

RPAS – UAS Senate Inquiry 2016

23 November 2016

Committee Secretary
Senate Standing Committees on Rural and Regional Affairs and Transport
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Re: Regulatory requirements that impact on the safe use of Remotely Piloted Aircraft Systems, Unmanned Aerial Systems and associated systems.

Dear Committee Secretary:

I am writing as member of the community affected by the potential changes to the rules and regulations around the use of Remotely Piloted Aircraft Systems (RPAS) and Unmanned Aerial Systems (UAS). I am heavily involved with the recreational use of quadcopters (colloquially known as drones) for use in recreational “drone racing”. I currently hold the secretary position for the Adelaide FPV Racing club although this submission is not on behalf of the club as this will be done more formally through the Model Aeronautical Association of Australia (MAAA) and Australian Miniature Aerospports Society (AMAS) societies that I am also involved with. I was also one of the organisers of one of the largest drone racing competition held in front of a large audience at night as part of the 2016 Royal Adelaide Show, which was a great success. Through this community I have been involved with primarily the quadcopter / drone community in all forms (photography drones, commercial drones, drone racing, etc.) and have been involved in the education community around the potential for use of these technologies in the science and technology domain.

In the following sections I will address each of the terms of reference for the inquiry however there are few fundamental principles that should be considered holistically when considering review of the governance and regulatory requirements around RPAS / UAS:

- **Category of RPAS /UAS Use:** As the primary concern around RPAS and UAS regardless whether it is for commercial or recreational purposes is that of safety. Safety for the public and property is always of the utmost concern and therefore the risk exposure to public and property must be considered. This risk exposure changes based on the type of use of the RPAS/UAS. For example, a photography drone used for landscape photography are typically operating at higher altitudes and therefore there is an increased risk to low flying passenger aircraft. In comparison, the operation of racing drones that typically flying lower than 10 meters (below the tree line) pose significantly less risk. Therefore, it is recommended to consider the RPAS / UAS use as part of the regulatory governance structures.
- **Location:** The location of where RPAS / UAS operate should also be considered. There are already rules around the flying over populated areas and near people to help reduce the risk of property damage or injury for good reasons. This is also true for other recreational use where flying at local parks or club flying fields away from buildings, people not involved in the flying activities poses significantly less risk when compared to the operation of RPAS / UAS for photography of buildings, events, structures. Typically flying activities that are in higher risk situations are typically being done by registered commercial operators who should be aware of their responsibilities and this should continue to be the case. Recommendation is to consider providing allowances for clubs and formal groups who have suitable safety plans and controls in place.

- **Skilled Pilots:** The biggest risk is due to unskilled pilots incorrectly operating their “new toy” without being aware of the rules and guidelines. Unfortunately, mandatory registration of pilots would result in a governance overhead that would not be possible to maintain and does not achieve the desired outcome as being a registered pilot would still not mean they know what they are doing. A mandatory online training course teaches potential pilots the basics of flying an RPAS / UAS and the basic rules and guidelines would help create a more informed community. Model associations and clubs could also support this training and guidance, which already occurs through social media discussion groups and regular club meets. However mandatory registration is impossible to police and only provides coverage for the conscientious people who are not the safety risk in the first place. Therefore, although registration of pilots seems like a suitable idea it is not recommended as it will be costly to implement and maintain without achieving a suitable outcome.
- **Weight Criteria:** Many people have been discussing the use of weight classes as a control mechanism to mitigate possible risks. Although lighter equipment does reduce the risk somewhat it is still not a suitable control as even something the weight of a tennis ball if it is falling out of the sky would still create significant damage / injury. This criterion is therefore not an especially good control although larger RPAS and UAS do have an increased risk especially when getting up to the 3Kg or greater category. Recommendation is to consider weight criteria but only as a guidance for ensuring pilots have suitable skill level for operating these larger aircraft.
- **Drone Racing:** Considering a few of the items listed above I would like to consider Drone racing in a slightly different category to most other RPAS / UAS. This is due to a few key characteristics of aircraft involved in a drone race including, racing drones are typically smaller and lighter (<2Kg and size of a dinner plate), they fly lower than the tree lines, fly with a restricted course or area where there are no buildings or foot traffic, aircraft are operated with a failsafe that if an error occurs stops all motors resulting in the aircraft crashing into the ground and travelling no further than 30 meters (typically utilise an exclusion zone around racing tracks for this reason). Due to these characteristics that are very different to many other uses of RPAS / UAS equipment and the risk to property damage or injury are significantly reduced that suitable regulations and controls are considered for this class of device and use. Drone racing is also one of the fastest growing sports around the world with recent events being covered by ESPN, increasingly large prize money and greater interest by the public to watch and be involved each year. Therefore, consider a class of device or operation that supports drone racing and suggest working closely with the model associations in Australia (MAAA and AMAS) to foster this sport and make Australia a leading competitor in the international community.

The following sections address the terms of reference for the inquiry.

Current and Future Regulatory Requirements that impact on the safe commercial and recreational use of RPAS, UAS and associated systems.

The current guidelines provide a broad and encompassing approach to the regulation of the use RPAS/UAS however as per the points raised above these guidelines should consider the purpose or use and focus on the scenarios that are of higher risk that may need additional controls. For example, the risk around passenger aircraft safety should only apply for the operation of RPAS / UAS where the model has the potential to impact an aircraft. This scenario is not applicable when operating at a model club flying field, when flying below the tree line (e.g. drone racing), or when taking photos below the tree line.

The design and manufacturing of RPAS and UAS or importation of these devices should not be placed under significant regulation otherwise you will severely limit the innovation and technology research development within Australia. The majority of the risk is around unskilled pilots / operators and not the technology itself. Most devices already have a level of failsafe already in them, which are suitable to its type of use. For example, photography drones typically contain a return to home function or racing drones contain a full motor stop. It is not recommended to mandate the same control for all types of RPAS / UAS as some controls are not applicable or could result in additional risks (e.g. a return to home on a racing drone would not be suitable and unwarranted).

Restriction in the importation of RPAS / UAS would also not limit the availability as the technology to build your own is readily available and not difficult to complete. One risk around self-built devices is the lack of safety features, which is why drone racing clubs instigate mandatory model scrutineering before all events to check the build of the device but more critically that the failsafe (motor stop) feature is operating correctly and is available in ALL model aircraft.

The existing industry and likely future social and economic impact of RPAS technology

Drone racing is an increasingly popular sport around the world and therefore there will be an increase in people wanting to be involved and an increasing number of racing events being held all around Australia. Suitable regulation that allows this sport

to grow and operate in a safe manner will help place Australia as one of the top sporting competitors in the International drone racing scene.

RPAS and UAS devices are increasingly being used for a variety of commercial users to reduce the risk of injury in the workplace (e.g. survey activities in dangerous to reach locations) and to achieve efficiencies (e.g. thermal imagery of land at much lower costs than alternative technologies). Other uses of the technology will continue to evolve over time and with Australia being a leader in innovative ideas the application of RPAS / UAS technology to various industries will likely become a large export of technology for Australia to other trade partners around the world.

current and future options for improving regulatory compliance, public safety and national security through education, professional standards, training, insurance and enforcement

As highlighted in the overarching principles above consideration of the “use” of the RPAS / UAS should be incorporated into the regulation so that rules are tailored based on the level of risk to the type activity being conducted. Support to model flying clubs to help encourage the community to fly as part of a club who have strong safety practices would help reduce the number of ill-informed drone pilots. Mandatory provision of rules and guidelines as part of the purchase of RPAS / UAS equipment from Australian sellers would also help to inform new pilots who are just learning.

The level of training and support for commercial operators seems satisfactory the biggest source of potential risk is primarily photography drone operators due to the ease of flying these devices and the desire to fly high and far away from the pilot. Therefore, greater training or awareness of the individuals’ responsibility for this class of use would be very appropriate.

the potential recreational and commercial uses of RPAS, including agriculture, mining, infrastructure assessment, search and rescue, fire and policing operations, aerial mapping and scientific research

This is a potentially very long list and based on the discussions I have had with various research and development communities, commercial companies and educational institutions there is a large desire by all to use RPAS / UAS equipment in a wide variety of situations as people enjoy using these devices and there are real commercial benefits that can be gained through their use. If further information is required on the potential uses then this can easily be facilitated through the drone racing community who typically also apply their skills at this “day jobs”.

the use of current and emerging RPAS and other aviation technologies to enhance aviation safety

The use of technology controls for safety MUST consider the type of RPAS / UAS and its use. For example, implementing a GPS and return to home solution on a racing drone would be more dangerous and less effective than the current control that is to apply a failsafe the stops all motors on the aircraft resulting in it falling to the ground (from its racing height of less than 5 meters on average). New technologies will come onto the market such as collision avoidance systems or even the possibility of electronic warning beacons for passenger aircraft but these should only be applied for RPAS / UAS that are to operate in situations where they are exposed to the risk of an aircraft hitting the device (e.g. photography drones or high flying aircraft).

Any other related matters

The RPAS and UAS community is growing rapidly in Australia and it would be good to have all affected parties more integrated in the development of suitable regulation that allows for innovation, cutting edge research and development, recreational model flying, increasing exposure of drone racing and increasing commercial use to achieve efficiencies or allowing new ways of working, while doing so in a safe and sustainable manner. I am therefore keen to see not just one body trying to work in isolation but rather all interested parties working together to achieve the same goal.

Let’s ensure that Australia leads the world in innovated approaches to regulation and control focussed on a common outcome that we all want to achieve ... safe operation of our skies for the future.

Sincerely,

Egon Kuster