



helistar

13th December 2016

Helistar Aviation Pty Ltd

ABN: 34 102 789 355

1 Sir Reginald Ansett Drive,
Adelaide Airport SA 5950

PO Box 21 West Beach SA 5024

Ph: 08 8235 2222

Fax: 08 8266 9305

www.helistar.com.au

Committee Secretary
Senate Standing Committees
on Rural and Regional Affairs and Transport
PO Box 6100
Parliament House
Canberra ACT 2600

Dear Members of the Committee,

Thank you for the opportunity to provide a submission to the inquiry on
**Regulatory requirements that impact on the safe use of Remotely Piloted Aircraft Systems,
Unmanned Aerial Systems and associated systems.**

Helistar Aviation is a rotary wing aviation company based in Adelaide. We operate across Australia and have bases in WA and Qld. We also own a fixed wing training and charter company, an RPA company and an aircraft maintenance organisation.

We operate Westpac Rescue helicopters in WA and SA for Surf Life Saving Australia. We operate media helicopters and we also have contracts for powerline inspections and maintenance in SA and Qld plus we carry out gas pipeline patrols in SA. We have previously worked in NSW on powerline inspections and routinely tender for powerline inspection work across Australia.

From the above you can understand that the vast majority of our work is carried out at low level, well below 500 feet, with much of it at powerline height.

In the past two years we have commenced providing RPA solutions to our helicopter clients. Through this work we have gained a significant understanding of the current and potential markets for RPA systems and we have also a significant insight into the current RPA hardware, software and regulations both in Australia and overseas. Most recently we were part of a team tendering to CASA for the supply of software for an RPAS Application for mobile devices that would show the user restricted flying areas.

In addition to being involved by flying RPAS and by working on software to monitor RPAS flights, in our daily helicopter operations we have come close to having incidents with RPAS. We have reported several instances where the RPAS was being flown in our flight path illegally – one in controlled airspace and the other deliberately ‘buzzing’ our aircraft. Unfortunately for the second operator, we had a Cineflex camera system on board and we filmed the event including the operator.

From the above, we feel that we are well placed to provide insights into the impact of RPAS and UAS.

Terms of Reference Part A – Regulatory Framework

The regulatory framework for aviation is significant with CAOs, CARs, CASRs and manuals of Standards to name a few. Professional aviators often have difficult understanding the aviation regulatory framework but they become familiar with the requirements through training and experience. The current system works well and we are able to deliver a safe and efficient service to our clients while ensuring that we are meeting all of the regulatory requirements.

One of the key functions of the aviation regulations is to provide safe separation of aircraft and this is achieved by, amongst others, the requirement to “see and be seen”. I refer to the recent NTSB Safety Alert ¹ on this subject. Even in our busiest terminal airspace where a sophisticated ATC system is separating traffic, it is routine to use visual separation and visual approaches when weather permits, which is most of the time. Hence “see and be seen” is a significant part of our current system. We are about to move to ABS-B transponders which will allow the pilots to ‘see’ all the other aircraft operating near them so this fundamental method of separation still holds true with enhanced technology.

Unfortunately opening up the skies, albeit only to 400’, to the general public with limited or no training can only lead to issues. Please remember that Helistar and others spend most of their flying time well below 400’.

There are two fundamental safety issues with the current regulatory environment. First aviation authorities have yet to address the well-documented issue that RPAs and UAVs fly away or crash uncontrolled and, second, the dozens of reported cases of RPAs flying in close proximity to manned aircraft which the regulation and the current enforcement regime is not stopping.

The first issue is caused by the software and hardware. Just as modern computers often ‘hang’ or become unresponsive, so do the operating systems of RPAs. RPA software is often ‘open-source’ and not tested to the level of other aviation-related software. These ‘fly-aways’ can breach the 30m from people and not above 400’ rules as the aircraft are not under the pilot’s control. The RPA hardware has not undergone significant testing and malfunctions are common. Mean time between failure of the electric motors is not known and software is potentially ‘open-source’ with many ‘bugs’.

Currently we are working on a beach management solution using a tethered RPA and our research to date indicates that the electric motors on the RPA from the largest supplier may last only 200 hours before failure with failures recorded at as low as 20 hours. So both untested and uncertified software and hardware does cause uncontrolled ‘fly-aways’ and crashes and these are well know throughout the industry.

The second issue is caused by the level or lack of training of the pilots. Most RPA pilots come from a non-aviation background and are focussed on the simple regulations of 30m from people and buildings, 3nm from an airport and not above 400’. Private landowners can now operate RPAs up to 25kg with no operator’s certificate or remote pilot licence. Commercial operators of RPAs above 2kg in the current regulatory requirement are required to have the same theoretical training of a recreational private pilot (RPL) requires. The RPL theory training normally takes at least several weeks before the student is proficient to pass the examinations however RPA pilots can gain their licence in 5 days which covers both theory and practical flying training. This training is not sufficient to allow them to fly safely. Some of the suppliers of hardware who provide the required “manufacturer’s training do not have sufficient expertise on the hardware or software themselves as it is changing so often. Chris Anderson, CEO of 3D Robotics (one of the early major drone manufacturers) was quoted as saying “Now that we’ve made them so easy to fly, people just open up the box and put them in the air,” Mr. Anderson says. “It’s not that people are worse pilots; it’s that they’re not pilots at all.”

¹(www.nts.gov/safety/safety-alerts/Documents/SA_045.pdf)

Terms of Reference Part B – Social & economic Impact

The social and economic impact of UAVs will be significant. Recent reports from Goldman Sachs² and the Single European Sky ATM Research Project (SESAR)³ clearly show that the economic impact will be in the hundreds of billions of dollars.

For Helistar, we see that much of our current work will transition from a helicopter platform to a UAV platform. For many clients our helicopters are just a mobile work platform that enables them to capture data – often from cameras, LIDAR or geomagnetic devices. Many of the key uses of UAVs relate to data capture and analysis by software. It is our view that Australia can be at the forefront of developing this software but we need to also be at the forefront of the regulation of the UAVs and RPAs that will allow the development and testing of the data capture and analysis software.

We are working with an overseas university to develop the software to conduct powerline inspections using programmed UAVs and we expect this to be available within 5 years. Already major aircraft manufacturers who make manned aircraft are trialling unmanned version of existing aircraft and designing new unmanned aircraft.

Both Boeing and Airbus are working on UAVs for carrying passengers and they intend to be trialling these aircraft in the next few years. Already Airbus has demonstrated a rescue operation using a pilot-less version of an existing helicopter. This will have as significant an impact on air travel as driverless cars will have on road transport. The social impacts of this mode of pilot-less air transport cannot be underestimated as reliance on road infrastructure will be reduced.

Australia can benefit significantly from this technology by assisting with its development and this can only be done with a regulatory environment that encourages its development through trials.

Terms of Reference Part C – International Regulatory/Governance Environment

All governments are struggling with the same issues as Australia. The USA had previously minimised the number of commercial operators to about 60 but has recently relaxed their rules and this is expected to explode commercial operator numbers to some 60,000. With their changes they also introduced the requirement for every RPA to be registered. This is in line with the requirement to register all aircraft and we consider this to be a mandatory requirement just as it is with road vehicles. By ensuring that all RPAs are registered it is then possible to ensure they are insured for 3rd party liability and also to track operators after incidents.

NASA is working on an air-traffic control system that can incorporate RAPS and UAVs into US airspace Australia and the FAA has been tasked by the US Government in achieving this goal.

Australia needs to be at the forefront of this move to integrate RPAs and UAVs into its airspace system and this can be achieved with the ADS-B technology currently being implemented across the world.

²(<http://www.goldmansachs.com/our-thinking/technology-driving-innovation/drones/>)

³(http://www.sesarju.eu/sites/default/files/documents/reports/European_Drones_Outlook_Study_2016.pdf)

Terms of Reference Part D – Options for Improving Compliance, Public Safety & National Security

Regulatory compliance and public safety needs to be improved by:

- a) Having all non-recreational RPAs & UAVs registered in the same way aircraft are registered
- b) Having all non-recreational RPAs & UAVs required to have a Certificate of Airworthiness in the same way that aircraft have to have a CoA (but this can be type specific with software version after submission of required test data by the manufacturer and not individual aircraft specific approval)
- c) Having all non-recreational RPA & UAV pilots licensed commensurate with the type of operation. This would mean a Recreational Pilot License theory exam by CASA for small RPA operations through to CPL with IFR rating for out-of-line-of-sight operations.
- d) Having all non-recreational RPA and UAV operators required to submit a flight plan (electronically on a web site) so that all aviation operators can see where such flights are being conducted
- e) Having all recreational RPA operations conducted at specified locations where no flight plan needs to be lodged or have them submit a flight plan via the web site mentioned above for other locations so that all aviators can know where they are operating.
- f) Having all beyond visual sight operations conducted with ADS-B transponders on board the aircraft.
- g) Having proven redundancy and fail-safe systems for flights over populated areas (which does not mean a return-to-home feature as these have failed)
- h) Providing additional funding to CASA to provide significantly increased compliance activities

Terms of Reference Part E – Relationship between safety and other RPAS regulation

There are recent media reports in SA of state government regulation of RPAS in relation to the issue of privacy invasion caused by operators filming, often for real estate work. Often this use is not legal as the aircraft is not 30m from a house especially in suburban streets. If the CASA regulations were followed many of these issues would not occur. RPAS operating at 30m with camera systems on-board will create complaints and, unless regulation and enforcement action is taken, public opinion will cause others to act.

Our view is that eventually RPAs and UAV have to be allowed in residential areas but their operation has to be limited to the streets or easements where there is current access. No flights should be conducted in a way that can cause privacy issues unless permission has been obtained from the landowners. It should be noted that powerlines run above statutory easements so flights inspecting these can be made over property without permission.

Terms of Reference Part F – Potential Uses of RPAS

The Goldman Sachs report mentioned in the response to Part B above indicated many of the potential uses of RPAS and UAS. The future will see mostly unmanned aerial systems pre-programmed for a task which can be inspecting infrastructure like roads, railways, powerlines, etc through to surveying crops, conducting surveillance and even carrying goods and passengers.

The uses are growing exponentially especially as sensing and data collection systems become cheaper and smaller. By leading the way in regulations to allow the safe but rapid development of these aircraft systems, Australia can benefit significantly. Our relatively open space provides sufficient scope for safe development trials.

Terms of Reference Part G – Insurance Requirements

As mentioned in Part C, insurance for all commercial and private RPA/UAV operations must be mandatory and it can be enforced via a registration requirement of the aircraft. A copy of the current insurance must be provided (uploaded to the registration website) before registration can be provided.

It should be noted that some insurance is available for as little as \$500. The minimum levels of cover for different types of operation and/or size of aircraft should also be mandated.

Registration and insurance for recreational flyers who are part of a club should not be required if the club has arranged insurance coverage for operations at its flying site(s).

Terms of Reference Part H – The use of current/emerging technologies to enhance aviation safety

The use of the internet and web-based or smartphone applications should become a more significant part of aviation. Currently most aviation operators use GPS and GIS software as part of flight planning and flight following and flight following software is commonly in use by the public. Most commercially available RPA flight planning software also shows the RPAs flight path in real time to the operator.

More can be made of these technologies to allow pilots of conventional and RPA/UAV aircraft to provide their flight plans and flight tracking information to other airspace users so that they can “see and be seen”.

With funding, CASA could extend its proposed RPAS application to allow all registered RPAS and UAS flights to be shown in real-time to all aviation users. This data could also be integrated with the air traffic management system eventually.

Terms of Reference Part I – Other Related Matters

As has been mentioned previously, unmanned aviation will have very significant social and economic impacts. Australia has had a very good regulatory regime for aviation that has been developed over many, many years.

With the availability of the new technologies relating to remotely piloted and programmed unmanned aircraft we have to adapt our regulations to meet these new challenges but the fundamentals still have to be met. The issue we have is not that we can’t regulate the technology, but we want to promote the development of this technology and be at the forefront of its development and use so that Australia can significantly benefit from the development as well as the use.

It is in this need to be at the forefront in regulation and development that we create our problem. If we sit back and stop development while we watch and learn from the mistakes of the rest of the world, we will miss out on many opportunities. If we relax the regulations too much we will learn too many costly lessons as safety will be compromised.

We need to find the compromise between regulating for safety and allowing development of these systems. We believe that the recent Part 101 changes do not achieve either improved safety nor provide for better development but rather allow significantly more small commercial operators and a compliance headache for the regulator.

We believe the options noted in Part D above are sensible. The last item is key and CASA must be provided with significant additional funding to not just regulate and ensure

compliance and safe skies but they must also have a role in assisting the development of unmanned aviation in Australia so that the Australian economy can benefit to the maximum from these technologies.

Yours sincerely,

Barrie Hosking
CEO
Helistar Aviation Group