Unmanned Aircraft Systems Public Consultation on Policy Framework 2024



Consultation on the Development of a Policy Framework for Unmanned Aircraft Systems

Unmanned Aircraft Systems (UAS), also known as drones, are contributing to innovation in several industries with the development of a wide range of new applications and services, delivering benefits to consumers and the wider public. The next few years will be pivotal for the UAS industry with the further development of UAS regulation, the testing of unmanned traffic systems, remote ID technologies coming on stream and the implementation of the Drone Strategy 2.0 for Europe. It is important for Ireland to decide where to position itself in the emerging UAS sector.

The Department of Transport is developing a Policy Framework for Unmanned Aircraft Systems that will set out the vision, strategy, and priorities for the development of the UAS sector in Ireland. The Policy Framework will aim to guide high-level strategic planning and development over the next decade by supporting growth and innovation in the UAS sector while managing safety, security, environmental and other aspects.

The Policy Framework will provide a roadmap that supports the sustainability, competition, and economic contribution of UAS and related technologies in Ireland, in line with Government policy in the areas of carbon, digitisation, innovation and disruptive technologies, balanced regional development, and with a strong focus on social acceptance.

Many of the issues to be addressed by the Policy Framework fall directly within the remit of the Department of Transport, while other issues cross-over into areas of responsibility of other Government Departments and agencies. In 2021, the Department established an interdepartmental steering group¹ to facilitate the development of a comprehensive, holistic, and integrated policy.

¹ The steering group comprises of representatives from the Irish Aviation Authority and the following Government Departments: Justice, Enterprise, Trade and Employment, Housing, Local Government and Heritage, and the Environment, Climate and Communications.

Three key areas were identified:

- 1. Innovation and enterprise
- 2. Planning and the use of airspace
- 3. Compliance and enforcement

Three working groups were set up to focus on these key areas. The working groups drew expertise from various relevant Government Departments and agencies, including the Data Protection Commission, local authorities, An Garda Síochána, Enterprise Ireland, Science Foundation Ireland and ComReg.

Informed by the work of the three working groups, the Department held a targeted stakeholder consultation in 2022. The Department now needs wider input to guide the direction of the policy framework and to ensure it provides a balanced and holistic approach.

Input is sought on several key areas, including how to respond to public concerns about the increase in use of UAS, how to position Ireland as a potential front runner in this emerging sector, and how to future proof responsible development of the UAS industry.

This consultation will help inform the development of the Policy Framework for UAS including defining Ireland's position in the UAS industry and the actions for implementing the Policy Framework.

We have developed some questions that you can consider when making your submission. Submissions may be made:

By the online form <<u>https://forms.office.com/e/H5VFZSR9QC</u>>

By email to: dronesUAS.consultation@transport.gov.ie

The closing date for submissions is Friday 8 March 2024

Background

The use of UAS has become more common in recent years for both commercial and non-commercial purposes. Over the last few years there has been a significant step forward in terms of UAS adoption, the expansion of usage across industries and the general awareness of the potential role of UAS. As of December 2023, over 17,500 remote pilot certificates were issued by the Irish Aviation Authority.

There is renewed focus on developing a strong, vibrant UAS sector in Europe. The European Commission has recognised that the sector is developing rapidly with new innovative ways of using UAS emerging at a fast pace. The European Green Deal, as the new growth strategy for the EU, calls for the reduction of greenhouse gas emissions as well as the development of digitalisation. The Communication on the European Green Deal announced a strategy for sustainable and smart mobility, which was adopted by the Commission in December 2020. In the Sustainable and Smart Mobility Strategy, the Commission announced its intention to adopt a Drone Strategy 2.0 in 2022 to develop UAS into a vector for the smart and sustainable mobility of the future and to reap the full potential offered to contribute to the safeguarding of a well-functioning single market. The Drone Strategy 2.0 for a Smart and Sustainable Unmanned Aircraft Eco-System in Europe was published in December 2022.



Image 1. Source: Bryan Walshe Photography 2023

The Strategy sets out how the years ahead will be pivotal in the growth of UAS industry with ongoing development of UAS and U-space regulations² coming fully into force, unmanned traffic systems being tested and remote ID technologies coming on stream. Given the rapid pace of development and the need to consider the impacts of increased UAS

² U-space is an area of airspace where complex UAS operations may only occur with the support of U-space services such as traffic management, flight authorisation etc. The concept of U-space is addressed further on page 11 under Planning and the Use of Airspace

activity, it is important that careful consideration is given to what that adoption will look like in Ireland. EU regulatory activity in the area of UAS means that Ireland benefits from a world-leading regulatory framework. The challenge is to ensure that Ireland can avail of the opportunities offered by these rapidly evolving technologies while being responsive to legitimate concerns.

UAS have many applications and uses, carrying out a wide variety of tasks for both hobbyists and professionals. UAS present exciting opportunities for business and the public sector to boost productivity, improve service provision, support emergency response and infrastructure safety inspections, create high-tech jobs and boost the economy across Ireland. UAS operations will continue to expand in the coming years and Ireland should be ready to achieve the available economic and societal benefits from this emerging industry in a safe and secure manner.

Ireland's national Policy Framework will aim to foster the development of a sustainable UAS industry in Ireland while responding to societal concerns. Ireland has the potential to become



Image 2. Source: Bryan Walshe Photography 2023

a front runner and leader in this emerging sector. The Policy Framework will endeavour to ensure the safety and security of UAS operations through responsible regulation, and future proof responsible development of the industry.

Societal acceptance will be key for a harmonious integration of UAS into modern Irish society. Public opinion on measures to address privacy, environmental, safety and security concerns is crucial to the successful development and implementation of the Policy Framework for UAS. The Policy Framework will address the civil use of UAS but will not cover the air transportation of passengers in urban environments. Military use of UAS is also outside the scope of the Policy Framework.

The UAS Sector – Current and Future

UAS are used as daily tools in fields such as inspection (pipeline, rail, wind turbine maintenance), agriculture, mapping, architecture, construction, real estate, energy, environment and public safety (over the last number of years the Irish Coast Guard have been introducing UAS into its search and rescue capabilities and Dublin Fire Brigade in its firefighting capabilities).

Other use cases are developing rapidly and are expected to become commercially viable within 2 to 5 years, such as:

- Precision agriculture: monitoring of crops, spraying, environmental protection, planting, etc.
- Medical transport: transport of medical samples between hospitals and laboratories, delivery of prescriptions to remote areas, etc. In 2019, blood samples were transported by UAS between the Aran Islands and Galway.

UAS are environmentally efficient technology that can connect remote locations to much needed services. Several UAS applications are powered through electric propulsion (and other emerging technologies) and therefore have the potential to contribute to the decarbonisation and modernisation of our transport system and improving the safety and health of the public.

According to a recent study carried out in Finland³, UAS could account for 6% of business-to-consumer deliveries and consumer pick-ups in Helsinki by 2030. The greatest potential lies in short deliveries up to 10 km and the so-called "last mile" deliveries, or the last leg of a journey to the customer's door. Here in Ireland small

³ The Potential Benefits of Drone Deliveries in Helsinki, Gaia Consulting Oy, 2021.

parcel delivery operations by UAS are already taking place and are being readied to scale up.

In Helsinki, it was estimated that greenhouse gas emissions could be reduced by an estimated 2,000 tons of CO₂ by 2030 by replacing deliveries and consumer pick-ups made in internal combustion vehicles with UAS. Figure 1 illustrates the potential to reduce greenhouse emissions per last mile delivery in a large urban environment by moving from using internal combustion vehicles to UAS as a mode of delivery.

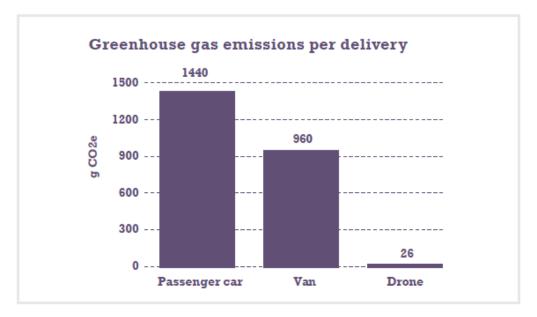


Figure 1. Greenhouse gas emissions from various forms of delivery and collection over five kilometres. *Source: The Potential Benefits of Drone Deliveries in Helsinki, Gaia Consulting Oy, 2021.*

It is estimated that replacing traditional modes of transport for last mile express delivery with UAS services could potentially produce a reduction of 120,000-ton of CO2 in Europe by 2030.

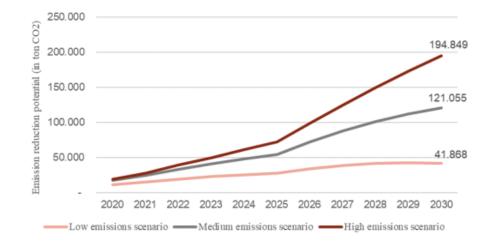


Figure 2. Potential reduction in C02 production by 2030 due to UAS last mile delivery. *Source: Drone Strategy 2.0 Fact-Finding Study, Ecorys*

The UAS services market in Europe could reach a value of \in 14.5 billion by 2030, with a compound annual growth rate of 12.3%⁴. Revenue in the UAS sector of the Irish market will amount to \in 1.92 million in 2023⁵.

In Europe substantial job creation is expected in the UAS sector (such as localised operations, pilots, insurers and others) and in the wider employment sector from indirect effects. The European Commission's medium-level projection for the sector is for the creation of 145,000 direct jobs in Europe by 2030⁶ (see Figure 3 below).

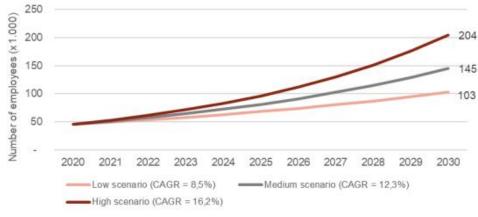


Figure 3. Projection of direct jobs created due to UAS by 2030. Source: Drone Strategy 2.0 Fact-Finding Study, Ecorys

⁴ Fact finding study preparing a "Drone Strategy 2.0", Final report, Ecorys, 2022.

⁵ https://www.statista.com/outlook/cmo/consumer-electronics/drones/ireland?currency=EUR

⁶ Fact finding study preparing a "Drone Strategy 2.0", Final report, Ecorys, 2022.

Innovation and Enterprise

Ireland has a long aviation history. It is recognised as a centre of excellence in the global aviation industry and has always been to the forefront of innovation in the aviation sector. Ireland is in a strong position to also become a global leader in the UAS sector. Areas of the UAS sector where Ireland is well positioned to perform strongly include:

- the future European UAS services sector
- innovation and UAS technology advancement
- UAS testbeds and testing sites.

Ireland has an uncluttered airspace compared to our European neighbours, prime UAS test-environments, a supportive research and development system, relevant multinational companies in situ and agile stakeholder engagement structures.

Ireland has a supportive civil aviation regulator that has demonstrated to be highly responsive to needs of the UAS sector. The Irish Aviation Authority (IAA) issued to one of Europe's first Light UAS Operator Certificates to Manna Aero for Drone Deliveries and a second to Skyports for Beyond Visual Line of Sight (BVLOS) UAS flights. The LUCs issued by the IAA give both companies access to a European market of 500 million customers. The IAA appointed a dedicated UAS Manager, in June 2021 as a positive force for the development of UAS operations and has expanded its UAS division this year in line with industry growth.

The opportunities in the UAS sector for Ireland are wide-ranging given the emergent nature of the sector. Opportunities will arise in areas where there is a need for the entire ecosystem to working together to support close collaboration and accelerated UAS technology advancement. Examples of such areas that have a strong foundation in Ireland (and with focus can become the areas of excellence in UAS tech and operations) are UAS components, UAS flight systems and UAS testing. Ireland has the opportunity to position itself as a testbed for research and development of UAS hardware, software, and services. There are a number of innovative UAS trials and tests already established here in Ireland.

One such trial, is the ÉALU-AER⁷ (Enhanced Automation for U-space-ATM integration or Escape Air) project based in Shannon. The project received a three-year grant from the European Commission's Connecting Europe Facility as part of the SESAR 3 Joint Undertaking Digital Sky Demonstrator programme. The project aims to demonstrate the integration of U-space (an area of airspace where complex UAS operations may only occur with the support of U-space services such as traffic management, flight authorisation etc.) with air traffic management in the vicinity of Shannon airport.

Observations sought:

How can Ireland position itself as a leader of innovation in the UAS sector to benefit our economy and society from the development and uptake of new technologies and services associated with UAS?

What are the core elements necessary for the development of the UAS sector in Ireland?

⁷ <u>https://www.sesarju.eu/projects/EALU-AER</u>

Planning and the Use of Airspace

The evolution of UAS technology and the developing EU regulatory approach to UAS indicates significant potential future growth in this sector. The European Union Aviation Safety Agency (EASA) forecasts that by the mid-2030s, the typical European city may see in the region of 30,000 UAS flights per hour[®].

The European Commission, in conjunction with EASA, developed an enabling regulatory framework that allows for the safe development of a UAS services market. The U-space Regulation (Regulation (EU) 2021/664⁹) provides for a digital system that aims to keep UAS operations safe, secure, and green. For Ireland to be in a position to benefit from the development and uptake of new technologies and services associated with UAS, future planning is required.

The U-space Regulation became applicable on 26 January 2023. The concept of Uspace emerged to support commercial operations with UAS, especially those entailing greater complexity and automation. The U-space Regulation outlines the service providers and services required to establish U-space. Essentially, U-space is an area of airspace where UAS operations may only occur with the support of Uspace services. At a minimum these must include: network identification, traffic management, flight authorisation and geo-awareness. The purpose of U-space is to achieve automated UAS management and integration, allowing for a large series of operations, many of them simultaneous. This must work alongside the current air traffic management (ATM) system.

⁸ EASA Opinion No. 01/2020, March 2020.

⁹ https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32021R0664



Image 3. Source: European Union Aviation Safety Agency 2023

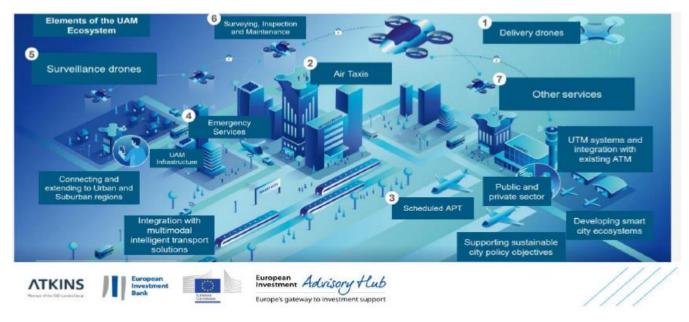


Image 4. Source: EUROCONTROL 2023

The level of operations over Dublin city is already reaching a volume that will necessitate U-space. The volume and complexity of UAS operations in Dublin is moving fast towards the level where we will need to consider putting a UAS traffic management system in place so that we don't infringe on the current flexible use of airspace policy. There are several commercial companies seeking to gain access to the limited air space over Dublin city with a view to scaling up their operations beyond visual line of sight (BVLOS) to maximise efficiency and cost effectiveness.

Key challenges associated with increased use of UAS, and the implementation of the U-space Regulation include concerns about noise, privacy, safety and security. Minimising environmental impact and ensuring environmental protection are key priorities. There is also the challenge of how U-space should be implemented within the State. Many EU member states are struggling with this challenge and are considering different approaches on funding and delivery of U-space. It is estimated that the implementation of U-space will take two to five years and a significant amount of capital will be required to put in place the necessary infrastructure and services required. Consideration should now be given to the State's approach to the adoption of U-space or at the very least the establishment of an unmanned aircraft system traffic management system (UTM) and how it should evolve over the next ten years.

The impact of a growing UAS sector needs to be considered in more depth as its volume increases. In particular, the impact to the receiving environment, and whether different considerations may need to apply to urban and rural areas.

A roadmap on integrated spatial planning for UAS use in urban and rural areas should be developed, to include a risk-based process for defining UAS geographical zones. UAS geographical zones can be established by the IAA for the purpose of ensuring safety, security, privacy, or environmental protection. UAS geographical zones are portions of airspace where UAS operations are facilitated, restricted, or excluded. It is proposed that as part of the roadmap, a process be established to allow state agencies, government departments and local government determine and request UAS geographical zones be established by the IAA. Observations sought:

What concerns do you have about increased UAS use in urban and rural areas? How can these concerns be addressed/alleviated?

What do you think is required to develop a roadmap on integrated spatial planning for UAS use in urban and rural areas? What immediate steps should Ireland be taking to implement the U-space Regulation? How should the development of U-space be funded?

Who should be able to initiate a request for the establishment of UAS geographical zones (on safety, security, privacy or environmental grounds) and on what criteria should one be established?

Compliance and Enforcement

Alongside strong concerns around security and privacy, the safe use of UAS is universally recognised as a priority if Ireland is to realise the full potential of UAS. We cannot escape the reality that UAS can be used for negative or harmful purposes. Often this is unintentional, where users are unaware of the technology and the law. Sometimes misuse may be intentional, such as around prisons. The consequences can be serious either way. Safety, security, and privacy remain our priority. Illegal UAS activity at Dublin airport at the beginning of 2023 that caused significant safety risks to aviation and inconvenience and disruption to the travelling public focused attention on the negative aspects of UAS activity.



Image 5. Source: Direction Générale de l'Aviation civile 2023

Image 6. Source: Direction Générale de l'Aviation civile 2023

The Policy Framework will address compliance and enforcement issues. Aviation is a highly regulated industry and there is a legislative framework at both EU and national level to regulate UAS operations. The legal obligations imposed by EU law on operators and pilots of UAS are contained in Regulation (EU) 2019/947. The obligations include registering with the IAA as a UAS operator, completing remote pilot competency training and adhering to obligations contained within the legislation. Image 7 below depicts a simple tabular overview of the basic requirements of the 'open' category. This is the "entry level" of the three operational categories, the others being the 'specific' and 'certified' categories.

UAS		Operation		Drone Operator/pilot		
Class	MTOM	Subcategory	Operational restrictions	Drone Operator registration	Remote pilot competence	Remote pilot minimum age
Privately built	< 250 g < 900 g	A1 (can also fly in subcategory - A3)	 may fly over uninvolved people (should be avoided when possible) no fly over assemblies of people 	No, unless camera / sensor on board and a drone is not a toy	- no training needed	No minimum age
o					- read user's manual	16*, no minimum age if drone is a toy
Legacy drones (art. 20)						16*
1			 No expected fly over uninvolved people (if happens, should be reduced) no fly over assemblies of people 	Yes	 read user's manual complete online training pass online theoretical exam 	16*
2	< 4 kg	A2 (can also fly in subcategory A3)	 no fly over uninvolved people keep horizontal distance of 30 m from uninvolved people (it can be reduced to 5 m if low speed function is activated) 	Yes	 read user's manual complete online training pass online theoretical exam conduct and declare a self-practical training pass a written exam at the CAA (or at recognized entity) 	16*
3		A3	- fly away from people - fly outside of urban area (150 m distance)	Yes	 read user's manual complete online training pass online theoretical exam 	16*
4	< 25 kg					
Privately built						
Legacy drones (art. 20)						

Image 7. Source: European Union Aviation Safety Agency 2023

For professional UAS operators, the 'specific' category provides a wider range of operational possibilities. These entail beyond visual line of site, precision agriculture (spraying) or operations of altitude higher than 120 meters above ground. An operational authorisation, which is based on a risk assessment and an operations manual, is necessary for operations in the 'specific' category. For passenger carrying and larger UAS, the 'certified' category provides the basis for regulation and compliance.

UAS are not like manned aviation, insofar as they are generally accessible to most of the population, at relatively low cost, and with considerably reduced requirements for licencing and training. Accordingly, experience has shown that many recreational UAS operators, particularly at the entry level, have only limited awareness or understanding of the UAS regulations.

Government recognises the need for greater public awareness of UAS regulations, which will address unintentional breaches and make them less likely to occur. This is in-line with the approach taken by EASA in relation to compliance, which is based on education and awareness of the regulations and encouraging people to do things the right way by following the relevant rules, procedures, and processes.

The IAA has a section of its website dedicated to UAS that provides guidance for operating and flying UAS safely. It also sets out the obligations placed on UAS operators, including data protection and environmental requirements and a link to the list of the current UAS geographical zones. In terms of privacy, an operator of any UAS equipped with a sensor system capable of recording personal data (unless it falls under the EU Toy Directive 2009/48/EC) must be registered with the IAA. The Data Protection Commission also provides guidance on its website on data protection in the context of drone usage.

While education and greater awareness may address some of the unintentional breaches of UAS regulations and rules, intentional misuse of UAS must also be tackled.

Operations at Dublin airport were suspended on numerous occasions in the first few months of 2023 due to illegal UAS activity near or on the airfield, resulting in safety risks to aviation, diverted and delayed flights and severe disruption to passenger journeys. The Government on 7 March 2023 appointed the daa (Dublin Airport Authority) to purchase and deploy a counter UAS (C-UAS) technology solution at Dublin Airport and for consideration to be given to the tasking of an existing state

agency to select and deploy C-UAS technology more broadly to protect critical infrastructure, including our airports.

The C-UAS technology is now in place and can be operated by the daa when required, in conjunction with the existing UAS detection system in place at Dublin Airport that gives early warning of illegal drone activity. Information gathered by this system is being used to pursue enforcement activity, including prosecution. Key state organisations are now examining C-UAS capability and the protection of critical infrastructure. The Defence Forces and An Garda Síochána are engaged in developing C-UAS capabilities in the State within their respective spheres of responsibility and cross-Government initiatives such as the National Risk Assessment and co-ordination of the implementation of the Critical Entities Resilience Directive will also address threats and risks from illegal UAS activity.

The IAA is the authority that enforces compliance with the obligations imposed by the aviation legislative framework on UAS operators. The statutory enforcement powers in Ireland to bring prosecutions for breaches of the EU regulations regarding the operation of UAS are set out in Sections 73 and 74 of the Irish Aviation Authority Act 1993. Under these provisions the IAA may bring summary proceedings in the District Court, where the maximum sentence is up to a fine not exceeding €5,000 or to imprisonment for a term not exceeding 6 months or to both. In more serious matters a prosecution may be brought on indictment by the Office Director of Public Prosecutions (DPP), where the maximum sentence is a fine not exceeding €500,000 or to imprisonment for a term not exceeding 3 years or both. Misusing a UAS may also infringe a range of other pieces of national legislation, including public order laws, non-fatal offences against the person and endangerment, which can be prosecuted by An Garda Síochána or the DPP. Under the Air Navigation and Transport Act 1975 anyone found guilty of an offence in relation to unlawful acts against aviation safety can face up to life imprisonment. The high-profile cases against the illegal use of UAS at Dublin Airport currently before the courts should act as a deterrent and send the message that prosecutions will be made, and these matters are taken seriously by the State. The use of a UAS may also give rise to

breaches of certain GDPR provisions that are enforceable by the Data Protection Commission under data protection legislation.

The introduction of on-the-spot fines for the misuse or illegal use of UAS will augment the already extensive enforcement provisions in aviation, civil and criminal law already on the statute book. The power to bring in the on-spot-fines is provided for in a recent amendment to the Irish Aviation Authority Act 1993 (Section 65A).

The Irish Aviation Authority (Unmanned Aircraft Systems (Drones)) Order 2023 (S.I. No. 24 of 2023) came into force on 2 February 2023. It restates the investigative and enforcement powers of the IAA and provides for arrangements between An Garda Siochana and the IAA in relation to enforcement of drone regulations.

Observations sought:

How can we improve both the publics and leisure UAS operators' awareness of the law in relation to the use of UAS?

What more can be done to stop the misuse and illegal use of UAS?

Consultation Questions

To inform the development of a policy framework on unmanned aircraft systems your views are sought on the following matters:

- 1. How can Ireland position itself as a leader of innovation in the UAS sector to benefit our economy and society from the development and uptake of new technologies and services associated with UAS?
- 2. What are the core elements necessary for the development of the UAS sector in Ireland?
- 3. What concerns do you have about increased UAS use in urban and rural areas? How can these concerns be addressed/alleviated?
- 4. What do you think is required to develop a roadmap on integrated spatial planning for UAS use in urban and rural areas? What immediate steps should Ireland be taking to implement the U-space Regulation? How should the development of U-space be funded?
- 5. Who should be able to initiate a request for the establishment of UAS geographical zones (on safety, security, privacy, or environmental grounds) and on what criteria should one be established?
- 6. How can we improve both the public's and leisure UAS operators' awareness of the law in relation to the use of UAS?
- 7. What more can be done to stop the misuse and illegal use of UAS?

Submissions may be completed online with reference to the questions outlined in the link <u>https://forms.office.com/e/H5VFZSR9QC</u> which also provides space for a general submission on an issue within the proposed scope of the policy framework.

Submissions are also welcome via email to:

dronesUAS.consultation@transport.gov.ie

Terms and Conditions

Respondents are advised that the Department is subject to the Freedom of Information Act 2014, the European Communities (Access to Information on the Environment) Regulations 2007-2014, and Data Protection legislation.

Personal, confidential, or commercially sensitive information should not be included in your submission, and it will be presumed that all information contained in your submission is releasable under the Freedom of Information Act 2014.

What we will do with your response

Responses will inform the UAS Policy Framework being undertaken by the Department of Transport, in terms of the consideration of options.

Please note that submissions received will be made available on the Government's website. In any event, all submissions received will be subject to the provisions of the Freedom of Information Act and Data Protection legislation.

Privacy information

- This is a public consultation, and the Freedom of Information Act 2014 and the Access to Information on the Environment (AIE) legislation apply.
- To ensure privacy, any personal information you give this department will be protected under the General Data Protection Regulation 2016/67 and the Data Protection Act 2018.
- You can read the Department's privacy statement here.
- The Department may publish the results of reviews and submissions received under this consultation on <u>www.gov.ie</u>. The Department may publish the contents of all submissions received to this consultation on our website, <u>www.gov.ie</u>. We will redact personal data prior to publication. In responding to this consultation, parties should clearly indicate where their responses contain personal information, commercially sensitive information, or confidential information which they would not wish to be released under FOI, AIE or otherwise published.

- A full list of those who make submissions may be included as an appendix in the report on the consultation. Any personal data will be removed.
- Submissions will be kept until the review process and the implementation of any accepted recommendations has finished.
- You can view the Department's Data Protection page <u>here</u> which outlines how and when the Department collects personal data, why it is collected and how the information is treated. It also explains your rights in relation to the collection of personal information and how you can exercise those rights.

