UK SPACE AGENCY

Department for Transport

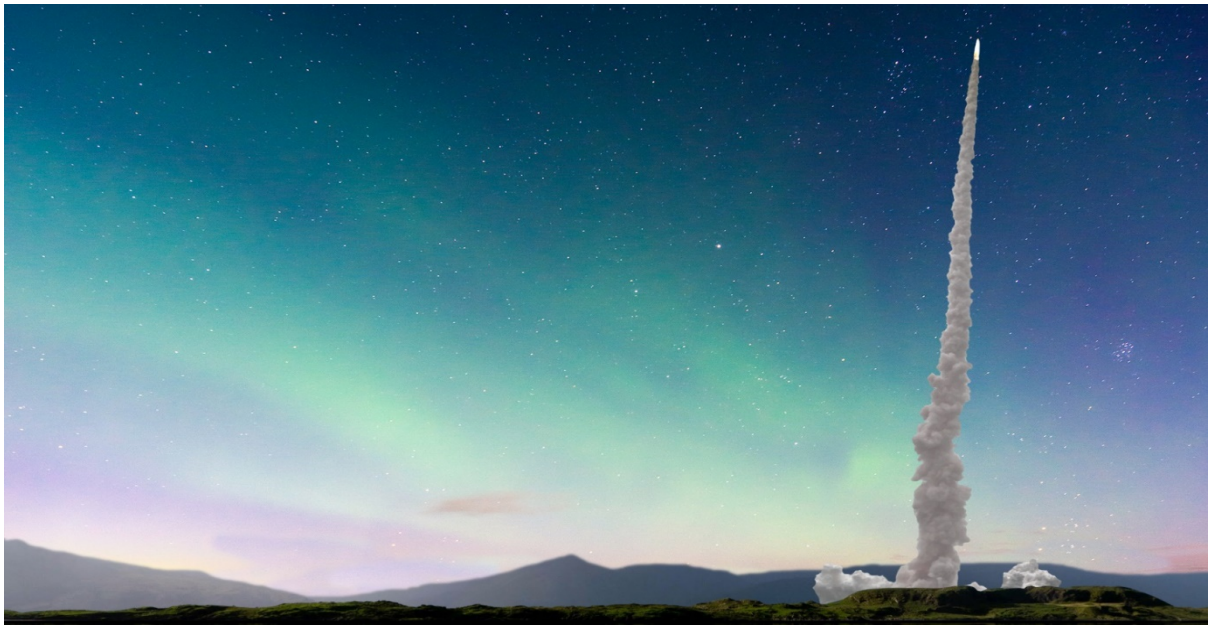
Department for Business, Energy & Industrial Strategy

Civil Aviation Authority

UNLOCKING COMMERCIAL SPACEFLIGHT FOR THE UK

Consultation on draft insurance and liabilities requirements to implement the Space Industry Act 2018

Closing date: 10 November 2020



Any enquiries regarding this publication should be sent to us at: SpaceTeam@dft.gov.uk

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Executive Summary

Introduction

Safety is at the heart of our proposed regulatory regime under the Space Industry Act 2018. Launch from the UK is a new activity that presents new and different risks from those posed by traditional aviation and our experience of licensing procurement of launch activities from other states under the Outer Space Act 1986.

Under the Act the regulator has an overriding duty to exercise its functions with regard to spaceflight activities (including whether or not to grant a licence) with a view to securing public safety. This duty has primacy over the other matters that the regulator has to take into account in exercising its functions.

The draft regulations to support the Space Industry Act 2018 will enable a range of commercial spaceflight and associated activities to operate from the UK, creating the conditions for horizontal and vertical launch to take place from UK spaceports.

A consultation on draft Space Industry Regulations to implement the Space Industry Act 2018 was issued on 29 July 2020 and closes on 21 October. This contained two provisions on liabilities (regulations 206 and 207). This consultation should be read in conjunction with that consultation. The draft Space Industry (Liabilities) Regulations will be merged with the Space Industry Regulations post consultation.

The Space Industry Act 2018 created the high-level legal framework to enable commercial spaceflight and associated activities to be carried out from the UK. The Act, which received Royal Assent on 15 March 2018, contains delegated powers to make secondary legislation. Together with draft instruments covering Accident Investigation and Appeals, these sets of Regulations will implement the Act.

Currently the space activities of UK entities are governed by the Outer Space Act 1986. This requires any UK entities who wish to procure the launch of a satellite and/or operate a satellite in orbit to hold a licence. The UK has a well-established and globally respected licensing regime for these activities.

Whilst the Space Industry Act 2018 is now law, the draft secondary legislation contained both in this consultation on liability requirements and in the main consultation on the Space Industry Regulations is required, along with our proposed arrangements for setting insurance requirements in licence conditions, to create the regulatory framework necessary for commercial launch operations to be licensed in the UK.

Once in force, the Space Industry Act 2018 will work alongside the Outer Space Act 1986 to regulate the spaceflight and associated activities of UK entities and others wishing to engage in spaceflight activities from the UK.

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.

The Space Industry Act 2018 will regulate the following activities carried out from the UK:

- Launch (space or sub-orbital) and return;
- The procurement of a UK launch (space or sub-orbital);
- The operation of a satellite in orbit;
- The operation of a spaceport;
- The provision of range control services.

The draft regulations to support the Space Industry Act 2018 are a result of a collaboration across Government, building on existing space and aviation legislation and harnessing a range of regulatory, technical and legal expertise. The Department for Business, Energy and Industrial Strategy; the Department for Transport; the UK Space Agency and the Civil Aviation Authority have worked closely together, with the support of the Health and Safety Executive, to develop these regulations.

The draft liabilities regulations (which will be merged with the wider Space Industry Regulations following the consultation) are accompanied by two guidance documents. The first guidance document covers our proposed approach to setting insurance requirements in licence conditions and other details on standards of insurance that the regulator will expect operators to follow. The second guidance document sets out further technical detail on the methodology for setting the insurance requirement. These guidance documents – aimed at applicants and licensees intending to carry out spaceflight activities, to operate a spaceport or to provide range control services – will help industry to understand the requirements and comply with the Space Industry Act 2018 and the regulations made under it.

We are keen to understand that the legal text has achieved a balanced and proportionate set of regulations and expect respondents to fully read and comprehend the regulations and associated impact assessment rather than relying on the guidance alone to understand the meaning behind the legal text. It also seeks views on our approach to charging approach in relation to the Outer Space Act and Space Industry Act, outlined in the charging section below.

Respondents should, however, note that the documents and regulations presented as part of this consultation are drafts and are therefore subject to further refinement. The regulator is also actively considering what further materials could be published alongside these guidance documents in the future.

To ensure that activities are carried out safely and responsibly, we are creating a new regulator for commercial spaceflight and associated activities. It is our intention to appoint the Civil Aviation Authority to undertake all Space Industry Act 2018 regulatory functions in addition to regulating in-orbit activities under the Outer Space Act 1986.

Why we are consulting

The Secretary of State is required by section 68(7) of the Space Industry Act 2018 to carry out a public consultation before making regulations to which section 68(6) of the Act applies.

This consultation also covers proposals which are not being made by regulations. The intent behind including these in this consultation is to ensure transparency and appropriate context for respondents.

This consultation seeks views on the operability and effectiveness of the proposed liabilities and insurance requirements to implement the Space Industry Act 2018, including the use of licence conditions to cover insurance requirements. It also seeks views on the draft Space Industry (Liabilities) Regulations and the associated guidance documents, as well as to gather new evidence and test the assumptions in the consultation stage impact assessment.

To facilitate consideration of the proposals, pre-consultation engagements have been carried out with key stakeholders. Two plenary events were held with industry ahead of the consultation (one in July 2019 and the other in September 2020). In addition, officials have discussed the draft regulations and guidance with the Non-Governmental Organisation community and the devolved administrations. This is in addition to a call for evidence published in March 2018[1].

This consultation document describes and explains what we are trying to achieve with the draft regulations, our proposed approach on setting insurance requirements in licence conditions and guidance and sets out our key questions. All questions are then additionally set out in a catalogue at the back of this document.

Responses to this consultation will be taken into account when taking the policy forward and the draft regulations and guidance documents may be further revised.

This consultation sets out the further detail on the approach to setting the insurance and liabilities requirements for spaceflight activities, focussing primarily on insurance requirements for launch. This consultation also includes draft guidance on insurance and liabilities, covering issues such as licence conditions and standards of insurance. A supporting impact assessment is also included in this consultation.

Overview of the liabilities and insurance requirements

Two types of operator liability arise under the Space Industry Act 2018. The first is a liability to indemnify the UK Government for claims brought against it. Whilst this indemnity would cover any claim brought against the UK Government, it was included within the Space Industry Act 2018 to cover claims brought under the UN space treaties[2].

Secondly, an operator holds an unlimited liability towards third parties under section 34 of the Space Industry Act 2018.

During the passage of the Space Industry Bill through Parliament concerns were raised about the liability provisions (in particular the unlimited third party liability placed

[1] https://www.gov.uk/government/publications/call-for-evidence-space-industry-act-2018

[2] Under UN space treaties, the UK Government is ultimately liable to pay compensation for damage caused by its space objects on the surface of the Earth or to aircraft in flight, and liable for damage due to its faults in space. **With respect to damage caused by a space object** on the ground and to aircraft in flight, that **liability is absolute**, meaning that another State could bring a claim against the UK Government without having to prove fault. Where the damage is **caused in orbit, the liability is fault based.**

on operators and the lack of availability of insurance to cover such unlimited liability) and Ministers committed to publishing a call for evidence. This was published on 27 March 2018.

Evidence and information were sought on the impact of operators holding unlimited liabilities on the UK launch market. Input was also sought on the approach to setting the minimum amount of third-party liability (TPL) insurance required for UK launch activities. The Government's response was published on 28 May 2019.

In its response, the Government acknowledged the clear concerns expressed in Parliament and by potential launch operators regarding the impact of holding unlimited liabilities for launch activities from the UK. However, as launch (both to orbit and sub-orbital) from the UK is a new activity that carries inherent risk, robust and independent evidence was required to justify exercising the power to limit both the operator's liability to third parties and their liability to indemnify Government.

The Government commissioned further detailed and independent research, by way of a report, to inform this decision. On the basis of the commissioned research, the UK Government has determined that a limit on operator liability is justified.

Our preferred approach is to set the insurance requirement for launch activity on the basis of a Modelled Insurance Requirement (MIR), similar to the Maximum Probable Loss approach used in the United States of America and Australia.

The MIR approach is a calculation of the realistic amount of damage that could be caused by each mission.

The insurance amount is set at a probability threshold that shows the number of launches expected before an accident occurs that causes more than a given value of financial damage. This requires complex modelling which is currently being developed and will be ready to implement in line with the first launches of the early 2020s.

Where a licence is granted for a number of activities (e.g. multiple launches), it is likely that the reporting requirements will be more extensive.

It is envisaged that, alongside generic reporting conditions, there will also be specific reporting conditions to be complied with by a launch operator licensee. These conditions will be specific to the individual launch operator licensee or even tailored to each launch. Depending on the circumstances, the regulator may place conditions on the licence to be complied with during an individual launch or series of launches, or remove conditions previously placed on the licence.

The precise nature of the conditions will depend upon the nature of the licensed activities authorised. This may also mean that the MIR amount and the limit of liability may need to be changed and this will be managed through amendments to the licence conditions.

Our intention is to set the operator's limit of liability in most cases at the same level as the modelled insurance requirement. It is also our intention that the UK Government will indemnify a claimant in full for amounts in excess of the operator's limit of liability.

Whilst the provisions in section 34 apply to all operators; satellite operators (orbital licensees) in particular should note that the Space Industry Act 2018 creates a new liability to third parties compared with licences issued under the Outer Space Act 1986. Operator liability for operating a satellite or procuring a launch under the Outer Space Act 1986 is limited to indemnifying the Government only. We intend that the satellite operator's liability to third parties would be limited at the same level as the launch operator's using the same calculation method (if launched from the UK, otherwise the liability would be set at €60m). This would cover liability arising from the procuring of a launch or, for example, if a satellite were to re-enter and cause damage in the UK. However, we would consider this risk to be extremely low.

We can confirm that the limit of an orbital licensee's liability to indemnify Government under section 36 of the Space Industry Act 2018 will remain as per the policy under the Outer Space Act 1986.

Potential operators should note that further regulatory, legal and Parliamentary approvals are required before any limit of liability, combined with providing a Government guarantee on licensee liabilities, can be applied. Whilst we will progress these necessary approvals, decisions taken by operators with respect to spaceflight are taken at their own risk and should not be made on the guarantee of a limit being in place at the point of the proposed activity. The UK Government is making every effort to progress the relevant approvals as quickly as possible following the outcome of this consultation.

The UK will follow WTO subsidy rules after the end of the transition period and the UK will adhere to any international obligations on subsidies agreed under future free trade agreements.

How to respond

For ease of reference, questions posed throughout the document are also listed together in a catalogue of questions at the back of this document.

Your response will be most useful if it is framed in direct response to the questions posed, though further comments and evidence are also welcome. When responding, please state whether you are responding as an individual or representing the views of an organisation. You are encouraged to respond by completing the online survey.

Alternatively, you can email your responses to SpaceTeam@dft.gov.uk

Hard copies can also be submitted to the address below and should be clearly marked 'Space Industry (Liabilities and Insurance) Consultation'.

Issued: 13 October 2020

Respond by: 10 November 2020

Territorial extent:

The draft regulations contained in this consultation will extend to the whole of the UK – England and Wales, Scotland and Northern Ireland. Accordingly, we welcome the views of the Devolved Administrations.

Enquiries to:

Commercial Spaceflight Policy Team, Department for Transport, Great Minster House, 33 Horseferry Road, London, SW1P 4DR.

Tel: 0300 330 3000 Email: SpaceTeam@dft.gov.uk

Consultation reference: Consultation on draft insurance and liabilities requirements to implement the Space Industry Act 2018

Additional copies:

You may make copies of this document without seeking permission. An electronic version can be found at:

https://www.gov.uk/dft#consultations

Hard copies can be provided upon request either from the postal address given above, or by emailing:

SpaceTeam@dft.gov.uk

A range of accessible format versions of the consultation documents can be provided in response to specific requests – please get in touch so that we can make appropriate arrangements.

Confidentiality and data protection

In this consultation we're asking for your name and email address, in case we need to ask you follow-up questions about your responses (you do not have to give us this personal information, but if you do provide it, we will use it only for the purpose of asking follow-up questions).

Your consultation response and the processing of personal data that it entails is necessary for the exercise of our functions as a government department. Any information you provide that allows individual people to be identified, including yourself, will be protected by data protection law and DfT will be the controller for this information.

Please note however that information you provide in response to this consultation, including personal information, may be disclosed in accordance with UK legislation (the Freedom of Information Act 2000, the Data Protection Act 2018 and the Environmental Information Regulations 2004). If you want the information that you provide to be treated as confidential please tell us, but be aware that we cannot guarantee confidentiality in all circumstances. An automatic confidentiality disclaimer generated by your IT system will not be regarded by us as a confidentiality request.

DfT's privacy policy has more information about your rights in relation to your personal data, how to complain and how to contact the Data Protection Officer.

We will not use your name or other personal details that could identify you when we report the results of the consultation. Your information will be kept securely and destroyed within 12 months after the closing date. Any information provided through the online questionnaire will be moved to our internal systems within 2 months of the consultation end date.

We will summarise all responses and publish this summary on GOV.UK.

Quality assurance

This consultation has been carried out in accordance with the Government's consultation principles.

If you have any complaints about the way this consultation has been conducted, please contact:

Consultation Co-ordinator
Department for Transport Zone 1/29
Great Minster House London SW1P 4DR

Or email: consultation@dft.gsi.gov.uk

Context and Background Information

The future of spaceflight in the UK

The UK's space sector can strengthen our national capabilities, create high-skilled jobs and drive future economic growth across the UK. At the time of the Queen's speech on 19 December the Government announced its intent to establish a new National Space Council and develop a comprehensive UK Space Strategy. The launch of this consultation and the introduction of this new regulatory framework form an important part of the work we are doing to enhance the UK's national approach to space by bringing commercial spaceflight to the UK and creating a supportive regulatory environment which fosters growth in the sector.

Government and industry have set a target to grow the UK's share of the global market to 10 per cent by 2030. In order to support this, our spaceflight programme aims to establish commercial vertical and horizontal small satellite launch from UK spaceports. To help expand the UK's spaceflight capabilities, Government is funding a range of industry-led projects. Separately, we are also investing in related facilities and technology. This will provide industry with new commercial market opportunities, grow our export share and help to build new UK supply chains.

As acknowledged in the Government's Research and Development Roadmap[3], regulation that enables the development, demonstration and deployment of new technologies is essential to championing companies on the technological frontier. Our regulatory framework for spaceflight will support safe and sustainable activities that will drive research, innovation and entrepreneurship in this vital sector, exploiting the unique environment of space, and providing a catalyst for growth across the space sector. This will feed into our emerging National Space Strategy as we develop further priorities for the UK and the sector in the long term.

The UK already has an internationally respected licensing regime for activities in space. Now our aim is to license launches from UK spaceports. The Space Industry Act 2018 created the high-level framework to enable commercial spaceflight and associated activities to be carried out from the UK. This piece of primary legislation, which received Royal Assent on 15 March 2018, contained delegated powers to make secondary legislation.

The draft secondary legislation contained in this consultation is the result of collaboration between the Department for Business, Energy and Industrial Strategy; the Department for Transport; the UK Space Agency; and the Civil Aviation Authority, with the support of the Health and Safety Executive.

We have legislated to allow for the regulation of a wide range of new commercial spaceflight technologies, including traditional vertically launched vehicles, air-launched vehicles and sub-orbital spaceplanes and balloons. We have endeavoured

[3] https://www.gov.uk/government/publications/uk-research-and-development-roadmap

to produce legislation that is flexible enough to accommodate emerging technological advancements, market opportunities and changes to the international legal landscape, while keeping safety at the forefront.

The Outer Space Act 1986

Currently the space activities of UK entities are governed by the Outer Space Act 1986. This requires UK entities who procure an overseas launch and/or operate a satellite in orbit to hold a licence. The UK has a well-established and globally respected licensing regime for these activities.

Once in force, the Space Industry Act 2018 will work alongside the Outer Space Act 1986 and will regulate spaceflight and associated activities in the UK.

The Outer Space Act 1986 will continue to regulate 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.

The Space Industry Act 2018

The Space Industry Act 2018 is a major step towards establishing a safe and supportive regulatory framework to enable launches to take place from the UK from the early 2020s. This piece of primary legislation sets out a high-level enabling framework for commercial spaceflight operations. The draft secondary legislation contained in this consultation provides further regulations required to implement the Act.

Once in force, the Space Industry Act 2018 will regulate and support activities carried out from the UK, including:

- Launch (space or sub-orbital) and return;
- The procurement of a UK launch (space or sub-orbital);
- The operation of a satellite in orbit;
- The operation of a spaceport;
- The provision of range control services.

Once in force, the Space Industry Act 2018 will regulate activities carried out from the UK. This includes launching a rocket outside of UK airspace from a carrier aircraft that took off from a UK spaceport. As this type of operation is intended to send a satellite into orbit, under the Act the whole operation will be licensed as a “space activity”. Another example of activities regulated under the Act is the launching of a launch vehicle from a United Kingdom ship in UK territorial waters where the launch vehicle was loaded onto the ship from a UK port. Any site that meets the description of a spaceport set out in section 3(2) of the Act will need to meet the spaceport requirements contained in the Act as well as the regulations made under it.

A consultation on draft regulations to implement the Space Industry Act 2018 was issued on 29 July and is due to close on 21 October. This consultation should be read in conjunction with that consultation.

The consultation issued on 29 July contained two provisions on liabilities and also sought views on the Traffic Light System (TLS), which is referenced in the licence conditions and the guidance with respect to the existing waiver from insurance for in-orbit operations which meet specific criteria. Any changes to the proposed approach on the TLS as a result of the consultation will be applied to the approach included in the insurance licence conditions and guidance.

The Government may publish its response to both of these consultations together.

This consultation seeks views on the operability and effectiveness of the proposed liabilities and insurance requirements under the Space Industry Act 2018, the draft Space Industry (Liabilities) Regulations, approach to setting licence conditions on insurance and liabilities and the guidance documents. The draft Space Industry (Liabilities) Regulations will be merged with the Space Industry Regulations post consultation. It also seeks views on the charging approach in relation to the Outer Space Act 1986 and Space Industry Act 2018.

As part of this consultation, a consultation stage Impact Assessment has also been published. This consultation aims to gather new evidence and test the assumptions in that assessment.

Structure of the instruments and guidance

The following documents have been drafted for publication as part of this consultation. We welcome comments on these drafts:

- The draft Space Industry (Liabilities) Regulations;
- Guidance documents:
    - Guidance for stakeholders on insurance and liabilities requirements under the Space Industry Act 2018
    - Guidance on the Modelled Insurance Requirement Determination Process

The regulator

Successive Governments have followed a policy of separating safety regulation from sector promotion to ensure regulation is impartial. On these principles it is proposed that the Civil Aviation Authority undertake all the regulatory functions in relation to both the Space Industry Act 2018 and the Outer Space Act 1986. With regard to the Space Industry Act 2018, the functions are to be conferred on the Civil Aviation Authority by draft regulations to be made under section 16 of the Space Industry Act 2018. References to the regulator in this consultation therefore relate to the Civil Aviation Authority. It is our intention to produce further regulations delegating certain functions of the Secretary of State under the Outer Space Act 1986 to the Civil Aviation Authority.

Legislative process

Once the consultation is concluded and the Government has responded, the regulations will need to be approved by both houses of Parliament.

We currently anticipate that most of the secondary legislation will be in place in 2021, although this is an ambitious timetable and will be dependent on factors including the responses received following consultation and the availability of Parliamentary time.

Background on liabilities and insurance provisions in the Space Industry Act 2018

What are the liabilities provisions under the Space Industry Act 2018?

Safety is at the heart of our proposed regulatory regime under the Space Industry Act 2018. Launch from the UK is a new activity that presents new and different risks from those posed by traditional aviation and our experience of licensing procurement of launch activities from other states under the Outer Space Act 1986.

Under the Act the regulator has an overriding duty to exercise its functions with regard to spaceflight activities (including whether or not to grant a licence) with a view to securing public safety. This duty has primacy over the other matters that the regulator has to take into account in exercising its functions.

The draft regulations under the Space Industry Act 2018 are proportionate and outcome focused and are not a set of detailed prescriptive operating requirements. Outcome based regulation drives a more holistic consideration of safety, while supporting innovation and new entrants to the market. This is in keeping with the goal setting approach set out in the Health and Safety at Work etc. Act 1974. The draft regulations are informed by the UK's current regulatory framework for civil aviation and best practice championed by the Health and Safety Executive, as used across other high-risk industries in the UK such as oil and gas and nuclear. We have also looked at international examples from countries that have more experience with launch activities, for example the United States.

An important consideration for the regulator is how licence applicants will be asked to demonstrate that the risks their activities pose to the uninvolved general public are as low as reasonably practicable (ALARP) and that the residual risk is at a level that is acceptable to the regulator. The Space Industry Regulations set out the steps to be taken by the applicant to demonstrate the spaceflight activities can be conducted safely.

An important element of the Space Industry Act 2018 concerns operators' liabilities arising from their spaceflight activity.

Under UN space treaties, the UK Government is ultimately liable to pay compensation for damage caused by its space objects on the surface of the Earth or to aircraft in flight, and liable for damage due to its faults in space. This means that another state suffering damage can bring a claim against the UK Government under the UN space treaties. On the ground and in relation to aircraft in flight, the liability is absolute which means that the state bringing the claim would not need to prove fault. In space, the liability is fault based.

In the UK, the UN space treaties are currently implemented by way of the Outer Space Act 1986. As such, under the Outer Space Act 1986, space activities are licensed and operators are required to comply with conditions including the requirement that the operator indemnifies the Government for claims brought against it.

In line with the provisions in the Outer Space Act 1986, **section 36** of the Space Industry Act 2018 places an obligation on an operator carrying out spaceflight activities to indemnify the Government or listed person or body for any claims brought against them for loss or damage caused by those activities. The bodies listed in this section are ones that may be carrying out functions on behalf of the regulator or will be appointed as a regulator.

Furthermore, in regulating spaceflight activities carried out from the UK, the Space Industry Act 2018 goes further than the Outer Space Act 1986 with regard to its liability provisions in order to provide the general public in the UK with easy recourse to compensation. As such, **section 34** of the Space Industry Act 2018 places a strict liability on an operator carrying on spaceflight activities in the UK. This means that the uninvolved general public in the UK suffering injury or damage can bring a claim against an operator without having to prove fault.

This provision was included in the Space Industry Act 2018 because the Government wanted to ensure that the general public suffering injury or damage in the UK are entitled to the same compensation (without having to prove fault) as foreign nationals are entitled to under the UN Convention on International Liability for Damage Caused by Space Objects, the "Liability Convention". The Liability Convention provides foreign nationals with the ability (via their own Government) to seek compensation (from the UK Government as the responsible launching state) for damage or loss without having to prove fault (where it occurs on the ground or to aircraft in flight).[4]

This strict liability would apply to any injury or damage caused to persons (regardless of nationality) or property in the UK or its territorial waters or to an aircraft in flight or persons and property on board such aircraft over the UK or its territorial waters. It applies to damage that is caused by a craft or space object used by the operator for spaceflight activities. It does not apply to damage sustained in orbit.

The definition of "spaceflight activities" in the Space Industry Act 2018 does not include the operation of spaceports or the provision of range control services. These are "associated activities". Therefore, the Space Industry Act 2018 does not impose a strict

[4] The strict liability in the Space Industry Act 2018 applies to any person in the UK who suffers injury or damage. It therefore applies to both UK nationals and foreign nationals. Foreign nationals could choose to bring a claim against the UK Government via their own Government via the Liability Convention or bring a claim against the operator under section 34 of the Space Industry Act 2018. The operator would be liable to indemnify the UK Government for any claims brought against the UK Government by either UK nationals or foreign nationals regardless of the basis of the claim.

liability under section 34 on persons operating spaceports or providers of range control services or require them to indemnify the Government for claims brought against it.

This is because it is considered that it is likely to be the activities of the operator of a spacecraft that would cause injury or damage to the general public. Furthermore, there may be multiple parties involved in a spaceflight activity and by making the operator of a spacecraft liable, this provides third parties sustaining injury and damage with clarity regarding who they can bring a claim against without needing to prove fault. This does not however prevent anyone from bringing a claim against a person operating a spaceport or providing range control services and proving fault.

Are there powers in the Space Industry Act 2018 to limit liability?

The Space Industry Act 2018 contains powers to limit, via regulations and in licence conditions, the two types of operator liability identified above.

The Government is aware that operators have previously raised concerns that an unlimited liability could be a barrier to operating in the space industry. The Government is also aware that other launching nations limit liabilities or provide a state guarantee for the current type of launch activities that take place from their territory and that this might affect the competitiveness of the UK's space market. These powers can therefore be exercised to address these concerns.

In **section 12(2)** of the Space Industry Act 2018 there is a power to specify a limit on an operator's liability to indemnify the UK Government under section 36 of the Space Industry Act 2018 (Obligation to indemnify Government etc against claims). This limit would be set out in an operator's licence and no further regulations are required to exercise this power.

In **section 34(5)** there is a power to make regulations to limit the amount of liability of an operator for injury or damage to third parties. This limit would be set out in an operator's licence. The limit on this liability can be restricted to injury and damage sustained by prescribed persons or in prescribed circumstances.

The requirement to limit the indemnity to the Government for activities licensed under the Outer Space Act 1986 was introduced following an amendment made by the **Deregulation Act 2015**[5]. For the activities of procuring an overseas launch (purchasing space on a launch vehicle for a satellite) and the in-orbit operation of a satellite, the limit on an operator's indemnity is set out in a licence. The UK Space Agency currently limits liability for claims against Government to €60m for standard missions launching overseas.

This is the only liability that is limited under the Outer Space Act 1986. As the activities currently licensed under the Outer Space Act 1986 are launched from overseas locations, the Government's most likely liability currently is to pay compensation for injury or damage to foreign States or their nationals that arises under the UN Liability Convention.

Once the Space Industry Act 2018 comes into force, the procurement of an overseas launch and the operation of a space object by a UK entity based overseas will continue

[5] https://www.legislation.gov.uk/ukpga/2015/20/contents/enacted

to be regulated by the Outer Space Act 1986 and benefit from a limited liability to indemnify the UK Government.

Where an entity procures a UK launch or operates a satellite from the UK, this will be regulated under the Space Industry Act 2018 when it comes into force. It is the Government's intention to maintain the policy on limiting the liability to indemnify the Government in licences for procuring a UK launch or operating a satellite from the UK by exercising the power under section 12(2). This reflects the policy under the Outer Space Act 1986 that has been consulted on with industry and scrutinised by Parliament. The limit on the operator's indemnity to the Government will be set out in a licence condition (with €60m as the default for standard missions).

The Space Industry Act 2018 also provides a power in **section 13** and **Schedule 1, paragraph 36** to include conditions within licences that could mandate the use in contracts of cross waivers of liability for injury or damage from carrying out the licensed activities. This could mean that all parties involved in a spaceflight activity would have to bear their own losses.

What are the insurance provisions in the Space Industry Act 2018?

As spaceflight and associated activities are risky in nature it is important that those suffering damage or loss as a consequence can be compensated. As highlighted above, under UN space treaties, the UK Government is ultimately liable to pay compensation for damage caused by its space objects on the surface of the Earth or to aircraft in flight, and liable for damage due to its faults in space. Insurance therefore provides an important resource to meet potential claims. Section 38 of the Space Industry Act 2018 covers provisions on insurance.

Currently, under the Outer Space Act 1986, a licensee is required to demonstrate that they hold third-party liability insurance for the activities licensed under that Act before a licence is issued. These activities are where a UK entity procures a launch (purchases space on a launch vehicle for its satellite) and the in-orbit operation of a satellite. The requirement to obtain third-party liability insurance for these activities will continue under the Outer Space Act 1986 and the Space Industry Act 2018, once introduced.

Proposals for insurance requirements under the Space Industry Act 2018

The UK Government intends that operators engaging in launch from the UK and operating a satellite from the UK would be required via licence conditions, to obtain and maintain third-party liability (TPL) insurance. TPL insurance will be required to cover claims made by third parties for injury and damage arising out of all spaceflight and associated activities, whether such damage occurs on the surface of the earth, in airspace or in outer space. This insurance will also cover the operator's indemnity to the Government in respect of claims made against the Government.

Whilst there are other types of insurance taken out to cover spaceflight activities, following the views expressed in the call for evidence (a summary of which can be found in Annex A), the Government has concluded that requirements on operators to

hold third-party liability insurance to cover claims by third parties under section 34 and to indemnify Government for claims under section 36 will be the only type of insurance that will be mandated in licence conditions.

We propose that the amount of insurance required will be included in a licence condition. Insurance cover must be taken out for the period and scope of the licensed activities, which for launch will cover the period of the launch activities only. This means that those undertaking associated activities (i.e. spaceport or range control licensees) only need TPL insurance cover for the duration of the spaceflight activities and not for periods outside of this.

It should be noted that liabilities may still arise after the licensed activity has concluded, or in cases where the insurance requirement is waived. For example in the case of orbital licensees, even if insurance is no longer required following the end of operations and the satellite has been safely disposed of (as per a pre-approved end of life plan) and positioned to the satisfaction of the regulator; if there is a collision in orbit a liability may still arise.

The amount included in the licence can be calculated either on a per occurrence or aggregate basis[6] by the regulator for in-orbit operations (depending on the scope of the licensed activity), as is the current practice under the Outer Space Act 1986.

In summary, we intend to implement in licence conditions and through guidance the following policy with respect to third-party liability insurance:

Launch - Modelled Insurance Requirement

- On the basis of the evidence received, it is the UK Government's intention to implement the Modelled Insurance Requirement (MIR) approach for setting insurance requirements for launch activities from the UK. The amount would be calculated in this way for all types of launch. The insurance amount would be set out in a licence condition.
- The MIR would not apply to in-orbit operations, as the approach to setting insurance and liability requirements will be the same as that currently applied under the Outer Space Act 1986 (i.e. €60m for standard missions).
- For return / re-entry activities, further discussion on the developing policy can be seen below.
- The MIR approach will therefore apply to sub-orbital launch and a carrier aircraft from which a rocket is to be launched (air-launch), although the insurance would usually be written in the aviation market and aviation market terms would apply based on current practice. Operators should note however:
    - that it is not possible to limit liabilities imposed under existing aviation law in relation to passengers, if the carrier aircraft is used for air transport

[6] Aggregate – The maximum amount that an insurer will pay out in total within the policy period (i.e. annually). Note that, whatever the aggregate, the policy may also have limits for each separate claim. Per occurrence (or any one occurrence) – This refers to the maximum amount that an insurer will pay out for each event where third-party damage has been caused. This may or may not be subject to an aggregate. Typically, the same amount can be claimed/paid out for any future claims during the policy period.

i.e. to carry passengers or cargo whilst it is being used for spaceflight activities. As noted above, air-launched rocket activity would be licensed as a space activity under the Space Industry Act 2018;

- it is not intended to issue licences for sub-orbital point to point activities. As and when such licences are considered, there may be a need to look at an alternative approach for setting insurance and liability requirements for such operations.

Insurance requirements for procuring a launch / in-orbit operations

- We intend to maintain the current policy applied under the Outer Space Act 1986 for the activities of procuring a UK launch and in-orbit operations covered by the Space Industry Act 2018 (€60m for standard missions). Further detail on the current TPL requirements under the Outer Space Act 1986 can be found here.
- For the new liability arising under section 34 (where damage or loss is caused to third parties in the UK or its territorial waters, for example through re-entry of a satellite), we intend that the satellite operator's liability to third parties would be limited at the same level as the launch operator's, as determined by the MIR approach (if launched from the UK, otherwise the liability would be set at €60m).

Detail on the Modelled Insurance Requirement for launch

The Modelled Insurance Requirement is an approach similar to the Maximum Probable Loss (MPL) methodology used for setting insurance requirements in both the US and Australia.[7]

The MIR is the amount of potential third-party liability claims that an operator could incur in a realistically possible scenario. The insurance amount is then set at a probability threshold that shows the number of launches expected before an accident occurs that causes more than a given value of financial damage.

The MIR reflects the UK approach to calculating damages arising from death, injury and property damage as applied in UK courts. The Government Actuary's Department (GAD) has been commissioned to provide information on the average level of payouts that may be received in the UK, in order to help the Government to determine the figures it wishes to include in the MIR.

[7] https://ablis.business.gov.au/service/ag/maximum-probable-loss-methodology/31339 https://www.faa.gov/space/licenses/financial_responsibility/media/MPL_November_2016_508.pdf

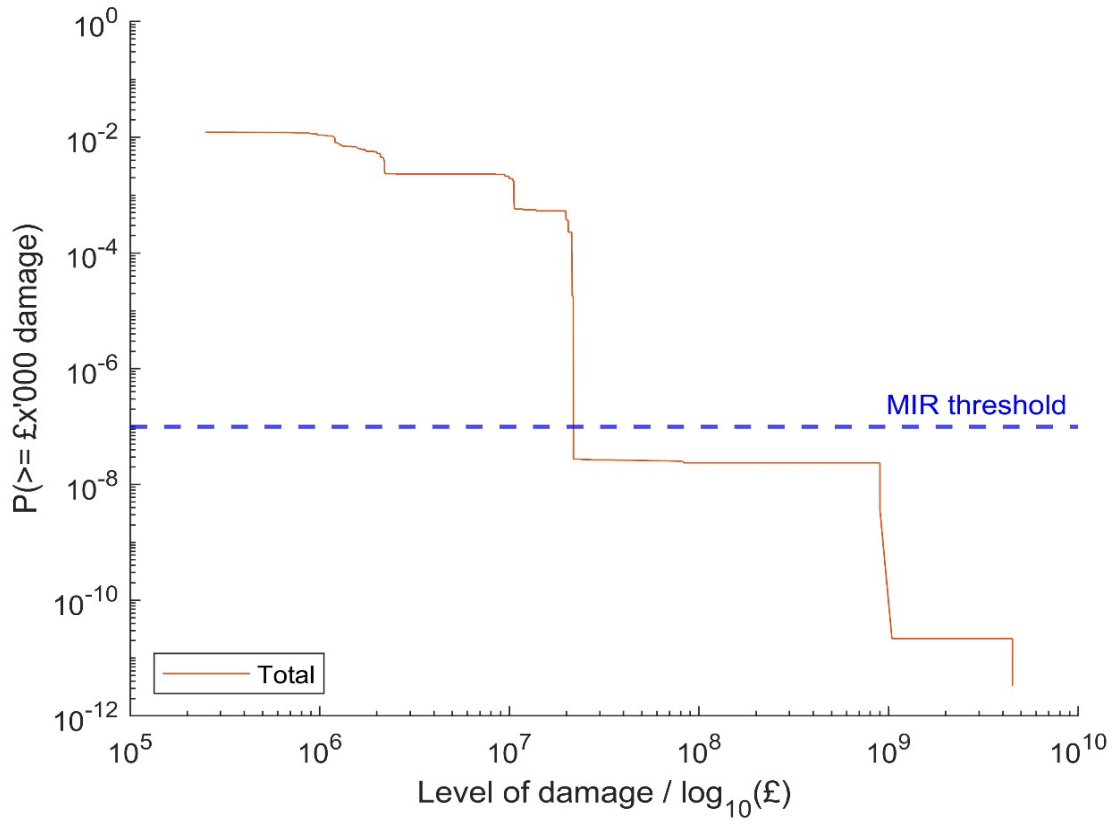

Figure 1 – illustrative example of a damage profile used in the MIR. The damage profile shows the relationship between the probability of an accident and the cumulative damage. The MIR threshold is where the insurance requirement is set.

Rather than applying a fixed limit that will apply to all missions, the intention behind the MIR is to set the insurance requirement on a case by case basis. The insurance requirement then reflects the level of financial risk associated with the mission and will be based on the outputs of the modelling carried out by the regulator for the safety case. The operator will therefore not need to carry out this modelling.

The MIR is therefore based on the level of loss associated with a set of reasonably foreseeable accidents associated with the proposed launch. The MIR will reflect a range of factors which account for variations in potential third-party damage that could be caused:

- Geographic location of launch;
- Launch operation type;
- Launch vehicle type;
- Launch trajectory (required to obtain desired orbit and taking into account safety constraints or apogee and azimuth for sub-orbital);
- Time of year (nomadic/transitory populations).

Therefore, if these variables change between launches (or for the launch that the MIR value was calculated) the MIR value may need to be re-visited by the Regulator and a revised insurance condition placed on the license.

In order to understand the financial risks associated with a space launch activity detailed modelling of the possible consequences and their associated likelihoods will be performed. This is based on:

- a detailed gridded model of world population (GPW);
- the FAA CFR 14, Part 420 model of debris distribution from a launch vehicle failure;
- financial consequence models for the elements covered by the scope of the MIR (see below).

Further detail of the methodology applied can be found in the document 'Guidance on the Modelled Insurance Requirement determination process' included with this consultation.

Previous views expressed on the MIR in the call for evidence

There were mixed views on adopting this approach in responses to the call for evidence issued in 2018. Slightly more respondents favoured an MIR approach than not - stating that such an approach is familiar to many operators and the calculations for insurance requirements can be tailored to the individual operation concerned, making insurance more affordable.

One of the objections raised by operators regarding an MIR approach was the additional costs that would be involved in the modelling.

The current policy intention is to base the UK modelling approach for assessing the flight safety on the model used in the US. To mitigate the concerns raised in the call for evidence, the regulator will undertake the modelling during the licensing process and inform operators of the insurance requirement and liability limit.

We will provide transparent information within guidance regarding the method that will be applied and this consultation contains a technical note on how the amount will be calculated. This will enable operators to model their own requirements if they choose to (in order to aid low risk mission design), but the regulator will remain responsible for determining the actual insurance requirements / liability limit so there is no direct cost imposed on operators.

Detail of types of losses covered by the scope of the MIR

The following types of losses are covered within the scope of the MIR:

- Injuries;
- Fatalities;
- Property damage (residential/commercial and agricultural);
- Damage to the environment;

- Damage and destruction of high value infrastructure (for example oil and gas facilities).

These categories are consistent with the approach taken to civil nuclear liabilities[8]. In the US MPL approach, casualties are modelled (which covers both deaths and injuries) and a value of $3m is applied per casualty. Damage to property is also covered but as a proportion of the total casualty value (25%).

The MIR includes these losses within its scope but we have developed specific values for these based on the compensation regime applied in courts in England and Wales and commercial / residential property values. This is based on average values and the reasons for this are set out below.

Rationale for including business interruption and environmental damage costs

Under the Liability Convention, a launching state shall be absolutely liable to pay compensation for damage caused by its space object on the surface of the Earth or to aircraft in flight (Article II). There is some debate internationally with regards to what the Liability Convention covers in terms of damage and whether it would extend to business interruption costs where they are associated with physical damage[9].

Section 36 of the Space Industry Act 2018 requires that a person carrying out spaceflight activities indemnifies the UK Government for claims brought against it for loss or damage. This section is drafted in this way to ensure that the UK Government is indemnified in respect of all successful claims that are made under the Liability Convention.

We have considered whether business interruption (where it is associated with physical damage) should be included within the MIR model. We sought views from insurance advisors on whether a claim might include business interruption. On the basis of this advice, the Government has considered that it is likely that a claim could include an element of business interruption caused by damage and has therefore included the business interruption element in the MIR calculation.

The Government intends to use the residential figure for property damage as part of a prudent approach. Further detail of how this was determined can be found below.

Similar to the business interruption issue above, the Liability Convention definition of damage doesn't specifically include damage to the environment. However, Art XII of the Liability Convention provides that the compensation which the launching State shall be liable to pay shall be determined in accordance with international law and the principles of justice and equity in order to restore the claimant to the position they would have been in had the damage not occurred. Art II and III of the Liability Convention refer to damage caused by a space object which is commonly agreed to

[8] http://www.legislation.gov.uk/ukpga/1965/57/contents and http://www.legislation.gov.uk/uksi/2016/562/contents/made

[9] The term "damage" means loss of life, personal injury or other impairment of health; or loss of or damage to property of States or of persons, natural or juridical, or property of international intergovernmental organizations (Article I(a)).

include all damages resulting from physical collision of that space object with the damaged items.

On the basis of the above, Her Majesty's Government's view is that environmental damage could be included in an award for compensation for a claim under the Liability Convention.

The inclusion of environmental damage costs in the MIR calculation is also consistent with the approach taken in the nuclear installation liabilities regime (which has formed the basis of the approach of what to include in the MIR calculation). The nuclear liabilities legislation provides for the recovery of costs by a public authority for reinstatement following impairment of the environment and loss of income derived from impairment of the environment.[10] We understand that some launch TPL policies also have sub-limits for environmental costs. Further detail on the environmental damage cost to be applied can be found below.

Financial values considered for use in the MIR

Advice was commissioned from GAD regarding the financial values that we could apply to modelled injuries, deaths and property damage. These have been derived through applying the compensation regime applied in courts in England and Wales and based on national statistics on population profile, salaries and other information. Where such statistics have not been available to inform a figure, GAD looked at industry data to inform the figure.

The GAD reports were commissioned in early 2018 and are based on the latest available data at that date. These reports were prepared on the understanding that UKSA expected to use a prudent and pragmatic approach to selecting the final figures used. The figures derived in these reports have been included in this consultation as an example of the possible values that may be applied but it should be noted that some of the assumptions may need to be updated before a final decision is made. Specific examples are:

i) The PIDR used in respect of the Ogden Tables has been updated for England and Wales and this has not been reflected in the figures.
ii) No allowance has been made for inflation between the date of calculation and the date at which the values would apply, this is due to uncertainty at the stage of calculation as to when these rates would apply.
iii) Economic and demographic assumptions applying in 2018 will need to be reviewed to reflect the current position.

The GAD reports propose an average figure that could be used for each scenario. This is an appropriate approach to use provided that the number of casualties, to which it is applied, has been calculated based on events occurring at the desired extreme threshold of probability. For example, if the number of deaths were based on an event with probability of occurrence 1 in 10 million and the figure applied exceeded the average this would push the overall event outside of the desired probability threshold.

[10] http://www.legislation.gov.uk/ukpga/1965/57/contents and http://www.legislation.gov.uk/uksi/2016/562/contents/made

It would not be appropriate to apply the derived figures to events more likely to occur than at the outlying probability threshold selected.

A summary of the range of values developed by GAD is as follows, which includes ranges of awards identified in their report:

	Value modelled	**Range of claims awarded and other comments**
Death category		
Whole population average	£244,000	£12,950 to over £4m on scenarios included in the report, depending on the type of damages awarded and whether the affected person has dependents. Awards however could be much higher than this.
Average award with dependents	£418,000	
Injury category		
Minor injuries	£5,000	Examples of awards assessed range from a few thousand pounds to in excess of £20m.
Intermediate injuries	£30,000	
Semi-serious injuries	£192,000	
Lifetime care	£5,154,000	
Property damage (per m^2)		
Commercial	£1,739	The business interruption rates were calculated based on Association of British Insurers data under licence to UKSA, GAD's own experience and average figures for stock held by British companies. This demonstrates that business interruption costs would account for around half of the difference between the value for domestic and commercial property rates and if a prudent approach is being used that the domestic property rate could be appropriately applied as the value with respect to property damage generally.
Without business interruption	£1,389	
Residential	£1,739	
Agricultural	£1.90	
Without business interruption	£1.84	

Following the production of the GAD reports, the personal injury discount rate has changed in England and Wales and this resulted in a 10-15% *reduction* in the best estimate figures presented by GAD. The figure remained unchanged in Scotland and we suggest keeping the same figures for the time being. As noted above, these values will be subject to revision and the guidance will reflect the latest values ahead of the implementation of the policy.

For death and injury, the average figures provided by GAD are based on the overall population structure in terms of age, income and the deceased parties' marital and dependency status. For death, a figure is also provided relating only to cases where the deceased does have dependants. This is based on the historical evidence

available but presents challenges when evaluating possible future spaceflight accidents.

Detail of the risk approach and financial values to be used to set the MIR

The MIR is designed to be a risk sharing arrangement between the UK Government and the operator. In designing the MIR, we have used two parameters to determine the share of risk between Government and the operator – the probability level and the financial values to be applied to the modelled outputs and assessed how each of these affect the overall risk share when combined.

From this, we have determined a MIR threshold, which represents the number of launches expected before an accident occurs that causes more than a given value of financial damage.

In determining the MIR threshold, we have sought to achieve the best balance between maintaining a high level of protection for Government, whilst minimising operator costs in terms of the amount of insurance that an operator is required to hold.

In this consultation, we express the contingent liability in terms of the expected cost to Government, i.e. the average cost per launch that Government would be expected to be liable for given a very large number of identical missions.

It is not possible to place a definitive figure on the overall level of the most realistic loss for UK launch as we do not know what launches will occur or what accidents may happen.

However, we have assumed for the purposes of modelling that the most reasonable worst case scenario in terms of potential loss would be the destruction of an oil rig and have applied a value of cost of £4.5 billion for this (informed by details of losses claimed as a result of the Piper Alpha disaster, which is the largest UK-related insurance loss, although further work is on-going to refine this figure).[11] The risk of such a loss arising is considered to be extremely low. It should be noted that it is not possible to definitively determine the worst-case accident, but we believe the scenario described is justifiable based on the modelling done to date.

Our analysis considered a range of scenarios to assess the impacts of setting the MIR threshold. We considered three different probability thresholds, testing the 1 in 10 million (the same as Australia / US), as well as higher (1 in 100 million) and lower (1

[11] This is based on the reference to the insured loss of $1.4 billion – source https://www.lloyds.com/about-lloyds/history/catastrophes-and-claims/piper-alpha. We believe that this provides the best representation of a worst-case loss based on data relating to an incident which has occurred in the UK. It is noted that other, more extreme, examples could be used such as the Deepwater Horizon disaster (which has so far cost in excess of $65 billion in compensation). We do not consider that this would reflect a realistic level of loss in a UK scenario.

in 1 million) thresholds. We also considered applying different sets of financial values, using the financial values derived by GAD (except for environmental damage):

- Financial value per injury / death: £192,000, £244,000, £418,000
- Environmental damage costs: £250,000 and £1,000,000
- Damage to property: £1,739/ m^2

Assessment of the analysis

Due to commercial sensitivity, we are not able to provide the exact results of the analysis but we provide a summary here.

The high probability threshold (1 in 1 million) for the number of launches expected before an accident occurs that causes more than a given value of financial damage creates a higher cost to Government and therefore greater exposure for Government in having to meet a claim for compensation above an insurance amount and above a liability limit as compared with the other options. For this reason, we have ruled out using a 1 in 1 million threshold.

Adopting a more risk averse position (e.g. 1 in 100 million) is considered to be overly conservative, whereas adopting the 1 in 10 million threshold has a relatively small impact on the cost to Government in absolute terms. This threshold is used in both the US and Australia and is therefore familiar to operators.

On the basis of the above, we are proposing setting the insurance at **a probability threshold of 1 in 10 million** as this provides the best balance between achieving a high level of protection for Government and reducing operator costs for insurance while ensuring the UK remains competitive with other launching states.

Recommendation on Financial Values (Consequence)

Based on the results, expected cost to Government per launch does not vary considerably across the consequence values applied. However, operator insurance costs do vary considerably as the consequence values increase. The insurance amount doubles when applying high consequence values as compared to the low consequence values.

For the low consequence values for death, we have used the whole population average advised by GAD[12], and for injury, the semi-serious category.

The analysis demonstrates that increasing the financial values for death and injury to align them more closely to those used in Australia and the US makes little impact on the expected cost to Government but would increase the expected cost to operators.

[12] In its report, GAD recommended using the figure of £418k for death would be prudent. Subsequent modelling of damage loss profiles for launch sites has suggested that as the lower figure of £244k does not impact on the expected cost to Government per launch, that the lower figure is appropriate to minimise operator costs.

We therefore propose **adopting low consequence assumptions**, as we can reduce costs to operators with minimal increases to Government's share of risk. This means that **a figure of £244,000 for death and £192,000 for injury is to be used as the basis for these losses in the MIR. These figures will be subject to a further review before implementation of the policy to reflect the latest statistical updates and any inflationary impacts as these figures were produced in 2018.**

Applying the MIR approach to certain types of launch is more appropriate as compared with a fixed limit, which might otherwise have made some types of proposed operations unviable. In all scenarios, insurance amounts and therefore the cost of insurance premiums for operators should be much lower than if we were to implement a fixed limit at the same level as that applied in other countries, in particular other launching states in Europe (i.e. €60m, translating to an insurance amount of £53 million[13]), based on current launch profiles modelled to date. Depending on the mission profile, the recommended approach seems to align with some industry expectations in terms of insurance requirements from research commissioned by the UK Space Agency.

Rationale for applying single figures for death and injury

With respect to deaths we are unable to distinguish between those deaths that involve individuals with dependents and those without as this is not captured in any global population model. An alternative approach is to analyse the sensitivity to this dependency. From the results of our analysis we can conclude that the relationship is not a driver for the expected cost to Government.

We have assumed all injuries are semi-serious as a conservative approach on the basis that the only more expensive category is lifetime care and that in reality the majority of injuries would be minor or intermediate, both of which have at least one order of magnitude lower associated cost (which would more than off-set any lifetime care claims).

We therefore propose to use the following financial values (levels of consequence) as the basis for determining the MIR, in line with the overall risk approach taken to setting the insurance requirement. These figures will be subject to a further review before implementation of the policy to reflect the latest statistical updates and any inflationary impacts as these figures were produced in 2018.

- **Death has been valued at £244,000 per fatality modelled.**
- **Injury has been valued at £192,000 per injury modelled.**
- **Property damage has been set at £1,739/m^2 of damage modelled for commercial and residential property and £1.90/m^2 for agricultural land (based on GAD-derived calculations and taking into account business interruption costs for commercial property and agricultural land).**

[13] Based on exchange rate of 16 June 2020. Applying the 0.1% premium rate would result in a premium of £53,000.

- **Environmental damage, caused by any accident, is valued at £250,000. This will be a set value per launch and will not be a value which is varied per launch. GAD did not advise on this figure but the figure to be applied is consistent with the values applied in sublimits for policies covering pollution liability. Additional estimates of environmental damage may be needed in the case of accidents involving high value infrastructure.**

It is important to note that ultimately it may be for a court to determine the amount of compensation that will be paid and so the value of any compensation claim could be higher or lower than the insurance requirement, or take into account factors that are not included in the MIR calculation. This also applies in the case of claims launched in another jurisdiction.

It is our intention to update these figures every five years, in line with the general review proposed for insurance requirements and spaceflight legislation requirements more widely. We will review the figures annually to assess whether there has been a material change in the figures which requires a change in the financial values prior to the five-year review (for example due to the effects of inflation; if the Personal Injury Discount Rate changes; if there is a change in the wider methodology for calculating compensation in UK courts; or if there is a significant economic event, such as an economic downturn). In this way we hope to provide an appropriate level of assurance that changes in market conditions do not lead to over or under insurance.

At this stage, we do not intend to publish the details of the insurance requirement for each launch vehicle, although in the US such details are published and we are open to views on whether these should be published.

Questions

1. Do you agree with the use of the MIR approach for setting insurance for launch?

   Provide your preferred approach.

2. Do you have comments on the financial values?

3. Do you think the insurance requirement for each launch vehicle should be published?

Additional calculations / requirements for sub-orbital, air-launch, balloon-launch and re-entry activities

The insurance requirement for sub-orbital launches and air-launched rockets will be set using the MIR approach. The Government recognises however that this is an emerging area of insurance activity and would welcome views from insurers and operators as to how you see this market developing in the future.

If a policy is required to cater for this, details of the insurance requirements can be found here - https://www.caa.co.uk/Commercial-industry/Airlines/Licensing/Requirements-and-guidance/Insurance/

While detailed TPL coverage terms and conditions are not mandated by the regulatory authorities (e.g. CAA), there are standard terms used in the aviation insurance market and these may differ from those used in the space insurance market. For launch from the UK, only terms used on the London market will be accepted.

The guidance sets out further detail of the further requirements for sub-orbital launches and launches other than using vertical launch vehicles.

Questions

4. Are there additional requirements on insurance for sub-orbital launches?

    -What additional requirements?

5. Are there additional requirements on insurance needed for other launches (not involving vertical launch vehicles)?

    -What additional requirements

6. How are insurance arrangements currently managed by insurers for:

    -Sub-orbital launches?

    -other launches not involving vertical launch vehicles?

7. How do you think the insurance arrangements will change in future for:

    -Sub-orbital launches?

    -other launches not involving vertical launch vehicles?

Detail of the approach on insurance requirements

Spaceflight activities come with inherent risks, so it is important that there is resource available to meet any claims arising from incidents which impact third parties.

Section 38 of the Space Industry Act 2018 sets out the provisions and powers on insurance.

We do not intend to make regulations under section 38(1) of the Space Industry Act 2018 (which provides a power for regulations to require holders of licences to be insured). The UK Government intends to implement a policy which sets out insurance requirements in licence conditions, supported by additional standards in guidance that the regulator will expect licensees to follow. This is in accordance with Schedule 1 of the Space Industry Act 2018, which sets out the conditions that may be included in licences. Paragraph 35 states the following:

‘35 Conditions requiring insurance or indemnities, including—

(a) conditions requiring liability to third parties to be insured for no less than a specified amount;

(b) conditions as to compliance with requirements imposed by regulations under section 38(1).'

At this stage, we do not intend to introduce regulations under section 38(2) of the Space Industry Act 2018 (which provides a power for regulations to provide for insurance or reinsurance to be made available by the Secretary of State) as there is a functioning insurance market.

It is the Government's intention that every licence should include a condition that a licensee must not carry out any spaceflight activities, or associated activities from and including launch.

- For operators the insurance policy must insure the following:
    - the UK Government and the persons and bodies listed under section 36(2) of the Space Industry Act 2018 against any claims in respect of damage or loss arising out of or in connection with the spaceflight activities authorised by that licence;
    - the operator against any liability which may be incurred by it in respect of injury or damage to persons or property under section 34(2) of the Space Industry Act 2018, subject to the specified limit on the amount of the operator's liability;
    - the operator against any third-party liability which may be incurred by it in respect of the death of or bodily injury to any person or damage to property not covered by section 34(2) of the Space Industry Act 2018, subject to the specified limit on the amount of the operator's liability;
    - the operator against any obligation to indemnify either the UK Government or the listed persons and bodies under section 36(2) of the Space Industry Act 2018, subject to any limit on the amount of the operator's liability;
- For range control licensees, the insurance policy must cover any third-party liability which may be incurred by the licensee in respect of the death of or bodily injury to any person or damage to property caused by, or arising out of, range control services.
- For spaceport licensees, the insurance policy must cover any third-party liability which may be incurred by the licensee in respect of the death of or bodily injury to any person or damage to property caused by, or arising out of, spaceflight activities which are to be carried out at the spaceport.
- For all licensees, the insurance policy must have a limit of at least the amount determined by the MIR or the in-orbit TPL policy against the liabilities above and provide that no circumstances exist entitling the insurer to repudiate or disclaim liability.

The UK Government also intends that the regulator will include licence conditions on the following points. These will be specific to each licence but will cover the following principles:

- The limit of an operator's liability;

- If a licence covers multiple launches, variations of insurance requirements and limits of liability per launch, as permitted by the licence;
- That the licensee provides the regulator with the relevant insurance policy documents and evidence of payment of premiums as requested;
- That the regulator may assess the insurance and consult with insurance advisors internal or external to Government as necessary;
- That the regulator may require additional insurance to be taken out if the mission fails to meet its objectives (for example if a satellite fails to reach its intended orbit);
- That the licensee shall not vary terms and conditions of the insurance policy relating to the licensed activities or cancel or cause to be cancelled the insurance policy without the prior written consent of the regulator.
- That the licensee shall immediately notify the regulator of any event or other occurrence which is likely to give rise to a claim under the insurance policy.
- That the licensee shall take all necessary action to ensure that the insurance policy continues in force and is valid and enforceable, and the licensee shall do nothing that would enable the insurer to avoid any such policy.

We will also include licence conditions requiring reciprocal waivers of liability as appropriate for the licence in question, as provided for in paragraph 36 of Schedule 1 of the Space Industry Act 2018:

1. 'Conditions requiring waivers or indemnities to be provided, including conditions requiring—
   (a) the holder of a spaceflight licence, and
   (b) any person with whom the holder of the licence makes contractual arrangements in connection with the carrying out of activities authorised by the licence (other than an individual taking part in spaceflight activities in a role or capacity prescribed under section 17(1)),

to enter into reciprocal waivers of liability in respect of any injury or damage resulting from the carrying out of those activities.'

Other licence conditions may be included to cater for specific issues relating to the individual licence.

If these conditions are not met, then breaching such conditions could lead to the suspension or revocation of a licence and is also an offence under section 13(8).

It is important to note that for spaceport and range control licensees, an insurance policy against any liabilities caused by or arising out of spaceflight activities only needs to cover the period covered by the period and scope of launch activity and not periods of scope of activity outside of that. It is also important to note that spaceport and range control licensees do not necessarily need to take out their own TPL policy to cover the licensed launch activities. The launch service provider will usually take out this policy

and include the spaceport and range control provider as additional insureds on the launch TPL policy.[14]

We also intend to continue the waiver of insurance for the lowest risk satellite operations as appropriate, as per the current policy under the Outer Space Act 1986. Further detail on this can be found below.

Questions

8. Do you agree with the approach on setting insurance requirements in licence conditions?

   -Set out your preferred approach.

9. Do you have any comments on the licence conditions?

Guidance on insurance requirements under the Space Industry Act 2018

The guidance material included with this consultation includes the further detail on the requirements for insurance.

This is in two parts:

- Guidance for stakeholders on insurance and liabilities requirements under the Space Industry Act 2018
- Guidance on the Modelled Insurance Requirement Determination Process

The guidance for stakeholders on insurance and liabilities requirements under the Space Industry Act 2018 covers the following points:

- Conditions in licences relating to insurance - The guidance sets out further detail of the proposed approach to setting licence conditions on insurance and cross waivers.

The guidance also covers the following elements:

- Duration of cover required;
- Defining ‘launch’ and ‘in-orbit phase’ for the purposes of insurance;
- Provision of insurance documents;
- Other types of insurance that operators may wish to take out;
- What are the applicable law and terms applied to insurance policies;

[14] The same would usually apply in respect of pre-launch insurance, usually taken out by a satellite manufacturer and cover the period prior to the licensed launch activity. We do not intend to mandate pre-launch insurance and further detail is provided in draft guidance.

- Baseline requirements for third-party liability insurance policies;
- Structure of a TPL policy;
- Regulation of insurance policies and markets and rating of insurers;
- Appealing the decision on the amount of insurance required and / or the limit of liability set out in a licence.

Cross waivers of liability

It is standard practice within TPL policies to include provisions that those engaged in or involved in a launch agree to bear their own costs in the event of a launch failure or other issue. The guidance provides further details on such cross waivers.

Waiver of insurance requirements (Space Industry Act 2018 and Outer Space Act 1986)

The regulator may waive the requirement to hold third-party liability insurance if the spaceflight activity is one which the regulator deems suitable for a waiver. The waiver will only apply to missions that are considered by the regulator to be "low risk" and only in relation to in-orbit activities as per the current policy under the Outer Space Act 1986. This 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.** A low-risk satellite at these very low, sparsely-populated altitudes, with an orbital lifetime of less than a year and with few high-value assets nearby, would, in most cases, carry a negligible risk of third-party damage. This waiver is subject to a satisfactory risk assessment. The guidance provides further detail on this and details of the current policy under the Outer Space Act 1986 can be found here.

The Traffic Light System

The current approach used under the Outer Space Act 1986 makes use of a Traffic Light System (TLS). As noted in the consultation on the Space Industry Regulations on 29 July 2020, we are considering using a TLS for pre-application engagement for orbital operator licences. The proposed TLS draws from the existing processes under the Outer Space Act 1986 but due to the more structured nature of the Space Industry Act 2018 there are some key differences we would see under a TLS developed under the Space Industry Act 2018.

Under the Space Industry Act 2018 the regulator has an overriding duty to exercise its functions with regard to spaceflight activities (including whether or not to grant a licence) with a view to securing public safety. The Space Industry Regulations proposed to be made under the Space Industry Act 2018 (see draft regulations 20-27) prescribe the process which is to be followed in respect of applications for all licence types and the Regulator's Licensing Rules set out the information that is to be provided by applicants with their application form (see Table A and Table D for the information required in respect of orbital licence applications). Given the differences between the old and the new regime, a different approach from the TLS is justified.

As under the Outer Space Act 1986, the TLS would not be a formal part of the application process. Rather, it would be an optional pre-application process which

would allow prospective applicants to provide the regulator with responses to a short set of questions about their business and the proposed spaceflight activities. Based on those answers, the regulator would give prospective licence applicants a pre-application Red/Amber/Green rating.

The purpose of the proposed TLS is threefold:

• to help less experienced operators understand the need for safety, security, and sustainability, as reflected in the regulator's licensing process;
• to help operators understand their readiness to apply and the barriers they may face;
• where possible, to provide a smoother, more tailored application process.

Our intention is that the ratings would provide an early, non-binding and approximate indication of the potential level of risk to safety, security and sustainability of the proposed orbital activity. The rating given would be based on the answers provided to the initial questions, and would not take account of any additional information which will be required by the regulator, e.g. under the Regulator's Licensing Rules, or further information required or requirements which must be met under the Space Industry Regulations. If a prospective applicant does not meet those requirements when making its formal application, it is unlikely that a licence will be granted, even if it receives a "green" assessment:

• A 'green' rating means that the proposed orbital activities pose an apparently acceptable level of risk to safety, security and sustainability;

• An 'amber' rating means that the proposed orbital activities pose an uncertain level of risk to safety, security and sustainability;

• •A 'red' rating means that the proposed orbital activities pose an apparently unacceptable level of risk to safety, security and sustainability.

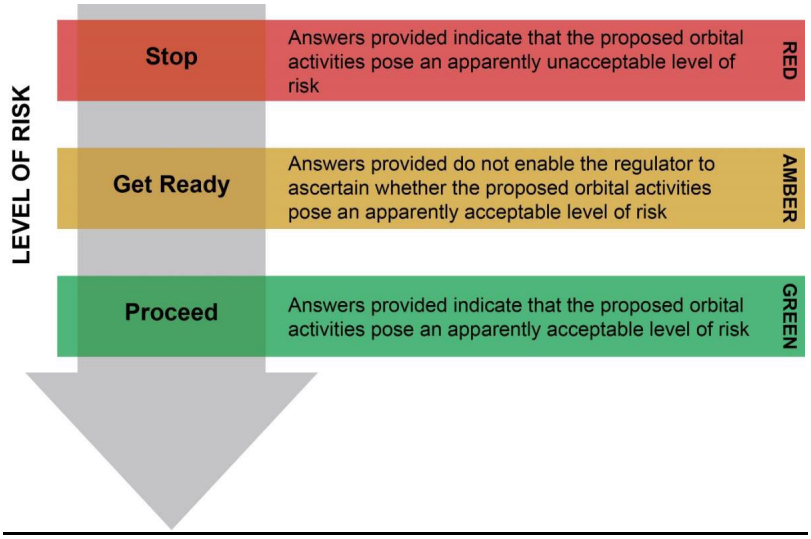

Figure 2 - The traffic light system for orbital operator licence applicants.

Prospective applicants would not be obliged to use the TLS and would be able to submit an application for an orbital operator licence under the Act without having first received a Traffic Light rating. However, we foresee that new operators, and all operators hoping to launch new types of missions, would benefit from making use of

the TLS to facilitate a smooth process when they make a formal application for an orbital operator licence.

Prospective applicants must note that any guidance they receive from the regulator before they submit a licence application will **not** form part of the regulator's decision-making process relating to granting or refusing the application for the licence. Nor do we intend for the red, amber or green rating to indicate the likely determination the regulator will make in respect of an application once submitted. The aim of any informal guidance pre-application is to facilitate the preparation of the application and of information required to be submitted 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 all necessary documentation.

At this stage, we are proposing to offer a TLS only for applicants for orbital operator licences. This is because:

- There is a wider diversity of missions conceivable and technologies used in the orbital context. Accordingly, there is a greater range of risk profiles for orbital activities than for activities covered by other licence types.
- Since 2018, the UK Space Agency has been using a Traffic Light System for applications under the Outer Space Act 1986, which regulates the operation of satellites or the procurement of a satellite launch from an overseas launch service. The UK Space Agency has experience in successfully using a Traffic Light System for activities that would be covered by an orbital operator licence under the Space Industry Act 2018.

Questions

10. In your opinion, should a downgrade clause be included in the space insurance policy?

11. Do you have any comments on the guidance?

Proposals for limiting third-party liabilities under the Space Industry Act 2018

Policy intention and rationale

As noted earlier in this document, the UN Liability Convention[15], to which the UK is party, provides that as a Launching State under UN space treaties, the UK

[15] Convention on International Liability for Damage Caused by Space Objects.

Government is ultimately liable to pay compensation for damage caused by its space objects on the surface of the Earth or to aircraft in flight, and liable for damage due to its faults in space. For damages occurring on the ground or to aircraft in flight, such liability is absolute, meaning that claims may be brought against the Launching State without having to prove fault. Liability in orbit is fault based.

To mitigate this liability, the Space Industry Act 2018 requires operators to indemnify the UK Government for any claims brought against it. As a resource to cover potential claims, we also intend to require that operators take out third-party liability (TPL) insurance to a minimum amount to cover the indemnity to Government, with the Government named as an additional insured party in the insurance policy.

The Space Industry Act 2018 also places a strict liability on operators. This means that persons (intended to be limited to uninvolved third parties by regulations) can bring a claim for injury or damage against an operator without having to prove fault. Therefore, under the provisions of the Space Industry Act 2018 and proposed regulations being made under it, an operator holds an unlimited liability to indemnify Government for any claims brought against it and an unlimited liability to indemnify third parties.

However, during the Space Industry Bill's passage through Parliament, concerns were raised about the liability provisions. Firstly, other launching states limit liabilities in some way or provide a state guarantee for launch activities from their territory. Evidence from UK Space Agency research and market engagement demonstrated that unlimited liabilities for launch from the UK impacts competitiveness. Secondly, that it is impossible to obtain insurance for an unlimited liability and companies holding unlimited liabilities can face difficulty raising finance. Evidence from commissioned research and market engagement demonstrates that insurance is not available to cover an operator's unlimited liability (capacity is generally limited to around $500 million) and industry have provided evidence that investors are unwilling to invest when they are unable to quantify and protect risks.

The UK Government therefore considers that failing to bring in liability limits risks undermining UK launch and the spaceflight programme's objectives.

Approach to limiting operator liabilities for launch activities

To address these concerns, we propose to establish limits on operator liabilities using powers under the Space Industry Act 2018. This is common practice for launch operators in other Launching States and for activities currently licensed under the Outer Space Act 1986 (with respect to indemnifying the UK Government for any claims made against it). Alongside the power to limit an operator's liability to third parties, section 35(3) of the Space Industry Act 2018 provides for a duty on Government to pay compensation to claimants for amounts above an operator's limit.

We propose limiting operator liability to indemnify the Government under section 36 and third parties under section 34 to the same amount as the Modelled Insurance Requirement in most cases (if launched from the UK, otherwise the liability would be set at €60m). There may be certain circumstances where the amount will differ and

this will take account various factors. The limit will apply also to claims made under common law.

The limit of liability, as with the insurance amount, will be set out in an operator's licence.

The UK Government will meet any claims above the operator's limit of liability.

We intend to disapply liability limits in the case of an operator's wilful misconduct, gross negligence or non-compliance with their licence conditions or requirements of the Space Industry Act 2018 and any regulations made under it. Details of the disapplication of the limit of liability to indemnify Government is included in the consultation issued on the 29th July 2020.

Question

12. Do you agree with our proposed approach to limiting operator liability?

Limits of liability applied in other Launching States

As noted above, it is commonplace amongst Launching States to apply a limit on an operator's third-party liability. The figure below provides further detail on a number of regimes which apply in other launching states.

Using an MIR approach for launch activity therefore places the UK in a favourable position for the types of launch proposed from the UK, considering the current risk profile of those missions.

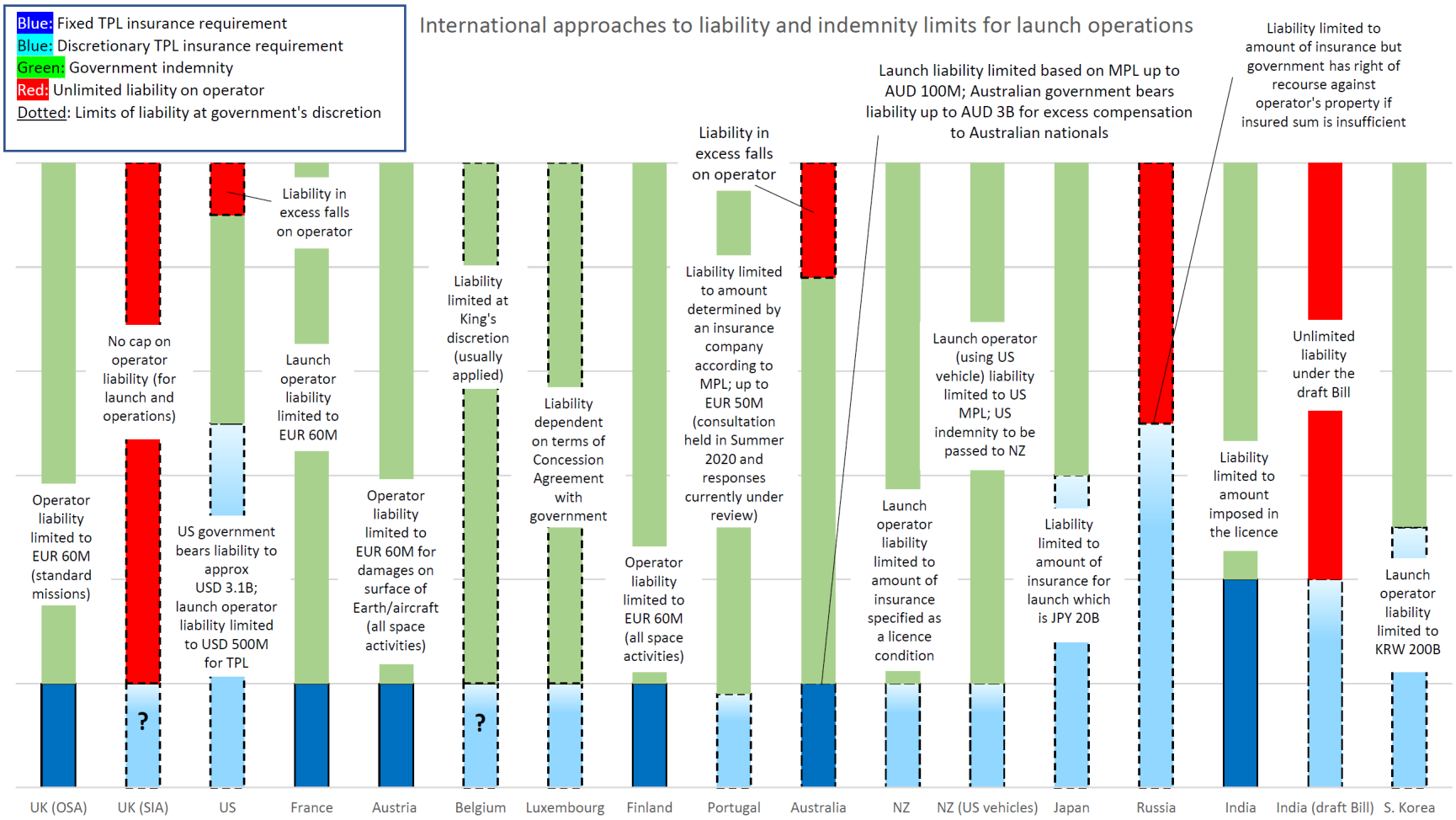

Figure 3 - Limits of liability applied to launch activities in other Launching States (as of 2nd October 2020)

Detail of the regulations on limiting liabilities

In section 34(5) there is a power to make regulations to limit the amount of liability of an operator for injury or damage to third parties. The draft regulations will provide that this limit be set out in an operator's licence. The limit on this liability can be restricted to injury and damage sustained by prescribed persons or in prescribed circumstances.

Regulation 2 provides that an operator licence must specify a limit on the amount of an operator's liability under section 34(2) of the Space Industry Act 2018 and for any third-party liability not covered by that section. It also provides how that limit shall be determined, and where it will not apply.

Regulation 3 provides that the power or duty of the Secretary of State to indemnify for claims above an insurance or liability limit does not apply where the operator is liable for gross negligence or wilful misconduct, or where damage or loss is caused by non-compliance by the operator with any conditions of its licence or any requirements under the Act or regulations made under the Act.

The regulations included in this consultation disapplying the limit on an operator's liability to claimants mirror the regulations that have already been drafted and consulted upon as part of the draft Space Industry Regulations, although they relate to the disapplication of the limit of liability in a different section of the Act. Further details on this (as well as details of those to whom a strict liability right of claim would not apply) can be found in annexes C and D.

In section 12(2) of the Space Industry Act 2018 there is a power for the regulator to specify a limit on an operator's liability to indemnify the UK Government under section 36 of the Space Industry Act 2018 (Obligation to indemnify Government etc. against claims). Regulations are not required to exercise this power.

The UK Government therefore intends that an operator's liability to indemnify Government for the activities of launching from the UK (to orbit or sub-orbital), procuring a UK launch and operating a satellite in orbit from the UK will be limited. For launching from the UK, the limit will be set at same amount as the Modelled Insurance Requirement in most cases. For the procurement of a launch and operating a satellite in orbit, this will follow the existing policy under the Outer Space Act 1986.

This limit will be set out in an operator's licence and further detail is set out in guidance.

Question

13. Do you have comments on the draft regulations covering the limit of liabilities?

Reviewing the regulations

The Space Industry Regulations provide that a review must be carried out every five years and set out the scope of what such a review must cover. It is our intention that the draft Space Industry (Liabilities) Regulations will be incorporated into the Space Industry Regulations following this consultation. The liabilities provisions (as well as

the insurance requirements under the Space Industry Act) will be subject to the review provisions within the Space Industry Regulations.

Guidance on liabilities

The guidance provides further background on issues relating to liabilities. This includes cases in which the limit of liability will be disapplied.

Question

14. Do you have comments on the guidance covering the limit of liabilities?

Insurance requirements and limits of liability where licences are also issued by another state

In cases where there is more than one Launching State involved in the spaceflight activity different liabilities and insurance arrangements may arise as different launching states apply different insurance and liabilities arrangements than the UK. It is recommended that applicants check with the relevant regulator(s) which arrangements will apply.

Insurance requirements for end-of-life and re-entry operations of UK licensed Space Objects

A key driver for the regulations and guidance developed by the UK Government is to minimise risk to people and property arising from in-orbit and re-entry activities. The Space Industry Regulations and guidance build on the UK's international obligations associated with liability, interference and space debris mitigations. The UK is also a member of the Inter-Agency Space Debris Co-ordination Committee (IADC); 13 space agencies who perform active research into space debris. As such, debris mitigation and space sustainability more broadly are a key part of UK policy.

The UK has an established approach to identifying insurance requirements for in-orbit activities. The upcoming commencement of launch activities from the UK has led the UK Government to consider how the in-orbit activities for upper stages or launch vehicle components and re-entry more broadly (satellites and upper stages) should be considered.

Launch vehicle components, such as upper stages, injected into orbit will increase the risk of collision to other space objects. The risk to other space objects is dependent on the lifetime of the launch vehicle component on orbit and may be reduced by accelerating the re-entry of the object, thereby shortening its in-orbit lifetime. In the event of a collision the UK Government may be liable, if fault can be proved, for damages. Therefore, the UK Government is considering whether there is a need for third party insurance for launch vehicle components

At the end-of-life, launch vehicle components such as upper stages, will re-enter the atmosphere. The risk to people and property on the ground can be calculated using a variety of methodologies and can be reduced by performing controlled re-entries. Similar considerations also exist for certain sizes/classes of satellites operating in orbit that may need to perform a re-entry for disposal or recovery operations. Therefore, the UK Government is considering what the approach should be to identify insurance requirements for re-entry operations.

We propose the following approach to calculate the third-party insurance requirement for various phases of a mission – launch, in-orbit and re-entry operations. We would welcome your views on this and the approach taken in other jurisdictions:

- Launch phase - To be covered by the MIR approach (as outlined above). This would only be required by the licensed launch vehicle operator;
- Orbital operations - Upper stages and other launch vehicle components which remain in orbit may require a separate TPL insurance requirement. The UK Government is currently considering applying the same requirements for upper stages and launch vehicle components as applied for in-orbit activities. It is hoped that this will reduce the lifetime of launch vehicle components in-orbit, thereby reducing the amount of debris in orbit and risk to space objects and ultimately improve the sustainability of UK launch operations. The requirement for TPL insurance is likely to be dependent on the mission profile of the upper stage and its potential interaction with high-value assets such as the ISS. A potential approach would be:
    - For upper stages with perigee & apogee below 400km, then no TPL insurance for the in-orbit phase would be required.
    - For upper stages with a perigee & apogee above 400km, then the standard TPL is required for the in-orbit phase (€60 million) until apogee the apogee falls below 400km.
    - For upper stages with perigee below 400km and apogee above 400km, then an assessment needs to be performed to see if the orbit can intersect with high value assets (prioritising the ISS). If it is possible then standard TPL would be required until apogee falls below 400km.

  The UK Government would welcome feedback on whether existing policies (e.g. Launch +1year) would cover this TPL requirement and the appropriateness in general of this requirement.
- Re-entry activities (covering satellites, expendable upper stages, re-usable elements of launch vehicles or other space objects returning from the orbital environment) would be subject to a similar approach as the MIR approach. The approach adopted and the relationship to international risk thresholds associated with re-entry are subject to further study.

The final outcome of the financial risk modelling is therefore likely to be up to three conditions (one for each mission phase) on a launch operator's license for each mission included in the license.

Further detail on insurance requirements for end-of-life activities for satellites is included in the guidance on insurance. As licences for in-orbit activities are often issued without an end date, licence conditions will set out that the insurance must be maintained for the duration of the mission, including any end-of-life plan (switching the satellite off, passivation, lowering the satellite to a lower orbit etc).

Questions

Insurance for the in-orbit and re-entry phase of a mission

Insurance for the in-orbit phase of a mission

15. Do you agree with the proposed approach on third party liability insurance for the in-orbit lifetime of launch vehicle components?

16. If you are a launch vehicle operator:

- What do you see as the relative costs between insuring upper stages left in-orbit and the operational impacts of ensuring the timely disposal of upper stages?

- What are the practical considerations and issues we need to consider in setting the insurance requirement for in-orbit insurance for launch vehicle components (e.g. the length of time that upper stage is left in-orbit, changes in the orbital environment)?

17. Is insurance already available to cover the in-orbit phase of a launch vehicle's mission profile until disposal by re-entry or insertion into a graveyard orbit?

18. Do you think such insurance is commercially viable?

19. Do you have any further information on the approaches to in-orbit liability for upper stages or launch vehicle components in other jurisdictions?

Insurance for the re-entry phase of a mission

20. Do you agree with the proposed approach on third party liability insurance for re-entry activities?

21. Is insurance already available to cover the re-entry phase of either a launch vehicle component such as an upper stage or a satellite?

22. Do you think such insurance is commercially viable?

23. Do you have any further information on the approaches to for re-entry satellites in other jurisdictions?

Insurance for the in-orbit and re-entry phases of a mission

24. Do you have comments on potentially requiring three separate mission phases i.e. launch, in-orbit and re-entry?

25. If insurance is required for two or three phases e.g. launch and in-orbit, developed to manage this?

Issues for which we do not intend to introduce regulations

Use of securities and other alternatives to insurance

The Space Industry Act 2018 allows for such measures but no further regulations are being proposed. This is as a result of the responses received in the call for evidence indicating that there would be a lack of uptake of facilities other than insurance.

Government insurance and re-insurance scheme

As noted above, the UK Government has not put in place an insurance or re-insurance scheme, unlike in other areas where market failures have occurred. This is because there is currently a functioning market for space insurance provision. The UK Government recognises however that there is limited capacity in the market and that a significant loss could adversely impact on the sustainability of that market. As demand for space insurance provision increases over the coming years due to proposed increase of satellites, and as the UK launch market matures, the UK Government will consider further options to maintain the resilience of the space insurance sector.

Question

26. Are there other approaches for providing insurance you aware of?

Provide further details.

Impact assessment

Impact Assessments are used to estimate the impact on individuals, groups and businesses with the aim of understanding the overall impact on society from implementing legislative and regulatory changes. As part of this, the business impact target for this Parliament reflects the Government's ambition to continue to bear down on the costs to business of regulation while maintaining important regulatory protections. The general threshold for independent scrutiny of Impact Assessments is

where the equivalent annual net direct cost to business (EANDCB) is greater than ±£5 million.[16]

An Impact Assessment for the Space Industry Act 2018 was published on 16 September 2016[17]. An Impact Assessment on the draft secondary legislation was published on 29 July[18]. A further Impact Assessment, specifically for the draft secondary legislation on limiting launch liabilities, has been published alongside this consultation document. This Impact Assessment considers in more detail the impact of the proposed draft regulations and guidance and provides an initial estimate of the expected impacts. The accompanying Impact Assessment's Summary Sheets provide a high-level overview of the rationale for intervention, policy objectives and expected impacts for each option.

The Impact Assessment looks at the main affected stakeholders, costs, benefits and risks for the following three options:

- Option 1: Do nothing – Operators continue to hold unlimited liabilities. It is assumed that operators cannot gain unlimited insurance cover from the commercial insurance market. Therefore, operators will continue to launch from other nations (where there are liability limits), so no commercial spaceflight launch industry develops in the UK.

- Option 2 (**Preferred**): Modelled Insurance Requirement: Set the liability limit and insurance requirement on a per-launch basis, reflecting the launch-specific risks (e.g. spaceport location, flightpath, launch vehicle type) and minimising the risk of over-insurance. A state guarantee is provided free of charge to meet any claims in excess of the operator's liability limit.

- Option 3: €60m Fixed Limit: Set the liability limit and insurance requirement at €60m for UK launch, in line with other European launch nations. A state guarantee is provided free of charge to meet any claims in excess of the operator's liability limit.

We welcome comments and evidence on the analysis set out in the accompanying Impact Assessment to help provide a sound basis for our final assessment of impacts, such as potential costs, benefits and risks arising from the proposed secondary legislation. Specific areas on which we would benefit from input are set out in consultation questions. At the very least, it is recommended that the accompanying Impact Assessment's Summary Sheets are reviewed before responding to the consultation.

[16] Please see the 'Better Regulation Framework: Guidance 2018' for more information, available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/735587/better-regulation-framework-guidance-2018.pdf
[17] http://www.legislation.gov.uk/ukpga/2018/5/pdfs/ukpgaod_20180005_en_001.pdf
[18] https://www.gov.uk/government/consultations/spaceport-and-spaceflight-activities-regulations-and-guidance

Impact assessment

27. In your view are there persons affected by the proposed secondary legislation that have not been captured in this Impact Assessment?

    - Who, in your view, has been omitted?
    - How do you think they are affected?
    - If possible, quantify the costs and benefits in £.

Impact assessment – Compliance with legislation

28. Will you have to change any processes to comply with the proposed secondary legislation?
    - Provide details of your changes (including estimated costs in £).

Impact Assessment – Benefits

29. Do you think there are benefits associated with the proposed secondary legislation that are:
    - misrepresented in this Impact Assessment?
    - not captured in this Impact Assessment?
    - Which benefits (including estimated benefits in £)?

Impact Assessment - costs

30. Do you think there are costs associated with the proposed secondary legislation that are:
    - misrepresented in this Impact Assessment?
    - not captured in this Impact Assessment?
    - Which benefits (including estimated benefits in £)?

Impact assessment – familiarisation costs

31. Do you plan to familiarise yourself with the:
    - proposed secondary legislation?
    - Accompanying guidance?

32. Provide further details of the following in terms of familiarisation costs:
    - Type / grade of employee who will familiarise themselves
    - Number of employees at grade
    - Expected time per employee
    - Expected cost per employee

Impact Assessment - Engagement costs

33. Do you agree with the statement?

It is assumed that all information required to set the liability limit and insurance requirements (for either Option) is provided by the operator as part of the safety case, and hence this engagement cost is accounted for in the 'SIA Secondary Legislation IA'.[1] On this basis, there are no (additional) engagement costs to business from this legislation.

Impact Assessment - compliance costs

34. It is assumed that insurance premiums are 0.1% of the insurance cover provided, up to £50 million of insurance cover. In your opinion is the figure of 0.1% realistic?

35. Do you expect premiums to be:
    - Higher?
    - Lower?

Accident and investigation

There is separate guidance published on accident and investigation.

Registration

As a responsible space faring nation the UK will register commercial spaceflight in line with existing UN treaties. The UK has a strong track record as a responsible space faring nation and will continue to review registration policy to ensure it meets its international obligations.

Charging

Background

Her Majesty's Government (HMG) published a call for evidence in 2018 on the charging[19] of fees for licensing under the Space Industry Act 2018 and the Outer Space Act 1986 (Annex A). HMG has noted the views expressed and conducted further work on a proposed approach. HMG is now seeking views from industry stakeholders in relation to charging proposals under the Outer Space Act 1986, outlined below.

The Civil Aviation Authority (CAA) is responsible for implementing Space Industry Act 2018 licence fees, so will consult on Space Industry Act 2018 proposals in mid-November. However, the proposals are also outlined below to provide stakeholders with our latest position and support early planning.

[19] https://www.gov.uk/government/publications/call-for-evidence-space-industry-act-2018

What are the charging provisions in the Space Industry Act 2018 and Outer Space Act 1986?

Section 62 of the Space Industry Act 2018 gives effect to Schedule 11 which makes provision about the Secretary of State or regulator (referred to in the Space Industry Act 2018 as the charging authority) to charge a fee for carrying out their duties.

Section 4(3)(d) of the Outer Space Act 1986 has been amended by paragraph 10 of Schedule 12 (minor and consequential amendments) of the Space Industry Act 2018 so that charging schemes can be made under the Outer Space Act 1986. This is to ensure the same charging regime applies to both licences for space activities issued under the Outer Space Act 1986 and the Space Industry Act 2018 to ensure consistency.

The power to make charging schemes is necessary in both Acts as licensing and the subsequent monitoring of spaceflight and associated activities outlined in the Space Industry Act 2018 and those activities licensed under the Outer Space Act 1986 will incur a cost to the regulator.

Charging Proposals under the Space Industry Act 2018 and Outer Space Act 1986

Under the guidance in Managing Public Money[20] (the HM Treasury guidance on how to handle public funds), the costs of providing such services should be fully recovered from users of the service. However, HMG proposes a different approach to support the UK's nascent launch market.

Potential operators should note that our charging proposals are subject to further approvals.

New Space Industry Act 2018 spaceport, launch and range licensing

We propose no cost recovery for three years. The cost of initial operations will be high as the regulator will need time and experience to mature its safety-critical functions. In addition, the volume of applications is expected to be low at first, further increasing costs if priced according to full cost recovery.

We propose implementing a charging scheme in 2024, moving towards full cost recovery over a phased approach. Given uncertainties around how the UK launch market will develop, we will review this decision annually.

Space Industry Act 2018 and Outer Space Act 1986 satellite licensing

For Outer Space Act 1986 satellite licensing, we propose continuing to charge a one-off £6,500 fee per licence. We also propose adopting the same fees for Space Industry Act 2018 satellite licensing. This is consistent with HM Treasury guidance, ensuring that the same charges apply to all users of a similar defined category of service. Over the long-term, we propose implementing a flexible charging regime for all types of mission (e.g. constellations) and licensing activities (e.g. in-life monitoring).

In 2021, we also intend to remove the exemption from fees for educational institutions under the Outer Space Act 1986.[21] The exemption was created in

[20] https://www.gov.uk/government/publications/managing-public-money

[21] The exemption can be found in the Outer Space Act 1986 (Fees) Regulations 1989.

1989 to encourage institutions to engage in the space sector. However, universities are no longer part of the public sector and have become more commercialised, through greater collaboration with industry. Academic groups now bid for contracts in the same way as industry, so an exemption could offer a comparative advantage.

Charging Powers

It is HMG's intention that the CAA will be the UK commercial space regulator in 2021. Under the existing charging powers set out above, the CAA will be responsible for implementing Space Industry Act 2018 licence fees. The CAA will implement fees through their annual consultation process. A separate CAA consultation on charging will be published in mid-November. It is proposed that Space Industry Act 2018 satellite licence fees will become effective by 1 April 2021. However, it may be later in 2021 that regulations made under the Space Industry Act 2018 will be in force for the regulator to receive licence applications.

A charging regime for activities under the Outer Space Act 1986 already exists. These powers are granted to the Secretary of State, so the CAA does not have the statutory powers to charge for activities under Outer Space Act 1986. There is not enough time to transfer these powers via legislation before it is intended that the CAA becomes the regulator.

Therefore, HMG intends that the UK Space Agency will continue to set and administer Outer Space Act 1986 charges in the interim. HMG intends to transfer Outer Space Act 1986 charging powers to the CAA via legislation in 2022 or 2023. It will deliver better outcomes for applicants and enable fees to be updated more efficiently, through the CAA's annual process instead of legislation. The UK Space Agency and the CAA will work closely to ensure the quality of the licensing process remains unaffected.

Questions

36. Do you agree with the charging proposals?

37. Are you aware of any licensing fees in other jurisdictions?

    Provide details

Final comments

38. Any other comments?

Catalogue of consultation questions

Personal details

a. Your contact details:
   * name

* email

b. Are you responding:
* as yourself as an individual?
* on behalf of an organisation?

Organisational details

c. Your organisation is:
a) a spaceport
b) a range control service provider
c) a launch operator
d) an orbital operator
e) a trade body
f) a union
g) a user of launch or satellite services (for example imagery)
h) an academic institution
i) an international body or group
j) an environmental group or organisation
k) an insurance, banking or finance company
l) a foreign government
n) another type of business or organisation

d. Is your organisation considering applying for a licence under the Space Industry Act 2018?
a) Yes
b) No
c) Don't know

Questions on insurance and liability proposals

MIR approach

1. Do you agree with the use of the MIR approach for setting insurance for launch?
    - Provide your preferred approach.
2. Do you have comments on the financial values?
3. Do you think the insurance requirement for each launch vehicle should be published?

Insurance for launch activity other than vertical launch

4. Are there additional requirements on insurance for sub-orbital launches?
    - What additional requirements?
5. Are there additional requirements on insurance needed for other launches (not involving vertical launch vehicles)?
    - What additional requirements

6. How are insurance arrangements currently managed by insurers for:
    - Sub-orbital launches?
    - other launches not involving vertical launch vehicles?
7. How do you think the insurance arrangements will change in future for:
    - Sub-orbital launches?
    - other launches not involving vertical launch vehicles?

Proposals for including insurance requirements as licence conditions

8. Do you agree with the approach on setting insurance requirements in licence conditions?
    - Set out your preferred approach.
9. Do you have any comments on the licence conditions?

Guidance on insurance

10. In your opinion, should a downgrade clause be included in the space insurance policy?

11. Do you have any comments on the guidance?
    - Provide details, if you have extensive comments, you may upload a file.

Proposed approach to limiting operator liability

12. Do you agree with our proposed approach to limiting operator liability?

Draft limit of liabilities regulations

13. Do you have comments on the draft regulations covering the limit of liabilities?

Guidance about the limiting of operator liabilities

14. Do you have comments on the guidance covering the limit of liabilities?

Insurance for the in-orbit and re-entry phases of a mission

Insurance for the in-orbit phase of a mission

15. Do you agree with the proposed approach on third party liability insurance for the in-orbit lifetime of launch vehicle components?

16. If you are a launch vehicle operator:
    - What do you see as the relative costs between insuring upper stages left in-orbit and the operational impacts of ensuring the timely disposal of upper stages?

- What are the practical considerations and issues we need to consider in setting the insurance requirement for in-orbit insurance for launch vehicle components (e.g. the length of time that upper stage is left in-orbit, changes in the orbital environment)?

17. Is insurance already available to cover the in-orbit phase of a launch vehicle's mission profile until disposal by re-entry or insertion into a graveyard orbit?

18. Do you think such insurance is commercially viable?

19. Do you have any further information on the approaches to in-orbit liability for upper stages or launch vehicle components in other jurisdictions?

Insurance for the re-entry phase of a mission

20. Do you agree with the proposed approach on third party liability insurance for re-entry activities?

21. Is insurance already available to cover the re-entry phase of either a launch vehicle component such as an upper stage or a satellite?

22. Do you think such insurance is commercially viable?

23. Do you have any further information on the approaches to for re-entry liability for launch vehicle components including upper stages and satellites in other jurisdictions?

Insurance for the in-orbit and re-entry phases of a mission

24. Do you have comments on potentially requiring three separate conditions for third party insurance in a licence to cover all of the mission phases i.e. launch, in-orbit and re-entry?

25. If insurance is required for two or three phases e.g. launch and in-orbit, do you have any suggestions as to how insurance policies could be developed to manage this?

Future models for the provision of space insurance

26. Are there other approaches for providing insurance you aware of?

    Provide further details.

Impact assessment

27. In your view are there persons affected by the proposed secondary legislation that have not been captured in this Impact Assessment?

    - Who, in your view, has been omitted?
    - How do you think they are affected?
    - If possible, quantify the costs and benefits in £.

Impact assessment – Compliance with legislation

28. Will you have to change any processes to comply with the proposed secondary legislation?
    - Provide details of your changes (including estimated costs in £).

Impact Assessment – Benefits

29. Do you think there are benefits associated with the proposed secondary legislation that are:
    - misrepresented in this Impact Assessment?
    - not captured in this Impact Assessment?
    - Which benefits (including estimated benefits in £)?

Impact Assessment - costs

30. Do you think there are costs associated with the proposed secondary legislation that are:
    - misrepresented in this Impact Assessment?
    - not captured in this Impact Assessment?
    - Which benefits (including estimated benefits in £)?

Impact assessment – familiarisation costs

31. Do you plan to familiarise yourself with the:
    - proposed secondary legislation?
    - Accompanying guidance?
32. Provide further details of the following in terms of familiarisation costs:
    - Type / grade of employee who will familiarise themselves
    - Number of employees at grade
    - Expected time per employee
    - Expected cost per employee

Impact Assessment - Engagement costs

33. Do you agree with the statement?

    It is assumed that all information required to set the liability limit and insurance requirements (for either Option) is provided by the operator as part of the safety case, and hence this engagement cost is accounted for in the 'SIA Secondary Legislation IA'.[1] On this basis, there are no (additional) engagement costs to business from this legislation.

Impact Assessment - compliance costs

34. It is assumed that insurance premiums are 0.1% of the insurance cover provided, up to £50 million of insurance cover. In your opinion is the figure of 0.1% realistic?

35. Do you expect premiums to be:

    - Higher?
    - Lower?

Outer Space Act charging

36. Do you agree with the charging proposals?

Licencing fees in other jurisdictions

37. Are you aware of any licensing fees in other jurisdictions?

    Provide details

Final comments

38. Any other comments?

If you would like further copies of this consultation document, it can be found at https://www.gov.uk/dft#consultations or you can contact the department if you need alternative formats (Braille, audio CD and so on).

Annex A – Summary of the call for evidence

Liabilities

Unlimited liability for launch activities from the UK

Respondents were asked what impact having an unlimited liability to indemnify Government and to indemnify claimants (third parties) would have on launch activities from the UK and how this might affect a UK launch business. Most respondents who replied to these questions said that they wanted to see a limit on liabilities for launch activities from the UK. Most respondents thought that by not having a limit on liabilities, the UK would be at a disadvantage when competing internationally. This was because other countries have a limit and also due to concerns around availability and/or cost of insurance and lack of clarity for business as to level of potential exposure to liabilities. A number of respondents also thought that the Government should share liability with operators. Having a limit was therefore considered necessary to make the UK more attractive for launch.

Questions were also asked about how such a limit should be set, if Government deemed it appropriate to limit liabilities for launch activities from the UK. Most respondents generally preferred to see some sort of variation in any liability limits applied to reflect risks associated with different types of launch. There were a number of different views as to how the limit could be calculated and applied. Some respondents said they would prefer a set limit for various mission types (for example, by launch vehicle type or by mission classification; standard or non-standard), whilst others thought limits could be set on a case-by-case basis using a Maximum Probable Loss[22] approach as is used in the US or Australia.

Operators thought that both types of liability (i.e. an operator's liability to indemnify Government and an operator's liability to third parties) should be limited.

Cross-waivers

Questions were also asked about conditions within licences that mandate the use of cross waivers of liability in contracts for injury or damage from carrying out licensed activities. Most respondents were familiar with the use and purpose of cross waivers as it is standard practice for launch activities in other countries such as the US and France. One respondent thought that the use of cross waivers could threaten small operators with liquidation unless they had insurance.

[22] MPL is an approach that would seek to calculate the amount of potential third-party liability claims that an operator could incur in a realistically probable scenario. The US definition is 'The MPL is a dollar value assessment of government and third-party properties at risk of damage from launch-related activities or conduct.'

One respondent stated that it is vital to identify contractually who is liable for each particular type of risk in spaceflight activities from the UK to prevent complex liability claims.

Insurance

Availability and cost of insurance

Questions were asked about the availability and cost of third-party liability (TPL) insurance. Seven respondents commented that TPL insurance is unavailable to cover an unlimited liability. This was expressed by both space sector and insurance sector respondents. One respondent noted that insurers have a maximum limit of liability that they could be exposed to and in addition, need to monitor any accumulation that might occur from one event.

There were a few comments that it is possible to secure a set amount of TPL insurance if the launch vehicle has flight heritage and the level of insured risk is known. One respondent said that for newer launch vehicles it might be more difficult to obtain hull / asset insurance, although TPL insurance might still be obtainable. The same respondent thought the first launch from the UK might not be insurable or would be prohibitively expensive to insure for these reasons. Some respondents had noted that cost and availability of insurance had impacted on their operations.

Respondents said that there are a number of factors that influence TPL insurance premiums, including the level of risk, level of cover sought (including whether any excess is applied) and prevailing market conditions. A number of respondents noted that if there is a large claim paid by the market in the future, then this may impact the availability and cost of insurance.

Maximum Probable Loss approach

The call included questions about using an MPL approach as a way of setting the amount of TPL insurance for UK launch (both orbital and sub-orbital). There were mixed views on adopting this approach across the responses to questions in both the insurance and liabilities sections of the call for evidence. Slightly more respondents favoured an MPL approach than not - stating that such an approach is familiar to many operators and the calculations for insurance requirements can be tailored to the individual operation concerned, making insurance more affordable.

One of the objections raised regarding an MPL approach was the additional costs that would be involved in the modelling work by operators. Some respondents instead preferred a set amount of TPL insurance or alignment with the traffic light system, citing the approach taken to licensing in-orbit operations of satellites under the Outer Space Act 1986 currently.

Insurance requirements for a spaceport other than TPL insurance

Questions were asked about the types of risks that spaceports would expect to insure against. Respondents identified the following as possible types of cover that might be applicable to spaceports:

- Property damage to ground infrastructure

- Weather damage / natural disasters
- Property damage to aircraft/spacecraft
- Environmental/pollution damage
- Security risks
- Ground handling (and other contractors') risks

Respondents considered that such cover could be obtained through conventional insurance products.

Insurance for a range control service provider other than TPL Insurance

Questions were asked about the types of risks that range control service providers would expect to insure against. There were few responses to these questions. Premises and products liability insurance were two examples cited by one respondent.

Alternative Securities

Questions were asked about the use of alternative financial securities instead of traditional insurance, the types of securities that might be appropriate and whether such securities would be used. Half of the respondents answered questions on securities. Whilst a number of these respondents thought that including provisions in respect of securities was useful, the actual use of such securities was thought to be unlikely, with only one respondent saying that they would be likely do so. One respondent observed that making use of securities favours larger organisations.

One respondent stated that securities would need to be realisable tangible assets, if such an approach were adopted.

Charging

Approach to Charging

Questions were asked in relation to the approach to setting charges under both the Space Industry Act 2018 and the Outer Space Act 1986. The overwhelming preference of those that responded was for a fixed fee.

approach to setting charges (often a single fixed fee) to provide greater certainty for applicants. Some respondents did advocate an hourly rate approach, particularly in cases where repeat licences were sought which should see a reduction in costs per licence. One respondent also quoted section 6 of the Government's Managing Public Money document, suggesting that 'the standard approach is that the same charges should apply to all users of a defined category of services.'

There were some concerns that early users of the licensing system could be penalised with higher costs, with a suggestion that costs of the licensing service should be averaged out over a number of years. There were also some concerns that third-party costs (where the Government procured external advice) could be excessive, with no input from operators as to whether such advice is needed. Also respondents commented that others may subsequently benefit (both in terms of the third-party advice and the regulator's more general increased regulatory experience over time) at the expense of those for whom the advice was sought originally.

Some respondents suggested reviewing whether a fee should be charged at all, citing competitiveness when compared with other regimes - especially the US where there is no fee for obtaining an operator or launch licence. One respondent suggested that the rationale for licensing, in respect of securing the safety of the public, meant that the state should carry the cost, citing the US approach.

Annex B - Glossary

Operator's Liability to the UK Government: Under section 36 of the Space Industry Act 2018 an operator is required to indemnify the UK Government for any claims that are brought against the Government arising from their spaceflight activity. This is the only liability that is limited in licences issued under the Outer Space Act 1986. Section 12(2) provides a power to limit operator liability under section 36.

Operator's Liability to third parties: Under s34(2) of the Space Industry Act 2018 an operator is strictly liable for injury or damage caused in the United Kingdom to people or their property on land, territorial waters or to an aircraft in flight or persons and property on board such an aircraft as a result of spaceflight activity. Section 34(5) provides a power to limit the operator's liability to third parties who suffer injury or damage, including claims arising from domestic common law.

Meaning of strict liability - This means that a person sustaining injury or damage does not have to prove the operator was at fault to obtain compensation and become involved in complex litigation.

Who the strict liability applies to - The operator's liability under section 34 attaches to persons carrying out spaceflight activities only, generally the operator of a launch vehicle, for space or sub-orbital activities and the operator of a satellite in orbit.

Meaning of Injury or Damage - The strict liability under section 34 of the Space Industry Act would apply to claims for compensation for physical injury and damage. It would not apply to claims for compensation for purely economic loss.

ANNEX C – Detail of Regulations setting out those persons who do not have a strict liability right of claim previously consulted upon

1. Government policy in relation to claims resulting from spaceflight activities is that the uninvolved general public should have easy recourse to compensation (in the event of loss or damage) and therefore have a strict liability right of claim. This means that a claimant does not have to prove fault on the part of the operator to claim compensation. This reflects the fact that members of the public will not have access to all of the information needed to prove fault, or knowledge of the complex technicalities involved in spaceflight activities.

2. This provision was included in the Act because the Government wanted to ensure that any members of the uninvolved general public in the UK who suffer injury or damage from spaceflight activity are entitled to the same compensation (without having to prove fault) as foreign nationals are entitled to under the UN Convention on International Liability for Damage Caused by Space Objects, the "Liability Convention".

3. The Liability Convention provides foreign nationals with the ability, via their own Government to seek compensation from the UK Government as the responsible launching state for damage or loss without having to prove fault (where it occurs on the ground or to aircraft in flight).[11]

4. However, anyone who voluntarily takes part in spaceflight activity will have agreed to accept the risks to themselves. They therefore do not benefit from such a strict liability claim.

5. Under regulation 206, the following people do not have a strict liability right of claim:

- an appointee, employee or agent of a licensee who is at work at a space site[12]
- a member of the crew who has signified their consent to accept the risks involved in the operator's spaceflight activities in accordance with section 17 of the Space Industry Act 2018
- a spaceflight participant who has signified their consent to accept the risks involved in the operator's spaceflight activities in accordance with section 17 of the Space Industry Act 2018
- an individual on a carrier aircraft taking part in the operator's spaceflight activities
- an officer or partner of a licensee who is present at a space site
- an individual who is within an operational area or a restricted area of a space site at the invitation of a licensee
- an employee or an individual acting on behalf of the regulator or with the regulator's authority at a space site
- an employee or an individual acting on behalf of the government of another country present at a space site in connection with spaceflight activities

- an employee of the emergency services who is on duty at a space site in connection with spaceflight activities
- an employee of the Spaceflight Accidents Investigation Authority who is on duty at a space site in connection with spaceflight activities
- compliance authority personnel on duty at a space site in connection with spaceflight activities
- an employee of a qualifying health and safety authority who is on duty at a space site in connection with spaceflight activities
- a member of the armed forces of the crown who is on duty at a space site in connection with spaceflight activities

5. The disapplication of the right to a strict liability claim therefore applies to those who are licensed under the Space Industry Act 2018, their employees, and individuals taking part in spaceflight activities (such as those who sign an informed consent form to take part in sub-orbital spaceflight activities).[13] It also applies to members of other organisations who may be required to become involved in spaceflight activities as part of their employment (such the emergency services or employees of the regulator).

6. The list does not include spectators invited to view the launch who would not be in or near, an operational or restricted area. This is because it is unlikely that spectators would be at sufficient risk that they would be required to sign informed consent forms. However, if spectators were to contravene restrictions on them and enter restricted and / or operational areas, it is likely that they would lose the strict liability right of claim by virtue of section 34(3) of the Act.

7. It is important to note that restricting the right to a strict liability claim does not remove any individual's rights under common law or other legislation. Employer liability insurance is mandatory and would be an available resource for claims against employers.[14] Furthermore, employers involved in spaceflight activities will have legal obligations towards their employees to provide additional safety measures.

8. It is also important to note that if an incident arises when any of the above listed individuals is not engaged in a spaceflight activity in their official capacity, they would have a strict liability right of claim (for example, if a spaceflight incident caused damage to their home).

Annex D: Details of Regulations disapplying the limit on an operator's liability to indemnify UK Government previously consulted upon

1. Regulation 207 sets out that any limit on the liability of the holder of an operator licence to indemnify the Government does not apply in certain cases. These are:
    - the operator is guilty of gross negligence or wilful misconduct
    - if damage or loss is caused as a result of the operator's non-compliance with the conditions of its licence or the requirements under the Space Industry Act 2018 or regulations made under the Space Industry Act 2018

2. Under the Outer Space Act 1986, there is a limit on an operator's liability to indemnify Government for the activities of procuring an overseas launch (purchasing space on a launch vehicle for a satellite) and the in-orbit operation of a satellite. The UK Space Agency has full discretion to vary the indemnity limit for claims against Government (set in each licence), depending on the risks associated with that mission.

3. This is the only limited liability under the Outer Space Act 1986 and it was introduced following an amendment made by the Deregulation Act 2015.[15] Once the Space Industry Act 2018 comes into force, the procurement of an overseas launch and the operation of a space object by a UK entity based overseas will continue to be regulated by the Outer Space Act 1986 and benefit from a limited liability to indemnify the UK Government.

4. Where an entity procures a UK launch or operates a satellite from the UK, this will be regulated under the Space Industry Act 2018 when it comes into force. It is the Government's intention to limit the liability under section 36 of the Act to indemnify the Government by exercising the power under section 12(2) of the Space Industry Act 2018the Act.