# EASA Comment Response Tool

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| **Title** | Introduction of a regulatory framework for the operation of drones |
| **NPA Number** | A-NPA 2015-10 |

**UK CAA** (European.Affairs@caa.co.uk) has placed **33** unique comments on this NPA:

| Cmt# | Segment description | Page | Comment | Attachments |
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| 2254 | (General Comments) | 0 | **General**<br><br>**Comment:** The UK CAA welcomes the move to the creation of a risk and performance based approach in the regulation of Unmanned Aircraft Systems (UAS) which is centred primarily on the type of operation being undertaken. The UK CAA also acknowledges, and is in agreement with, the principle of the 'three category' concept and is therefore fully supportive of the overall aims of A-NPA 2015-10. | |
| 2257 | (General Comments) | 0 | **General**<br><br>**Comment:** For operations within the '–open' category, the most significant issue here is the enforcement of the regulations; this A-NPA assumes that this enforcement will be "ensured by the police". Clearly the more prescriptive the requirements, the more challenging this will become. As EASA acknowledges, "overburdening low-risk operations leads to climate of indifference or to illegal operations adversely affecting safety". While we fully agree with the overall principles of the concepts within this proposed regulatory framework, we do not agree that some of the more detailed proposals within the 'open' category will be able to be suitably enforced in a proportionate manner. | |
| 2261 | (General Comments) | 0 | **General**<br><br>**Comment:** There is no discussion (other than in Annex 1 at the end) of any maximum operating distance from the operator. Although 'within visual line of sight' might practically limit this, the UK CAA considers that setting a maximum horizontal/lateral distance of 500m from the *person observing the drone* is sensible. In practical terms, it is not possible to judge separation from buildings, objects, people or other aircraft beyond 500m due to the limits of depth perception by the human eye, no matter how large the drone is. Unless we limit the distance, at least for the 'open' category, then people will always be able to claim they were in sight of the drone, even if they couldn't really assess rate of closure or danger etc. Of course, this does not mean that any drone can be flown to a distance of 500m; it and the surrounding airspace must still be clearly seen at this distance so that collisions can be avoided; so if the drone is too small to be seen at 500m, or if the weather conditions preclude flight to this distance, the drone must be kept within this shorter distance. | |
| 2262 | 2.2 Present regulatory context | 5 - 6 | **Page No:** 6 of 41 | |

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| | | | **Paragraph No:** 2.2 EASA Member States<br><br>**Comment:** The UK CAA is in full agreement with the comment that '*prescriptive rules create difficulties due to the fact that the technical area is developing too fast*.' | |
| 2267 | 2.3 Industrial context and trends | 6 - 7 | **Page No:** 6 of 41<br><br>**Paragraph No:** 2.3 Trends<br><br>**Comment:** The second sentence states that '*the military market will remain largely predominant'*. This may well be true for the largest of types, but at the smaller end of the scale (typically 25kg and below) it is the civilian market that is totally dominant, for both commercial and recreational activities. The paragraph continues over the page (to page 7 of 41) to discuss civilian activities, but only describes commercial type activities "*Today, drone activities are essentially what is called aerial work in manned aviation"*. However, it is vital to recognise that the recreational use of drones has increased significantly (from what was previously just the 'model aircraft' flier), and it is this area where an appropriate level of regulation is needed, primarily in the 'open' category. Currently in the UK, as well as in several other countries, it is the recreational use of drones that is seen as presenting the greatest safety hazard to other forms of aviation.<br><br>**Justification:** Maintenance of a balanced discussion within the text | |
| 2272 | 2.4 Societal context | 7 - 9 | **Page No:** 8 of 41<br><br>**Paragraph No:** 2.4 Public acceptance - Safety, security and privacy concerns<br><br>**Comment:** The first paragraph in this section discusses the fact that other manned aircraft also operate at low level and hence the potential for collision is not eliminated when drones are flown at low level. This statement is fully agreed with; however, the most evident trend to be seen within UK airspace is that drones are being flown recreationally at much higher levels (1500ft, upwards to as high as FL110, with anecdotal evidence of even higher levels) and it is at these higher levels, which are all clearly well beyond VLOS, where the greatest risk of mid-air collision is considered to be.<br>We feel that the establishment of a specific requirement for drones to give the right of way to all other aircraft needs further consideration and will not be a practical or achievable solution in the long term - this is discussed further in later comments. | |
| 2275 | 2.4 Societal context | 7 - 9 | **Page No:** 8 of 41<br><br>**Paragraph No:** 2.4 Public acceptance - Safety, security and privacy concerns - 4$^{th}$ sub para starting with "*There is limited data…"*<br><br>**Comment:** The statement '*…the Agency conducted a study into….'* has no reference and thus the study's efficacy and reported conclusions can be brought into doubt.<br><br>It is recommended that a reference to the report should be inserted and made available. | |

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| | | | **Justification:** Need for provenance to the statement or the report | |
| 2277 | 2.4 Societal context | 7 - 9 | **Page No:** 8 of 41<br><br>**Paragraph No:** 2.4 Public acceptance - Safety, security and privacy concerns - 3rd paragraph from bottom of page. "*Finally, it should be kept in mind that using drones to inspect buildings or power lines could also improve safety because the consequences of hitting the building or the power line are likely to be material only compared to a manned aircraft where injuries to persons are to be expected."*<br><br>**Comment:** The UK CAA is in full agreement with this statement and considers it an important one in emphasising the point that there are significant safety benefits that can be achieved from the use of drones for particular activities. However, the statement written 'as it is' could lead the reader to the conclusion that drones will only improve safety for activities that are currently undertaken by manned aircraft. The potential benefits extend well beyond just the aviation sphere however, and into benefits to other aspects of society e.g. a reduction in the risks of falls from height. Consideration should be given to expanding this statement to cover activities where aircraft are not currently used as well, but where an improvement to safety can still be achieved - this is important in order to ensure that an appropriate level of proportionality is maintained and that drone operations which do not present a risk to aviation are not overburdened with unnecessary aviation 'red tape'. | |
| 2278 | 2.5 Related activities | 9 - 11 | **Page No:** 9 of 41<br><br>**Paragraph No:** 2.5 Cooperation to ensure harmonisation ICAO "*The Agency considers it important to achieve international harmonisation on drones, especially as there are approximately 60 countries worldwide that are designing and producing drones — compared to the considerably smaller number of countries designing and producing manned aircraft."*<br><br>**Comment:** The UK CAA fully agrees with this statement and considers it a very important point that needs to be made. It emphasises the significantly increased scope of the unmanned aircraft market, in terms of a design, manufacturing and production base, when compared to the manned aircraft market and highlights the substantial number of 'new' manufacturing and operating organisations that may not be very familiar with the current aviation environment - this emphasises the likely increase in workload that will be placed on NAAs in ensuring that these organisations are appropriately 'aviation aware' | |
| 2281 | 2.5 Related activities | 9 - 11 | **Page No:** 10 of 41<br><br>**Paragraph No:** Planning and prioritisation of the activities of standardisation bodies<br><br>**Comment:** The text states that the activity of developing industry standards (to ensure that the necessary standards to support the regulatory framework are drafted) is planned for October – November 2015, following the public consultation of this A-NPA. This proposed timescale seems overly optimistic.<br><br>It is recommended that the plan is reviewed and a more realistic | |

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| | | | timescale added to the text.<br><br>**Justification:** Past experience concerning the time it takes for standardisation bodies to draft and agree industry standards would indicate that this will take considerably longer than two months. | |
| 2283 | 3. Proposals for the regulatory framework for drones and the regulation of drone - 3.1 Principles and general framework | 12 - 14 | **Page No:** 12 of 41<br><br>**Paragraph No:** 3.1 Proposal 1<br><br>**Comment:** The UK CAA fully agrees with the proposal to regulate commercial and non-commercial (which in this case we understand to also include the existing 'recreational' activities such as model aircraft flying) operations, and considers it essential that this principle is not relaxed or deviated from in any way. Furthermore, we are also in full agreement with the principle that the regulatory framework should be operation-centric and risk-based.<br><br>**Justification:** Recognition that the risk to uninvolved parties at a specific location/time is the same, irrespective of the purpose of the flight. | |
| 2284 | 3.1 Principles and general framework - Categories, Regulatory framework, Security and privacy | 14 - 15 | **Page No:** 14 of 41<br><br>**Paragraph No:** 3.1 Proposal 2<br><br>**Comment:** The paragraph describing the 'Open' category ends with the sentence "*Enforcement mainly by the police."* UK CAA has been advised by the UK Police Chief's Council that the police forces do not have the resource to investigate all breaches. Therefore, any investigations will be based on their threat/risk/harm principles and the police will not enforce industry or safety standards. | |
| 2285 | 3.1 Principles and general framework - Enforcement, Enviromental protection, Use of QEs | 15 - 16 | **Page No:** 15<br><br>**Paragraph No:** Proposal 3<br><br>**Comment:** The text states that *"It is proposed not to include the oversight of the 'open' and 'specific' categories into the EU aviation system."* This is potentially confusing for a number of reasons:<br><br>a. The first sentence of 3.1 states *"This regulatory framework proposes that all drones be regulated at EU level".*<br><br>b. Proposal 2 explains that the "specific category" includes authorisation by an NAA (i.e. an EU competent authority) and;<br><br>c. At the top of page 15 it states *"it is proposed to develop dedicated IRs for the regulation of the 'open' and 'specific' category of drones*."<br><br>There appears to be some contradiction within this text given that everything that is being discussed falls within the EU aviation system.<br><br>**Justification:** Clarification of meaning within the text<br><br>**Proposed Text:** Any one of the following amendments are recommended: | |

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| | | | "It is proposed not to include the **enforcement** oversight of the 'open' and 'specific' categories into the EU aviation system."<br><br>or<br><br>"It is proposed that the oversight of the 'open' and 'specific' categories remains with the EASA MSs"<br><br>or<br><br>Delete the sentence. | |
| 2287 | 3.2 Low-risk operations —'open'category | 17 | **Page No:** 17 of 41<br><br>**Paragraph No:** Proposal 5<br><br>**Comment:** The UK CAA is in agreement with the principle of the 'open' category, as outlined within Proposal 5, and the need for simplicity in the definition of the boundary. However, it should be made clear to all that, as it is written, this is not a definition of the 'open' category.<br><br>**Justification:** UK acceptance of the overall principle that is being portrayed for the 'open' category | |
| 2288 | 3.2 Low-risk operations —'open'category, Technology | 17 - 19 | **Page No:** 18 of 41<br><br>**Paragraph No:** Proposal 6<br><br>**Comment:** The UK CAA is fully in favour of the use of embedded technologies, such as geofencing and identification systems similar to RFID in order to limit/restrict areas of operation and to ensure that those who fly drones are able to be 'accountable' and 'catchable'. This could be used as being an effective method of limiting the height at which small drones are used on a 'casual' basis - the flight of drones at excessive heights (ie. well beyond VLOS) is fast becoming one of the major hazards to manned aviation. However, the mandating of such systems throughout the 'open' category, although on first sight appearing to be a positive approach, does not necessarily appear to be a practical approach. Many types of small unmanned aircraft, such as the traditional radio controlled model aircraft and the smaller/cheaper types aimed at the 'toy' market, all of which fall under the stated definition of a 'drone', are 'manually controlled' and do not make use of any external 'positional' information (other than the observation of the person flying it). These would not be influenced or controlled by a geofencing system and so mandating the fitment of a geofencing capability to these types would appear to be a disproportionate and impractical requirement. Not all 'drones' are purchased 'off the shelf' either, so consideration must also be given to the control of those that are self assembled, either from kits or from a selection of parts bought separately. It is therefore considered that any mandating of embedded technologies will need to be focussed on specific components (such as the flight controller and its associated software) rather than the drone itself.<br><br>It is believed that much further thought will be required in this area in order to achieve a sensible balance of what needs to, and what actually can, be geofenced or identified. | |

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| 2289 | 3.2 Low-risk operations —'open'category, Technology | 17 - 19 | **Page No:** 18 of 41<br><br>**Paragraph No:** Proposal 7<br><br>**Comment:** From an aviation safety point of view, the UK CAA sees the benefit of mandating permanent areas where drone flight is prohibited or limited, such as near to airports or other aviation sites. However, opening up such a regime to other areas for reasons of environmental protection, security, privacy or simply 'annoyance' will require a much larger and more complex system, which could be seen as overburdening operations that have already been deemed to be 'low risk'. The management of such a system and the approval, checking or updating of any limitations could prove burdensome and would be beyond the resources of most NAAs and beyond their remit in dealing with aviation safety. The proposal also introduces the concept of 'authority approval' being required for operations within 'no drone zones', which tends to go against the 'open category' philosophy of there being minimal NAA involvement. - Where a no drone zone has been established for aviation safety reasons, then such an approval may be relatively simple (and relevant) to approve; however, when the prohibition has been made for other, non-aviation reasons, then the steps in the approval process are likely to become overly burdensome and time consuming, both for the applicant and the authority that is required to issue the final approval.<br><br>There is also a question of responsibility here regarding who will be held responsible if the overall system fails, details are erroneously entered, or the individual drone's system malfunctions; the 5th principle of the Riga declaration requires the operator of a drone to be responsible for its use, but such proposals for the use of embedded technology may give the impression that this responsibility has been moved elsewhere and the operator no longer needs to fully consider his actions. | |
| 2290 | 3.2 Low-risk operations —'open'category, Use of market regulation | 19 - 20 | **Page No:** 20 of 41<br><br>**Paragraph No:** 3.2 - 'Open category' - 2nd paragraph on page 20<br><br>**Comment:** The final sentence in this paragraph states "*Operations of drones would remain subject to aviation rules".* While this is a valid point when considering operations in the 'open' category that might present a hazard to other aviation, the UK CAA does not consider that aviation rules are an appropriate method of regulating all aspects of drone flight. For example, aspects relating to privacy, public order and security cannot be sensibly covered through aviation regulation. Similarly, a builder using a small (2kg) drone to inspect the roof of a building will not pose any risk to other aircraft and therefore should not be required to be constrained by aviation rules unless he chooses to fly his drone significantly higher than the building itself (and hence into the aviation environment) - any hazard that his operation may present to the general (non flying) public should be addressed through other health and safety at work regulation in the same way that the use of tools at height is managed.<br><br>**Justification:** Maintenance of proportionality. The UK experience to date is that the policing and enforcement of aviation regulations when dealing with non-aviation issues is extremely difficult, if not impossible - overburdening of regulation leads to a climate of indifference or to large scale illegal operations. | |

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| 2294 | 3.2 Low-risk operations —'open'category, Limitations | 21 - 22 | **Page No:** 21 of 41<br><br>**Paragraph No:** Proposal 12<br><br>**Comment:** The UK CAA is in agreement with the general thrust of this proposal in that the boundaries/limitations need to be explained in simple terms that are easily understandable to the general public and can be enforced by the appropriate authorities. However we have the following comments on the text within this proposal:<br><br>- It is suggested that the regulations/limitations detailed here should be restricted to outdoor operations only. Operations of drones indoors within buildings, where there is no opportunity for the drone to 'escape' into open airspace should not be addressed within aviation legislation. The maximum mass of any drone flown indoors will, in general terms, be 'self limiting' by the environment it is within. This principle also follows for indoor flights within 'no drone zones' as there should be no specific reason why the flight should be prohibited unless it concerns the activities within the building itself.<br><br>- We agree that flights in the 'open' category must be restricted to visual line of sight, however we must also acknowledge the existence of the many 'first person view' recreational fliers and therefore some allowance should also be made for another competent human to provide the appropriate 'look out' while the drone is airborne. The overall responsibility of the pilot for the safe operation and safe separation from other airspace users and uninvolved persons or property is still covered by the other requirements further down the list. It is also considered necessary to include a statement confirming that the visual observation should be unaided (ie. no binoculars or other forms of visual enhancement)<br><br>- We agree that the remote pilot must be made clearly responsible for the safe separation from any other airspace user(s), however we do not think that an explicit statement regarding 'giving way' is appropriate or required. While an 'always give way' requirement sounds fine as a basic statement, it is not necessarily practicable, or even desirable when considered more closely. We should not give other aviators the impression that they always have right of way - it will only confuse pilots of manned aircraft at best, or promote inaction at worst, especially for encounters with the larger drones - while this limitation is aimed at the 'open' category, it will undoubtedly become a de-facto impression that all drones, irrespective of their size, will always give way. In the UK, we have already had instances where pilots have flown towards drones they've seen and had Airprox with because they think they have right of way over the drone - manned aircraft must be ready to give way and, of course, avoid, too. We fully agree that the default option for drone operators in the 'open' category should be avoidance, and it is likely that, in almost all cases, it will be the drone operator who sees the confliction before the pilot of the manned aircraft, but this is the reason for maintaining and closely defining the VLOS requirement.<br><br>- We note that a limit of 150m above the ground or water has been stated - in general, we believe that most MSs have been using 120m (i.e. 400ft) as a general height limit, either via guidance or a regulatory limit. This offers a 'procedural' buffer of about 100ft from the 500ft minimum height as stated within the rules of the air. The reasoning for this change is not understood. We note that the US | |

FAA has proposed a 500ft agl 'maximum' within its small UAS NPRM, however we also note that the FAA is not permitted to actively limit the maximum operating height of *model aircraft*, although it advises a 'keep below 400ft' message in its guidelines. It must also be noted that any legislation specifying maximum heights such as this are actually difficult to enforce in practice. Additionally, the use of the term 'altitude' is incorrect and should be replaced by 'height'.

- We agree with the requirement for maintaining a 'safe distance' from people, however we foresee difficulties in the monitoring, policing and enforcement of this as opinions will differ markedly in regard to what is a 'safe distance'. There does not appear to be any suggestion of defining a safe distance' within the proposals of this A-NPA, hence it is inferred that the responsibility determination for this will fall to the person operating the drone in the first instance - we do not disagree with this approach, but the level of responsibility that is being placed on the operator with regard to the safe operation of the drone will need to be explicitly stated in both the regulations and any product information/instructions provided by manufacturers. Such 'safe operation' messages will also need to be made the subject of wider publicity campaigns in order to ensure that the general public is also aware. With regard to the enforcement of such a requirement, it would be preferable for any offences to be based on how the system was being used (Eg. dangerously or anti-socially) and for a Member State based legislative power of entry and search and seizure to be attached.

We also feel that there will need to be some further sub-classification of the levels where the safety of uninvolved persons and properties on the ground needs to be actively considered. The A-NPA appears to have made a start towards this principle, which is wholeheartedly welcomed, but it is suggested that this could be further expanded, perhaps as follows:

- less than 1kg (A0) - No separation restrictions, it is accepted that such devices are treated as 'toys/harmless flying objects' and pose little, if any, safety risk to people or risk of damage to properties. Such an approach also acknowledges the wide ranging type of user (from small children upwards) and the clear difficulties in policing and enforcing anything more restrictive.

- Below 4kg (A1) - A basic requirement to keep a safe distance from uninvolved people/properties and crowds, as described within the proposal, but backed up with clear statements to emphasise the operator's responsibility to operate in a safe manner with respect to other people or property. Such a move recognises the widespread use of the better performing products, both for casual/recreational use and for small scale business use, while at the same time acknowledging that the risk to others is still relatively small and cannot be adequately quantified (ie. it is an 'assumed risk' rather than a proven one).

- 4kg and over (up to the 'open' category mass limit) (A2) - A setting of specific minimum distance limits from, or flight over, uninvolved people or properties (the actual distance may still need to be determined, but it is suggested to be somewhere between 25m and 50m). Operations within this minimum distance would automatically fall into the 'Specific category'. Such a move acknowledges the increased risk to the safety of people/properties from the larger drone types, but does not completely prevent the use of these types

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| | | | under the 'open' category where the drone is being flown in a controlled environment, well away from people, or in the open countryside. It also recognises that, realistically, it will only be commercial operators that will need to fly in areas close to third parties with this higher mass category of drones. It needs to be acknowledged that, in the progression from 0kg to 25kg, there will be a point at which the safety of people on the ground must be considered within regulations as opposed to leaving this to 'operator judgement'. Clearly, a 24kg drone hitting a person is likely to severely injure or damage; the effects at the lower mass limit are less clear and below a certain mass can be considered to be negligible - the quoted 4kg minimum appears to be a reasonable compromise at present, however there may be scope for increasing this to a higher limit.<br><br>Finally, it is unclear where the determination of a crowd being more than 12 persons has originated. We do not consider it an unreasonable figure (particularly if limited to the '1 to 3.99kg' category), however its origins (if any) need to be understood. The UK 'Public Order Act' defines a crowd as being 6 people, therefore this would be an unhelpful conflict with UK law.<br><br>**Justification:** Clarity of text and determination of appropriate limits<br><br>**Proposed Text:** The following specific additions to Proposal 12 are proposed here. Text regarding the 'safe distance' from people/properties is offered later.<br><br>"- These regulations only apply to drone operations that are conducted outdoors, or which have the potential to leave the confines of a building during a particular flight<br><br>- Only flights within the direct, unaided visual line of sight of the remote pilot, or a competent human under the control of the remote pilot, are allowed.<br><br>- The remote pilot is responsible for the safe separation from any other airspace user(s) and has a direct responsibility to avoid collisions with other aircraft.<br><br>- A drone in the 'open' category shall not operate at a height exceeding 120m above the surface." | |
| 2297 | 3.2 Low-risk operations —'open'category, Limitations | 21 - 22 | **Page No:** 22 of 41<br><br>**Paragraph No:** 3.2 - First paragraph on page 22<br><br>**Comment:** As mentioned in the our comment on Proposal 12, the UK CAA is in full agreement with the intent of this statement. The text refers to 'low-energy aircraft', but there will be a need to establish who/which Authority defines this. Similarly, the text refers to 'smaller drones' - does this refer to any 'sub 25kg' drone, or to a lower sub division such as the 'very small drones' as described in CAT A1 ? Whilst it is acknowledged that this text is intended to be more conversational and general in nature, further clarity of the precise meaning will be required. | |
| 2299 | 3.2 Low-risk operations —'open'category, | 22 - 23 | **Page No:** 22 of 41<br><br>**Paragraph No:** 3.2 - Risk awareness, education, training and safety | |

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| | Risk awareness, education, training,and safety promotion | | promotion<br><br>**Comment:** We agree that the remote pilot must be made clearly responsible for the safe separation from any other airspace user(s), however we do not think that an explicit statement regarding 'giving right of way' is appropriate or required. We should not give other aviators the impression that they always have right of way - it will only confuse pilots at best, or promote inaction at worst, especially for the larger drones - while this limitation is aimed at the 'open' category, it will undoubtedly become a de-facto impression that all drones, irrespective of their size, must always give way. In the UK, we have already had instances where pilots have flown towards drones they've seen and had Airprox with because they think they have right of way over the drone - manned aircraft must be ready to give way too. We fully agree that the default option for drone operators in the 'open' category should be avoidance, and it is likely that, in almost all cases, it will be the drone operator who sees the confliction before the pilot of the manned aircraft, but this is the reason for the VLOS requirement. | |
| 2301 | 3.2 Low-risk operations —'open'category, Risk awareness, education, training,and safety promotion | 22 - 23 | **Page No:** 22 of 41<br><br>**Paragraph No:** 3.2 - Risk awareness, education, training and safety promotion<br><br>**Comment:** It is agreed that a key element in the 'open' category is raising the awareness of the responsibility of the user/operator as they have no aviation background. However, the proposal only suggests use of a leaflet listing the dos and don'ts.<br><br>This is only one potential solution and we should not be closed to other methods, for example online information. Also, use of an online mechanism, especially if provided as a part of a drone activation process (where software controlled drones are involved), could ensure recording of an acceptance of reading the information, similar to what is found in many other software 'product activation' agreements. .<br><br>Online activation could also provide manufactures with a path to their customers and improved support, updates of systems etc.<br><br>**Justification:** The majority of 'open' category operators are likely to be non-aviation people and hence the widest and most flexible approach to ensuring they understand their responsibility should be advocated.<br><br>**Proposed Text:** Replace 3rd paragraph with:<br><br>"Every customer buying a consumer drone should be provided with the necessary information regarding their responsibilities and best advice, e.g. "the dos and don'ts". This could be achieved by use of leaflets or other documents provided with the drone, as have already been developed by some EASA MSs or through online based services. It is important to recognise the need to make this information very easily accessible to overcome any reluctance to seek separate material. If online tools are used it could be preferable to make this part of the drone activation process to assure the information is accessed. Any leaflets or documents could be published on the Agency's and on the EASA MSs' websites as well as being distributed | |

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| | | | when drones are bought. Such leaflets should be translated with the support of the drone community in all EU official languages.” | |
| 2302 | 3.2 Low-risk operations —‘open’category, Risk awareness, education, training,and safety promotion | 22 - 23 | **Page No:** 22 of 42<br><br>**Paragraph No:** Proposal 13<br><br>**Comment:** The UK CAA feels that a limitation to 50m above ground, unless the remote pilot has ‘basic aviation awareness’ is an impractical one which will be impossible to either police or enforce. There is no guidance as to what basic aviation awareness is. At this level, the basic requirement is for the remote pilot to be aware of the potential hazard that his drone could pose to other aviation users and therefore to be aware of his responsibility for the safe conduct of the flight, the requirement to avoid collisions with other aircraft and the necessity to keep the drone within his unaided visual line of sight in order to achieve this. All of these requirements are already contained within the basic scope of the ‘open’ category’s limitations, therefore it is questionable whether any other basic awareness is actually needed. For this proposal to work, it will be necessary for the individual to be able to demonstrate that he has successfully completed whatever education/training/qualification is required.<br><br>We also feel that 50m will also be an impractical limit to be able to enforce - we cannot see the Police forces actively using their resources to measure this height, or then interrogating individual operators to check their qualifications. While it could feasibly be achieved through some technical software ‘limitation’ that is only ‘unlocked’ following the completion of an e-learning tool, this solution would only work for drones that possess the appropriate hardware and software which permits height control to be monitored or limited; the simpler ‘toy’ drones and of course, the more traditional model aircraft, do not have such a capability and their operating heights are simply controlled through visual observation. In addition, once unlocked, a height limited drone could presumably be flown by any other person, therefore there would be no guarantee that the person flying the drone has the requisite aviation awareness.<br><br>**Justification:** It is considered that the requirement is impractical and could not be adequately policed or enforced. Any regulation must be appropriate to those being regulated and recognise their needs in the solution offered. It is also necessary to consider how compliance can be demonstrated, when necessary, hence the solution offered for aviation knowledge awareness training must also be able to provide evidence of completion for each individual. | |
| 2303 | 3.2 Low-risk operations —‘open’category, Mass and subcategorisation | 23 | **Page No:** 23 of 41<br><br>**Paragraph No:** Proposal 14<br><br>**Comment:** The UK CAA sees the benefit of some sub categorisation within the ‘open’ category due to the significant variance in use, capability and overall risk within this group. The UK CAA agrees that the use of mass is most probably the simplest and most ‘enforceable’ parameter to achieve this, but must also point out that the subsequent demarcation of ‘permitted activities’ between the sub categories must be clear and easily understood.<br><br>With this in mind, it is felt that the category numbering of 0, 1 and 2 are not particularly intuitive and suggest that a direct link to the | |

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| | | | mass involved (ie. CAT A1, CAT A4 and CAT A25) may be more easily understood.<br><br>**Justification:** Increased clarity of subdivisions<br><br>**Proposed Text:** It is recommended that the categories are renumbered as follows:<br><br>CAT A1: 'Toys' and 'mini drones' < 1 kg<br>CAT A4: 'Very small drones' < 4 kg<br>CAT A25: 'Small drones' < 25 kg | |
| 2304 | 3.2 Low-risk operations —'open'category, Mass and subcategorisation Proposal 15 | 23 | **Page No:** 23 of 41<br><br>**Paragraph No:** Proposal 15<br><br>**Comment:** The UK CAA does not see the need to explicitly limit the flight of CAT A0 (*UK suggests renaming this as CAT A1*) drone flights to below 50m. While it is acknowledged that the majority of toys would not have the generic performance to fly higher than this, there are a number of lightweight recreational model aircraft (particularly glider types) that would be unnecessarily restricted by this limitation. We consider that the overall requirement to maintain direct unaided visual contact is a more suitable, and more 'naturally limiting' requirement.<br>We also feel that 50m will also be an impractical limit to be able to enforce - we cannot see the Police forces actively using their resources to measure this height, or then interrogating individual operators to check their qualifications.<br><br>We do, however, feel that a lower mass limit should be set where it is accepted that such devices are treated as 'harmless flying objects' and as such, pose little, if any, safety risk to people or risk of damage to properties. To this end, a lower limit of 'below 1kg' would appear to be an appropriate value. Such an approach also acknowledges the wide ranging type of user (from small children upwards) and the clear difficulties in policing and enforcing anything more restrictive.<br><br>**Justification:** Acceptance of a minimum mass level below which it will be entirely impractical to apply or enforce anything but the most basic of requirements<br><br>**Proposed Text:** Replace Proposal 15 with the following:<br><br>"Additional requirements for CAT A1: 'Toys' and 'mini drones' < 1 kg:<br><br>- Any drone sold as a toy or consumer product with a mass below 1 kg shall comply with the applicable product safety Directive.<br><br>- The person flying the drone shall not fly it in a manner that is likely to endanger other persons." | |
| 2306 | 3.2 Low-risk operations —'open'category, Mass and subcategorisation Proposal 16 | 24 | **Page No:** 24 of 41<br><br>**Paragraph No:** Proposal 16<br><br>**Comment:** The first additional requirement specifically refers to 'any drone sold as a *consumer product*…' This would imply that a drone | |

which is not sold as a 'consumer product' (whatever this actually means) or, presumably, any drone that has been 'assembled from a set of components', does not need to comply with any product safety directives or possess any form of geofencing or identification capabilities. This appears to create a split within the <4kg category and hence would lead to greater difficulties in policing and enforcement as the requirements would be different. As mentioned in previous comments, the UK CAA is fully in favour of the use of embedded technologies in order to limit/restrict areas of operation and to ensure that those who fly drones are able to be 'accountable' and 'catchable'. However, the mandating of such systems throughout the 'open' category, although on first sight appearing to be a positive approach, does not necessarily appear to be a practical one.

It is therefore considered that any mandating of embedded technologies will need to be focussed on specific components (such as the flight controller and its associated software) rather than the drone itself. It is believed that much further thought will be required in this area in order to achieve a sensible balance of what needs to, and what actually can, be geofenced or identified.

The UK CAA feels that a limitation to 50m above ground, unless the remote pilot has 'basic aviation awareness' is an impractical one which will be impossible to either police or enforce. There is no guidance as to what basic aviation awareness is. At this level, the basic requirement is for the remote pilot to be aware of the potential hazard that his drone could pose to other aviation users and therefore to be aware of his responsibility for the safe conduct of the flight, the requirement to avoid collisions with other aircraft and the necessity to keep the drone within his unaided visual line of sight in order to achieve this. All of these requirements are already contained within the basic scope of the 'open' category's limitations, therefore it is questionable whether any other basic awareness is actually needed. For this proposal to work, it will be necessary for the individual to be able to demonstrate that he has successfully completed whatever education/training/qualification is required.

We also feel that 50m will also be an impractical limit to be able to enforce - we cannot see the Police forces actively using their resources to measure this height, or then interrogating individual operators to check their qualifications. While it could feasibly be achieved through some of technical software 'limitation' that is only 'unlocked' following the completion of an e-learning tool, this solution would only work for drones that possess the appropriate hardware and software which permits height control to be monitored or limited; the simpler 'toy' drones and of course, the more traditional model aircraft, do not have such a capability and their operating heights are simply controlled through visual observation. In addition, once unlocked, a height limited drone could presumably be flown by any other person, therefore there would be no guarantee that the person flying the drone has the requisite aviation awareness.

This proposal includes consideration that *"Any failures, malfunctions, defects or other occurrences that lead to severe injuries to or fatalities of any person need to be reported…"* although there is no text in this section that discusses this. Clearly though, it is seen to be fairly obvious that a fatality or a severe injury in any section of society, from whatever cause, is something that would need to be reported, thus it is questionable whether or not this needs to be specified here. If the intent of this text was to promote a more

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| | | | detailed reporting mechanism which would lead to a better determination of the actual degree of hazard posed by <4kg drones, then the text would need to be adjusted to reflect this and so ensure that the relevant Police or medical authorities can record the cause appropriately.<br><br>Given that the 'less than 1kg' category carries an implicit consideration that they are essentially harmless flying objects, it is felt that a more specific statement regarding the maintenance of a 'safe distance' from uninvolved people/properties and crowds is placed within the <4kg 'additional requirements', as described within Proposal 12. This should be backed up with a clear statement to emphasise the operator's responsibility to operate in a safe manner with respect to other people or property. Such a move recognises the widespread use of the better performing products, both for casual/recreational use and for small scale business use, while at the same time acknowledging that the risk to others is still relatively small and cannot be adequately quantified. | |
| 2308 | 3.2 Low-risk operations —'open'category, Mass and subcategorisation Proposal 17 | 24 - 25 | **Page No:** 24 of 41<br><br>**Paragraph No:** Proposal 17<br><br>**Comment:** The first additional requirement specifically refers to 'any drone sold as a *consumer product*…' This would imply that a drone which is not sold as a 'consumer product' (whatever this actually means) or, presumably, any drone that has been 'assembled from a set of components', does not need to comply with any product safety directives or possess any form of geofencing or identification capabilities. This appears to create a split within the <25kg category and hence would lead to greater difficulties in policing and enforcement as the requirements would be different. As mentioned in previous comments, the UK CAA is fully in favour of the use of embedded technologies in order to limit/restrict areas of operation and to ensure that those who fly drones are able to be 'accountable' and 'catchable'. However, the mandating of such systems throughout the 'open' category, although on first sight appearing to be a positive approach, does not necessarily appear to be a practical one. It is therefore considered that any mandating of embedded technologies will need to be focussed on specific components (such as the flight controller and its associated software) rather than the drone itself. It is believed that much further thought will be required in this area in order to achieve a sensible balance of what needs to, and what actually can, be geofenced or identified.<br><br>It is unclear as to why the operation of drones with a mass of 4kg or greater within 'limited drone zones' is not permitted. It is wholly conceivable that there could be a requirement for the operation of a heavier drone (ie. one with a capability that is superior to that which is available from a drone of a lesser CAT).<br><br>The UK CAA feels that a limitation to 50m above ground, unless the remote pilot has 'basic aviation awareness' is an impractical one which will be impossible to either police or enforce. There is no guidance as to what basic aviation awareness is. At this level, the basic requirement is for the remote pilot to be aware of the potential hazard that his drone could pose to other aviation users and therefore to be aware of his responsibility for the safe conduct of the flight, the requirement to avoid collisions with other aircraft and the necessity to keep the drone within his unaided visual line of sight in | |

order to achieve this. All of these requirements are already contained within the basic scope of the 'open' category's limitations, therefore it is questionable whether any other basic awareness is actually needed. For this proposal to work, it will be necessary for the individual to be able to demonstrate that he has successfully completed whatever education/training/qualification is required.

We also feel that 50m will also be an impractical limit to be able to enforce - we cannot see the Police forces actively using their resources to measure this height (which, given that these are larger drones will be harder as they could easily appear to be a smaller drone at a lower height), or then interrogating individual operators to check their qualifications. While it could feasibly be achieved through some technical software 'limitation' that is only 'unlocked' following the completion of an e-learning tool, this solution would only work for drones that possess the appropriate hardware and software which permits height control to be monitored or limited; the simpler 'toy' drones and of course, the more traditional model aircraft, do not have such a capability and their operating heights are simply controlled through visual observation. In addition, once unlocked, a height limited drone could presumably be flown by any other person, therefore there would be no guarantee that the person flying the drone has the requisite aviation awareness.

This proposal includes consideration that *"Any failures, malfunctions, defects or other occurrences that lead to severe injuries to or fatalities of any person need to be reported to the Agency"* although there is no text in this section that discusses this. Unlike Proposal 16, this text specifically makes a requirement for a report to EASA. The reasoning for this is not apparent, although it is assumed that it is related to achieving a better determination of the actual degree of hazard posed by <25kg drones, but in order for this to create a relevant data set, the number of accidents related to the number of flights would need to be established; however there is no intent (or desire) to gather this level of data within the 'open' category. The 'open' category is primarily aimed at low risk operators, who are recognised as having little or no aviation knowledge. It is also considered that this type of operator is least likely to engage in any reporting system, especially one involving EASA, hence the reporting requirements and tools to support this will need to be very easy to access, simple to use and open to everyone to use. It needs to be considered how this part of the proposal can be achieved, given that the aim of the 'open' category is for minimal, if any, involvement with aviation authorities. Clearly though, it is seen to be fairly obvious that a fatality or a severe injury in any section of society, from whatever cause, is something that would need to be reported, thus it is questionable whether or not this needs to be specified here.

It is within this CAT (4kg and over - up to the 'open' category mass limit) that the UK CAA feels additional regulatory limitations related to the safety of uninvolved people or properties should be considered. We therefore suggest that specific minimum distance limits from, or flight over, uninvolved people or properties should be set for this sub category (actual distance is to be determined, but suggested to be between 25m and 50m). Any operations within this minimum distance would automatically fall into the 'Specific category'. Such a move acknowledges the increased risk to the safety of people/properties from the larger drone types, but does not completely prevent the use of these types under the 'open' category

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| | | | where the drone is being flown in a controlled environment, or in the open countryside. It also recognises that, realistically, it will only be commercial operators that will need to fly in areas close to third parties within this drone category. It needs to be acknowledged that, in the progression from 0kg to 25kg, there must be a point at which the safety of people on the ground must be considered within regulations as opposed to leaving this to 'operator judgement'. Clearly, a 24kg drone hitting a person is likely to severely injure or damage; the effects at the lower mass limit are less clear and below a certain mass can be considered to be negligible - the quoted 4kg minimum appears to be a reasonable compromise at present, however there may be scope for increasing this to a higher limit. | |
| 2309 | 3.2 Low-risk operations —'open'category, Special operations — Models — Tethered vehicles | 25 | **Page No:** 25 of 41<br><br>**Paragraph No:** Proposal 18<br><br>**Comment:** The text is potentially confusing. The text states that "In dedicated areas the operation of drones (or models) can be performed in the 'open' category according to the conditions and procedures defined by the competent authority."<br><br>The text could be taken to imply that EASA is proposing that model aircraft are only to be operated within 'dedicated areas' and not elsewhere. This is not understood as it contradicts the text in Picture 1 on page 14, under the 'open' category which states "No involvement of aviation authority".<br><br>**Justification:** Clarification of the meaning and intent of the text. | |
| 2310 | 3.2 Low-risk operations —'open'category, Special operations — Models — Tethered vehicles | 25 | **Page No:** 25 of 41<br><br>**Paragraph No:** Proposal 19<br><br>**Comment:** The text discusses tethered drones and lighter than air aircraft (it is assumed that it is meant that both types are tethered), however the proposal does not appear to introduce anything different to the previous requirements, other than introducing a height limit of 50m above ground or water. To date, the UK's experiences of tethered drone operations has been at the lower (mass) end of the scale, involving essentially 'harmless' drones of less than 1kg, with a maximum tether length of less than 25m. Within this category, it is considered that tethered drones can be safely operated, even within a 'no drone zone'<br><br>**Justification:** Removal of unnecessary restrictions to lightweight tethered drones, by recognising that their operation is essentially harmless and the operator can be easily identified. | |
| 2312 | 3.3 Specific risk operation — 'specific'category | 26 | **Page No:** 26 of 41<br><br>**Paragraph No:** 3.3, 3rd sub-para.<br><br>**Comment:** This discusses that some functionality will rely on safety equipment installed on the drone (i.e. the 'detect and avoid' function), or on specific operational procedures. The text only refers to separation from other aircraft, whereas the problem also applies to other vehicles, vessels, structures, persons etc, and inappropriate weather (remain clear of cloud rules etc.) | |

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| | | | Also, as written, this infers the solution is only installed on the drone. It is possible that this functionality/capability could be provided by co-operative systems between the drone and other located systems, e.g. other ground/water/airborne based surveillance systems.<br><br>**Justification:** To fully recognise the wider range of potential hazards and that the capability solutions that could be introduced may not only be installed on the drone.<br><br>**Proposed Text:** Replace 3rd sub-paragraph with:<br><br>"In the 'specific' category we could expect operations of drones out of the visual line of sight of the pilot, sharing airspace with other users where separation assurance with respect to other aircraft, terrain, weather or other hazards cannot be fully assured by the direct vision of the pilot. This function therefore relies on the equipment installed on the drone (e.g. the 'detect and avoid' function), some combination of drone and other located systems, e.g. air/ground/water/space, and/or on specific operational procedures." | |
| 2314 | 3.3 Specific risk operation — 'specific'category, Operation Authorisation (OA) | 27 - 28 | **Page No:** 27 of 41<br><br>**Paragraph No:** 3.3 - Operation Authorisation (OA) - (including Proposals 22 and 23)<br><br>**Comment:** The basis of the overall regulatory framework being proposed within this A-NPA is under a concept that is operation centric (see page 12 para 3.1), "*This regulatory framework is based on the risk posed by drone operations. ….. the consequences of loss of control are highly dependent on the operating environment."*<br><br>This proposal means that an OA from one MS, which has been granted on the basis of a safety risk assessment by the operator, is automatically accepted by another MS. However, it is unclear how one MS will be able to address any 'location specific' aspects of operations in another state, especially given local laws, bylaws and other non-aviation regulations associated to the location and type of activity.<br><br>It is therefore of significant concern that such 'automatic recognition' of an approval that is not based on a full and clear set of harmonised standards (which address all aspects of operation), provides the potential for unsafe and illegal operations with limited ability (by the affected MS) to address location based safety concerns.<br><br>**Proposed Text:** It is recommended that the first paragraph that sits directly under Proposal 22 is replaced with the following:<br><br>"The OA would be valid in all EASA MSs only if it addresses all necessary location specific aspects, as notified/identified* by that MS. As this will only address the aviation regulations it will also be necessary to contain appropriate limitations and conditions to require that any other non-aviation regulations are complied with, including gaining any local additional permissions, approvals etc.<br><br>The OA will be based on an Operations Manual (detailing how the drone needs to be operated, where and under which limitations) in | |

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| | | | line with the result of the safety risk assessment. Assumption within the risk assessment and the resulting operational limitations and conditions need to be applicable in all other EASA MSs and the limitations and conditions defined by the competent authority need to be complied with.<br><br>* this would require MS to define and make these available. If these are not available then the automatic recognition could not be possible." | |
| 2316 | 3.3 Specific risk operation — 'specific'category, Use of certified equipment and approved organisations | 28 - 29 | **Page No:** 28 of 41<br><br>**Paragraph No:** Proposal 25<br><br>**Comment:** The correct term for the abbreviation 'ROC' is RPAS Operator Certificate (see ICAO RPAS Manual). The precise meaning and intent of this proposal is unclear - it seems to be simply saying that an operator is free to apply for an ROC even if he is only working in the specific category. It is unclear that this actually needs to be stated.<br><br>**Justification:** Clarification of intent and meaning of Proposal. Correction of terminology. | |
| 2317 | 3.3 Specific risk operation — 'specific'category, Standard acceptable means and mitigations | 29 | **Page No:** 29 of 41<br><br>**Paragraph No:** Proposal 28<br><br>**Comment:** The proposal mentions the production of 'standard Operations Manuals' in order to simplify the safety risk assessment process - An important aspect of the 'Specific cat' is that each type of operation is assessed on the basis of a safety case that has been supplied by the operator. The UK CAA would advise caution in making any suggestion that a 'standard' manual (that has been produced by a third party) will be automatically acceptable. It must be up to the individual NAAs to design a safety risk assessment process that will meet the requirements. | |
| 2319 | 6. Annexes, Annex I - Overview of the EASA Member States' regulations on drones | 34 - 36 | **Page No:** 36 of 41<br><br>**Paragraph No:** 6.1 - Overview - First full paragraph on page<br><br>**Comment:** Some clarification is required regarding the statement that "*The UK is challenging the idea that the 'open' category should be regulated by aviation legislation at all."* This is not a correct statement of the UK position. The UK's opinion is that aviation legislation should not be used to regulate the non-aviation aspects of drone operations - this covers aspects such as security, privacy, public order, 'annoyance' and, for the smaller sized drones, public safety. The UK fully acknowledges that, in the progression from 0kg to 25kg, there must be a point at which the safety of people on the ground must be considered within regulations as opposed to leaving this to 'operator judgement'. Clearly, a 24kg drone hitting a person is likely to severely injure or damage, but the real public safety effects at the lower mass limit are less clear and will be unrealistic to police/enforce below a certain mass - the 4kg minimum mass as quoted within this A-NPA appears to establish a reasonable compromise at present, but there may be some scope for increasing this to a higher value. | |

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| | | | **Justification:** Clarification of statement within the A-NPA that has been attributed to the UK. | |