

# **Regulation of Unmanned Aircraft Systems in Hong Kong Consultancy Study and Way Forward**

## **Consultation Paper**

### **PURPOSE**

1. This paper seeks the public's views on recommendations concerning the regulation of unmanned aircraft systems (UAS) put together by a consultant commissioned by the Government in 2017. The full report is available from [www.cad.gov.hk/english/uas\\_view.html](http://www.cad.gov.hk/english/uas_view.html).

### **BACKGROUND**

2. The UAS technology and the versatility of usage have continued to evolve rapidly in recent years. Governments around the world are actively reviewing ways to cope with the technological development and diversifying applications of UAS. Given that each jurisdiction is unique with distinctive environmental and societal factors, governments have to take into account local situations in formulating policies and regulatory regimes which best suit the local needs.

3. According to the prevailing laws, any operator of UAS, regardless of the weight of aircraft, must observe Article 48 of the Air Navigation (Hong Kong) Order (Cap. 448C). Under this provision, a person shall not recklessly or negligently cause or permit an aircraft to endanger any person or property. Articles 3, 7 and 100 of Cap. 448C also provide that an aircraft weighing above 7 kilograms (without fuel) can only fly if it has a Certificate of Registration and a Certificate of Airworthiness issued by the Civil Aviation Department (CAD). Furthermore, Regulation 22 of the Air

Transport (Licensing of Air Services) Regulations (Cap. 448A) requires that any person using an UAS of any weight for hire or reward must lodge an application with the CAD before operations, and he/she must abide by the conditions of issue of the permit granted by the CAD. Apart from operating in a safe manner in accordance with the applicable civil aviation legislation, operators must also observe other relevant laws of Hong Kong, such as but not limited to the Telecommunications Ordinance (Cap. 106) and the Personal Data (Privacy) Ordinance (Cap. 486). Despite the existence of the said provisions, there have been calls for a fundamental review of the current regime governing the use of UAS, which is considered rudimentary and cannot effectively cope with the regulatory challenges brought by technological advancements and the proliferation of UAS over the years, hence new and specific legislation will be needed to keep up with the current situation as well as the future development of UAS operations.

4. To assist the Government of the Hong Kong Special Administrative Region on reviewing the effectiveness of the existing statutory requirements, and exploring ways to refine the prevailing regulatory regime with a view to accommodating the technological development and diversified usage of UAS while safeguarding public safety, the CAD commissioned a consultant in March 2017 to conduct a study on the regulation of UAS. The objective is to provide recommendations that can strike a reasonable balance between facilitating usage and development of UAS on the one hand and protecting public safety on the other.

## **KEY RECOMMENDATIONS OF THE CONSULTANT**

5. The consultant has pointed out in the report that while there are no uniform standards, the international community has generally adopted a risk-based approach to classify and regulate UAS, i.e. more stringent regulation for higher-risk operation. After evaluating the relevant risk factors and with due consideration to the dense population of Hong Kong, the consultant has made six key recommendations on the regulation of UAS, which are outlined in the ensuing paragraphs.

### Recommendation 1 — Establishment of an UAS Owner Registration System

6. The consultant recommends that the CAD establish an online registration system for owners of UAS weighing over 250 grams. In essence, a UAS exceeding this weight should not be operated unless it has been registered by the owner. The registration system and labelling requirements allow the owners of UAS to be identifiable, and ensure that owners are aware of their responsibility for the safe operation of UAS. In fact, owners of UAS above 250 grams in Mainland China and US are already subject to similar registration and marking requirements for UAS. Europe has also proposed similar requirements.

7. Through an online registration system, owners will be required to provide personal information to identify themselves and the UAS they own or operate. They are also expected to ensure that information provided is up-to-date and true. Owners must amend relevant information after events such as change of contact number, address etc. UAS owners may be required to enter the following information:

- (a) Full name of UAS owner as shown in HKID / other documents as appropriate, e.g. passport;
- (b) Personal / contact information (e.g. HKID / Passport no., mobile phone no., home address, and/or email address, etc.);
- (c) Information to identify the UAS (e.g. manufacturer / assembler, model name, serial no., date of purchase/assembly, etc.); and/or
- (d) Visual evidence of UAS (e.g. picture showing the representative features for identification purposes)

8. The consultant also recommends that registered UAS be labelled such that they will be identifiable. A unique registration number may be issued to the owners through CAD's database. Owners must ensure their UAS are properly labelled at all times according to prescribed requirements. This system will allow multiple drones to be owned and registered by a single person or company to ensure that accountability can be established.

9. Very small UAS (i.e. those weighing 250 grams or less) are recommended to be excluded from the registration requirements as they are generally<sup>1</sup> less likely to cause serious injury. That said, very small UAS must operate according to certain requirements (see paragraph 16 for details) (e.g. operate in daylight only, within visual range, lower height, etc.). The operation of such UAS is also subject to Article 48 of the Air Navigation (Hong Kong) Order 1995 (Cap. 448C) which stipulates that a person shall not recklessly or negligently cause or permit an aircraft to endanger any person or property.

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<sup>1</sup> Exceptions depend on the area of operation, batteries and motors of drones that are being used.

10. Some members of the public may consider that the registration requirements should be extended to all UAS equipped with image capturing functions or devices, regardless of weight, arising from concern of UAS being used for invasion of privacy. Given the wide coverage, a careful balance should be made regarding the potential burden laid on the general public; for example, parents will be required to register their children’s “toy” aircraft (and update the registration information) although they may be as light as 250 grams or less. Mainland China and United States (US) also do not require UAS lighter than 250 grams to be registered. Likewise, under the proposed regulations by the European authority, those very small UAS are not mandated to be registered. Whilst privacy is a concern, it should be noted that the Personal Data (Privacy) Ordinance (Cap. 486) is the legislation protecting the privacy rights of an individual in relation to personal data. The Ordinance is a principle-based and technology-neutral legislation. While the technology and products for UAS application have been evolving, the use of the relevant devices must comply with the requirements of the said Ordinance as well as the Data Protection Principles if collection of personal data is involved. In this regard, the Office of the Privacy Commissioner for Personal Data has issued a Guidance on the use of drones from the perspective of protecting personal data privacy: [https://www.pcpd.org.hk/english/resources\\_centre/publications/files/GN\\_CCTV\\_Drones\\_e.pdf](https://www.pcpd.org.hk/english/resources_centre/publications/files/GN_CCTV_Drones_e.pdf).

11. For model aircraft (e.g. radio-controlled aeroplane or helicopter), it may be said that they are different from other types of UAS, commonly referred to as “drones”, and hence should be exempted. However, it can also be argued that model aircraft is de facto UAS, therefore should also be

subject to the same registration requirement with respect to the same risk management principle. Such thinking was in line with the consultant's view in the report. Model aircraft heavier than 250 grams are required to be registered in US. While those UAS are not required by the aviation authority of Mainland China to be registered, they are subject to other rules developed by the authority on sport administration in conjunction of other authorities in the Mainland. In EU's proposed regulations, model aircraft are required to be registered.

12. Some people may build / assemble UAS by themselves (known as Do-It-Yourself (DIY) / privately-built / assembled) for hobby, training, or research purposes. Some quarters of the community may opine that they should not be required to register DIY / privately-built UAS as these equipment lack an identifier, say a serial number. However, others may consider these UAS bring risks similar to those made by manufacturers. A possible way to address the identification issue is to require submission of picture(s) of the UAS. Internationally, the European authority proposes that privately built aircraft weighing over 250 grams to be registered. Regulations of Mainland China and US are silent on whether those aircraft may be excluded from their registration requirements.

13. For tourists and visitors, some members of the public may advocate that they should be required to register any UAS they intend to bring into Hong Kong for use. However, given that tourists and visitors usually only stay in Hong Kong for a relatively short time, enforcement of the registration requirements would be difficult. On the other hand, tourists and visitors are already bound by the laws of Hong Kong, including Article 48 of Cap. 448C, which stipulates that a person shall not recklessly or negligently cause or permit an aircraft to endanger any person or property.

If the latter approach is adopted, CAD would consider effective means to disseminate information about the use of UAS in Hong Kong at border control points. In Mainland China and US, tourists are also required to register their UAS.

### **Your views**

A1. Do you agree that UAS owners should be required to register on the Government's registration system, and registered UAS be labelled, before the UAS can be operated?

A2. Do you agree that exemptions from registration requirements should be granted to certain UAS? Examples are UAS weighing 250 grams or less, model aircraft (e.g. radio-controlled aeroplane, helicopter, etc.), DIY or privately-built/assembled UAS, UAS owned by tourists and visitors.

## **Recommendation 2 — Risk-based Classification and Regulation of UAS Operations**

14. The consultant considers that safety requirement on UAS operation should be risk-based and there should not be a differentiation between recreational and commercial use as the risks to persons or properties are similar. After assessing ICAO's recommended risk-based approach to regulate the operational risks of UAS (<https://www.icao.int/safety/UA/UASToolkit/Pages/Toolkit-Guidelines.aspx>), the consultant considers that the model is applicable to

the circumstances of Hong Kong. The consultant recommends that CAD develop regulatory requirements based on the risk categories of UAS operations, i.e. the higher the operational risks of UAS, the more stringent the control and requirements for the persons concerned. The proposed classification is as follows :-

- (a) **Category A — “Low-Risk” Operations:** “Category A” comprises two sub-categories viz “Category A1” (UAS weighing 250 grams or less) and “Category A2” (UAS weighing more than 250 grams but not exceeding 7 kilograms). Prior authorisation to operate these UAS by CAD is not required but the UAS must be operated within specified parameters, for instance, flights are to be operated during daytime, within visual range, and away from airports etc.
  
- (b) **Category B — “Regulated, Lower Risk” Operations:** “Category B” refer to UAS weigh over 7 kilograms but not exceeding 25 kilograms. They should be subject to more stringent safety requirements. The UAS operations will be subject to safety assessment by operators and CAD’s authorisation before flight.
  
- (c) **Category C — “Regulated, Higher Risk” Operations:** “Category C” covers UAS that weigh over 25 kilograms. This category of UAS is not common in Hong Kong. As the ICAO would stipulate safety standards for Remotely Piloted Aircraft Systems (RPAS<sup>2</sup>) in 2020, the consultant suggests that the CAD may formulate operating requirements and conditions for this category with reference to local circumstances after those ICAO’s standards are published. RPAS is

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<sup>2</sup> RPAS are normally larger and/or heavier unmanned aircraft (usually heavier than 25 kg) with more payload capacity and consist of B-VLOS operations (i.e. UAS operated beyond the visual range of pilots).

defined by ICAO as a subset of UAS that can be integrated in international airspace alongside manned aircraft.

15. A summary of the proposed requirements for “Category A” and “Category B” UAS under the above proposed classification is set out below.

**UAS  $\leq$  250 grams (i.e. “Category A1”)**

16. No registration (and labelling) is proposed for UAS weighing 250 grams or less, but their operation is subject to the following operating requirements:-

<b>Operating Requirements</b>	
<b>Time of operations</b>	Daylight only
<b>Operating height</b> <i>[above ground level (AGL)]</i>	<100 ft (about 10 floors)
<b>Distance from people/buildings</b>	> 10 m
<b>Distance from operator</b>	< 50 m (about length of 2 basketball court)
<b>Visual line of sight (VLOS)</b>	Required
<b>Speed</b>	$\leq$ 40 km/hr
<b>Carriage of loads (e.g. dangerous goods)</b>	Prohibited

*Note: If the operation of UAS cannot comply with any of the above operating requirements<sup>3</sup>, the owners must obtain CAD's prior authorisation as per "Category B" arrangements.*

**UAS > 250 grams but ≤ 25 kg (i.e. "Category A2", "Category B")**

17. Registration and labelling are required for UAS weighing more than 250 grams.

18. For UAS weighing 7 kg or less (i.e. "Category A2"), they are subject to the following operating requirements:-

<b>Operating Requirements</b>	
<b>Time of operations</b>	Daylight only
<b>Operating height [above ground level (AGL)]</b>	< 300 ft (about 30 floors)
<b>Distance from people/buildings</b>	> 50 m (> 30 m during take-off / landing)
<b>Distance from operator</b>	< 500 m (about length of 5 soccer field)
<b>Visual line of sight (VLOS)</b>	Required
<b>Speed</b>	≤ 80 km/hr
<b>Carriage of loads (e.g. dangerous goods)</b>	Prohibited
<b>Training of operators</b>	Basic training required (see paragraphs 26-29)

<sup>3</sup> For instance, UAS flown solely by first-person view (FPV) or beyond the visual range of pilot, drone racing (normally of higher speed), etc.

*Note: If the operation of UAS cannot comply with any of the above operating requirements<sup>4</sup>, the owners must obtain CAD's prior authorisation as per "Category B" arrangements.*

19. Given the evolving technology and application of UAS, international standards have yet to be set. Many governments around the world are still working on the requirements and related enforcement issues. Hong Kong is no exception. Some members of the public may raise concerns about the enforcement of the proposed registration system and operating requirements. On the one hand, technologies such as geo-awareness<sup>5</sup> and flight log capabilities (e.g. means to record flight details such as time, position of aircraft and operator, height, speed, etc.) could assist in the enforcement of operating requirements of UAS. However, mandating such capabilities for all UAS will prohibit the use of UAS which do not have such capabilities. For instance, most "Category A1" UAS currently do not have such capabilities. At the same time, some members of the public may prefer a more liberal and gradual approach. The existence of a registration system and clear specification of operating requirements is already a step forward. It may be said that like many recreational activities, owners and operators of UAS have the shared responsibility to exercise self-discipline and due diligence. In any case, they could be held liable under Article 48 of Cap 448C. Again, a careful balance should be struck between facilitating the development/use of UAS and ensuring public safety. On the other hand, following the risk based approach geo-awareness and flight log capabilities should be mandated for "Category A2" UAS or above.

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<sup>4</sup> See footnote 3

<sup>5</sup> A function that can detect a potential breach of airspace limitations and provides the remote pilot with sufficient information and an appropriate alert to allow the remote pilot to take effective action to prevent that breach [ Source : <https://www.easa.europa.eu/document-library/opinions/opinion-012018#group-easa-downloads> ]

<b>Equipage Summary of UAS</b>		
	<b>“Category A1”</b>	<b>“Category A2” or above</b>
<b>Geo-awareness</b>	<b>x</b>	<b>✓</b>
<b>Flight log</b>	<b>x</b>	<b>✓</b>

20. For UAS weighing more than 7 kg (i.e. “Category B”), prior authorisation from CAD is required for their operation. Owners (and operators where applicable) should submit information required by CAD in applying for the authorisation, which may typically include :-

- (a) a safety risk assessment;
- (b) an operations manual;
- (c) information about the operators (e.g. name, contact information, qualifications); and
- (d) any other information as required by CAD.

21. In giving out authorisation, CAD may impose any operating requirements as circumstances warrant. Some typical requirements may include :-

- (a) requirements relating to time of operation, operating height, distance from people/building, distance from operator, visual line of sight, speed, carriage of loads and any other conditions as CAD thinks fits; and
- (b) requirements relating to operators’ training (see paragraphs 26-29).

22. Geo-awareness and flight log capabilities should be mandated for “Category B” or above UAS. Subject to further study, the UAS should also be equipped with electronic identification capability<sup>6</sup>

23. Apart from the operating requirements, the CAD will also provide guidelines and safety tips on the safe operations of UAS such as minimum ground visibility, wind limit, pre-flight checks, etc.

24. Some UAS, for example, prototype UAS, are used for development/research purposes or educational purposes (e.g. STEM programme). The operation of these UAS is often confined within a controlled area under the supervision of responsible persons such as teachers and researchers. The risk to public safety posed by this kind of UAS should not be significant. Exempting this category UAS from certain requirements and/or providing facilitation to their operations would assist the development of UAS technology. However, if these UAS will also be used for purposes other than education/research, or if there is a probability that it may be used outside of the controlled areas, there is an argument for them to be subject to the same registration arrangement as other UAS.

25. Some members of the public may consider outdoor UAS competitions (such as first-person-view (FPV) racing<sup>7</sup>) with safety confinement (such as safety nets) should also be facilitated; for instance, consideration should be given to simplifying/relaxing certain regulatory requirements at the time of racing. However, the consultant pointed out that

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<sup>6</sup> A system that transmits the identity of the UA so that it can be identified without direct physical access to that UA. [ Source : <https://www.easa.europa.eu/document-library/opinions/opinion-012018#group-easa-downloads> ]

<sup>7</sup> According to the consultant, in FPV, participants control UAS wearing head-mounted goggles showing the live stream camera feed from the UAS. The goal is to complete a set course as quickly as possible.

FPV racing UAS typically can reach very high speeds (between 100 and 200 km per hour), and some countries have imposed restrictions on these activities, such as only allowing the racing to be conducted indoors. In the US, indoor UAS racing is not regulated by the civil aviation authority. Racing organisers with competency to ensure public safety may seek to obtain CAD's authorisation as per "Category B" arrangements.

### Your views

- B1. Do you agree that regulation should not be differentiated by purpose (i.e. current regulatory framework) but by operational risks under a risk-based approach?
- B2. What are your views on the classification and operating requirements of UAS under different categories?
- B3. What are your views regarding the enforcement measures such as the requirement of geo-awareness, flight log and electronic identification capabilities etc.?
- B4. Do you agree that for certain operations conducted in controlled areas with safety confinement and/or of a time critical nature and public interest should be exempted from certain requirements otherwise required? e.g. UAS whose operation is confined in a controlled area such as research/development or educational purpose, FPV UAS racing competitions.

26. Suitable training helps improve the safety awareness of UAS operators, thereby reducing the likelihood of accidents. In this connection, the consultant recommends that appropriate training and/or assessment requirements be prescribed for different risk categories. Any person operating a “Category A2” UAS may be required to undergo at least 1 to 2 hours of basic training and assessment. For “Category B” operations which have higher risk level, the operators should undertake more advanced training and go through assessment on their competence. Both Mainland China and European authorities have stipulated training or licensing requirements for UAS operations being classified as higher risk.

27. Noting that UAS training organisations do not currently require CAD’s approval, the consultant suggests that the CAD may consider devising learning objectives with established organisations, and authorise qualified organisations to conduct assessments on operators under the supervision of the CAD. Certain web-based training and assessment, where appropriate, may be administered.

28. While training is not required for “Category A1” operations, for “Category A2” operations UAS owners may take a short web-based training covering the following topics:

- (a) relevant legislations, safety guidance (e.g. no-fly zones, DOs and DON’Ts on leaflet), operating requirements and limits for the applicable UAS category;
- (b) responsibilities of UAS owner (for example, owners must take reasonable measures to ensure operators of their UAS can follow the safety requirements); and

(c) acknowledgement of owner responsibility and compliance with manufacturers' instructions where appropriate.

29. For "Category B" operations, more stringent requirements, such as assessment and certification of UAS operators are required. Theory and practical training may also be conducted by instructors or course organisers approved by CAD, and assessment and certification may be conducted by certified instructors approved by CAD.

**Your views**

C1. Do you agree that training and/or assessment requirements should be prescribed based on risk categories?

C2. Please share your suggestions and views on the content, nature, and extent of training and/or assessment requirements?

**Recommendation 4 — Drone Maps for UAS Operators**

30. The consultant notes that the CAD has already published textual information on areas where UAS operations are prohibited (<https://www.cad.gov.hk/reports/CAD%20Leaflet-UAS.pdf>). The consultant recommends that drone maps with visual images with clear delineation of no-fly zones<sup>8</sup> (for example areas near aerodromes or flight paths etc.) also be provided to better facilitate general UAS users.

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<sup>8</sup> No-fly zones refer to areas where UAS cannot operate unless with CAD's permission.

31. At present, UAS cannot operate in certain areas (e.g. airport or helipad, congested areas, Victoria Harbour etc). Some people have concerns about UAS operations in congested areas and suggest marking those areas as no-fly zones. However, “congested area” can be difficult to delineate<sup>9</sup>, particularly to a place like Hong Kong. Some members of the public may consider that Hong Kong is densely populated and hence congested areas should practically cover the majority part of Hong Kong (e.g. all urban areas). Prohibiting operation of UAS in all these areas may hinder the development and use of UAS. At the same time, some may be inclined to adopt a more liberal approach. In any case, owners/operators will need to abide by the operating requirements (e.g. maintain a certain distance from other people) and CAD’s safety guidance at all times.

**Your views**

- D1. What are your suggestions or views on where UAS must not fly other than aerodromes (including heliports), flight paths, air navigational aids e.g. radar stations? In view of overseas experience, should UAS flying be banned near major public and security facilities, e.g. power plants, hospitals, railway, prisons, etc.?
- D2. What are your suggestions or views on where UAS are recommended to fly (e.g. country parks, uninhabited rural areas or outlying islands)? If you are a UAS user/owner/operator, what are the usual places where you operate your UAS?

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<sup>9</sup> Under Cap. 448C, the interpretation of “Congested area” is “in relation to a city, town or settlement, means any area which is substantially used for residential, industrial, commercial or recreational purposes”

## Recommendation 5 — Prescribing Insurance Requirements for UAS

32. At present, UAS operators applying for permits to operate commercial service are required to purchase third party insurance for every single operation, similar to the existing practice of the United Kingdom. Mainland China also requires certain UAS operators to have third party insurance. The European authority requires operators to observe the applicable insurance law. The consultant notes there may be diverging views on insurance coverage requirements for different types of UAS operators, and it may not be easy to purchase insurance for UAS operations in Hong Kong. It is however expected that with increasing demand worldwide, more insurance packages specifically for UAS operations will emerge.

33. In view of the fact that potential risks may be posed to the public by certain UAS operations, the consultant proposes that “Category B” or above operations, whether for commercial or non-commercial use, must be covered by third party insurance. For very small UAS (e.g. “Category A1”) the consultant does not see any practical needs for mandating operators to purchase insurance. As for “Category A2” UAS which weigh above 250 grams but do not exceed 7 kg, some members of the public may have concerns that those heavier UAS may still pose potential danger to persons and properties, hence insurance should also be required to protect both the public and the UAS operators. Indeed, with the increasing use of UAS, it is expected that the purchase of insurance covering third party liability for injury or death will become easier.

34. Regarding the coverage of liability, as reference, motor vehicles are required by the Motor Vehicles Insurance (Third Party Risks) Regulations (Cap. 272A) to have a minimum insured amount of HK\$100 million for third party risks for any event resulting in death or bodily injury. Owners' Corporations are required by the Building Management (Third Party Risks Insurance) Regulation (Cap. 344B) to have a minimum insured amount of third party risks of HK\$10 million for any prescribed liability that may be incurred in respect of the death, or the bodily injury, or both, arising out of any event.

**Your views**

- E1. Do you agree that operators of higher risk operations shall be subject to insurance requirements? Should “Category A2” and “Category B” be subject to requirements?
- E2. What are your suggestion or view on the coverage of insurance required, including the risks covered (e.g. third party risk in the event of death or bodily injury) and minimum insured amount?
- E3. If you have ever purchased insurance for UAS operations, please share your experience.

**Recommendation 6 — Indoor Operations of UAS**

35. The consultant notes that indoor operations of UAS have become increasingly popular, such as drone racing, training, building maintenance, etc. The consultant notes that indoor UAS flights are bound by Article 48 of Cap. 448C, which stipulates that a person shall not recklessly or negligently cause or permit an aircraft to endanger any person or property. Noting that most countries do not yet have a clear view on how to regulate indoor activities, the consultant recommends that the CAD may conduct further study on indoor UAS activities and the associated safety issues.

36. For indoor operations, a starting point for discussion could be venues with public access (e.g. shopping malls). Indoor operations of UAS differ from outdoor operations. As the operations are conducted indoors, while the UAS pose no safety concerns to airspace users (e.g. manned aircrafts), they may cause concerns about the safety of public inside the venue. As indoor environments vary, it will be difficult to develop standards (e.g. operating heights) that could cover all types of indoor venues and situations. Tailor-made operating requirements may be required, depending on the specific environment and operations of individual venues.

37. Moreover, unlike outdoor venues, indoor venues are usually subject to control by property owners/managers, who can decide and control whether to allow a person to enter their premises and operate UAS, and if so, the operating requirements. To balance the risks involved and the burden on users, a possible option is that for lower risk operation like “Category A” where CAD’s prior authorisation is not required, UAS operators should obtain the consent of relevant property owners/managers before conducting indoor operations. For higher risk operations like “Category B” where CAD’s prior authorisation is required, the applicant should provide the information in collaboration with the relevant property

owners/managers (e.g. safety assessment) in their application to CAD for authorisation. The Government may also issue general safety guidelines for property owners/managers.

**Your views**

F1. What are your views on the regulation of indoor operations of UAS? Should the operations solely be regulated/monitored by owners/property managers where the operations would take place?

**TENTATIVE IMPLEMENTATION TIMEFRAME**

38. With regard to the above recommendations on enhancing the regulatory regime for UAS and the consultant’s suggested implementation timetable, the CAD will develop a strategic framework of implementation measures in both short-term (2018-20) and medium/long-term (2020 onwards) approaches. The Government and stakeholders could consider the feasibility, priority and resource allocation in respect of the recommended measures as a whole.

39. In the short run (2018-20), subject to the outcome of consultation, the CAD may first formulate relevant requirements for “Category A” and “Category B”, such as establishing a registration system as mentioned above, risk classifications and associated operating requirements, requirements for authorising UAS training organisations or instructors etc.

In the longer run, the CAD may review ICAO's new requirements for RPAS which may be published in 2020 and assess whether those are applicable for "Category C" operations. For indoor UAS operations, the CAD may set out general safety guidelines for reference by UAS operators, and property owners or managers.

## CONSULTATION

40. Your views are important in shaping our way forward on the regulation of UAS. Please provide your views to the questions raised in this paper and send your comments in writing on or before 3 July 2018 :

By mail:           Coordinator of UAS Consultation  
                          Air Services and Safety Management Division  
                          Civil Aviation Department  
                          Civil Aviation Department Headquarters  
                          1 Tung Fai Road  
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By fax:           (852) 2877 8542

By e-mail:       [uas\\_view@cad.gov.hk](mailto:uas_view@cad.gov.hk)

41. It is voluntary for any member of the public to supply his/her personal data upon providing views on this consultation document. Submissions and personal data collected may be transferred to the relevant Government bureaux and departments for purposes directly related to this

consultation exercise. The Government bureaux and departments receiving the data are bound by such purposes in their subsequent use of such data.

42. The Government may, as appropriate, publish, reproduce, quote, summarise and publish the written comments received, in whole or in part, in any form and use, adapt or develop any proposal put forward without seeking permission or providing acknowledgement of the contributing parties.

43. If you do not wish your names and/or affiliation(s) be disclosed, please state so at the beginning of your submissions. We respect the wishes of individuals/organisations to remain anonymous. We will remove their names when publishing their views. Any personal data provided will only be used by CAD for purposes which are directly related to consultation purposes under this consultation paper. Such data may be transferred to other Government departments/agencies for the same purposes.

44. For access to or correction of personal data contained in your submission, or any enquiries relating to this public consultation, please contact us by e-mail at [uas\\_view@cad.gov.hk](mailto:uas_view@cad.gov.hk).

**Civil Aviation Department**

**3 April 2018**

## **GLOSSARY**

<b>Drone</b>	Drones are a type of unmanned aircraft (UA). While a definition by ICAO is not yet available, “drones” are generally understood by the public as the newer type of UA which usually have multi-rotor and self-levelling device. Drones are widely used for recreational or other purpose.
<b>Electronic identification</b>	A system that transmits the identity of the UA so that it can be identified without direct physical access to that UA. (Source : <a href="https://www.easa.europa.eu/document-library/opinions/opinion-012018#group-easa-downloads">https://www.easa.europa.eu/document-library/opinions/opinion-012018#group-easa-downloads</a> )
<b>Geo-awareness</b>	A function that can detect a potential breach of airspace limitations and provides the remote pilot with sufficient information and an appropriate alert to allow the remote pilot to take effective action to prevent that breach (Source : <a href="https://www.easa.europa.eu/document-library/opinions/opinion-012018#group-easa-downloads">https://www.easa.europa.eu/document-library/opinions/opinion-012018#group-easa-downloads</a> )
<b>Maximum all up weight (MAUW)</b>	Maximum take-off weight or gross weight of UAS during operations including batteries, fuel, equipment, and all other parts.
<b>Model Aircraft</b>	Model aircraft is generally recognized as UAS intended for recreational purposes only. (Source : ICAO Cir. 328)
<b>Operations Manual (OM)</b>	An OM contains procedures, instructions and guidance for use by operational personnel in the execution of their duties. Please see <a href="http://www.cad.gov.hk/reports/UAS_operations_manual.pdf">http://www.cad.gov.hk/reports/UAS_operations_manual.pdf</a>
<b>Remotely Piloted Aircraft Systems (RPAS)</b>	<ol style="list-style-type: none"><li>1. According to the Consultant, RPAS are a subset of UAS, which are usually large for cross national boundary operations, and they are unlikely to be UAS lighter than 25 kg. It is not used in Hong Kong at present. It is envisioned that RPAS should be able to interact with Air Traffic Control (ATC) and other aircraft on a real-time basis, and they are subject to the same equipage and certification requirements as manned aircraft and have the same separation standards.</li><li>2. A set of configurable elements consisting of a remotely-piloted aircraft, its associated remote pilot station(s), the required command and control links and any other system elements as may be required, at any point during flight operation. (Source : ICAO Cir. 328)</li></ol>
<b>Unmanned Aircraft (UA)</b>	An aircraft which is intended to operate with no pilot on board. (Source : ICAO Cir. 328)
<b>Unmanned Aircraft Systems (UAS)</b>	An aircraft and its associated elements which are operated with no pilot on board. (Source : ICAO Cir. 328)
<b>Visual Line of Sight (VLOS) Operations</b>	An operation in which the remote crew maintains direct visual contact with the aircraft to manage its flight and meet separation and collision avoidance responsibilities. (Source : ICAO Cir. 328)