EU Drone Regulations - Outline

Introduction

On 11 June 2019 a package of regulations relating to the use of Unmanned Aircraft Systems (UAS) within Europe was published in the Official Journal of the European Union. This 'EU UAS Regulation Package' consists of two separate, but interlinked regulations as follows:

- **Commission Implementing Regulation (EU) 2019/947**[1] on the procedures and rules for the operation of unmanned aircraft.
    - For simplicity, this will be referred to as the *'Implementing Regulation'* (IR) within this document
- **Commission Delegated Regulation (EU) 2019/945**[2] on unmanned aircraft and on third country operators of unmanned aircraft systems.
    - This is referred to as the '*Delegated Regulation'* (DR) within this document

Copies of the regulations can be found here (IR) and here (DR).

[1] Commission Implementing Regulation (EU) 2019/947 of 24 May 2019 on the rules and procedures for the operation of unmanned aircraft [2019] OJ L 152.
[2] Commission Delegated Regulation (EU) 2019/945 of 12 March 2019 on unmanned aircraft systems and on third-country operators of unmanned aircraft systems [2019] OJ L 152.

A package of Guidance Material, providing additional information on certain parts within the regulations, is expected to be published early in the autumn by the European Aviation Safety Agency (EASA).

Although the regulations have now been published, it is important to note that they will not become applicable until a later date. The DR will enter into force and become applicable on 1 July 2019. However, although the IR will also enter into force on the same day, it will not become applicable until one year later (1st July 2020). Therefore, the contents of these regulations, and hence the content of this document, will not have any immediate effect on the way unmanned aircraft are operated within Ireland or any other Member State.

It is important to note that these regulations do not apply to operations that are conducted indoors.

Purpose of this document

This document has been written with the aim of providing readers, particularly those who are less familiar with the layout and structure of European regulatory documents, with an outline of the new regulations as they now appear in law. In addition, this document aspires to provide a simple explanation of the general intent behind the key parts of the regulations, which will be accompanied by an outline of the Irish Aviation Authority's plans for their implementation of the regulations within Ireland. This document is intended to be used as an aid to any interested stakeholder in reading and understanding the regulations themselves; however, it **does not replace the regulations** as the definitive documents.

Structure of the regulations

In common with many other European regulatory documents, each regulation is structured in a particular way. This includes:

- **A Cover Regulation** – This is the primary 'body' of the regulation upon which the legal basis of the regulation is set. It contains a list of the points that were taken into account in creating and adopting the regulation

(known as the 'recitals'), followed by a number of regulatory 'Articles', which are the specific rules and stipulations of the regulation.

- **An Annex** – This expands on the text of the Articles where necessary and provides the finer details of the regulation. The Annex is split in to a number of individual 'Parts', which are focussed on individual subject areas, and holds the same legal status as the Articles in the cover regulation.

A more detailed description of the Implementing Regulation can be found at **Annex A**.

Further, a more detailed description of the Delegated Regulation can be found at **Annex B**.

Background

The concept of harmonisation across Europe is one of the key aims of the European Union (EU), and with this in mind, these regulations are intended to simplify the overall process for UAS operations and remove the need to refer to separate regulations within each Member or Contracting State. An additional, but no less fundamental, objective was the desire to foster a greater European market which would promote the growth of the European UAS industry.

This package of regulations is the culmination of over four years of development that has included three separate EU wide consultations by EASA:

- an 'Advance Notice of Proposed Amendment' (A/NPA) in the summer of 2015
- a set of 'Prototype Rules' which were published for comment during the summer of 2016
- 'Notice of Proposed Amendment 2017-05' 'Notice of Proposed Amendment 2017-05' (EASA's formalised consultation) during the summer of 2017

Following the consultations, EASA published its Opinion (EASA Opinion No. 01/2018) in February 2018. This contained EASA's proposal to the European Commission (EC) as to how the UAS regulations should appear. The text within the Opinion was further refined by the EC, with input from EASA and the EU

Member States, over the following 12 months and the final text of the Implementing Regulation was agreed at the end of February 2019.

These UAS regulations are underpinned by Regulation (EU) 2019/1139 (known as the 'Basic Regulation'), which is the key regulation that provides the EC and EASA with the legal competency to regulate civil aviation within Europe. The Basic Regulation sets out the context within which the Implementing and Delegated Regulations are framed.

General principles

The paragraphs below provide an overall summary of the principles and concepts behind the EU UAS regulations. A full account was provided in the EASA Opinion of Feb 18 and previously within the various consultation documents. These principles are largely unchanged and so can be referenced in more detail by reading the full text of the Opinion.

From the outset, it should be noted that these are wholesale EU regulations that cover all aspects of the operation of unmanned aircraft as opposed to being 'just' aviation safety regulations. This means that while the safety related aspects are clearly of paramount importance and form the basis of the majority of the ruleset, there are also a number of 'non-aviation safety' elements included which cover the wider security and privacy/data protection areas too. In addition, it should be noted that the safety considerations within regulations for unmanned aircraft are, perhaps, more overtly defined than they would be for manned aviation between:

- **Air risks** – collisions with manned aircraft or other unmanned aircraft
- **Ground risks** – collisions with persons or critical infrastructure

Concepts

The regulations are intended to follow three basic concepts as follows:

- **Operation centric** – the focus is on the type of operation being conducted, rather than who or what is conducting it, or why it is being done. Because there is 'no one on board' the aircraft, the consequences of an incident or accident are purely dependent on where that incident/accident takes place.

- **Risk based** – the focus is on the risk that the operation presents, and so more effort or proof is required where the risk is greater. One outcome of this is that there will no longer be a requirement to hold an operational authorisation purely on the basis that an unmanned aircraft is being flown for commercial purposes – it is the risk of the operation that is the deciding factor.

- **Performance based** – the primary requirements are aimed at identifying the required capabilities, or performance levels, rather than creating a set of prescriptive rules

UAS operating categories

Tied in with the 'operation centric' concept above, operations of unmanned aircraft will fall into one of three categories as follows:

- **'Open' category** – operations that present a low (or no) risk to third parties. Operations are conducted in accordance with basic and pre-defined characteristics and are not subject to any further authorisation requirements.

- **'Specific' category** – operations that present a greater risk than that of the Open category, or where one or more elements of the operation fall outside the boundaries of the Open category. Operations will require an operational authorisation from the CAA, based on a safety risk assessment.
- **'Certified' category** – operations that present an equivalent risk to that of manned aviation and so will be subjected to the same regulatory regime (i.e. certification of the aircraft, certification of the operator, licensing of the pilot)

The 'Open' category

Open category operations are bounded by three main factors:

- the maximum take-off mass of the unmanned aircraft must be **less than 25kg**,

- the unmanned aircraft must be operated within **visual line of sight (VLOS),**

- the unmanned aircraft must not be flown further than **120 metres (400 feet)** from the closest point of the surface of the earth.

All three of these factors must apply for an Open category operation. If not, then the operation must be conducted under the requirements of the Specific category instead.

The Open category is then further divided down into three operational 'subcategories', in order to allow different types of operation without the need for an authorisation, as follows:

- **A1 (fly 'over' people)** – Operations in subcategory A1 can only be conducted with unmanned aircraft that present a very low risk of harm or injury to other people due to their low weight (less than 250g), their type of construction, or because they are a 'toy'[3] (i.e. they are 'inherently harmless'). However, **flight over open-air assemblies of people is not permitted**.

- **A2 (Fly 'close to' people)** – Operations in subcategory A2 can only be conducted with an unmanned aircraft that is compliant with a specific product standard (and a maximum mass of less than 4kg), but this unmanned aircraft can be flown to a **minimum safe horizontal distance of 30 metres from uninvolved people**, or down to 5 metres horizontally when its 'low speed mode' is selected. In addition, the remote pilot must have successfully completed an additional competency examination in order to operate in this subcategory.

- **A3 (Fly 'far from' people)** – This category covers the more general types of unmanned aircraft operations. The intent is that the unmanned aircraft will only be flown in areas that are **clear of uninvolved persons** and will not be flown in areas that are used for residential, commercial, industrial or recreational purposes (roughly equivalent to what is currently referred to as a 'congested area').

A key element of the Open category is that any unmanned aircraft that are sold for use within this category will also be subject to a set of product standards, similar to the **'CE' marking** scheme. In order to achieve this standardisation,

[3] Toys are products designed or intended (whether or not exclusively) for use in play by children under 14 years old.

unmanned aircraft that are intended to be sold within the 'EU market' have been further subdivided into 5 'classes'. These classes provide a link to the operational subcategories as follows:

- **Class C0** - (can be flown in all subcategories) Very small unmanned aircraft, including toys, that:
  - are less than 250g maximum take-off mass,
  - have a maximum speed of 19m/s (approx. 42.5 mph),
  - are unable to be flown more than 120m (400ft) from the controlling device.

- **Class C1** – (can be flown in all subcategories) Unmanned aircraft that are either:
  - less than 900g maximum take-off mass, or;
  - are made and perform in a way that if they collide with a human head, the energy transmitted will be less than 80 Joules,
  - have a maximum speed of 19m/s (approx. 42.5 mph),
  - designed and constructed so as to minimise injury to people.

The standards also cover other aspects such as noise limits, height limits and requirements for remote identification and geo-awareness systems.

- **Class C2** – (can be flown in subcategory **A2** [close to people] or **A3** (far from people) Unmanned aircraft that:
  - are less than 4kg maximum take-off mass,
  - designed and constructed so as to minimise injury to people,
  - are equipped with a low-speed mode' which limits the maximum speed to 3m/s (approx. 6.7 mph) when selected by the remote pilot.

The standards also cover other aspects such as noise limits (but different from C1), height limits and requirements for remote identification and geo-awareness systems, plus additional requirements if it is to be used during tethered flight.

- **Class C3** – (flown in subcategory **A3** [far from people] only) Unmanned aircraft that possess automatic control modes (such as found in typical multi-copter 'drones') which:
  - are less than 25kg maximum take-off mass.

The standards also cover other aspects covering height limits and requirements for remote **identification** and **geo-awareness systems**. There are also additional

requirements if it is to be used during tethered flight, but there is no specified noise limit (because the aircraft is intended to be flown 'far from people').

- **Class C4** – (flown in subcategory **A3** [far from people] only) Unmanned aircraft that do not possess any automation, other than for basic flight stabilisation (and so are more representative of a 'traditional' model aircraft) which:
    - Are less than 25kg maximum take-off mass

A diagrammatic representation of how the subcategories and UAS classes are broken down is given at **Annex C** to this document.

The full details of the product standards for each class are set out in the Annex to the Delegated Regulation and include a requirement to include an EASA published information leaflet in the packaging which simply describes the applicable limitations and obligations under EU law in the form of a 'do' and don't' list. Remember, these standards only apply to unmanned aircraft that are intended to be sold in the EU market, either fully assembled or in kit form.

Clearly, manufacturers will need time to create products that are compliant to the standards and it is most unlikely that it will be possible to purchase a compliant device immediately. Therefore, some transitional arrangements have been developed as follows:

- Unmanned aircraft which do not comply with the requirements of classes C0 to C4 are able to continue to be operated indefinitely within subcategory A3 (far from people) and, if they are less than 250g, within subcategory A1 (over people).

- From 1 July 2022 onwards, Open category unmanned aircraft that are placed on the EU market (i.e. new products introduced for sale in Europe) must comply with the product standards and be marked with the appropriate class Number (C0 to C4).

- Until 1 July 2022, additional transitional provisions have been made to enable unmanned aircraft:
    - with a mass of less than 500g to be used in subcategory A1

- with a mass of less than 2kg to be operated in subcategory A2 down to a horizontal distance of 50m from people subject to certain requirements regarding remote pilot competency.

Further details are provided within Articles 20 and 22 of the Implementing Regulation.

The overall concept of the Open category is that it should be simple for the user to understand; for the consumer this is ultimately the case in that:

- you buy your 'drone', upon which you will find a 'class Number',
- you read the leaflet corresponding to the class of 'drone' and note the things you must, and must not do,
- you fly your drone, while ensuring that you comply with the text in the leaflet.

The Specific category

The simplest description of a Specific category operation is that it is a UAS operation that 'cannot be done within the Open category but is not complicated enough for the certified category'.

The key point to note is that the category hinges on an operational authorisation[4] being held by the UAS operator, which has been issued by the IAA, before the operation can be commenced.

For UAS operators in Ireland, the process should be very similar to the current Specific Operating Permission process in that the UAS operator is required to tell the IAA:

- what, where and how the unmanned aircraft will be operated;
- demonstrate that the operation is 'safe enough' through the provisions of a procedure's manual (including a risk assessment) accepted by the Authority.

Note: *In some cases, the requirements for a 'full' safety risk assessment may be able to be lifted if the IAA considers that this is not required but is instead covered*

[4] 'Authorisation' is a term which encapsulates what were previously known as permissions and exemptions.

by a lesser degree of documentation, as a 'pre-defined risk assessment'. It is anticipated that the application process for the replacement of the current 'standard permission', issued by the IAA for operations within congested areas and for commercial operations, would follow these lines.

The regulations also introduce a **'standard scenario'** concept where, for some relatively simple types of operation, the burden on UAS operators is removed through the use of a number of 'pre-assessed' operating procedures and can simply 'declare' his/her intent to operate to the IAA. In these situations, the safety risk assessment has already been conducted by EASA or the IAA and so UAS operators simply have to follow a 'recipe' of fixed conditions and limitations that has been provided for them. The subsequent actions are then:

- The UAS operator makes a declaration to the IAA that he/she will apply the scenario's listed mitigating measures when conducting this type of operation.

- The operation may be commenced once the IAA has responded to the operator to verify that the declaration is complete.

Standard scenarios will be published by the EC as Appendix 1 to the Annex of the Implementing Regulation (which means they will form part of the regulation itself) and will be individually numbered (E.g. EU-STS-01). None have been published yet, but the first scenarios are expected to be published in early 2021, via an amendment to the Implementing Regulation.

The regulations also make provision for an optional light UAS operator certificate (LUC) scheme, which allows the IAA to issue privileges to UAS operators, including the possibility of authorising their own operations. This is essentially an 'augmented operational authorisation' but requires a significant additional investment from the operator's side, particularly with regard to the safety management aspects.

Registration

The regulations introduce requirements for registration, which build on the requirements that were introduced in Annex IX of Regulation (EU) 2018/1139 (the 'New Basic Regulation')[5], which states that:

- Unmanned **aircraft** whose design is subject to certification must be registered.

- **Operators**[6] of unmanned aircraft must be registered when operating;
  - an unmanned aircraft that could transfer more than 80 Joules kinetic energy to a human that it collides with,
  - an unmanned aircraft where its operation presents risks to privacy, protection of personal data, security or the environment.

These requirements therefore lead to the overall principles within the Implementing Regulation that:

- Certified category – the unmanned aircraft must be registered (in the same way that a manned aircraft is registered),

- Open and Specific categories – the UAS operator must be registered.

The UAS operator registration principles are generally the same as those enshrined in section 7 of the IAA's S.I. No. 563 of 2015 Irish Aviation Authority Small Unmanned Aircraft (Drones) And Rockets Order and Aeronautical Notice U.01 with the following notable exception:

- Operators are required to register when they operate an unmanned aircraft that is less than 250g in mass if it:

- is equipped with a sensor that can capture personal data (i.e. a camera or 'listening device'), unless it is classed as a toy, or:
  - is able to transfer a kinetic energy of more than 80 Joules to a human in the event of a collision (i.e. it may be small and light, but it can be flown at high speed)

[5] This regulation sets out common European rules in the field of civil aviation and establishes a European Union Aviation Safety Agency.

[6] The operator can be but is not necessarily always the remote pilot. It is defined within IR Article 2 as 'any legal or natural person operating or intending to operate one or more UAS'.

Operator minimum age

The regulation does not set a minimum age for a UAS operator. This is left to the discretion of the individual Member States to determine, although the European Commission's working assumption was that the requirements set out in the Implementing Regulation (at Article 14) would mean that it was unlikely that a person under the age of 18 could become a UAS operator.

UAS operators must also register in the Member State where they live, or where their 'company' has its principal place of business. The UAS operator must also display their registration number on every unmanned aircraft that meets the relevant conditions. Multiple registrations (i.e. in different Member States) are not permitted.

Remote pilot competency and minimum age

Following on with the principle of taking a risk-based approach, the regulations use the competency of the remote pilot as a way of complementing the other risk mitigations, particularly in the Open category.

Apart from subcategory **A1** operations involving unmanned aircraft of class C0 and most others that have a mass of less than 250g, all remote pilots operating in the Open category are required to complete an **online training course and successfully complete an online theoretical knowledge examination** before they can fly. This test is also viewed as the 'foundation' upon which all other levels of remote pilot competency are built; it is a multiple-choice examination and there is no requirement to undertake any practical flight test.

Remote pilots operating in the **A2** subcategory are required to undertake an **additional theoretical knowledge examination**. This examination is aimed at assessing knowledge of the technical and operational mitigations that address the added risks resulting from flying a slightly larger unmanned aircraft (class C2, below 4kg mass) close to people. Successful completion of this test results in the award of a **'certificate of remote pilot competency'** for the A2 subcategory ('A2 CofC').

Competency requirements for the Specific category will vary, as set out in the operational authorisation (depending on the risk assessment associated with the particular operation) and could range from as little as the 'foundation' test of the Open category, all the way up to a manned aircraft pilot's licence or a

'Remote Pilot Licence' (when the RPL requirements are finalised). For operations using either a standard scenario (declared) or a pre-defined risk assessment (authorised), the remote pilot competency requirements will be specified within the text of the relevant scenario document.

For the certified category, the requirements are more straightforward in that the remote pilot will be expected to hold the appropriate manned aviation pilot's licence associated with the type of operation being conducted (with appropriate mitigation related to the operation of the particular unmanned aircraft), or an RPL (when the RPL requirements are published and applicable).

A **minimum age of 16 years** is set within the regulation for remote pilots operating within the Open and Specific categories, but there are some variations allowed to this as follows:

- No minimum age is set for the operation of toys marked as class C0, or 'privately built' unmanned aircraft that have a mass of less than 250g,

- Member States are permitted to lower this minimum age to 12 years (Open category) or 14 years (Specific category) but only for operations within their territory,

- A remote pilot aged at least 16 years may directly supervise a younger remote pilot with no lower age limit but the younger person being supervised must have already passed the foundation test.

The IAA intends to initially set the minimum age for remote pilots at 16 years of age.

Model aircraft

Additional provisions are made within the regulation to cater for operations, including registration and remote pilot competence, under the framework of model aircraft clubs or associations under a separate authorisation that can be negotiated with, and issued by, the IAA.

Insurance

The EU UAS regulations make no changes to insurance requirements and indeed make little reference to them at all. The EU's aviation insurance regulation (EC)

785/2004 continues to apply in the same way as it does currently within Ireland. This means that all unmanned aircraft, other than those with a maximum take-off mass of less than 20kg which are being used for sporting or recreational purposes, must be insured for third party risks in accordance with EU 785/2004.

Cross-border operations/operations outside the State of registration

In accordance with the principle of harmonisation across the EU, the regulations make provisions for UAS to be flown in other EU Member States with relatively minimal burden on the UAS operator.

- For the '**Open' categor**y things are very straightforward and unmanned aircraft can be operated in exactly the same way as they would be in their 'parent State' (i.e. no further contact with the IAA). Obviously, any airspace restrictions that are applicable in the State where the flight is being conducted must be complied with. The registration and the remote pilot competence valid in the parent State are applicable, but details should be carried at all times and made available to any enforcement authorities, if requested.

- Operations within the '**Specific' category** require prior liaison with the IAA of the State where the flights are to be conducted, but the UAS operator does not need to go through the whole risk assessment/application process again if an operational authorisation is already held for the same operation in his/her State of registry. The UAS operator must still apply to the National Aviation Authority ("NAA") that oversees the State where the flight will take place, but is instead only required to provide:
    - a copy of the operational authorisation it holds, and
    - details of the additional mitigation measures that will be taken in order to address any risks that are specific to the State and location(s) where the operation is intended to take place in that State

Once received, the NAA of the state where the flight will take place is then required to assess the application and, if satisfied, provide the UAS operator and the parent NAA a confirmation that the updated mitigation measures are satisfactory. The operation can be commenced once this confirmation has been received.

If the intended operation is one that is covered by a standard scenario, the operator is simply required to provide the NAA of the state where the flight will

take place with a copy of the declaration that was submitted to their parent NAA, along with a copy of the verification of completeness that was received in response.

> ***Note:*** *The specific text of the standard scenarios is still being developed however, and so some elements may be changed at the point they are published. Early indications suggest that additional mitigation measures to cater for local airspace restrictions within the State where the flights are to be conducted will also be required.*

Geographical zones

Other than the Open category '120m/400ft' operating height limitation and the limits on flight within 'congested areas' placed on the A3 subcategory, the EU UAS regulations do not contain any explicit airspace limitations (such as minimum distances from aerodromes etc) within the text. Instead, these are left to individual Member states to determine as necessary at a more 'local' level. States are permitted to define 'UAS geographical zones' for reasons such as safety, privacy, security or environmental considerations, which must be made publicly available in a digital format. Geographical zones can be introduced which:

- prohibit or restrict UAS operations in accordance with specified requirements,
- limit operations to certain UAS classes or levels of equipment fit (e.g. remote identification or geo awareness capabilities, or environmental standards)
- allow only UAS operations to take place (and so restrict/prohibit manned flight)

The IAA already runs a form of 'geographical zoning' within the existing manned aviation airspace reservations (Prohibited, Restricted and Danger Areas, along with their 'temporary' variants, the RA[T] and the TDA) plus, of course, the Flight Restriction Zone system that is in place around protected aerodromes. Moreover, Aeronautical Notice U.04 labelled 'Exemption from Controlled Airspace Permission Requirement for Certain Drone Operations' sets out a pictorial depiction of drone 'no-fly' zone areas within the State. These zones include:

1. Beaumont Hospital
2. Casement Aerodrome
3. Cork Airport
4. Currency Centre
5. Dublin Airport
6. Ireland West Airport- Knock
7. Kerry Control Zone
8. Phoenix Park
9. Mountjoy Prison
10. Royal Hospital Kilmainham
11. Shannon Airport
12. AMNCH – Tallaght Hospital
13. Waterford Airport
14. Weston Aerodrome

Ireland's Implementation of the regulations

The current intent is that these regulations will apply to the operation of unmanned aircraft in the IAA from 1 July 2020.

Work is now underway within the IAA to implement these regulations. Further details will be provided when available and when details are confirmed. However, the intent of the project is to meet the following timelines:

- **Q1 2020**:
  - Revision of S.I. 563 of 2015 Irish Aviation Authority Small Unmanned Aircraft (Drones) And Rockets Order to better reflect the new EU Drone Regulations.

- **Q2 2020**:
  - SRD.010 revision to reflect new enforcement policy and procedures.
  - IAA webpages within the IAA website updated.
  - Revision of any Aeronautical Notices pertaining to UAS operations to reflect the new EU registration requirements and pilot competency requirements.

EU Drone Regulations - Outline

Annex A - The Implementing Regulation (on the rules and procedures for the operation of unmanned aircraft)

Note: *This is provided as a simplified interpretation of the regulation in order to aid the general understanding of the intent behind the regulation. It is not intended to replace the legal text of the regulation.*

The Cover Regulation

Recitals - The initial recitals simply set out the overall reasoning behind the regulation and set the tone under which it should be considered.

Article 1 - Subject matter. This article simply states the points that the Regulation is intended to cover.

Article 2 - Definitions. This is simply a listing of the meanings of the terms used within the regulation which are not adequately covered by the traditional dictionary meaning.

In accordance with the established EU principles, the terms are listed in the order that they appear within the regulation, rather than being listed alphabetically.

Terms that have already been defined in the New Basic Regulation are not repeated here (E.g. aircraft, unmanned aircraft, remote pilot).

Many of the definitions will already be familiar to those already involved in UAS operations, but the following are of specific note:

'natural person' is the term the EU uses when legally referring to a human being.

'legal person' is the term the EU uses when legally referring to an organisation/company or similar.

'assemblies of people' – no numbers of people are mentioned, but instead it is the ability of the people to move away from a (drone) threat that is the key point.

'robustness' - is a term used when dealing with risk assessments (see Article 11).

'direct remote identification' – is a security/privacy related system giving the ability to obtain information about an unmanned aircraft while it is flying, but only at a very short range (local) level.

'geo-awareness' is the term used for what is often called 'geo fencing', but the key point to note is that this is considered an advisory system to which the remote pilot must react, rather than being a function that relieves the remote pilot of his/her responsibilities to fly sensibly/safely.

Article 3 - Categories of UAS operations. This Article sets out the basic parameters for the 'Open', 'Specific' and 'Certified' categories.

Article 4 - Open Category. This article is simply used to outline the requirements of the Open category and points you to:

- the types of unmanned aircraft that can be used in this category, which must be less than 25kg maximum take-off mass and either:

• belongs to one of the Classes listed in the delegated regulation; • privately (home built), or; • meets the conditions set out in Article 20 if they have been made available for sale in the EU prior to 1 July 2022, and so do not hold a UAS Class marking.

• the need to keep the unmanned aircraft

• at a 'safe distance' from people

• within visual line of sight, although additional measures can be taken if using 'follow me mode' (if equipped) and when using an observer (details are described later in Part A of the Annex to the regulation)

• within 120m/400ft of the closest point of the earth's surface - essentially this means a 'maximum flying height', but the form of words used allows for a more generous interpretation when flying near hills or cliffs. There is also additional flexibility permitted when flying over fixed obstacles and for some sailplanes (radio-controlled gliders) - (details of this are described later in Part A of the Annex to the regulation)

• the fact that the unmanned aircraft cannot

• be flown over assemblies of people

• be used to carry dangerous goods

• drop any material (i.e. articles) whatsoever (this is a security requirement)

• the fact that the Open category is divided into three subcategories (details are described later in the Part A of the Annex to the regulation)

Article 5 - Specific Category. This article points you to the requirements of the Specific category and reiterates the obvious point that you must operate in the Specific category if you cannot comply with the Open category.

The Article also points out:

- the basic principles of the operational authorisation
- UAS operator must include a risk assessment in the application to the IAA
- the IAA must issue the operational authorisation if it is satisfied that the risks are adequately mitigated
- what the operational authorisation must specify
- the basic principles of the standard scenario in that it only requires a declaration, and then no operational authorisation is required
- the differing processes associated with the 'light UAS operator certificate' (LUC) and the authorisation that can be issued to model aircraft clubs or associations

Article 6 - Certified category. This article serves to set out the basic criteria that require a UAS operation to be classified as being in the Certified category. There are two subtle points to note in the form of words that are used in sub paragraphs 1(a) and 1(b), as on first glance, they appear to say the same thing, however:

- 1(a) points the reader to the Delegated Regulation where it lists the circumstances where an unmanned aircraft must be certificated (for its design, production and maintenance). Essentially, these cover what the unmanned aircraft has been designed to do.
- 1(b) lists the types of operation which may only be conducted in the Certified category.

While this would appear to be obvious (i.e. in order to conduct a Certified category operation you must use a certificated unmanned aircraft), the text is written in this way so that an aircraft that is certificated is not barred from being used in the Specific category.

Paragraph 2 provides the 'catch all' statement that allows the IAA to require a UAS operation to be conducted in the Certified category if the risk assessment that was provided (with the intent of operating in the Specific category) is not considered to be suitable.

Article 7 - Rules and procedures for the operation of UAS. This Article provides the legal basis that allows the operational rules and procedures for the three categories to be set out:

- Open – these are set out in Part A of the Annex to the IR
- Specific – these are set out in the relevant authorisation that is issued to the UAS operator, or in the standard scenarios that are listed in Appendix 1 to the Annex. Note also that this Article sets out that Specific category operations will be subject to the operational requirements of the Standardised European Rules of the Air (SERA)
- Certified – operations in this category will be subject to the requirements set out in SERA, the EU OPS regulation, and the Airspace Usage Requirements regulation (related to airborne collision avoidance)

Article 8 - Remote pilot competency. This article provides the legal basis to allow for the competency requirements to be set out later in the document:

- Open – the competency requirements are set out in Part A of the Annex to the IR
- Specific – the competency requirements are set out in the operational authorisation that is issued to the UAS operator (as the requirements are dependent on the risk assessment). For standard scenarios, the competence requirements will be defined within individual scenario listing. The article lists a number of key basic competency requirements.
- Model aircraft associations – the competency requirements are set out in the authorisation (if any) that is issued to the model association (se Article 16)

Article 9 - Minimum age for remote pilots. The EC was required by EU processes to set a 'basic EU wide' minimum age within the regulation. This article sets that minimum age at 16 years, but also permits some variation to be applied within individual Member States. The essential points to note for the Open and Specific categories are as follows:

• No minimum age.

• toys marked as class C0 (no competency test requirement).

• privately built UAS with a maximum take-off mass less than 250g (no competency test requirement).

• any UAS if under the direct supervision (i.e. one to one monitoring with the ability to take control immediately) of a remote pilot aged at least 16 years. But the younger person being supervised must have already passed the foundation theory test.

• 12-16 years – Open category, but only if the Member State has allowed this within its territory.

• 14-16 years – Specific category, but only if the Member State has allowed this within its territory.

• 16 years and over – Open and Specific category in any Member State.

• Model aircraft associations – the minimum ages are set out in the authorisation (if any) that is issued to the model association (se Article 16).

Article 10 - Rules and procedures for the airworthiness of UAS. This is a fairly simple article which basically states that any UAS operated under the implementing regulation must comply with the (technical) requirements of the Delegated Regulation (i.e. product standards or certification). This requirement does not, however, apply to privately built UAS, model aircraft being flown under an authorisation that is issued to a model association, or to UAS covered under the provisions of Article 20 (non 'class marked' and placed on the market before 1 July 2022).

Article 11 - Operational risk assessments. This article sets out the key requirements that are required to be covered in the risk assessment that is provided to the IAA when applying for an operational authorisation in order to fly in the Specific category. While the article only sets out the 'headline' elements, more detail

will be offered at a later date within the GM and AMC provided by EASA.

Article 12 - Authorising operations in the Specific category. This article follows on from Article 11 in that it is simply the instructions to the IAA regarding the actions that must be taken in order to issue an operational authorisation, as well as the actions required when a declaration (associated with a standard scenario) has been submitted.

Article 13 - Cross-border operations, or operations within the EU that are outside the state of registration. This article is intended to provide the means for UAS operators from one EU state to operate in another EU state. It only covers the Specific category requirements, because Open category operations are already 'open' to any EU state and so do not require any further IAA involvement (other than the operator registration and remote pilot competency). The procedure is based on the assumption that the operator already has a relevant operational authorisation issued in his/her 'parent state' (but see the additional text below if employing a standard scenario) and basically requires the UAS operator to make an application to the NAA of the 'State of operation' (where the flight(s) is/are planned to take place) which includes:

- a copy of the current operational authorisation that the UAS operator holds (for flight in the 'parent State')
- details of the location(s) in the 'State of operation' along with any mitigation measures necessary to address the specific requirements of that State (national airspace restrictions, other listed national limitations etc).

The NAA of the 'State of operation' is then required to assess the application and, if satisfied, send back a 'confirmation' to the UAS operator and the 'parent NAA' that the mitigation measures are satisfactory. Once the 'confirmation' has been received, the operation may commence in the new State.

If the operation is being conducted under a standard scenario (i.e. with a declaration), then the UAS operator is simply required to provide the NAA of the 'State of operation' with a copy of his/her

declaration and a copy of the response from the 'parent NAA' (confirmation of receipt and completeness).

Note: This is likely to change to include a requirement for any mitigation measures necessary to address the specific requirements of the State of operation.

Article 14 - Registration of UAS operators and 'certified' UAS. This article sets out the requirements for registration for:

- unmanned aircraft – when their design is subject to certification (i.e. intended for use in the Certified category).
- UAS operators – for operations in the Open or Specific categories

The overall details are as outlined earlier in the main body of this document but the key points to note are:

- Certified category – unmanned aircraft are registered in the same manner as their 'manned' counterparts.
- Specific category – all UAS operators must be registered.
- Open category - UAS operators must register when they operate an unmanned aircraft that has a maximum take-off mass of 250g or more. But even if the unmanned aircraft is less than 250g in mass, they must also register themselves when it is:
- equipped with a sensor that can capture personal data (i.e. a camera or 'listening device'), unless it is classed as a toy, or:
- is able to transfer a kinetic energy of more than 80 Joules to a human in the event of a collision (i.e. it may be small and light but it can be flown at high speed),
- UAS operators,
- must register themselves in the country where they live or, if the operator is an organisation, in the country where they have their principal place of business,

- cannot be registered in more than one EU country at a time
- must display their registration number on every unmanned aircraft they operate that falls within the stated requirements

Article 15 - Operational conditions for UAS geographical zones. This article is intended to establish the legal basis for the use of special airspace 'zones' to control UAS operations within individual states. A big emphasis is placed on this 'zone' system, particularly in the Open category and the EC/EASA has been particularly keen to leave the use and allocation of the zones to individual nations to determine (including the choice as to whether they are used at all), as it is viewed as offering the maximum flexibility to each country.

Article 16 - Operations under the framework of model aircraft clubs and associations. Another important article to take note of. Efforts to either define or exclude 'model aircraft' from the proposed regulations have proved to be troublesome to achieve in a simple and straightforward manner. This article is therefore intended to offer a sanctuary to the 'traditional' model aircraft enthusiasts and provide them with an avenue for continued operation, via the cover of their existing model clubs or associations. This is through the 'umbrella' of a separate 'authorisation' within the Specific category, which could essentially allow them to continue operating as they currently do (which is openly recognised as being safe), without being restricted by other requirements within the regulations which are clearly directed at the manufacture and use of the 'drone' type devices. The details of what will actually be contained within this authorisation will need to be discussed further.

Article 17 - Designation of the competent authority. This serves as the legal requirement for the Government to ensure that there is a 'competent authority' designated to be responsible for dealing with the tasks set out in Article 18, which includes aspects such as registration, oversight of UAS operators and the publication of information related to airspace zones.

Note: *that a country is free to allocate these responsibilities to a number of different competent authorities (i.e. not only the relevant National Aviation Authority)*

Article 18 - Tasks of the competent authority. This follows on from Article 17 and sets out the legal requirements for the tasks that the competent authority(ies) must undertake.

Article 19 - Safety information. This article essentially sets out what EASA and the National Aviation Authorities must do in response to being notified of any safety issues regarding UAS.

Note: *that there is also a requirement within this Article for UAS operators to report safety related occurrences in accordance with the EU 'occurrence reporting regulation', Regulation (EU) 376/2014*

Article 20 - Open category – provisions for certain UAS. When the regulations were being drafted, it was clearly evident that it would take some time for manufacturers to be able to develop products that meet the standards set out in the new classes listed in the Delegated Regulation. Equally, it was clear that there would still be a large number of unmanned aircraft on the market that would not be compliant with the new unmanned aircraft classes. This Article sets out the boundaries within which these 'legacy' products can continue to be used within the Open category, as well as setting a three-year target for manufacturers, beyond which, only UAS types that are compliant with the new product standards can be introduced for sale on the EU 'market'. The key points are:

- from 1 July 2022 onwards, only UAS products that are compliant with the class C0 to C4 standards set out in the Delegated Regulation may be introduced for sale in the EU (placed on the market) for use in the Open category
- 'Legacy' unmanned aircraft (those that do not hold a class marking and were placed on the market before 1 July 2022) may be used indefinitely in the Open category:
- If less than 250g – within the subcategory A1 (fly over people) limits listed in Part A of the Annex.

• If less than 25kg – within the subcategory A3 limits (fly far from people) listed in Part A of the Annex.

Article 21 - Adaptation of authorisations, declarations and certificates. In a similar fashion to that for Article 21 above, this Article allows Member States additional time to adapt their documentation into the format required for this new regulation. Two specific dates are noted here:

• 1 July 2021 – Until this date any authorisations or remote pilot competency certificates issued under national law will remain valid (subject to any earlier expiry date on the documents themselves). From this date onwards, all documentation issued must be in accordance with the EU regulations.

• 1 July 2022 – Operations within the framework of model aircraft associations or clubs may be continued in accordance with any national rules until this date. Essentially, this sets the date by which any model aircraft associations or clubs will have to have requested and received an 'Article 16 authorisation' in order to avoid being restricted by the full extent of these Regulations.

Article 22 - Transitional provisions. Again, recognising that manufacturers will require some time to develop C0-C4 compliant products and place them on the market, this Article has been developed to provide operators with some ability to operate within the general scope of the new UAS classes even though their unmanned aircraft is not marked as being compliant. This privilege is 'time limited' however, and only applies until 30 June 2022 (after which all UAS placed on the market must be compliant). Additionally, the privileges that are offered are less (by about 50%) than those that could be achieved by using a compliant product for the same operation. The effect of this is that unmanned aircraft:

• with a mass of less than 500g will be able to be used in subcategory A1, as if it was a class C1 device, but only if the remote pilot has been tested to a competency level specified by the state where the operation will take place.

• with a mass of less than 2kg will be able to be operated in subcategory A2, as if it was a class C2 device, but only down to a minimum horizontal distance of 50m from people. In addition, the remote pilot will be required to have been tested to a competency level that is at least equivalent to that required for operation within the A2 subcategory (i.e. the 'A2 CofC).

• With a mass of more than 2kg and less than 25kg may be operated within the limits set out for subcategory A3 provided that the remote pilot has successfully passed the foundation test.

Note: *From the text of the article that refers to this aspect, there appears to be no difference between this and the 'legacy' provisions relating to a 'sub 25kg' unmanned aircraft that are already set out in Article 20.*

Article 23 - Entry into force and application. This simply states when the Regulation becomes EU Law, when its provisions become applicable, and its legally binding nature. It also sets out the dates when two additional elements, one within Article 5 regarding any 'declarative national standard scenarios', and one within Article 15 regarding the format of any published geographical zone information. As a result, given that the Implementing regulation was published on 11 June 2019, the subsequent effective dates are as follows:

• **1 July 2019 –** Regulation 'enters into force' (i.e. it becomes EU law)

• **1 July 2020** – Regulation becomes 'applicable' (i.e. national regulations are replaced and UAS operations must be conducted in accordance with the regulation)

• **1 July 2021** – Geographical zone information must be made publicly available by each state in a common unique format.

• **(estimated early 2023)** – 'Declarative national standard scenarios' will no longer be applicable – only published EU standard scenarios can be used. The latest information we

currently have is that the standard scenarios are scheduled to become applicable in early 2021 (published in the Appendix to the annex), but that this part of Article 23 will also be amended to extend the use of national scenarios by a further 2 years.

The Annex to the Implementing Regulation

The Annex to the Implementing Regulation provides a more detailed listing of the precise rules that must be followed when operating an unmanned aircraft within the Open and Specific categories. It is split into three parts, plus an Appendix as follows:

- **PART A** – the Open category
- **PART B** – the Specific category
- **PART C** – the Light UAS Operator Certificate (LUC)
- **APPENDIX 1** - Standard scenarios supporting a declaration

Part A

UAS.OPEN.010 - General provisions. This rule sets out the subdivision of the Open category into the A1, A2 and A3 subcategories, plus it also provides some additional stipulations/moderations regarding the 120m (400ft) maximum operating height requirement that was set out in Article 4 as follows:

- The unmanned aircraft must not be flown at a distance greater than 120m (400ft) from the closest point of the earth's surface, but:
- this height can be exceeded when overflying a fixed obstacle provided that:
- The person in charge of the 'obstacle' has granted permission (i.e. the reason for the flight is related to that obstacle)

• The unmanned aircraft is not flown more than 15m above the top of the obstacle and must be kept within 50m horizontally of it

The logic here is that the obstacle already presents a hazard to manned aviation so, provided the unmanned aircraft is kept close to the obstacle, there will be no additional threat to manned aircraft.

• model gliders (unmanned sailplanes) of up to 10kg in mass may be flown up to a height that is 120m (400ft) above the remote pilot. This allows more freedom to operate slope soaring gliders, whilst still remaining within visual line of sight.

UAS.OPEN.020 - UAS operations in subcategory A1. This rule sets out the more unique requirements for operations within the A1 subcategory and sets out the operating conditions, the requirements that the remote pilot must comply with, and the types of unmanned aircraft that are permitted. Key points to note are:

• Assemblies of people must not be overflown

• Class C1 aircraft must not be intentionally flown over uninvolved persons

• If a class C0 or C1 aircraft has its 'follow-me' mode activated, it may be flown up to a distance of 50m from the remote pilot, even if this means that the aircraft is no longer within visual line of sight

• The remote pilot is expected to be familiar with (i.e. have read and understood) the user manual that was provided with the UAS

• Remote pilots flying C1 aircraft are required to pass the remote pilot online 'foundation test' before they can start flying. The specific requirements of this test are set out here (40 questions, 9 subjects, multiple choice) and serve as a reference for the rest of the Annex.

• The only UAS that can be operated in subcategory A1 are:

• those marked as Class C0 or C1

• privately built UAS with a mass of less than 250g and a maximum speed of 19m/s (approx. 42.5 mph)

• 'legacy' UAS (as noted in Article 20 – i.e. sold on the market) that have a mass of less than 250g

• until 30 June 2022 only – UAS covered by the transitional provisions of Article 22 (mass less than 500g able to be used as if it was a class C1)

UAS.OPEN.030 - UAS operations in subcategory A2. This rule sets out the more unique requirements for operations within the A2 subcategory. Only C2 marked aircraft are allowed (with an exception for the first two years), which must be less than 4kg, require the fitment of electronic identification and geofencing, and requires a higher level of remote pilot competency (in order to be able to fly safely closer to uninvolved people). The key points to note are:

• Unmanned aircraft must not be flown closer than 30m horizontally from uninvolved persons, but if the 'low speed mode' (if fitted) has been activated, this horizontal distance can be reduced to 5m

• Uninvolved persons must not be overflown at any height

• The remote pilot must hold a 'certificate of remote pilot competency' which enables subcategory A2 operation (A2 CofC). This is obtained by:

• passing the online foundation test (same test as for C1) and then conducting some self-directed training flights with the aircraft within the bounds of subcategory A3, and then;

• passing an additional theoretical knowledge examination which is aimed at assessing the

knowledge the risk to people on the ground (as this is a 'fly close to people' category). The test comprises 30 multiple choice questions, over 3 primary subjects, and is conducted at a test centre.

• The only UAS that can be operated in subcategory A2 are:

• Those marked as class C2

• until 30 June 2022 only – UAS covered by the transitional provisions of Article 22 (mass less than 2kg able to be used as if it was a class C2, but only down to 50m from uninvolved people

UAS.OPEN.040 - UAS operations in subcategory A3. This rule sets out the requirements for flight in the A3 subcategory, which is essentially where it is believed that most aspects of 'casual drone use' will fall; the main aspects being that, in addition to keeping the unmanned aircraft within your line of sight and below 120m/400ft, flights are conducted away from congested areas and in an area where there are no uninvolved people that can be endangered. Specific points to note are:

• The area for the flight must be selected on the basis that the remote pilot can make a reasonable expectation that there will be no uninvolved people present (and hence could potentially be endangered) within the area where the unmanned aircraft is flying

• The intent of this requirement is that the area within which the flight is being conducted should be clear of uninvolved people while the aircraft is flying. The 'reasonable expectation' placed on the remote pilot allows for cases when people unexpectedly move into an area that was previously clear, at which point the remote pilot must take appropriate steps to manoeuvre the aircraft away from these people, or land if this is not possible.

***Note**: that no specific horizontal separation distance values have been set in the regulation for A3; however, it is clear that any distances employed must be greater than those set out for the A2 subcategory (which specifically caters for flight 'close' to people). Until any further guidance is received from EASA, the CAA's general guidance is that a horizontal distance (i.e. no overflight) of at least 50m must be maintained from all uninvolved persons.*

• A3 subcategory operations are not permitted to take place within 150 m horizontally of any residential, commercial, industrial or recreational areas.

• Remote pilots flying in this category are required to pass the remote pilot online 'foundation test' before they can start flying (same test that is required for C1 and A2).

• The only UAS that can be operated in subcategory A3 are:

• Those marked as class C2, C3 or C4,

• Privately built UAS with a mass of less than 25kg,

• 'legacy' UAS (as noted in Article 20 – i.e. sold on the market) that have a mass of less than 25kg,

• until 30 June 2022 only – UAS covered by the transitional provisions of Article 22 (mass more than 2kg and less than 25kg).

UAS.OPEN.050 - Responsibilities of the UAS operator. This rule simply sets out the tasks that the UAS operator (i.e. any individual or organisation operating or intending to operate one or more UAS) is directly responsible for. It covers the organisational aspects involved in operating UAS such as development of operational procedures, training and competence of all personnel involved in operations, maintenance and update of UAS and any associated capabilities etc. Clearly, in many cases, the UAS operator may also be the remote pilot and so the responsibilities of both fall to the same person.

UAS.OPEN.060 - Responsibilities of the remote pilot. This rule sets out the corresponding tasks that the remote pilot is directly responsible for. These are generally the more

'immediate/day-to-day' actions and are essentially split into 'pre-flight' and 'in-flight' tasks. They cover actions such as possessing and carrying the correct proof of competency, fitness to fly, site inspections and pre-flight checks, compliance with operational procedures and regulatory limitations (including VLOS requirements). The rule also makes special note of two points:

- Areas where any form of emergency response effort is underway must be avoided (unless they have permission to enter)
- This rule provides an alleviation to the VLOS requirement in that remote pilots flying in the Open category may be assisted by a visual observer, but only if that observer is situated alongside them. This allows the remote pilot to look away from the aircraft (e.g. to a screen or FPV equipment) while the observer undertakes the visual look out task and so provides the same freedom as is currently offered by the two General Exemptions that have been issued by the CAA (E4853/ORS4 No. 1294 and E4857/ORS4 No. 1297).

UAS.OPEN.070 - Duration and validity of the remote pilot online theoretical competency and certificates of remote pilot competency. This rule 'does what it says on the tin' and sets out that both the online foundation test and the 'A2 CofC' are valid for a period of five years, following which the respective tests must be repeated.

Part B

This section lists the more precise rules for operation within the Specific category, which essentially bridges the gap between the simple, rule based, Open category and the formalised, manned aviation based, Certified category.

UAS.SPEC.010 - General provisions. This rule sets out the key aspect of the Specific category, which is that the National Aviation Authority must be made aware of the UAS operation, either through an application for an operational authorisation

(submitted with an operational risk assessment), or the UAS operator has submitted a declaration based on a standard scenario.

UAS.SPEC.020 - Operational declaration. This sets out the full requirements for, and administrative aspects of, the operational declaration that is required when employing the privileges offered by a 'standard scenario'. The points covered are:

- The aircraft and operational constraints upon which 'standard scenarios' can be defined in Appendix 1 to the Annex. These constraints are based on a combination of unmanned aircraft size, VLOS or BVLOS operation, and the area being overflown, along with the airspace classification.
- The details to be provided in the declaration and the need to update any information if it changes.
- The actions that must be taken by the IAA when a declaration is received. The operation may only commence when the IAA has confirmed 'receipt and completeness' of the declaration.

UAS.SPEC.030 - Application for an operational authorisation. This simply states when an application must be made, and what must be included in it.

UAS.SPEC.040 - Issuing of an operational authorisation. Another fairly simple rule which contains the procedures that individual NAAs must follow when issuing an operational authorisation and are fairly self-explanatory.

UAS.SPEC.050 - Responsibilities of the UAS operator. In the same way as is done for UAS.OPEN.050, this rule simply sets out the tasks that the UAS operator is directly responsible for but goes into more depth for this category.

UAS.SPEC.060 -Responsibilities of the remote pilot. Like the entry for UAS.OPEN.060, this rule sets out the relevant

'immediate/day-to-day' tasks that the remote pilot is directly responsible for and in general covers the same points.

UAS.SPEC.070 - Transferability of an operational authorisation. A very simple rule which states that operational authorisations are not transferable (between operators).

UAS.SPEC.080 - Duration and validity of an operational authorisation. Again, fairly simple text telling you how long an operational authorisation is valid for. This basically means that you should refer to the dates that are set out in the authorisation document itself (for Ireland this will normally be a maximum of 12 months), but within this period it is obviously only valid if the UAS operator can still comply with all of its conditions.

UAS.SPEC.090 - Access. This rule allows NAAs to inspect organisations operating within the Specific category as required and directs that the operators must not prevent access.

UAS.SPEC.100 - Use of certified equipment and certified unmanned aircraft. This rule covers occasions where a UAS is being operated in the Specific category, but the UA itself, or more likely, a piece of equipment within the system has been 'certified'; this may offer the operator an advantage, or a reduced level of workload during the operation itself. In these cases, all conditions of the certification, including the recoding of operating times, must be followed.

Part C

This section sets out the requirements for operators who wish to make use of the Light UAS Operator Certificate (LUC – pronounced 'el you see') process, which is essentially aimed at permitting operators to authorise their own operations, where those operations would normally have required the authorisation of a NAA. Realistically, the benefits of holding an LUC will probably be quite limited in the early days, but they may be of benefit to a manufacturer, for example, during the initial flight testing process, or for operators that are intending to operate large fleets of unmanned aircraft.

The overall rules are relatively straightforward in that:

UAS.LUC.010 - General requirements for an LUC. This sets out the application requirements, but also most importantly indicates that only organisations (i.e. legal persons) are eligible to seek an LUC

UAS.LUC.020 - Responsibilities of the LUC holder. This details what the LUC holder's key responsibilities, noting that they also include the requirements of UAS.SPEC.050 (operator responsibilities) and UAS.SPEC.060 (remote pilot responsibilities).

UAS.LUC.030 - Safety management system. The requirement for the LUC holder to have a safety management system in place is one of the key differences between the LUC and any other Specific category operational authorisation.

UAS.LUC.040 - LUC manual. This sets out the specific points required of an LUC holder's operating/organisational manual.

UAS.LUC.050 - Terms of approval of the LUC holder. Explains that the CAA will determine the terms of the LUC approval and what details must be included in it.

UAS.LUC.060 - Privileges of the LUC holder. Linked with UAS.LUC.050 above, this states the privileges that a LUC offers – note that there is not a 'standard' LUC. Each certificate will be different and will depend on the individual organisation and the types of operation that it will be conducting.

UAS.LUC.070 - Changes in the LUC management system. This simply states when changes to the safety management system must be approved by the CAA.

UAS.LUC.075 - Transferability of an LUC. This limits the ability to transfer an LUC.

UAS.LUC.080 - Duration and validity of an LUC. This states that an LUC is issued for an unlimited duration and is written in the same format as is done for several other EASA related approvals/certificates. However, it should be noted that despite having an 'unlimited duration' aspect to it, in order for it to remain 'valid', the organisation will still be subject to regular oversight/audit by the parent NAA.

UAS.LUC.090 - Access. This rule allows NAAs to inspect LUC holders and their subcontractors as required in order to confirm that they are complying with the regulation and directs that the operators must not prevent access.

Appendix 1 to the Implementing Regulation

Appendix 1 is allocated for future use and will be used to list any standard scenarios that may be issued in the future for which UAS operators can declare their compliance with.

Each standard scenario will be listed here, with each on given an individual reference number (e.g. EUSTS-01) and the layout will follow a similar pattern to that of the Annex (i.e. paragraphs marked as UAS.EU-STS-01.010, UAS.EU-STS-01.020 onwards, plus several Annexes).

Each standard scenario will be published as an amendment to the Implementing Regulation and will be consulted via an NPA beforehand.

The first standard scenarios are still under development but are not expected to be published/applicable until early 2021 at the earliest.

Annex B - The Delegated Regulation (on unmanned aircraft and on third-country operators of unmanned aircraft)

Note: *This is provided as a simplified interpretation of the regulation in order to aid the general understanding of the intent behind the regulation. It is not intended to replace the legal text of the regulation.*

General

While the Implementing Regulation covers the operational aspects of UAS activities, the Delegated Regulation is primarily more focussed on the technical aspects. This follows the overall principles set out by the EU where some facets of EU regulation have been delegated to the European Commission to make and adopt itself. Provided that The European Parliament and the Council have no objections, the regulation enters into force; the principle being that these regulations can be changed more quickly because there is no need to refer to Member States for approval (although the EC will normally look to achieving the consensus of an 'expert group').

Delegated Regulations/Acts are used to supplement Implementing Regulations/Acts and are typically used to define detailed measures. Within aviation, Delegated Regulations are used to cover technical requirements and other 'non-essential' aspects, such as the relationship with 'Third-countries' (i.e. a country that is not a member of the European Union).

This Delegated Regulation is primarily intended to serve as a standalone regulation which sets out the specific requirements for the sale of unmanned aircraft intended for the Open category and any specific additional components, such as electronic identification 'add-ons'. It is primarily aimed at manufacturers and 'sales' organisations such as importers and distributors. One important point to note is that drones that are sold in ready to assemble 'kit' form are also covered by these requirements.

The regulation also, however, briefly covers the requirements for the Specific and Certified categories, and the requirements as to how third-country operators must be dealt with.

The Cover Regulation Recitals - The initial recitals simply set out the overall reasoning behind the regulation and set the tone under which it should be considered.

Chapter I – General Provisions

Article 1 - Subject matter. This article states the points that the Regulation is intended to cover. As mentioned above, this primarily covers the design and manufacture of unmanned aircraft systems, but it also covers the types of UAS that will be subject to certification and the rules for third country operators operating in the European single sky airspace.

Article 2 - Scope. This expands on Article 1 and sets out the contents of the remaining chapters of the regulation.

Article 3 - Definitions. This is simply a listing of the meanings of the terms used within the regulation which are not adequately covered by the traditional dictionary meaning.

In accordance with the established EU principles, the terms are listed in the order that they appear within the regulation, rather than being listed alphabetically.

Chapter II – UAS intended to be operated in the 'open' category and remote identification add-ons

This covers Articles 4 to 39 and forms the bulk of the cover regulation itself. This is essentially a re-write of EC Regulation 765/2008, which is, in simple terms, the overarching EU regulation covering product standards and the 'CE' marking requirements.

These Articles set out the obligations of the manufacturers and sales organisations, the requirements as to how the products must conform to the product standards and the responsibilities of the State bodies that are charged with assessing conformity. As such, there is little else of benefit to explain here.

Chapter III - UAS operated in the 'certified' and 'specific' categories

Article 40 - Requirements for UAS operated in the 'certified' and 'specific' categories. This article is the legal determination of the conditions that specify the boundary of the certified category. The text is very specific here, in that it covers the conditions where the design, production and maintenance of a UAS must be certified, which essentially means that those aspects must be undertaken in accordance with the related EU regulations for manned aircraft, which are:

- Regulation (EU) 748/2012 – Initial Airworthiness.
- Regulation (EU) 1321/2014 – Continuing Airworthiness.
- Regulation (EU) 640/2015 - Additional Airworthiness Specifications.

This means that the UAS must be certificated (i.e. designed, produced and maintained to specified standards by approved organisations) if:

- It is greater than 3m and designed to be operated over assemblies of people.
- It is designed to carry people.
- It is designed for carrying dangerous goods and the likelihood of an accident causing a risk to third parties (because of the dangerous goods being carried) requires significant mitigation.
- Even though it was intended to be used in the Specific category, the NAA determines that the residual risks are too great unless the UAS is certificated.

This is the 'catch all' condition and, in simple terms, means that the risk assessment for the operation has not sufficiently addressed the safety aspects.

For UAS operated in the Specific category, the technical requirements of the system are less precisely defined and must simply be:

- As set out in the operational authorisation issued to the operator
- As set out in the standard scenario that the operator has declared will be used
- As set out in the LUC issued to the LUC holder

Chapter IV – Third-country UAS operators

Article 41 - Third-country UAS operators. The intent of this article is to detail how the regulation will apply to non-EU based UAS operators who wish to fly within EU airspace. In simple terms this means:

- A third-country operator will deal with the CAA of its 'host' EU nation (i.e. the one where the flights will take place) for any registration and authorisations.
- The 'host' nation CAA may recognise the non-EU operator's qualifications provided that they are 'valid' in his own country and that the EC, via EASA, has confirmed that it is

satisfied these qualifications meet the intent of the EU Regulations.

Chapter V – Final provisions

Article 42 - Entry into force. This simply states when the regulation becomes EU law and when it becomes applicable. In both cases, this is twenty days after it was published, which therefore means that the Delegated Regulation is applicable from 1 July 2019.

The Annex to the Delegated Regulation

The Annex to the Delegated Regulation provides a more detailed listing of the technical requirements that have been specified for certain unmanned aircraft and their components. It is split into fifteen parts, as follows:

PARTS 1 to 5 – These set out the product standards that are required for UAS classes C0 to C4. They are fairly self-explanatory and are the responsibility of the manufacturers to comply with. However, it should be noted that any 'modifications' or adjustments made to an unmanned aircraft that are not conducted under the specific direction of the manufacturer will result in the loss of the relevant UAS class 'status' and hence revert the aircraft to the status of a 'privately built' device, with the resultant loss of any benefits the class marking may have provided.

PART 6 – sets out the product standards that are required for any device that is sold as an 'add-on' (aftermarket) part to provide a remote identification capability, which may be required for operations within certain geographical zones of a State.

PARTS 7 to 9 – There are obligations placed on the manufacturers to ensure that they conform with production and quality control standards in order that they can manufacture the products referred to in the earlier Parts and place them on the market. These Parts have no direct relevance to UAS operators or remote pilots.

PART 10 - This sets out what technical documentation must be provided by the manufacturer.

PARTS 11-12 - These set out what must be included in the manufacturer's declaration of conformity with the relevant product standard. This is similar to the type of declaration that you should see in the

documentation that accompanies an electrical appliance, such as a kettle or vacuum cleaner, which states that it conforms to the requirements of the relevant 'CE' making.

PARTS 13-15 - These parts cover requirements for testing in relation to noise disturbance, which is becoming an increasingly important aspect when considering UAS operations.

Part 13 - sets out the methods that must be used when conducting noise tests.

Part 14 - details the labelling that must be provided by the manufacturer to indicate the test results.

Part 15 -sets out maximum sound power levels that have been allocated to certain classes, along with requirements for a gradual reduction of this level for products that are placed on the market from 1 July 2021 and from 1 July 2023.

Note: *that specific sound limits are only set for unmanned aircraft of classes C1 and C2. This is because these classes are the only ones where unmanned aircraft can be operated 'close to people' within the Open category (it is assumed that class C0 types are too small to be 'noise intrusive'.*