Department for Transport

Future of transport regulatory review consultation:

Future of flight

OGL

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Introduction

We want the UK to be a world leader in shaping the future of transport. A flexible and forward-looking regulatory framework for transport is critical to achieving this.

The Future of Transport regulatory review aims to address areas of transport regulation that are outdated, a barrier to innovation, or not designed with new technologies and business models in mind.

This consultation builds on the Air Traffic Management and Unmanned Aircraft Act 2021. Your views will assist in developing a flexible legislative and regulatory framework to bring new aviation technology to market in a safe, secure and sustainable way.

As part of the review, we're also consulting on:
- zero emission vehicles
- maritime autonomy and remote operations
- regulatory sandboxes
- modernising vehicle standards

You're welcome to provide feedback on as many topics as are relevant to your areas of interest and expertise.

Background and proposal

The UK is a world leader in innovation and aviation technology. Advances in aviation technology are enabling businesses to develop additional and novel models and services, which will change how people and goods move around in the future.

This consultation complements the recent Jet zero: our strategy for net zero aviation and Mandating the use of sustainable aviation fuels in the UK consultations.

Emerging forms of aviation will create new ways to travel, create new markets, support a net zero economy and increase domestic connectivity to level up the UK.

Our ambition is to lead the world in innovative aviation technology that has a transformative effect on the movement of people and goods, and delivers tangible benefits to communities, industry and users.

We expect that:

- unmanned aircraft will routinely fly beyond visual line of sight to open up new markets for delivery, surveying, data collection and search-and-rescue. Some estimates see the value of the drone economy as up to £42 billion by 2030 with up to 76,000 drones operating in our skies
- Advanced Air Mobility (AAM) aircraft will offer new ways for people and goods to move around the country, creating new journeys within urban environments and at regional and sub-regional levels
- Unified Traffic Management (UTM) and its integration with existing Air Traffic Management (ATM) systems will become increasingly important in managing the greater numbers of aircraft in our skies. UTM will have an important role to play in ensuring the safe integration of new technology with existing aircraft

We will also see developments in high-altitude platforms, the adoption of net zero systems and fuels, infrastructure including vertiports and drone hubs and other enabling technology.

With new competing manufacturing markets opening up globally, we need to maintain our strong position and encourage the development of these technologies for the benefit of the UK as a whole.

To bring this new technology to market in an integrated, safe, secure and sustainable way we need to ensure our regulatory framework is ready and that it is also flexible enough to keep pace as technology develops.

We will put in place legislation and regulation that allows us to respond to new developments and innovations in aviation, and realise the benefits offered by this technology while empowering regulating bodies to operate effectively.

New or novel aircraft

We want to ensure that government, regulators and stakeholders are able to talk about new and emerging aviation technology in a clear and consistent way.

As such, we will use the term 'new or novel aircraft' to refer to any aircraft, crewed or unmanned, that performs a function not currently covered in legislation or in regulation. This may include, but would not be limited to:

- AAM aircraft including where they may provide sub-regional and regional routes performing a journey between places underserved or not served by aircraft
- Unmanned Aircraft, defined in legislation as any aircraft operating or designed to operate autonomously or to be piloted remotely without a pilot on board, including unmanned aircraft flying Beyond Visual Line of Sight (BVLOS)
- autonomous and other non-piloted aircraft
- other vehicles using airspace serving a function not currently covered by regulation or legislation

Safety

The safety of crew, passengers and the general public remains the priority of government and the regulator when considering the introduction of any new or novel aircraft in the UK. Accordingly, it is important that any new or novel aircraft are introduced in a safe way.

Safety and risk management processes are well-established in the aviation sector, but new or novel aircraft may require a new approach. Recognising core principles of aviation regulation, new or novel aircraft will need to meet the highest levels of safety.

In the future, some new aircraft technologies may enable vehicles to operate quite differently to traditional aircraft. For example, some forms of innovative personal flight and some hovercraft can propel themselves in new ways that don't rely on air resistance. However, these vehicles will still operate in UK airspace, and they may pose risks to pilots, crew and the public, as with traditional aircraft.

As such we want to ensure any vehicle operating in UK airspace is subject to an appropriate aviation safety framework. To support innovation and ensure these new vehicles can be operated safely and securely, we are considering what amendments to UK legislation may be necessary.

Safety includes a broad range of areas from initial and continuing airworthiness of aircraft, their maintenance, safe operation and integration with other users of airspace, through to air traffic management, pilot licensing and training.

Safety: alcohol limits

We are considering introducing specific maximum levels of alcohol while flying an unmanned aircraft for safety reasons. We are proposing to prescribe in legislation specific limits in the proportion of alcohol in the breath, blood or urine of a remote pilot immediately before, whilst or immediately after flying in each category of operation.

These categories are:

- the open category (lowest risk operations, within visual line of sight such as flying a drone in a park away from people)
- the specific category (operations that require prior approval from the Civil Aviation Authority such as flying an unmanned aircraft for an inspection of a building or over a crowd for wedding photography)
- the certified category (which is the highest risk of operations, such as carrying dangerous goods or carrying people. This category requires the certification of the operator and the unmanned aircraft, and where applicable the licensing of the remote pilot)

Full details of all categories of operation are set out in Implementing Regulation (EU) 2019/947. It will be a criminal offence for the remote pilot to exceed any of the relevant limits.

The proposed limits for the specific and certified categories are the same as those that apply currently apply to a pilot of an aircraft. The limits proposed for the open category are slightly higher than those proposed for the specific and certified categories to reflect the fact that the operations that take place in that category pose less of a risk.

However, the limits that we are proposing for all three categories are relatively low as unmanned aircraft have the potential to cause substantial harm to those on the ground or to other forms of aviation, regardless of the category of operation in which the flight occurs.

The fact that unmanned aircraft operating in the certified category may be carrying passengers needs to be considered too. We are proposing the following limits:

Category of operation	Prescribed limits: breath (microgrammes / millilitres)	Prescribed limits: blood (miligrammes / millilitres)	Prescribed limits: urine (miligrammes / millilitres)
Open category	13µg/100ml	29mg/100ml	39mg/100ml
Specific category	9µg/100ml	20mg/100ml	27mg/100ml
Certified category	9µg/100ml	20mg/100ml	27mg/100ml

Safety: insurance

As part of the safe and orderly introduction of new technology, we need to be able to ensure that appropriate insurance requirements for unmanned aircraft and other new or novel aircraft can be provided for in legislation. This will ensure that there is a mechanism in place to cover the cost and liability arising from an incident involving one of these aircraft.

We intend to give the Secretary of State for Transport the power to provide for insurance requirements for new or novel aircraft, including unmanned aircraft, in secondary legislation.

We are currently looking for evidence on how to set these appropriate insurance requirements and any other factors or considerations we need to take into account when deciding how to use this power.

Security

We will also need to ensure the security (physical and cyber) of individuals, businesses and the UK as a whole in relation to new and novel aircraft. This is to protect the development of new technology markets.

This includes both national security and ensuring individuals, communities and businesses are protected from abuse, malicious actors or unlawful interference, however caused.

There will be a need for the police to have appropriate powers to address misuse of new technology.

This will include ensuring powers, restrictions and offences are available and clearly defined and considering where the UK may need to adapt legislation to ensure new or emerging technology is operated appropriately for the benefit of society and not to its detriment.

There is a continuing need for the regulation of technology to tackle illegal drone use, such as Detect, Track, Identify (DTI) and effector equipment.

We will also need to consider what, if any, measures are necessary to ensure the security of related systems that enable this new technology, such as UTM.

Unified Traffic Management (UTM) and its integration with Air Traffic Management (ATM) systems

As new and novel aircraft enter operation there is likely to be a corresponding increase in the overall number of aircraft (with some performing new roles). This will require new approaches to air traffic management to ensure the safe operation of new and novel aircraft.

In the UK, traffic management has been centralised. However, given the new roles and increased number of aircraft, we may want to explore a framework that enables multiple operators to manage traffic. This could be done through a federated approach. In this model, government would set a framework for operation, but service providers would offer decentralised, interoperable UTM services and compete for customers.

In this context, UTM refers to a specific aspect of air traffic management to support the introduction of new and novel aircraft safely, economically and efficiently through the provision of facilities and a seamless set of services in collaboration with all parties and involving airborne and ground-based functions.

Currently, there is no separate system for licensing or regulating the use of UTM in the UK. The Civil Aviation Authority (CAA) is responsible for the regulation of aviation safety, air traffic management and airspace in the UK.

There is a need to ensure that the CAA has the necessary powers to regulate and license UTM systems to ensure their introduction is safe and their use is secure and sustainable.

The Department for Transport recently commissioned research from the Connected Places Catapult on how UTM systems could work in the UK. We are now working closely with the CAA to understand the regulatory requirements for UTM and to enable UTM in the UK.

Airspace

The Airspace Modernisation Strategy (AMS) has created a clear framework for modernising airspace to keep the UK moving and making journeys quicker, quieter and cleaner.

This strategy is currently being reviewed in collaboration with industry. Combined with the development of new technology, airspace modernisation will:

- help to reduce aviation's greenhouse gas emissions
- reduce the need for stacking, where aircraft join a circular queue to land at busy airports, helping to reduce greenhouse gas emissions
- create opportunities for airports to manage how noise impacts local communities
- increase the resilience of flights, to improve confidence that both holidays and travelling for work will not be affected by unnecessary delays
- increase airport capacity, providing more choice and better value for passengers
- ensure new technology provides, as far as possible, opportunities to reduce the amount of controlled airspace by airports for commercial flights, allowing greater access for general aviation users

Airspace modernisation is recognised as a critical enabler for new and novel aircraft. It is important that new and novel aircraft are integrated into airspace in a safe, secure and sustainable way that reflects the UK's goals for use of airspace.

Noise

We will need to ensure that any new and novel aircraft produce a level of noise acceptable to the general public and local authorities (LAs).

Any unregulated or unexpected noise risks harming public attitudes towards the widespread adoption of new and novel aircraft in the UK.

The noise produced by aircraft can be regulated in several ways, for example, by setting locally enforced airport noise limits, or through standards to the aircraft themselves.

To understand the noise produced by different forms of new and novel aircraft, it will be necessary to collect data at different phases of flight (for example, take-off, flyover, landing, hovering) to determine how noise may impact the public.

As there are expectations of an increased number of new and novel aircraft, potentially interacting at low levels or more regularly, we need to have a robust approach to measuring noise and setting related standards.

Infrastructure and digital infrastructure

We need to ensure that the infrastructure requirements for new and novel aircraft have been considered and that we have the ability to develop the necessary infrastructure through our regulatory and planning systems.

New or novel aircraft may have specific requirements in relation to aerodrome, airport or airfield infrastructure that does not currently exist across the UK. For example, specific requirements in relation to charging eVTOL aircraft, or planning considerations to ensure the safe integration of new or novel aircraft at a local level.

New or novel aircraft and related systems may also have digital infrastructure requirements, such as access to 5G or detection technology to inform automated systems on the ground.

The Planning Act 2008 makes provision for nationally significant infrastructure projects, while the Town and Country Planning Act 1990 makes provision in relation to smaller, more local, developments.

The National Planning Policy Framework (2021) and the Aviation Policy Framework (2013) provide guidance on aerodromes and infrastructure for aviation. New infrastructure may also require an Airspace Change if there is a consequent need to amend the UK's airspace design.

Future plans

We are interested in views on the main use cases for new and novel aircraft and the milestones needed to deliver these over the next 5 years. These could include:

- development of these 'use cases' that show how services could change in the future, for example, a greater use of novel aviation services for regional travel, or increased use of aviation for the movement of cargo
- further research into specific areas of technology or the gathering of data to inform regulation
- developing regulations around the safe and secure use of new technology
- development of new models of licensing and/or insurance
- further developing and supporting sandboxes for new and novel aircraft, autonomous vehicles and related services such as UTM (for example, the CAA Innovation Hub regulatory sandbox)
- further developing horizon scanning capabilities to ensure that government and regulators are up to date with fast-moving developments in the aviation sector
- consideration of data and privacy requirements around information sharing in relation to new or novel aircraft
- developing pilot training requirements

How to respond

The consultation period began on 28 September 2021 and will run until 11:45pm on 22 November 2021. Ensure that your response reaches us before the closing date.

Further copies and alternative copies of this consultation document, such as Braille and audio CD, for example, can be requested at FutureOfTransport@dft.gov.uk.

You may send your consultation response:

- via the online survey
- by downloading the response form and emailing us the return at FutureOfTransport@dft.gov.uk
- by emailing FutureOfTransport@dft.gov.uk directly with your comments
- by post at:

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When responding by email only, state whether you are responding as an individual or representing the views of an organisation. If responding on behalf of a larger organisation, make it clear who the organisation represents and, where applicable, how the views of members were assembled.

If you have any suggestions of others who may wish to be involved in this process, contact us.

Questions

This is a list of questions that appear in the consultation and is for information purposes only. If you wish to reply to the questions, see How to respond.

Safety

In your view, are there any new or novel forms of flight that use UK airspace that may, as it currently stands, not fall within aviation regulation? If so, what are these new or novel forms of flight and how could we best ensure they are within scope of our current aviation regulation?

In your view, are the existing legal and regulatory frameworks sufficient to introduce new and novel aircraft in a safe way? If not, what changes are required?

In your view do new or novel aircraft, or any systems related to new or novel aircraft, require a different approach for managing risk to support the safe introduction of new or novel aircraft? If so, what might risk management for new or novel aircraft and related systems look like?

Do you agree or disagree with the alcohol limits proposed for the different categories of operation of unmanned aircraft? Why? Supply any supporting evidence you have on alcohol limits.

What factors, if any, do you think the Secretary of State for Transport should be required to consider when deciding on the necessity of and the appropriate level of insurance for new or novel aircraft, including unmanned aircraft?

Security

Are there any areas of legislation or regulation, which may include police powers and criminal offences, that may need to be amended or expanded to:

- limit the potential misuse of new or novel aircraft
- ensure the security of new and novel aircraft and related systems
- ensure the security of other individuals, businesses and national security to allow for the introduction of new and novel aircraft and related systems

Are you aware of any technological requirements necessary to introduce new and novel aircraft in a secure way? If so, what are these technological requirements and what factors do you think should be considered when regulating their use?

UTM and its integration with ATM systems

Do you agree that the CAA should be provided with the necessary powers to regulate UTM systems in the UK? If so, what if any, powers do the CAA need and what factors should the CAA have to or be able to take into account when discharging these powers?

Do you support a centralised approached to UTM, or a federated approach with multiple providers of UTM services competing for UAS operator customers, or another approach to UTM? What do you see as the advantages and disadvantages of your preferred approach?

Airspace

The current [Airspace Modernisation Strategy](#) sets out 15 initiatives including electronic surveillance solutions, airspace classification review and advanced flexible use of airspace.

In your view, are there any specific challenges around the integration of new and novel aircraft into UK airspace that are not already reflected in the Strategy?

What are the challenges that are not being addressed through the Airspace Modernisation Strategy? How should we address these issues?

Noise

Is your preferred approach to regulating new and novel aircraft noise setting locally enforced aircraft noise limits, standards attached to the aircraft themselves, or another approach?

At which points should we measure the noise impact of new and novel aircraft when gathering data on noise? Why?

Infrastructure and digital infrastructure

Are you aware of any digital infrastructure or other infrastructure needs for new or novel aircraft? If so, what needs? Is existing regulation sufficient to meet these needs?

Future plans

What do you think are the main 'use cases' for new and novel aircraft?

In your opinion, what are the milestones for achieving these 'use cases' in the next 5 years?

Equalities Duty

Do you have data or evidence about whether any of the proposals discussed in this consultation would positively or negatively impact on individuals with protected characteristics (as defined in section 4 of the Equality Act 2010)?

Next steps

These responses will complement evidence gathered from the Future of transport regulatory review: call for evidence and other work on the Future of Transport to inform our work on this regulatory review. A government response will be published in due course.

In the call for evidence, we said that ultimately the regulatory review may conclude that substantive legislative reform is required. We will continue to engage with stakeholders as our plans develop and as we determine areas where changes to primary legislation are necessary. Where that is the case, we would look to bring forward legislative proposals when Parliamentary time allows.

Consultation principles

The consultation is being conducted in line with the Government's key consultation principles which are listed below. Further information is available at https://www.gov.uk/government/publications/consultation-principles-guidance

If you have any comments about the consultation process please contact:

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