Regulating commercial spaceflight in the UK

A guide on what to expect from the new regulations in 2021

Burges Salmon

In 2020 the UK Government carried out **two consultations** on draft regulations to implement the Space Industry Act 2018, which will bring into force the legal framework to enable commercial spaceflight to be carried out from the UK for the first time.

The Government published the **joint outcome** of these consultations on 5 March 2021, and its ambition is to put this legislation in place later in 2021. In this guide **Chris Chesterman** and **Keith Beattie** look ahead at what spaceflight operators and other prospective licensees can expect from the new regime.

Overview

The UK's strategy for space

The UK Government has ambitious plans for the UK space sector. It has a target to grow the UK's share of the global market for space from 5.1% to 10% by 2030. In the Queen's Speech in 2019, it announced plans to launch a comprehensive National Space Strategy, and in 2020 it formed the National Space Council, a Cabinet Committee chaired by the Chancellor of the Exchequer to lead and co-ordinate space policy and investment.

Many of the best-laid plans went awry in 2020. The National Space Strategy is still awaited, and UK investment still lags behind its international competitors. In December 2020 UKSpace, the trade association for the UK space industry, voiced frustrations about a lack progress in implementing UK space policy.

Nonetheless, some significant steps have been taken in the last 18 months. The UK has increased its funding to the European Space Agency to a record £374M per year from 2019-2023. The Ministry of Defence has achieved notable milestones in the Skynet 6 satellite communications programme. In June 2020, the UK and US Governments signed the Technology Safeguards Agreement, a treaty setting out principles for handling sensitive US spaceflight technology, which aims to facilitate the participation of US companies in UK launch activities. The Government's much-publicised rescue of OneWeb may not be the answer to a sovereign navigation satellite capability outside the EU, but it was nothing if not a statement of the Government's intent to invest actively in the sector.

As a platform for other high-technology, high-growth industries, the space sector undoubtedly has a central role to play in the UK's economic recovery, and will be essential to the way in which Government and businesses respond to global challenges, from climate change to public health.

A legislative framework for UK spaceflight

A key element of the UK's strategy for space is enabling the launch of spacecraft from the UK. The UK's spaceflight programme, LaunchUK, aims to establish commercial vertical and horizontal launches of small satellites and sub-orbital spaceplanes and balloons from UK spaceports. Launch site development projects are under way in Cornwall, Sutherland and Unst in the Shetland Isles, combining Government funding with investment from Lockheed Martin, Virgin Orbit and Orbex.

Safe and sustainable growth of the spaceflight sector requires efficient and effective regulation. In March 2018, the Space Industry Act 2018 ("**SIA 2018**") was enacted to create a high-level framework to enable commercial spaceflight and associated activities to take place from the UK.

Whilst the SIA 2018 is a major step in itself, it is reliant on detailed secondary legislation to bring it into force and to flesh out the regulatory framework. Between July and October 2020, the Government consulted on three sets of draft implementing regulations and accompanying guidance, with further consultations on liabilities, insurance and charging proposals published in October 2020 and the regulator's environmental objectives published in February 2021. It published the joint outcome of the first and second consultations on 5 March 2021, containing a summary of public feedback and the Government's responses, and it has an ambitious target of putting this legislation in place in 2021.

What to expect from the regime

In this guide we look ahead at what businesses planning to participate in UK spaceflight and associated activities can expect from the new regime, based on what has been published so far and the overarching requirements of the SIA 2018. We will produce a follow-up to this guide once the regulations have been finalised, to reflect the modifications resulting from the consultations.

We have focussed on the following key areas of interest for operators and other prospective licensees:

Further information

The economic advantages of moving quickly to unlock commercial spaceflight in the UK are clear, and there is much that operators can do to prepare themselves before the regime comes into effect.

If you would like to discuss the draft regulations or any associated matters further, please contact:

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What the government has published so far

Between July and October 2020 the Government consulted on three sets of draft regulations, accompanying guidance and the Regulator's Licensing Rules, which make up most of the proposed regulatory regime. Between October and November 2020 it consulted on further regulations and guidance relating to liabilities and insurance. In February 2021 it published a third consultation on the regulator's environmental objectives. In March 2021 it published the joint outcome of the two consultations on the draft regulations and guidance.

Consultation on the new regime

Between July and October 2020, the Government consulted on three sets of draft regulations. These are:

- The draft Space Industry Regulations ("**SIR**"), which will be the main implementing regulations of the SIA 2018 and cover matters such as licensing of spaceflight and associated activities, safety, training and qualifications, security, liability and monitoring and enforcement by the regulator;
- The draft Spaceflight Activities (Investigation of Spaceflight Accidents) Regulations (made under s.20 of the SIA 2018), which will provide a framework for the investigation of accidents; and
- The draft Space Industry (Appeals) Regulations (made under s.60 of the SIA 2018), which will provide a process for appealing against certain decisions of the regulator.

The regulations will be supplemented by the Regulator's Licensing Rules, which the Government has also published in draft. These rules will set out the information that the regulator will require in support of licence applications, along with other procedural matters. Following consultation, the Government has indicated that some updates will be made to the draft rules that have been published, including a limitation on the scope of the requirement for applicants to provide information relating to officers in their organisations. However, despite concerns raised by respondents the Government has confirmed that (as set out in the published draft) the rules will not set any time limit for the regulator to review applications, and will require applicants to respond to requests for information within 28 days. Draft licence conditions have not been published, but Schedule 1 of the SIA 2018 summarises particular conditions that may be included in licences.

The regulations will be supported by published guidance for applicants and licensees. The consultations invited feedback on a number of draft guidance documents, which set out how the licence application processes will work for the various licences provided for in the regulations, the duties of licensees, and other issues such as security, appealing decisions of the regulator and investigation of spaceflight accidents.

Consultation on liabilities, insurance and charging proposals

Between October and November 2020, the Government carried out a second consultation on the liability and insurance requirements to implement the SIA 2018 and the Government's charging proposals. This consultation presented a fourth set of draft regulations, The Space Industry (Liabilities) Regulations, and associated guidance, although it is intended that these regulations will be incorporated into the SIR prior to the regime being finalised.

Consultation on environmental objectives

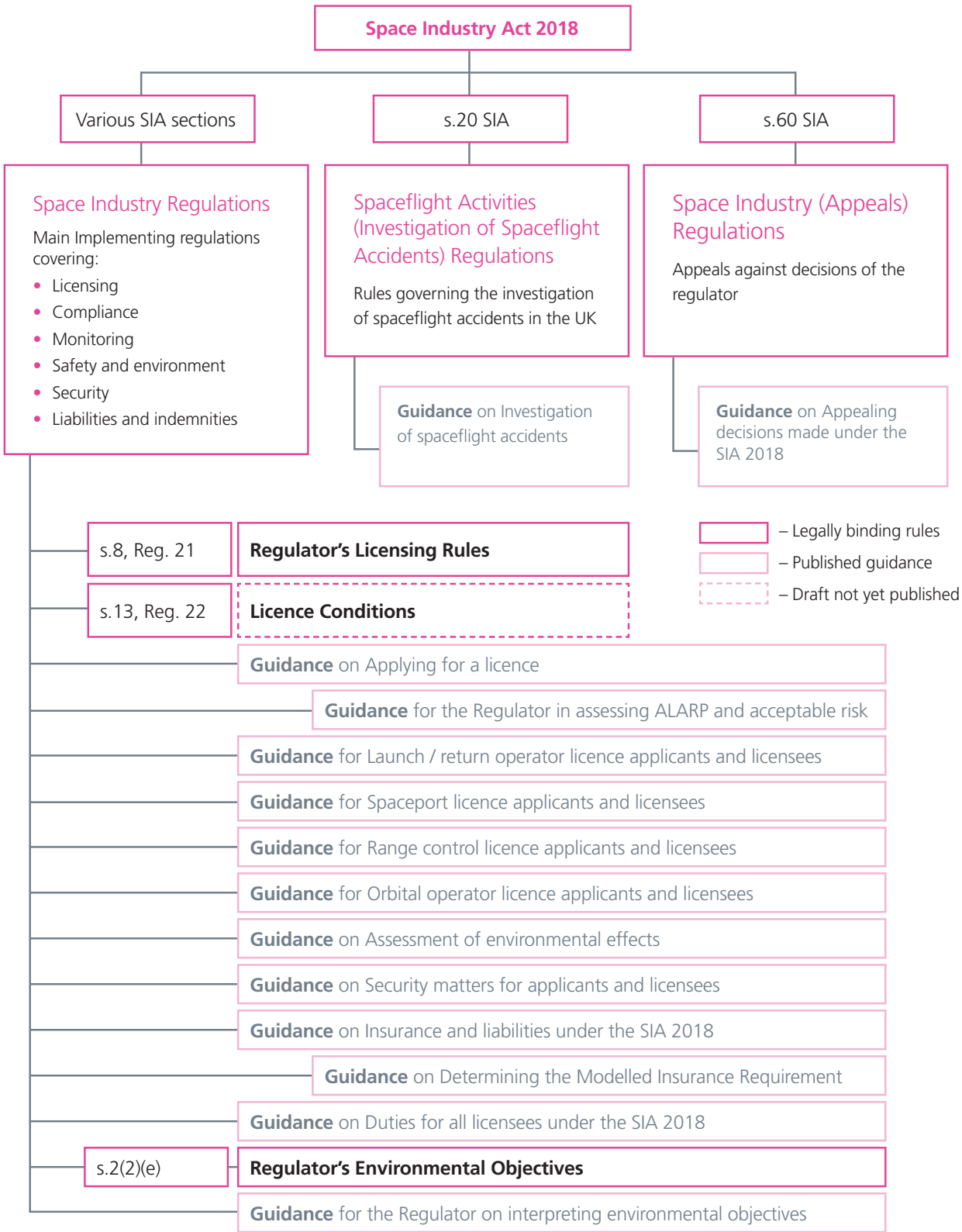
In February 2021, a third consultation was published on the environmental objectives that the regulator will be required to take into account, and draft guidance for the regulator on the interpretation of those objectives. No further draft regulations have been published as part of this consultation.

Consultation outcome

On 5 March 2021 the government published the joint outcome of the first and second consultations, containing a summary of public feedback and Government responses. In the consultation outcome the Government identified a range of areas in which the published draft regulations and guidance will be updated in response to the feedback received. Where relevant, the proposed updates are noted in the sections below.

Figure 1 below maps out the draft legislation and supporting guidance that has been published as part of the consultations, which, together with the SIA 2018 and legislative impact assessments, runs to over a thousand pages. As indicated in the published consultation outcome, modifications and refinements to the documentation will follow from the consultations, but the breadth of published material indicates the range of issues that prospective licenses will need to understand in order to successfully obtain a licence, conduct licensed activities in a compliant way, and manage the legal risks associated with UK commercial spaceflight.

FIGURE 1: Map of legislation and guidance



How the new regulatory regime will interact with the Outer Space Act 1986

Once the new regime is in force, the Outer Space Act 1986 will only regulate space activities carried out overseas by UK entities, and the Space Industry Act will regulate activities carried out from the UK. These include orbital and sub-orbital spaceflight activities, spaceport operations and range control services.

The space activities of UK entities are currently governed by the Outer Space Act 1986 ("**OSA 1986**"). The OSA 1986 requires UK entities who launch, or procure the launch, of a spacecraft overseas, or operate a satellite in orbit, to hold a licence granted under a process managed by the UK Space Agency ("**UKSA**").

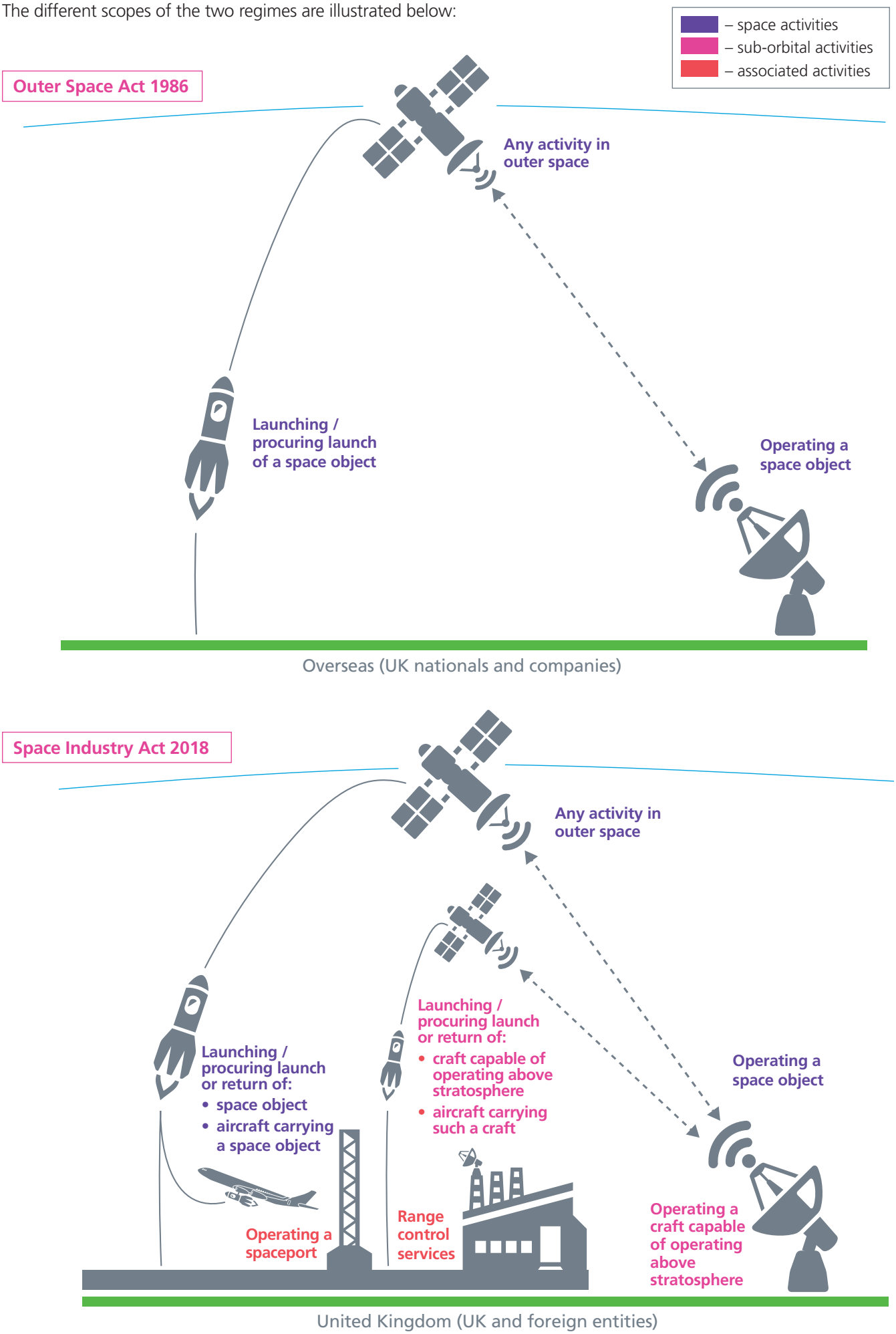
Once the new regime is in force, the SIA 2018 will work alongside the OSA 1986, which will have a reduced remit:

- The OSA 1986 will continue to regulate space activities carried out overseas by UK entities, including the launch of a space object overseas, the procurement of the launch of a space object overseas, and the operation of a satellite in orbit from an overseas facility. It will no longer apply to space activities carried out from the UK.
- The SIA 2018 and its supporting regulations will regulate activities carried out from the UK, either by UK or foreign entities. This includes orbital and sub-orbital spaceflight activities (including launch, operation and return to earth, and both vertical and horizontal launches), and associated activities such as operating a spaceport or providing range control services.

The draft regulations contain a transitional provision under which applications for licences made under the OSA 1986 that are in progress at the time the SIA 2018 regime comes into effect will continue to be considered and determined under the OSA 1986.

FIGURE 2: Scope of the SIA 2018 and the OSA 1986

The different scopes of the two regimes are illustrated below:



A new regulator for spaceflight activities

The Civil Aviation Authority will be appointed as the single regulator for all spaceflight carried out from the UK and by UK operators overseas. It will grant licences, monitor and enforce compliance, issue guidance and provide advice and assistance on security matters. It will have an overriding duty to exercise its functions with a view to securing public safety.

The UKSA is currently responsible for granting licences for the launch and operation of spacecraft under the OSA 1986. The Government intends to appoint the Civil Aviation Authority ("**CAA**") to carry out all regulatory functions under the SIA 2018 *(Reg. 3(1))*. It also intends to transfer the regulation of in-orbit activities under the OSA 1986 from the UKSA to the CAA, creating a single regulator responsible for all spaceflight carried out from the UK and by UK operators overseas. The stated policy behind this decision is to separate the role of safety regulation from the role of sector promotion, which will continue to be led by the UKSA.

The SIA 2018 sets out a broad range of functions which will be carried out by the new regulator. These include:

- Granting licences and setting licence conditions for spaceflight and associated activities *(SIA 2018 ss.8-15)*;
- Monitoring licensees' activities to secure compliance and protect public safety and national security, and taking enforcement action *(SIA 2018 s.26)*;
- Issuing guidance for applicants and licensees on safety requirements, environmental assessments, and training requirements *(SIA 2018 s.7(7), s.9(7), s.18(3), s.19(3))*; and
- Providing advice and assistance on security matters *(SIA 2018 s.25)*.

The CAA will have an overarching duty to exercise its functions relating to spaceflight with a view to securing public safety. It must also exercise its functions taking into account a range of other policy objectives, including the interests of spaceflight participants and other users of land, sea and airspace, environmental objectives, national security and any international obligations of the UK *(SIA 2018 s.2)*. The Government has indicated in the consultation documents that the power to grant exemptions from the requirements to hold a licence will not be exercised by the regulator.

It was reported in January 2021 that the Department for Business, Energy and Industrial Strategy has also taken over the UKSA's role in handling space policy and strategy, creating a somewhat uncertain future for the UKSA. It remains to be seen whether there will be any change to the role of the UKSA prescribed in the draft regulations, such as in relation to appeals against licensing decisions (see *Appeals against regulator decisions below*).

Licensing of spaceflight and associated activities

Anyone carrying out regulated spaceflight activities in or from the UK will need to obtain a licence from the regulator. Applicants will have to satisfy eligibility criteria and appoint individuals to prescribed roles. They will have to take specific steps depending on the type of licence, such as preparing a safety case, carrying out an assessment of environmental effects, and drawing up a site security programme and cyber security strategy.

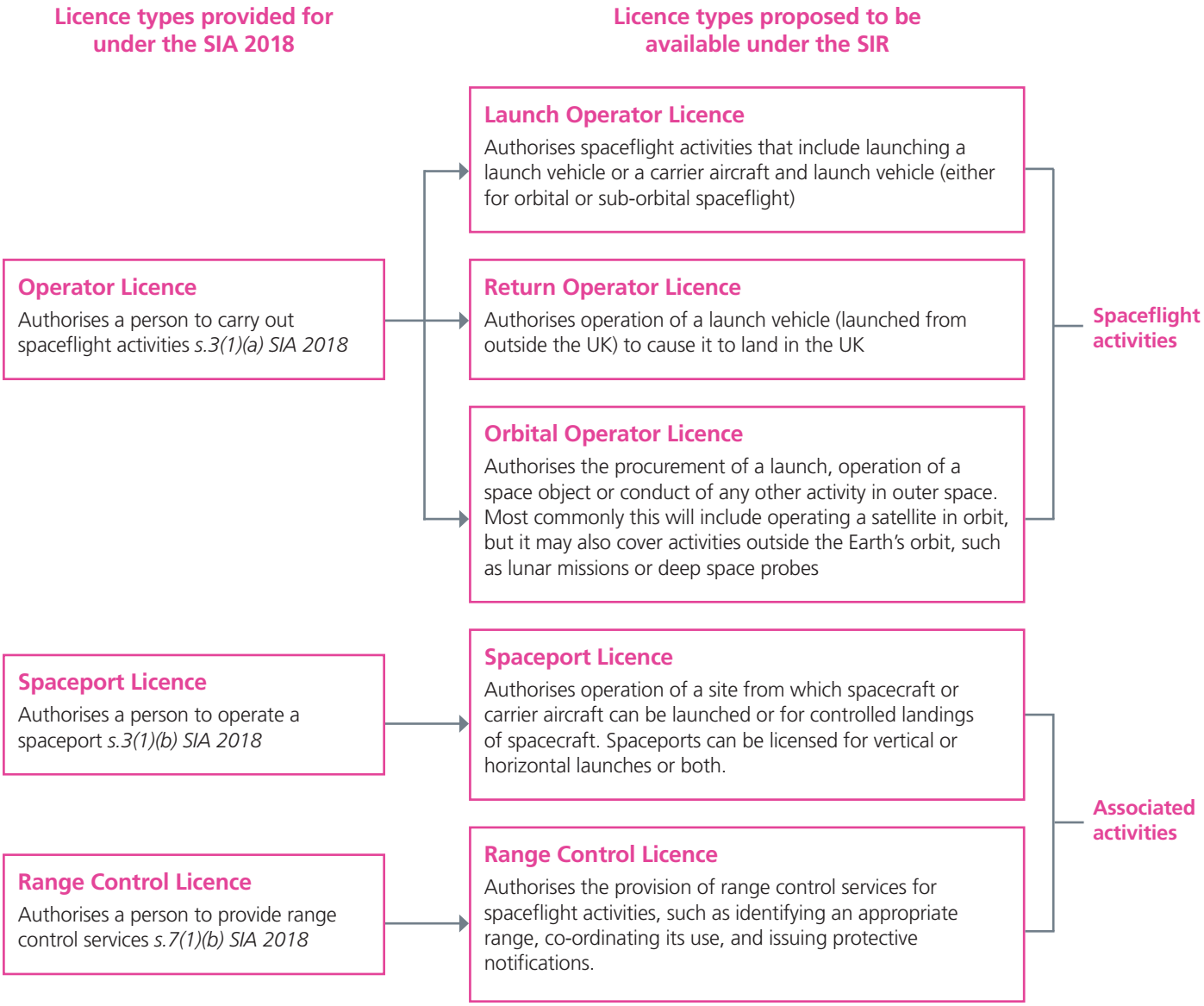
Requirement for a licence

The SIA 2018 will require any person or organisation carrying out regulated spaceflight or associated activities in or from the UK to obtain the relevant licence. It will be an offence to carry out spaceflight activities, operate a spaceport or provide range control services without a licence *Figure 3: Types of licence*.

Types of licence

The SIA 2018 itself refers to three types of licence: operator licences, spaceport licences and range control licences. However, due to the differing requirements for different types of operator, in practice there are proposed to be five types of licence available under the SIR, as shown in *Figure 3* below:

FIGURE 3: Types of licence



Exemptions from licence requirements

A licence will not be required for the launch or return to Earth of a carrier aircraft which is being used to transport a space object or launch vehicle from one place to another, provided the flight is not used for launch and the operator has an air operator certificate acceptable to the regulator, or other appropriate approvals in place (SIR Reg. 18).

The consultation advises that the Government is also considering a further exemption from the requirement for an orbital operator licence where only the procurement of a launch activity will be carried out within the scope of the SIA 2018, with the operation of the space object being carried out from abroad under the authorisation of a different state.

Applying for a licence

Pre-application engagement

The consultation and draft guidance for licence applicants indicate that prospective applicants will be encouraged to engage with the regulator informally prior to submitting an application. The purpose of this engagement is to provide support to prospective applicants and to help smooth the application process, but there is no obligation to do so.

For orbital operator licences only, the Government intends to apply an optional Traffic Light System ("**TLS**") of pre-application engagement between with the regulator and prospective applicants, based on the existing process under the OSA 1986. The applicant will provide the regulator with answers to a set of questions about its business and the proposed activities, and based on those answers the regulator will provide the applicant with a pre-application Red/Amber/Green rating indicating whether the proposed activity is likely to carry an acceptable level of risk or not.

The purpose of the TLS will be to help operators understand their readiness to apply and to help less experienced operators understand the regulatory requirements for safety, security and sustainability. It is designed to provide an approximate rating based solely on the answers given and will not affect the regulator's decision after the application has been submitted. Following responses received in the consultation, the Government has indicated that the guidance for orbital operator applicants will clarify the scope of the TLS, so applicants understand that a Green rating does not necessarily mean that a subsequent application will be successful.

Submitting the application

The SIR provide that an application for a licence must be made to the regulator in a form specified by the regulator and accompanied by information specified by the regulator (SIR Reg. 20). The information required to be submitted for all types of licence applications will be detailed in the Regulator's Licensing Rules.

The regulator will have the power to grant a licence if it thinks fit. It may only do so if it is satisfied that the licence will not impair UK national security, is consistent with the UK's international obligations, and is not contrary to the national interest. It must also be satisfied 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 *(SIA 2018 s.8)*.

To be eligible for a licence under the SIA 2018, the person or entity applying for the licence must also meet certain criteria relating to solvency and criminal convictions (which the Government has indicated in the consultation outcome will apply to some but not all officers of licensee companies) *(SIR Reg. 5, 6)*, and appoint individuals to undertake certain "prescribed roles". These roles differ between each licence type but include safety, security and training managers and an "accountable manager" with overall responsibility for establishing and maintaining an effective management system and ensuring the licensed activities can be financed and carried out in accordance with the legislation and any licence conditions *(SIR Reg. 7-11)*.

Alongside these general requirements, there are additional steps that an applicant will have to carry out depending on the type of licence it is seeking. The general requirements and additional steps are illustrated in *Figure 4* on the next page, and described in detail in the draft guidance documents for applicants (although the Government has acknowledged in the consultation outcome that the application of these requirements to orbital operators needs to be clarified). The evidence of these steps to be submitted with the relevant licence application is summarised in the Regulator's Licensing Rules.

Consideration and determination by the regulator

The regulator will consider the information provided by the applicant, and may request further information, inspect sites, facilities, equipment and spacecraft, inspect documents, and conduct interviews to assist with its consideration of the application *(SIR Reg. 22)*.

The regulator will determine whether to grant the application, and any conditions to be imposed on the licence, having regard to the information provided and gathered during consideration of the application *(SIR Reg. 23)*. The regulator will need to be satisfied that the general and licence-specific requirements illustrated above have been met, but ultimately it will have a general discretion whether to grant a licence, acting in accordance with its overriding duty to secure public safety and its other duties *(SIA 2018 s.2)*.

A licence may be granted subject to any conditions that the regulator thinks fit, which will be tailored to the circumstances of the licensee *(SIA 2018 s.13)*. Schedule 1 of the SIA 2018 sets out a broad range of examples of the kinds of conditions that the regulator may include.

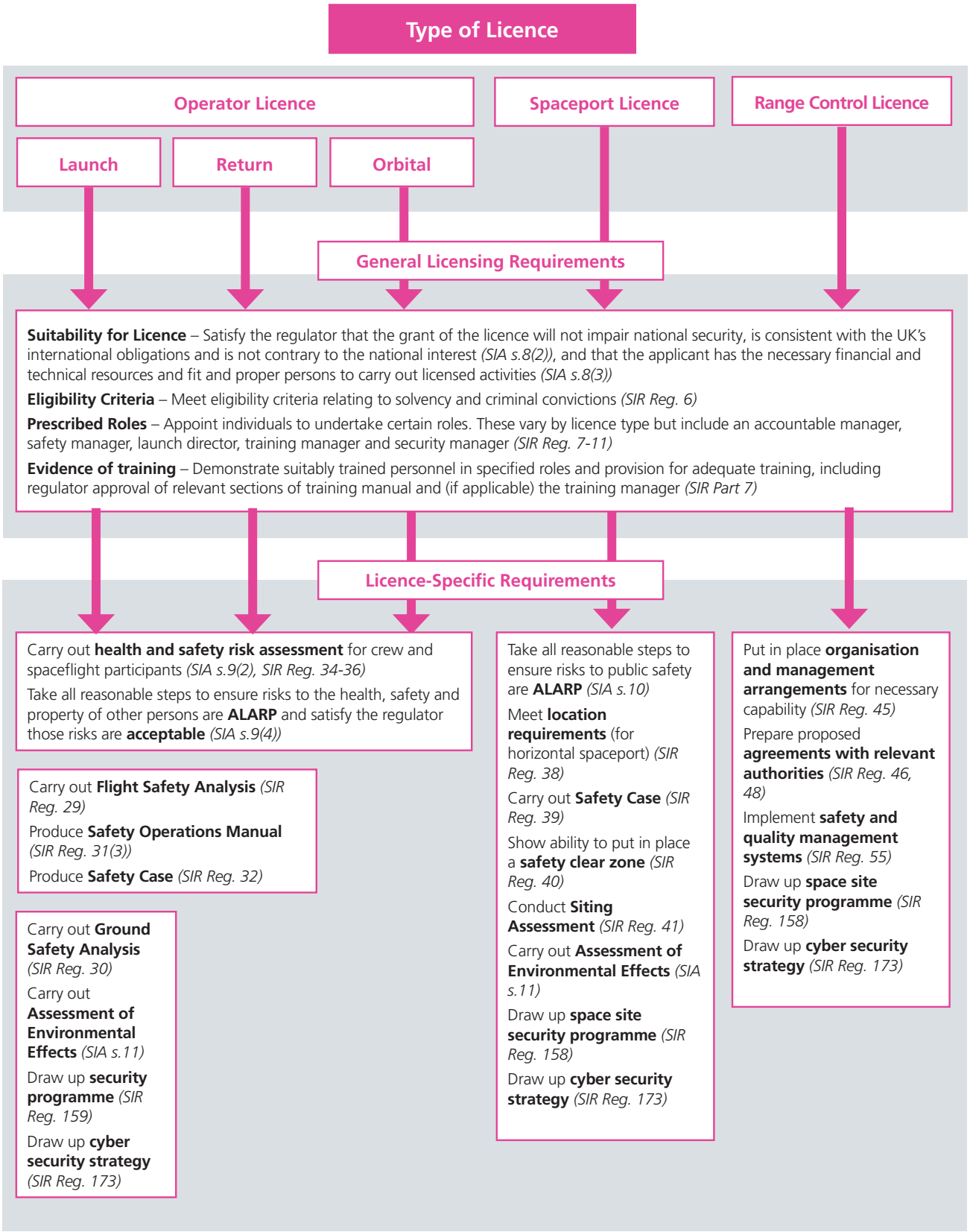
Unlike the current licensing regime under the OSA 1986, an applicant will be entitled to appeal against a decision by the regulator to refuse an application or to grant a licence subject to conditions (see *Appeals against Regulator Decisions* below).

Charging

The SIA 2018 makes provision for the Secretary of State or the regulator to charge fees for the performance of their functions *(SIA s.62)*, and amends the OSA 1986 so that the same charging scheme could apply under both regimes. The Government has proposed, and confirmed in the consultation outcome, that fees will not be charged for licensed spaceport, range control and launch activities under the SIA until 2024 in order to support sector growth, with a phased approach towards full cost recovery thereafter.

The Government has proposed that there will continue to be a one-off charge of £6,500 per licence under the OSA 1986, and to adopt the same fee for orbital licences under the SIA 2018, but following consultation feedback it has agreed to consider ways to reduce the licence fees for operators of constellations of satellites.

FIGURE 4: Licence application requirements



The duties of licensees

Licensees will have some common duties across all licence types, in relation to providing information to the regulator, keeping records and reporting accidents and unexpected events. Each type of licensee will also have a range of licence-specific duties and obligations designed to ensure that the licensed activities are carried out safely.

Common duties

After a licence has been granted, there are certain common duties that all licensees will be required to fulfil. These duties are not located in one place in the SIR as they relate to different subjects and different points in the lifecycle of a licensed activity, but the draft guidance on duties for all licensees puts them in three categories:

- **Providing information** – Licensees will have a range of duties to provide information to the regulator to enable it to fulfil its functions. In some cases, such as a single launch, most of the information required will be provided at the application stage. In others, such as orbital operations or a series of launches, licensees will have greater ongoing reporting requirements, some of which may be periodic and some of which are event-driven (such as confirmation of launch dates and specifications, or changes to the safety case). Many of a licensee's detailed reporting obligations will be set out in its licence conditions. The regulator will also have the power to formally require the provision of information under an "information notice", and failure to comply with certain information obligations will be an offence under the SIR (see *Monitoring and enforcement* below).
- **Keeping records** – Licensees will have a range of recordkeeping obligations in relation to licensed activities. These include:
  - certain records relating to spaceflight activities (such as communications during spaceflight, correspondence with the regulator and reports of maintenance) *(SIR Reg. 106)*; and
  - specified records relating to training, qualifications and medical fitness (such as its training manual, training participants, training received and assessment results, and medical examinations) *(SIR Reg. 63, Reg. 80)*.
- **Reporting occurrences** – All licensees will have a duty to report specified occurrences to the regulator within 72 hours (such as spaceflight accidents and other unexpected events arising during spaceflight), which will be analysed by the regulator to identify whether any powers need to be exercised to prevent or mitigate the risk of an accident *(SIR Reg. 259-264)*.

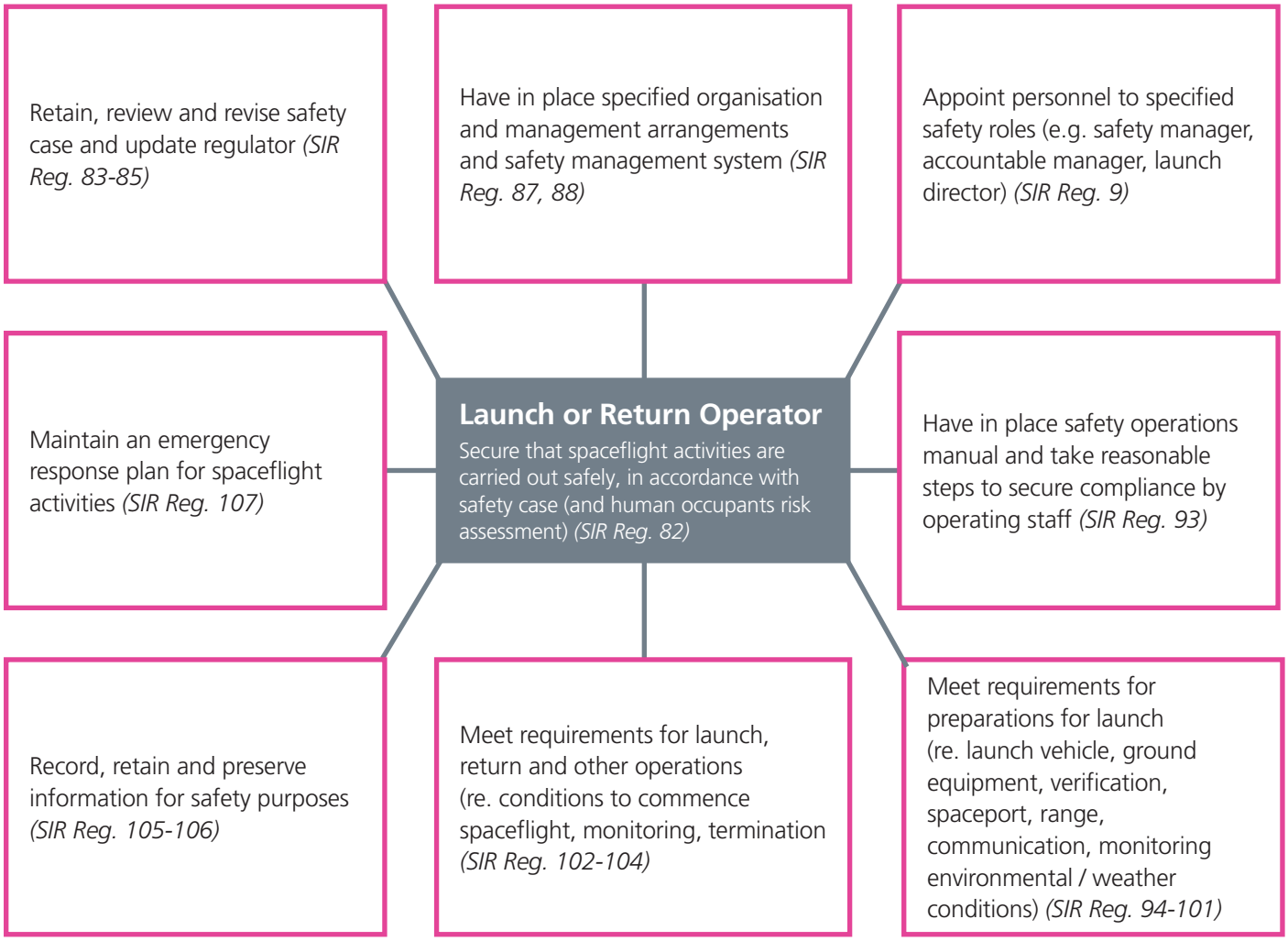
In addition to these common duties, the SIR set out detailed duties and requirements that apply to each type of licensee, and the regulator may set further requirements on licensees through the imposition of licence conditions.

Spaceflight operator duties

Launch operators and return operators (collectively referred to in the SIR as "spaceflight operators") will have a core duty to secure that their spaceflight activities are carried out safely, by securing the safety of individuals in accordance with the safety case (and, if applicable, by securing the safety of any human occupants in accordance with a risk assessment) *(SIR Reg. 82)*. The intention of setting the duty in this way is to set the required safety standards by reference to the evidence provided within the licence application to demonstrate the levels of risk presented. Schedule 1 to the draft SIR sets out the minimum information that the safety case must contain (although the Government has indicated in the consultation outcome that a number of updates will be made to this Schedule).

In support of this core duty, the SIR set out detailed requirements in relation to certain other matters designed to secure the safety of the licensed activities. These are summarised in *Figure 5* below and set out in more detail in the draft guidance for launch operator and return operator licence applicants and licensees.

FIGURE 5: Launch or return operator duties



The required information which must be included in the safety management system is set out in Sch 4 of the SIR, although the Government has indicated in the consultation outcome that these requirements will be consolidated with the equivalent requirements for spaceport licensees in Sch 6. The Government has also indicated that a number of other updates will be made to Part 8 of the SIR relating to safety requirements for launch, return and other operations in response to feedback received, and that it will provide further guidance in relation to matters such as space debris mitigation and constellations of satellites.

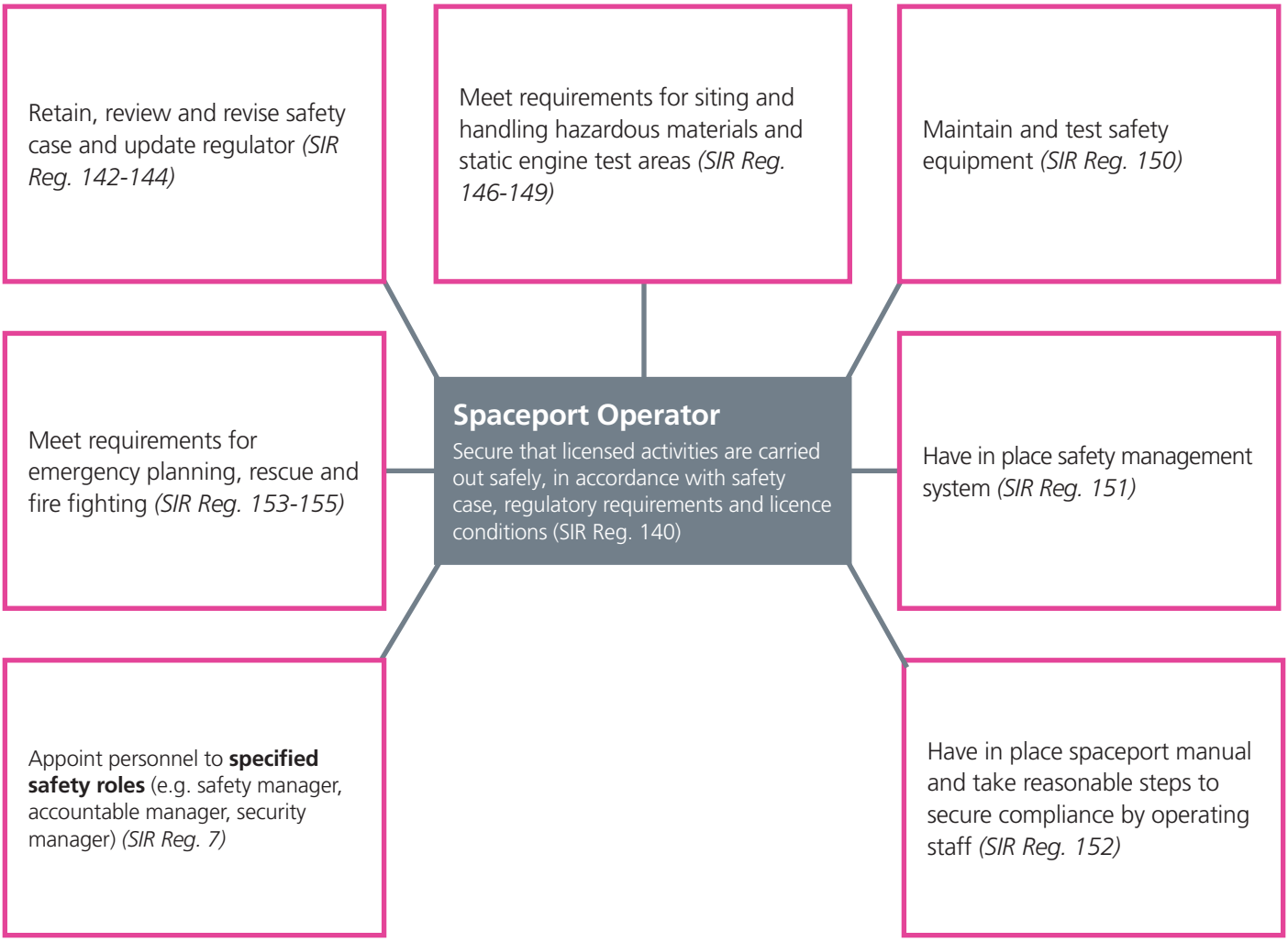
Additional safety requirements will apply for launch vehicles with human occupants, although it is proposed that initially the regulator's power to grant licences to carry out spaceflight activities with human occupants on the launch vehicle will be limited to suborbital activities.

Spaceport operator duties

Similar to spaceflight operators, spaceport operators will have a core duty to secure that their licensed activities are carried out safely. They must do so by securing public safety in accordance with the safety case and complying with the requirements of Part 9 (Spaceport Safety) of the SIR and the conditions of their licence *(SIR Reg. 140)*. As with spaceflight operators, the intention is to set the safety standards by reference to the evidence provided to demonstrate the levels of risk presented in the licence application.

The detailed safety requirements set out in the SIR in support of this core duty are summarised in Figure 6 below and set out in more detail in the draft guidance for spaceport licence applicants and spaceport licensees.

FIGURE 6: Spaceport operator duties

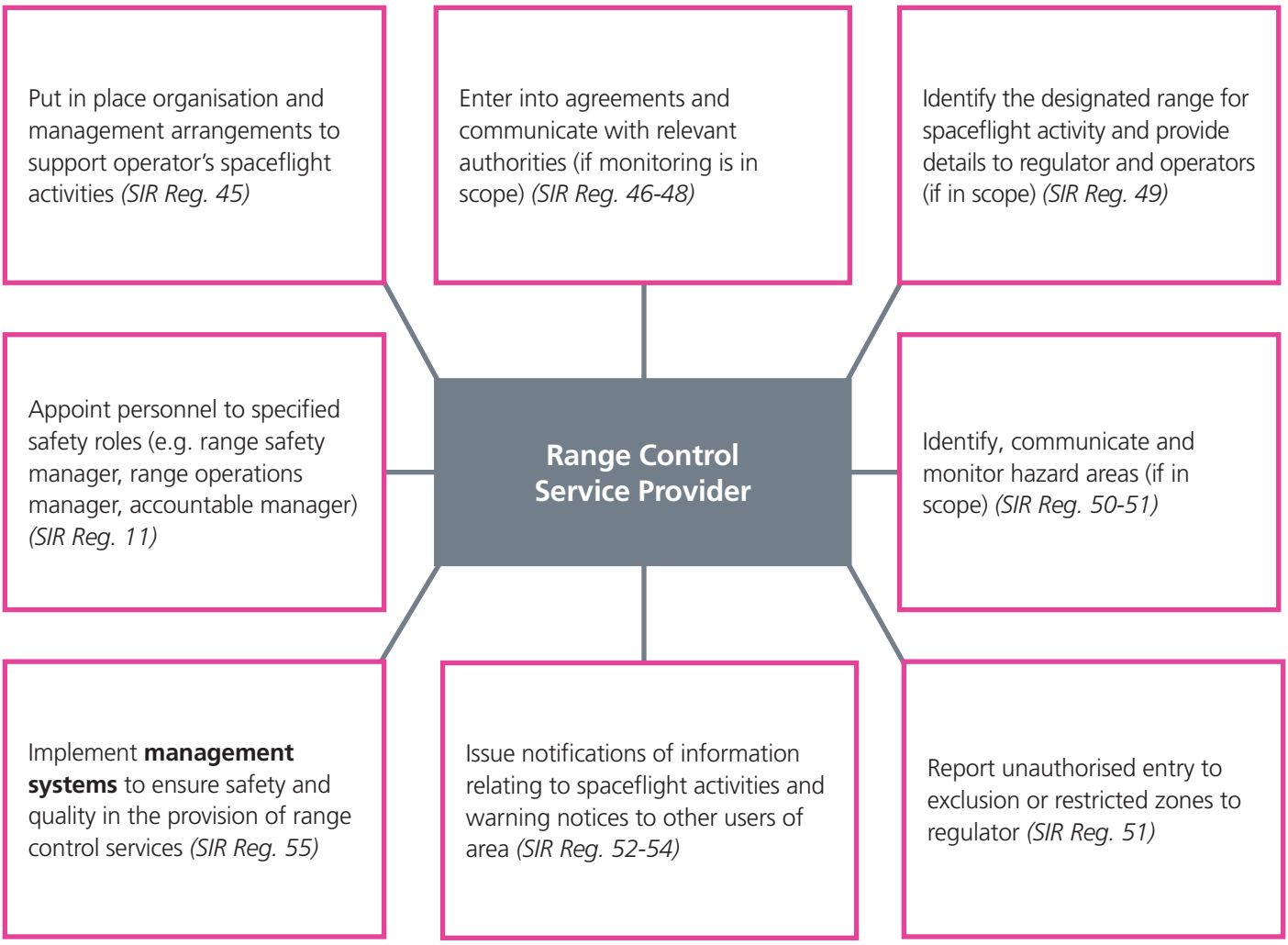


Range control service provider duties

The duties of a range control service provider will depend on the relevant spaceflight activity, and other documentation such as the launch operator's safety case and safety operations manual.

In addition to this, the SIR will set out management arrangements and systems that range control licensees will be required to have in place and activities that they will be required to carry out in connection with the spaceflight activity. These are summarised in *Figure 7* below and set out in more detail in the draft guidance for range control licence applicants and licensees:

FIGURE 7: Range control service provider



Orbital operator duties

The draft SIR do not contain safety obligations applicable exclusively to orbital operators. The draft guidance for orbital operator licence applicants and licensees indicates that following the grant of an orbital operations licence the primary obligations for the licensee will relate to reporting.

The Government has recognised in the consultation outcome that further clarity is needed on which regulations apply to orbital operators, and indicated that as a result of feedback received the guidance will be updated to clarify these points and to provide comparisons between the new regime under the SIA 2018 and the existing regime under the OSA 1986.

Training, qualifications and medical fitness

Licensees must not allow individuals to work in certain specified roles unless they meet detailed criteria in relation to qualifications, skills, experience and competencies. Licensees will be responsible for providing training and assessing competence, putting in place a training management system and producing a training manual to be approved by the regulator.

The SIA 2018 anticipates that regulations will make provision with respect to the training, qualifications and medical fitness of individuals engaged in spaceflight activities, providing range control services or working at sites used for those activities *(SIA 2018 s.18)*. These provisions are set out in Part 7 of the draft SIR, and will apply to all licensees except orbital operators.

Core responsibility of licensees

The core responsibility of a licensee under the SIA 2018 in relation to training is not to allow an unqualified individual to be engaged in licensed activities in a specified role, or to work in a specified role at a site used in connection with those activities *(SIA 2018 s.18(4))*. Under the SIR, the specified roles for this purpose will be the training manager, launch director, flight termination personnel, flight crew and remote pilots, engineer, range operations manager and range safety manager. Schedule 3 of the draft SIR sets out in detail the criteria that individuals holding those roles must satisfy in order to be considered as qualified *(SIR Reg. 59)*.

The SIR will set out what a licensee must do to discharge this responsibility, and further requirements relating to other individuals who participate in licensed activities. In short, a licensee must ensure that each person performing a specified role or otherwise participating in the licensed activities meets the following criteria *(SIR Reg. 61)*:

Specified role	Other participating individual
• Has the qualifications, skills, experience and competencies required by Part 7 (i.e. the detailed criteria set out in SIR Schedule 3) • Has received training appropriate to their role which enables them to satisfy the criteria set out in SIR Schedule 3, and otherwise complies with the requirements of Part 7 • Is medically fit to perform the duties assigned to them	• Has participated in a training programme appropriate to their role (including instruction on safety) • Has been assessed as competent to perform their duties • Is medically fit to perform their duties

In the consultation outcome, the Government has indicated that, in response to feedback provided, Part 7 of the SIR will be amended to add that participating individuals who do not perform a specified role must also be provided with initial induction training.

Supporting obligations

In addition to the core responsibilities above, a licensee will have a number of supporting obligations, including:

- Having in place a training management system meeting specified requirements *(SIR Reg. 61(8))*;
- Ensuring it has adequate resources (including personnel, facilities and equipment) to meet its training obligations *(SIR Reg. 62)*;
- Keeping specified training records for at least two years after the year in which the records are created *(SIR Reg. 63)*;
- Establishing and maintaining a training programme, with competence assessments and access to sufficient training equipment, and a pre-launch rehearsal of the mission to test operational procedures and train staff in their operational duties *(SIR Reg. 72, 73 (as will be modified following consultation))*;
- Preparing and maintaining a training manual which must be approved by the regulator *(SIR Reg. 69-71)*; and
- Ensuring that all relevant individuals are medically fit to perform their duties *(SIR Reg. 75-80)*.

Training manager

The training manager responsible for ensuring compliance with these requirements is one of the prescribed roles for which the person appointed must be approved by the regulator *(SIR Reg. 64-68)*.

Liability and insurance

Operators will be required to indemnify the Government against third party claims, and will have strictly liability to uninvolved third parties, for loss or damage resulting from their spaceflight activities. These liabilities will be capped and operators will be required to obtain third party liability insurance. For launch the required insurance level and liability cap will be determined on a case-by-case basis using a Modelled Insurance Requirement methodology.

One of the most important aspects of the regulatory regime will be the balance between protecting members of the general public against loss or damage resulting from spaceflight activities, and ensuring that the risks borne by operators are not prohibitive to growing the UK market.

There are four key elements to the framework for third party liability set out in the SIA 2018 and draft regulations, which operators will need to understand fully in order to appreciate the risks associated with UK spaceflight. These are:

- The liability of operators to the UK Government;
- The liability of operators to uninvolved third parties;
- The limitations on those liabilities; and
- The insurance requirements for operators.

The Government has indicated in the consultation outcome that based on the feedback received it intends to carry out a wider review of insurance and liabilities in 2021, including further market engagement. However, the key elements of the framework, as laid down in the SIA 2018 and set out in the draft regulations and guidance published to date, are described below.

Liability to the UK Government

Under the SIA 2018, a person carrying out spaceflight activities will be required to indemnify the UK Government (and certain listed bodies, such as the HSE and ONR) against any claims brought against them for loss or damage arising in connection with those activities *(s.36 SIA 2018)*.

This indemnity is substantially similar to the indemnity that existing licensed operators will recognise under s.10 of the OSA 1986. Both exist to flow down the UK's liability under international law for injury or damage caused to the people or property of other states by space objects launched by the UK, by UK nationals, or from UK facilities (*Art. VII Outer Space Treaty 1967 and Art. II and III Liability Convention 1972*). For damage occurring on the surface of the Earth or to aircraft in flight, this liability is absolute, meaning that claimants do not have to prove there has been any fault that has caused the damage.

The indemnity under s.36 SIA 2018 will not apply to the operator of a spaceport or a provider of range control services (unless that person is also carrying out spaceflight activities). The Government's view, as set out in the liabilities and indemnities consultation, is that spacecraft themselves are more likely to be the cause of injury or damage to the general public than any associated activities.

Liability to third parties

In addition to the Government indemnity, the SIA 2018 will place a new strict liability on operators for personal injury or damage in the UK caused by their spaceflight activities *(s.34 SIA 2018)*. As with the Government indemnity, a claimant will not have to prove any fault on the part of the operator.

The stated aim of this provision is to ensure that members of the general public in the UK have the same protection against loss or damage as foreign nationals do via the UK's obligations in international law.

Again, this strict liability will apply to launch, in-orbit and return operators, but does not apply to the operation of a spaceport or the provision of range control services. This will not prevent a person from being able to bring a claim against an operator of a spaceport or a range control service provider, but it does mean that fault would have to be proven (for example, under the existing law of negligence).

The policy intent behind the right to bring a strict liability claim is to protect people who are not involved in spaceflight activities, on the assumption that parties involved will generally be aware of and have consented to the associated risks. Accordingly, a strict liability claim will not be available to certain people involved in the spaceflight activity, including:

- Appointees, employees, agents, officers and partners of licensees at a space site;
- Individuals including crew and spaceflight participants who have signalled their informed consent to take part in spaceflight activities;
- Individuals on a carrier aircraft taking part in spaceflight activities;
- The emergency services; and
- Compliance authority personnel (such as the UK Security and Intelligence Agencies, CAA inspectors, and the Space Accident Investigation Authority) *(SIR Reg. 206)*.

The Government has indicated in the consultation outcome that the list of people who cannot make a strict liability claim will be updated to include other persons who may not be appointed by the licensee but are at a space site for work purposes (such as a satellite manufacturer), to include any person who has entered into a reciprocal waiver of liability with the licensee, and to clarify the meaning of the term "partner".

Limitations on liability

Whilst protecting the general public, the risks borne by operators need to be insurable and not prohibitively expensive, particularly for smaller businesses, to ensure that the UK is a competitive market for commercial operators.

In keeping with the approach taken in other launching states, the Government has determined that an operator's liability, both to the Government and to third parties, will be limited. To ensure the continued protection of the general public, the Government will step in to indemnify claimants for amounts in excess of the applicable limits *(s.35(3) SIA 2018)*.

The applicable limit will be specified in each operator's licence. As under the OSA 1986, in most cases the amount will reflect the level of insurance cover required by the licence conditions. However, the required level of insurance, and therefore the limit on liability, will be more variable under the SIA 2018 than under the OSA 1986, where the operator's liability under the Government indemnity and the required level of insurance are generally set at €60M for standard missions for both launch and in-orbit operations (see Insurance below). In-orbit operators should also note that the Government intends for their liability to third parties to be limited at the same level as the relevant launch operator's liability, to cover, for example, liability arising from the procurement of the launch or re-entry of the satellite.

The Government has proposed that the limits on liability will not apply in the case of an operator's gross negligence or wilful misconduct, or where the damage or loss is caused by the operator's non-compliance with its licence conditions, or its obligations under the SIA 2018 or the implementing regulations *(SIR Reg. 207)*.

The Government is seeking further feedback on its proposed approach to limiting liability and it would be unsurprising if this area is further refined before the regulations are finalised. As it stands, the exclusions present an exposure to unlimited liabilities that is both broad and difficult to quantify. For example, many of the operators' obligations under the SIA 2018 and the implementing regulations are outcome-focused, and collectively they cover virtually all aspects of safety management of spaceflight activities. Gross negligence is defined, but only as conduct which falls "far below what can reasonably be expected". It also remains to be seen what further obligations will be contained in licence conditions, which (as with licences under the OSA 1986) might include higher standards of conduct. Existing operators may well point to the current regime under the OSA 1986, under which there are no equivalent exclusions to the operator's limited liability to the Government (although it should also be noted that the liability to third parties is not limited at all).

Insurance

The Government will require all licensees under the SIA 2018 to have in place third party liability insurance (unless the regulator has granted a waiver).

For operators engaging in spaceflight activities – including launching or procuring a launch from the UK or operating a satellite from the UK – the insurance will be required to cover both claims made by third parties for personal injury or property damage arising out of all spaceflight activities, and the operator's indemnity to the Government in respect of claims made against it. For spaceport licensees and range control licensees (who do not have the same strict liability to third parties or the same obligation to indemnify the Government as spaceflight operators), the insurance must cover third party liability for personal injury or damage to property arising from spaceflight activities carried out at the spaceport or from the provision of the range control services. In practice, it is likely that in most cases a single insurance policy for launch will be taken out by the launch operator, with the Government and other participants identified as additional insureds.

It is proposed that the requirement for third party liability insurance, and the required amount, will be specified in a licence condition rather than in regulations, and will be the only insurance required by licence conditions.

The *amount* of the required insurance will depend on the type of licensed activities:

- For launch activity, the Government has stated that its preferred approach, which has been confirmed in the consultation outcome, is to set the insurance requirement on a case-by-case basis using a Modelled Insurance Requirement ("**MIR**") conducted by the regulator, adapted for the UK from the Maximum Probable Loss approach used in the US and Australia. The MIR is described as "the amount of potential third-party liability claims that an operator could incur in a realistically possible scenario", with the insurance amount then being set by the regulator at a certain probability threshold showing the number of launches expected before an accident occurs causing more than a specified value of damage. The purpose of this approach is to ensure that the required insurance, and associated cost, reflects the level of financial risk associated with the mission. The Government has published draft guidance for the regulator on the methodology that the regulator will use to determine the amount of insurance required under the Modelled Insurance Requirement, and has confirmed that the same amount will apply to an orbital operator procuring a UK launch as to the launch operator.
- The Government currently does not propose to apply the MIR to in-orbit operations. For the indemnity to the Government, the required insurance and the associated limit on liability are proposed to be the same as under the OSA 1986 (i.e. €60M for standard missions), and the Government has proposed to take the same approach to the new strict liability to third parties. However, the Government has indicated in the consultation outcome that insurance requirements and limits of liability for in-orbit operations (including exploring the use of the MIR) will be included in its further review of insurance requirements, and that further guidance will be provided.
- For return/re-entry activities (including satellites, upper stages and re-usable vehicles), the consultation documents advise that the policy is under development, and likely to adopt a similar approach to the MIR.
- The consultation documents do not specifically state the approach to setting the required amount of insurance for spaceport operators or range control service providers, but given the approach taken elsewhere it may reasonably be expected that these will follow the MIR that applies to the launch operator.

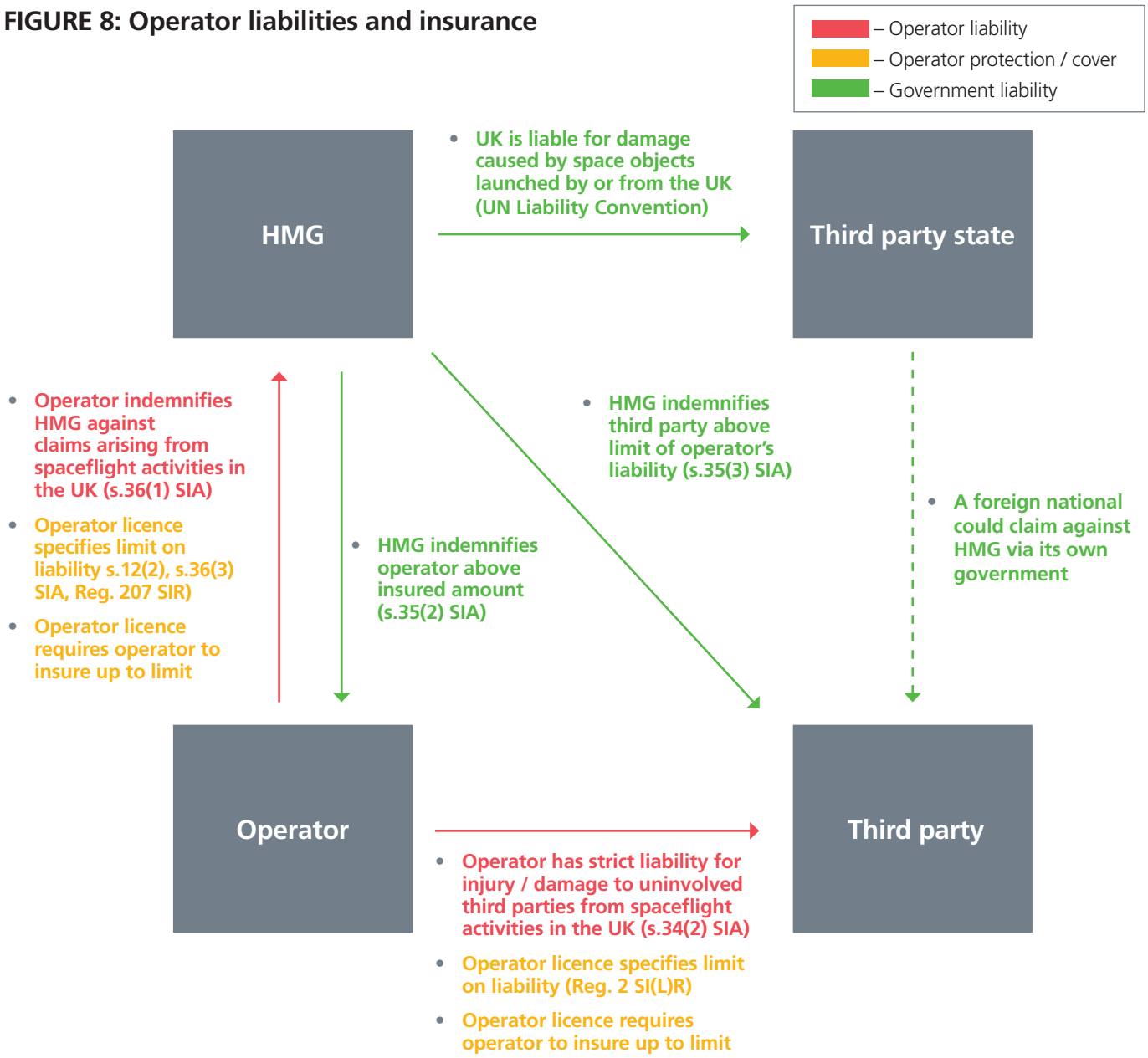
The regulator will have the power to waive the requirement to hold thirty party liability insurance if it deems this to be appropriate. The consultation indicates that the waiver will only apply to missions that are considered to be "low risk" and only in relation to in-orbit activities. This is consistent with current policy under the OSA 1986, which provides for a possible waiver for low-risk small satellite missions deployed from the International Space Station or otherwise launched to an operational altitude below that of the ISS.

Noting the forthcoming further review, the proposed required insurance amounts and limits on liability can be summarised provisionally as follows:

	Limit of liability and required insurance amount		
	UK launch (including sub-orbital launch and carrier aircraft) or **procuring UK launch**	**In-orbit operations**	**Return**
Indemnity to HMG *(SIA 2018 s.36)*	Set using the Modelled Insurance Requirement	€60M for standard missions (as under the Outer Space Act 1986) Higher for higher-risk missions Insurance requirement waived for lowest-risk missions	Policy remains under development, but similar approach proposed to Modelled Insurance Requirement
Strict liability to uninvolved third parties in the UK *(SIA 2018 s.34)*	Set using the Modelled Insurance Requirement	€60M for standard missions (as under the Outer Space Act 1986) Higher for higher-risk missions Insurance requirement waived for lowest-risk missions	Policy remains under development, but similar approach proposed to Modelled Insurance Requirement

Figure 8 below shows the key elements of the third party liability regime set out in the SIA 2018 and draft regulations:

FIGURE 8: Operator liabilities and insurance



Liabilities to other involved parties

Schedule 1 of the SIA 2018 contains a list of potential licence conditions, which includes conditions requiring the holder of a spaceflight licence and other parties it contracts with to enter into cross waivers or indemnities in respect of injury or damage resulting from the licensed activities. These provisions are common practice for launch activities in the US and other jurisdictions, and are designed to ensure that the parties involved in a spaceflight activity bear their own losses.

The Government has stopped short of confirming that such cross waiver and indemnity provisions will be mandated in licences, instead stating that "*conditions will…be included in licences relating to waivers and indemnities on a case-by-case basis, reflecting the specifics of each licence*" and that "*Each licensee may agree to waive their right to claim against the parties they are contracting with*". However, whilst the application to specific scenarios or types of licence remains to be seen, the Government does appear to intend to give the regulator the ability to make licences conditional on operators entering into these arrangements.

Security

Licensees will have obligations to protect physical, personnel and cyber security in relation to spaceflight and space sites. These obligations are designed to be appropriate and proportionate to the licensed activities, and may include appointing a security manager, controlling access to sites and maintaining a cyber security strategy. Further security measures will apply where the licensed activities involve US technology.

It perhaps goes without saying that security is becoming ever more important to the sustainable conduct of space activities and use of space systems. The Government is evidently mindful that adequately regulating for security in the conduct of UK spaceflight and associated activities is necessary not only to ensure that the UK meets its international obligations in protecting information and assets, but also to ensure that businesses can invest and participate with confidence.

Part 10 of the draft SIR deals with security requirements for licensees, and covers the following areas:

- Physical and personnel security *(SIR Reg. 157-172)*;
- Cyber security *(SIR Reg. 173-174)*;
- Vetting, clearance training and qualifications for licensee personnel *(SIR Reg. 175-178)*;
- Space sites or operations declared as critical national infrastructure or essential services *(SIR Reg. 179)*; and
- Requirements for the protection of US technology *(SIR Reg. 180-190)*.

The Government's stated intention is that the security regulations will be outcome focused. The security demands for a launch are self-evidently very different to those of, say, an orbital operator of a small research satellite, and this is reflected in the approach taken. Some of the security obligations apply only where there is a requirement to appoint a security manager (which depends on the nature of the licensed activities), and many of the requirements are to put in place "*appropriate*" or "*proportionate*" measures, putting the onus on the applicant or licensee to satisfy the regulator of the adequacy of the steps taken. The Government has indicated in the consultation outcome that it will update the guidance on security matters to provide further clarity on what these terms mean as they relate to specific provisions. It has also indicated that additional guidance will be provided for potential orbital operator licensees to clarify which regulations apply to every orbital mission and which apply only when the licensee is required to appoint a security manager.

Physical and personnel security

Launch operators, spaceport operators and range control providers (and orbital and return operators carrying out activities giving rise to national security issues) are required to appoint a security manager under the general licensing rules detailed above on prescribed roles. The regulator may also require the appointment of a security manager under licence conditions.

Part 10 of the draft SIR sets out the responsibilities of a security manager *(SIR Reg. 157)*, and adds that where there is a requirement for a security manager to be appointed, the licensee must draw up and maintain a space site security programme or operator security programme (as applicable) based on a risk assessment carried out by the security manager and addressing a range of specified issues. The regulator will not have to approve the programme per se (as it does for, say, a licensee's training manual), but for launch operators, spaceport operators and range control providers the programme must be submitted as part of the licence application (*Annexes B, E and F of the Regulator's Licensing Rules*). During the term of the licence it must be kept up to date, reviewed at least annually and whenever the systems are upgraded, and sent to the regulator following annual review *(SIR Reg. 158, 159)*.

Licensees will have to comply with further detailed obligations relating to physical and personnel security depending on the licensed activities they are undertaking. These cover:

- Control of access for people, vehicles, supplies, payloads and launch vehicles to space sites (meaning spaceports, mission management facilities and sites used in connection with the provision of range control services) *(SIA 2018 Sch 4 Para 5(3), SIR Reg, 160-167)*;
- Managing access to security restricted areas and controlled areas designated by the Secretary of State *(SIR Reg. 163)*;
- Ongoing surveillance of space sites *(SIR Reg. 168)*;
- Security control requirements for hazardous materials *(SIR Reg. 169)*;
- Protection of carrier aircraft, launch vehicles and payloads pre- and post-integration *(SIR Reg. 170-171)*; and
- Security controls for flight safety systems *(SIR Reg. 172)*.

Cyber security

The UK does not have an overarching regime of cyber security legislation for spaceflight regulation to fit into. However, the approach taken in the draft SIR is to build on existing principles which are supported by guidance from the National Cyber Security Centre ("NCSC").

All licensees under the SIR will be required to draw up and maintain a cyber security strategy for the systems used in their spaceflight operations. The strategy must be based on a risk assessment and be "appropriate and proportionate" for the type of systems operated. As with the site security programme, launch operators, spaceport operators and range control providers must submit it as part of the licence application (*Annexes B, E and F of the Regulator's Licensing Rules*). During the term of the licence it must be kept up to date, reviewed at least annually (and whenever the systems are upgraded), and sent to the regulator following annual review *(SIR Reg. 173)*.

The draft guidance indicates that the regulator will recommend that licensees' cyber security strategies follow best practice guidance and advice from NCSC, and that licensees obtain Cyber Essentials Plus certification as a minimum. The UKSA has also produced a Cyber Security Toolkit, which expands on the recommended principles.

Licensees will have an obligation to notify the regulator within 72 hours (increased from 24 hours following the consultation) after becoming aware that any event has occurred that has an adverse effect on the security of the cyber systems used for their spaceflight operations or that could have a significant impact on future essential services provided by the licensee *(SIR Reg. 174)*. "Essential services" has a broad meaning, covering any services that are "essential for the maintenance of critical societal or economic activities", such as energy, transport, healthcare, water and digital services and infrastructure.

Vetting, clearance, training and qualifications

All licensee personnel with a security function will have to have obtained appropriate security vetting and clearance, and have appropriate security training and qualifications (in addition to the general requirements outlined above on training, qualifications and medical fitness). This applies to the security manager (where one is required to be appointed), and people responsible for implementing security controls or for cyber security, their supervisors, and people with access to restricted areas.

Since there are currently no officially approved security training entities in the UK for spaceflight operations, the regulator will be required to allow licensees to have access to aviation security training syllabuses to enable them to develop appropriate training *(SIR Reg. 175-178)*.

Critical national infrastructure and essential services

The Secretary of State, in consultation with the Centre for Protection of National Infrastructure ("**CPNI**"), may determine that a space site is critical national infrastructure or that particular spaceflight activities are essential services. Where this applies, the relevant licensee will have additional obligations to take appropriate and proportionate measures to manage any risks posed to the security of the site and activities, and to co-operate with the CPNI and the NCSC in ensuring continuity of essential services *(SIR Reg. 179)*.

Protection of US space technology

For all licence types, licensees will be required to comply with further security provisions where the licensed activities involve US technology (meaning launch vehicles, spacecraft and related equipment authorised for export by the US Government and used for UK launch activities, and associated technical data).

These provisions derive from the Technology Safeguards Agreement associated with US Participation in Space Launches from the UK, a bilateral treaty entered into in June 2020 setting out requirements for handing sensitive US spaceflight technology when it is in the UK, and are designed to enable those requirements to be met and enforced under the licensing regime. They include:

	What licensees (and others) must do	What licensees (and others) must not do
Access control to segregated areas *(SIR Reg. 180, 181)*	✓ A licensee intending to carry out US launch activities must propose to the Secretary of State and US Government an area to be designated as a segregated area for preventing unauthorised transfer of US technology to third parties ✓ The licensee must ensure the boundaries of the segregated area are clearly delineated	✗ A licensee must not permit any person (other than emergency services) to enter a segregated area without US Government authorisation and being escorted by an person authorised by the US Government (unless unescorted access is authorised)
Control of access to imported US technology *(SIR Reg. 182)*	✓ Any person who owns, or is in possession of, imported US technology must ensure that access is controlled by a person authorised to do so by the US Government throughout transport, preparation, and launch	
Monitoring and oversight of US technology, technical data and launch activities *(SIR Reg. 183, 184)*	✓ A licensee must permit any person so authorised by the US Government to access and monitor any US launch vehicle, US spacecraft or US related equipment ✓ A launch operator for a US launch vehicle or spacecraft must permit the US Government to oversee and monitor its launch activities ✓ A launch operator for a US launch vehicle or spacecraft must notify US participants and the US Government of certain changed circumstances where launch is delayed or cancelled	✗ A licensee must not prevent a US licensee from accessing or monitoring the US technology in respect of which it has an export or transfer licence or authorisation from the US Government

	What licensees (and others) must do	What licensees (and others) must not do
Restrictions on use of and access to US technology *(SIR Reg. 185)*	✓ A licensee must inform the regulator of any information that a US licensee has given it from the US export licence (or other authorisation) to transfer US technology	✗ A licensee using US technology for its licensed activities must ensure that it is not used for any purpose other than that for which a US export licence has been granted (unless authorised by the US Government) ✗ A licensee must ensure that projects related to spaceflight activities that involve launch of a US launch vehicle or spacecraft, and items imported for use in these projects, are not used for any other purpose without permission from the US Government ✗ A launch operator for a US launch vehicle or spacecraft must ensure that no person may transfer US technology used for the launch activities to another person without authorisation from the US Government
Restrictions on importing US technology *(SIR Reg. 186)*	✓ A licensee must comply with the Technology Transfer Control Plan it has entered into (i.e. plans developed by US licensees in consultation with UK licensees, and approved by the parties' agencies, which outline security measures to be implemented during launch activities)	✗ A licensee which is a UK participant must not take possession of equipment or technology originating in the US and imported into the UK to support launch activities (or allow any other UK participant to do so) unless the regulator gives permission ✗ If the licensee is in possession of that equipment or technology, it must not be used to support launch activities unless the regulator gives permission
Security training for spaceflight activities involving US technology *(SIR Reg. 187)*	✓ A launch operator for a US launch vehicle or spacecraft must ensure that all staff carrying out spaceflight activities involving US technology, receive training on security measures required for US technology	
Return of US technology if licence is revoked *(SIR Reg. 188)*	✓ A licensee which uses US technology for its licensed activities must ensure that, if the US export licence or authorisation is revoked, anything imported under the revoked licence or authorisation is returned to the US or sent to another location authorised by the US Government.	

	What licensees (and others) must do	What licensees (and others) must not do
Processing of US technology after normal launch *(SIR Reg. 189)*	✓ Following launch of a US launch vehicle or spacecraft which proceeded as expected, the operator must destroy any US related equipment not needed for further launch activities or send it from the UK to a location approved by the US Government ✓ Following launch of a US launch vehicle or spacecraft which proceeded as expected, the operator must return any US technical data to a location approved by the Secretary of State and the US Government	✗ Following launch of a US launch vehicle or spacecraft which proceeded as expected, the operator must not permit any UK participant to dismantle US related equipment unless authorised to do so by the US Government
Information about nationality of contributors to launch activities etc. *(SIR Reg. 190)*	✓ An applicant for a launch operator licence that would authorise a spaceflight activity involving both US technology and either a non-US vehicle or a foreign spacecraft must inform the regulator of the nationality of any non-US contributors of money, equipment, technology or personnel ✓ An applicant for a spaceport licence must inform the regulator of the nationality of any non-US contributors of money, equipment, technology or personnel (and any changes), if the applicant intends that there will be launches of US spacecraft or launch vehicles from the spaceport ✓ The holder of a launch operator or spaceport licence must inform the regulator as soon as possible of any changes to the information provided above	

Investigation of spaceflight accidents

A new Space Accident Investigation Authority will be set up to conduct safety investigations into spaceflight accidents, publish reports and make recommendations. It will have powers to access information, equipment, facilities and personnel, but it will not apportion blame or liability. There will be a range of offences for impeding the work of the authority.

The second draft set of regulations consulted on between July and October 2020 is the Spaceflight Activities (Investigation of Spaceflight Accidents) Regulations ("**SAISAR**"), which are made under s.20 SIA 2018 and set out rules governing the investigation of spaceflight accidents.

The SAISAR are based on existing UK and EU regulations on the investigation and prevention of accidents in civil aviation and serve the same overall objective: to establish a framework for independent safety investigation for the purposes of accident prevention, without apportioning blame or liability.

The SAISAR will apply to the investigation of spaceflight accidents occurring in or over the UK, or elsewhere if certain circumstances apply, including where the accident involves a launch vehicle launched from the UK or where an investigation is not conducted by (or is requested by) another state *(SAISAR Reg. 16)*.

Space Accident Investigation Authority

The Secretary of State will be required to nominate a body to act as the Space Accident Investigation Authority ("**SAIA**") for the UK. The SAIA will have unrestricted authority over the conduct of safety investigations, and must operate independently of the UKSA, CAA and any other person whose interests might conflict with its responsibilities or influence its objectivity *(SAISAR Reg. 5)*. The consultation advises that the Government is considering appointing the Air Accidents Investigation Branch to carry out functions under the SAISAR (although it does not say whether this is for all or part of the role of the SAIA), and has sought views on that approach.

The draft SAISAR also provide for the Secretary of State to appoint inspectors of spaceflight accidents to work for the SAIA, including a chief inspector who will report directly to the Secretary of State and be responsible for acting as or appointing the investigator-in-chief for each safety investigation conducted *(SAISAR Reg. 6)*.

Obligations to notify SAIA, provide required information and preserve evidence

A person involved (such as a licensee or launch vehicle owner, designer or manufacturer) who has knowledge of the occurrence of a spaceflight accident will be required to notify the SAIA and the police without delay (SAISAR Reg. 7). The spaceflight operator will be required to immediately provide the SAIA information about people or dangerous goods on board, to ensure that safety measures can be taken at the accident site *(SAISAR Reg. 8)*.

The SAISAR will also impose rules to prevent anyone from interfering with evidence or contaminating the accident site, and an obligation on any involved person to take all steps necessary to preserve records relating to the accident *(SAISAR Reg. 9)*. This is a far-reaching obligation, as a "person involved" for this purpose includes not just operators or launch vehicle owners, but a wide group of participants including designers, manufacturers, maintenance providers and crew training providers.

Conduct of investigations and inspectors' powers

The sole objective of an investigation under the SAISAR will be the prevention of spaceflight accidents, and any investigation will be independent of and separate from any judicial proceedings or inquiry in relation to blame or liability *(SAISAR Reg. 11)*.

The SAISAR set out the duties and powers of the SAIA to investigate. It will be required to conduct a safety investigation into all "serious spaceflight accidents", meaning accidents involving death or serious injury, or where there was a high probability of death or serious injury. It will also have the power to conduct investigations into accidents that are not classified as serious if it expects to draw safety lessons from them *(SAISAR Reg. 14, 15)*. The SAIA may request assistance from safety investigation authorities from other states, and in certain circumstances other states may appoint accredited representatives, advisers and experts to participate in a safety investigation *(SAISAR Reg. 17-20)*.

Inspectors will have broad rights of access to the accident site and the vehicle, contents or wreckage, and information and records, powers to enter and inspect premises in the UK, and powers to call and examine witnesses *(SAISAR Reg. 23-26)*. SAIA may recover its reasonable expenses in connection with an investigation from the licensee *(SAISAR Reg. 28)*. These may be substantial if the costs include, for example, recovery, transport or disposal of property.

Sensitive safety information

There is a balance to be struck between the protection of sensitive information and sharing the lessons learned from accident investigations, which Part 5 of the draft SAISAR seeks to address.

Part 5 defines "sensitive safety information", which may only be disclosed by the SAIA (or other relevant people) in very limited circumstances prior to publication of the investigation report. This information includes statements taken by inspectors, personal information, material produced by inspectors during the investigation, draft reports, and launch operations communications. It does not, however, expressly include commercially sensitive information, which will be protected only if it falls within one of the other identified categories of information.

For other information, the SAIA has broader rights of disclosure – such as to the regulator, licensee, launch vehicle manufacturer, and other people using a launch vehicle of the same type – for the purposes of improving the safety of spaceflight activities or preventing a spaceflight accident *(SAISAR Reg. 30)*.

Safety investigation report and recommendations

On completion of a safety investigation, the investigator-in-charge will be required to prepare and publish a report. Sensitive information may be included in the published report where it is relevant to the analysis of the accident, but there are some protections for participants in the investigation. For example, a report must not reveal the identity of individuals involved in a spaceflight accident, and information obtained under witness examination will not be admissible in any judicial proceedings for the purpose of attributing blame or liability *(SAISAR Reg. 32)*. Any person whose reputation could be adversely affected by the report must be notified and provided with a copy before publication *(SAISAR Reg. 33, 34)*.

For obvious reasons, the rules on the publication of sensitive information are weighted in favour of the protection of spaceflight safety and the prevention of accidents. Respondents to the consultation will doubtless have a range of views as to whether they go far enough in protecting the commercial interests of operators and manufacturers.

A safety investigation report may include safety recommendations. However, the SAIA will have a broader obligation to make safety recommendations at any time during or after the investigation where it considers that preventative action must be taken promptly to enhance the safety of spaceflight activities. These recommendations will be published and addressed to the person who, in the opinion of the SAIA, is in the best position to give effect to them *(SAISAR Reg. 35)*.

The issue of a safety recommendation will not create a presumption of blame or liability for the accident. However, a person to whom a recommendation is addressed will have obligations to inform the SAIA of what action has been taken or is being considered, and must inform the SAIA when the action has been completed. Alternatively, they must give reasons for not implementing the recommendation. The SAIA in turn will tell that person whether or not it considers that the action taken is adequate or provide any reasons for disagreeing with the decision to take no action *(SAISAR Reg. 35, 36)*. Whilst the recipient's obligations fall short of an express requirement to implement the recommendations, clearly a failure to take satisfactory action in response to published recommendations could have implications for the assessment of a future licence application or safety case approval.

Contraventions and penalties

It will be an offence to contravene certain provisions of the regulations, carrying a fine on a summary conviction or imprisonment of up to 51 weeks on indictment. The offences include a failure to notify of a spaceflight accident, obstructing inspectors, failure to comply with a witness summons, failure to preserve evidence, failure to protect sensitive safety information and unauthorised disclosure of information relating to an investigation *(SAISAR Reg. 37-44)*.

Monitoring and enforcement

The regulator will appoint inspectors to monitor compliance with the Space Industry Act 2018, regulations and licence conditions, who will have powers to inspect sites and equipment and to issue notices requiring contraventions to be remedied. The regulator will have the power to issue stop notices carrying criminal sanctions, and the power to revoke, vary and suspend licences.

Regulator responsibility

The regulator will be responsible for monitoring all licensed activities, for the purposes of:

- Securing compliance with the SIA 2018 and regulations made under it; and
- Protecting public safety and UK national security *(SIA 2018 s.26(1), (2))*.

The regulator will also have the power to investigate and (except in Scotland) prosecute offences under the SIA 2018 or regulations made under it *(SIA 2018 s.26(4))*.

Part 13 of the draft SIR sets out the detailed rules relating to monitoring and enforcement, including obligations to provide information to the regulator, the appointment of inspectors by the regulator and their powers and duties, and specific offences designed to assist the regulator and inspectors in carrying out their monitoring and enforcement role. Perhaps unsurprisingly given the Government's stated aim and the regulator's duty of protecting public safety, these rules include far-reaching powers to access information, sites, facilities and equipment. Whilst the rules may be refined following consultation before they come into effect, it is clear that any organisation wishing to participate in UK spaceflight will have to submit to a high level of transparency and regulatory intervention.

Information notices

The regulator will have the power to serve an "information notice" on any person who carries out spaceflight activities or associated activities, requiring the provision of any information that the regulator thinks necessary for the purposes described above. This may include the creation of documents as well as the provision of documents already in existence *(SIR Reg. 214)*. Whilst in practice most regulator engagement will likely be carried out on a consensual, iterative basis, this power provides a backstop for the regulator to demand information that has not been, or cannot be, obtained by other means.

Inspectors

The SIR will give the regulator the power to appoint inspectors to carry out monitoring and enforcement activities on its behalf *(SIA 2018 s.26, SIR Reg. 223)*. If authorised by the regulator, the inspectors will be able to exercise significant powers for this purpose. These include:

- Entry into spaceports, range and mission control facilities, spacecraft assembly sites, and other facilities (SIR Reg.227);
- Inspecting, examining and taking samples from premises and vehicles *(SIR Reg. 229)*;

- Requiring the provision of information and documents relevant to inspections *(SIR Reg. 230)*;
- Taking possession of articles and substances found on premises or vehicles for examination, testing and other purposes *(SIR Reg. 231)*; and
- Requiring the provision of facilities or assistance to enable the inspectors to exercise their powers *(SIR Reg. 233)*.

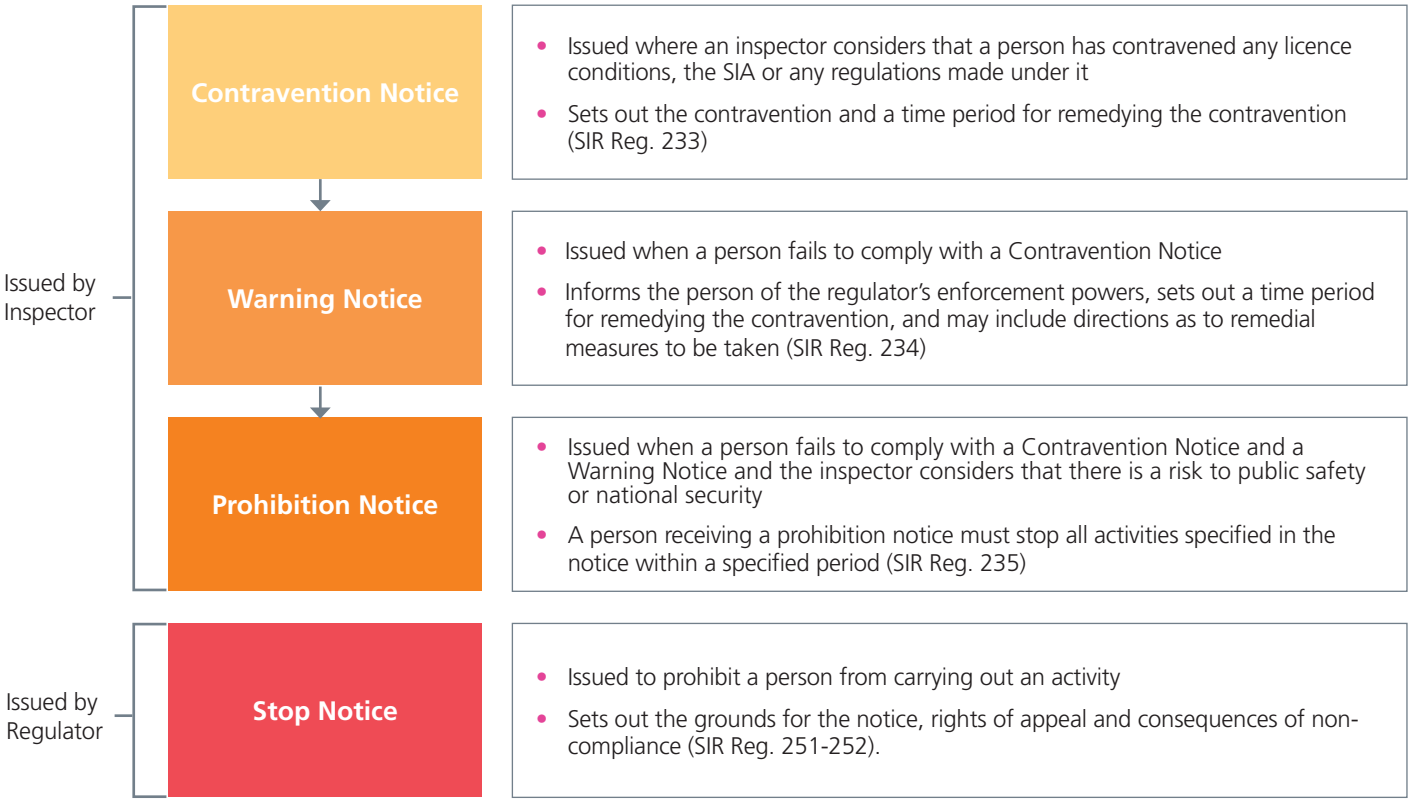
Enforcement measures

The regulator's and inspectors' monitoring powers are supported by a range of enforcement powers. These range from issuing notices, to revoking licences and/or investigating and prosecuting offences. The published guidance indicates that the regulator will take a "proportionate" approach to the use of these powers, but it will be some time after the regime comes into force before the regulator's view of proportionality becomes apparent.

Issue of notices

The first enforcement steps are likely to be taken by inspectors rather than the regulator. Inspectors will have powers to issue a series of notices – referred to as Contravention Notices, Warning Notices and Prohibition Notices – requiring remedial action where they believe a person is contravening, or conducting an activity likely to contravene, licence conditions or the provisions of the SIA 2018 or the implementing regulations.

Under Part 14 of the SIR, the regulator will have the power to issue Stop Notices. A Stop Notice is a notice prohibiting a person from carrying on a specified activity until steps specified in the notice have been taken. A Stop Notice may only be issued where the regulator reasonably believes that (1) the specified activity is causing, or presents a significant risk of causing, serious harm to public safety, people or property and (2) the activity involves the commission of an offence under the Act or regulations.



It will be an offence to fail to comply with a Stop Notice, resulting in a fine and/or imprisonment for up to two years *(SIR Reg. 257)*.

Appeals against notices

A person who is served a Prohibition Notice will have the right to appeal the decision *(SIR Reg. 236)*. A person who is served a Stop Notice may appeal the decision, but only on certain grounds (such as an error of fact or law, the decision or any step specified in the notice was unreasonable, or the person has not committed the relevant offence) *(SIR Reg. 253)*. A person who makes a successful appeal will also be able to claim compensation from the regulator where they have suffered loss as result of the Stop Notice *(SIR Reg. 255)*.

Revoking, varying or suspending licences

Perhaps of more significance than compliance notices in practice is that the regulator will have unilateral powers to revoke, vary or suspend any licence granted under the SIA 2018. Aside from revoking, varying or suspending the licence with the consent of the licensee or in accordance with the terms of the licence, the regulator may also do so in the following scenarios *(SIR Reg. 15(3) and (4))*:

Scenario	Revoke	Vary	Suspend
The regulator considers it is necessary to do so in the interests of safety or national security, to comply with an international obligation of the UK, or otherwise in the national interest	✓	✓	✓
It appears to the regulator that a condition of the licence has not been complied with	✓	✓	✗
It appears to the regulator that the licensee has failed to comply with any legal or regulatory obligations	✓	✓	✗
It appears to the regulator that an investigation or review is needed to ascertain whether (1) it is necessary to revoke or vary for the reasons above or (2) there has been a non-compliance with licence conditions or legal obligations	✗	✓ (Pending outcome of the review)	✓ (Pending outcome of the review)

Offences relating to monitoring and enforcement

The SIR will create a number of specific offences designed to assist the regulator and inspectors in carrying out their monitoring and enforcement role. These are:

- Intentionally obstructing or impeding an inspector or regulator *(SIR Reg. 209)*;
- Impersonating an inspector *(SIR Reg. 211)*;
- Failing to comply with an information notice *(SIR Reg. 216)*;
- Knowingly or recklessly making false statements in response to an information notice *(SIR Reg. 218)*;
- Creating or using false documents *(SIR Reg. 220)*; and
- Disclosure of protected information *(SIR Reg. 242)*.

Appeals against regulator decisions

Licensees will be able to appeal to an independent panel against certain decisions of the regulator, such as a refusal to grant or renew a licence, or revoking a licence. Appeals will be heard in private, usually by a panel of three senior officials drawn from the UK Space Agency and government departments.

The third set of proposed regulations, the Space Industry (Appeals) Regulations ("**SIAR**"), will provide a route of appeal against certain decisions of the regulator. The appeals process will apply to, and be the same for, decisions made under the SIA 2018 and the OSA 1986 (which does not currently have an appeals process in place).

Appealable decisions

The appealable decisions under both the SIA 2018 and the OSA 1986 are set out in Schedule 10 of the SIA 2018. These include:

- refusal of an application for a licence;
- grant of a licence subject to conditions;
- refusal to renew a licence;
- refusal to consent to the transfer of a licence;
- variation, or refusal to vary, a licence; and
- suspension or revocation of a licence.

For the purposes of Schedule 10, the SIAR will also set out other decisions that may be appealed, including decisions relating to approval of training managers, revisions to safety cases and Prohibition Notices issued by inspectors *(SIAR Reg 7(1))*.

Appeal applicants

The question of who can bring an appeal will depend on the decision in question. In most cases this will be the licence holder or applicant *(SIAR Reg 7(2))*. A person with sufficient interest in an appealed decision may apply to intervene in the appeal, and will be granted permission to intervene if the appeal panel is satisfied of that sufficient interest and satisfied that the intervention is necessary or desirable for the proper resolution of the appeal *(SIA 2018, Sch 10 para 14)*. The Government has indicated in the consultation outcome that the guidance on the appeals process will be updated to provide further information on what constitutes a "sufficient interest".

Appeal panels

The Secretary of State will be required to draw up a "panel members list" of people eligible to hear appeals. The panel members list must consist of at least five members drawn from senior officials within the UKSA and government departments *(SIAR Reg. 3)*. When an application for permission to appeal is received, the Secretary of State will appoint an appeals panel of at least three people from the panel members list *(SIAR Reg. 4)*.

Appeals process

The first step in the appeals process will be to make an application for permission to appeal to the secretary of the appeal panels, who is appointed by the Secretary of State. Applications for permission will be considered without a hearing. Under the SIA 2018, provided there is an appealable decision and the application is made within the required time period, the panel may refuse permission to appeal only where the appeal is made for trivial or vexatious reasons or does not have a reasonable prospect of success *(SIA 2018, Sch 10 para 7)*.

Where permission to appeal is granted, it may be determined by the same panel that considered the application for permission *(SIAR Reg. 13)*. The panel will direct whether there will be an oral hearing, the procedure to be adopted in the hearing, and what further evidence may be submitted if there is no hearing. It will have the power to issue a wide range of other procedural directions to secure that proceedings are dealt with justly and at proportionate cost *(SIAR Reg. 14)*.

Oral hearings will take place in private *(SIAR Reg. 19)*. However, notices of the outcomes of appeals will be published on the panel website unless the panel determines that publishing would breach international obligations of the UK, involve the disclosure of sensitive information, or breach data protection legislation *(SIAR Reg. 24)*. Notices of applications for permission to appeal will be published, as may withdrawals of appeals.

The SIAR are intended to provide a relatively short and cost effective process, and have similarities to other appeals processes such as employment tribunals. For example, an application for permission must, in most cases, be made within 14 days after the relevant decision is made. The appeal must be made within 14 days or 28 days after receiving permission to appeal, depending on the complexity of the case. Decisions on permission to appeal must be notified within 7 days of the decision, and decisions on appeals must be notified within 14 or 28 days of the decision, depending on the complexity of the case. However, there are no fixed timescales for those decisions to be made or for the duration of hearings. The Government has confirmed in the consultation outcome that the time limits for these steps will not be set out in the SIAR.

Overturning an appeal

The only way a person will be able to overturn a rejected appeal, or a declined request for permission to appeal, will be by way of an application to the courts under the existing process of judicial review. However, the grounds for overturning decisions under judicial review are narrow – usually requiring the claimant to show that the decision was outside the decision maker's authority, made without proper process, or irrational – and successful judicial review claims are rare.

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