

NEW ZEALAND MODEL AERONAUTICAL ASSOCIATION (INC)



Ministry of Transport
PO Box 3175
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7 June 2019

Civil Aviation Bill

Thank you for the opportunity to comment of the Civil Aviation Bill exposure draft. This response represents the views of the members of Model Flying New Zealand (MFNZ). This is an Association of over two thousand members in more than 70 clubs throughout the country.

This letter is additional to our earlier response and focuses on responding to a key assertion in the commentary document.

“Problem

100. There have been frequent recent instances of drones operating in contravention of civil aviation law, where this has caused significant risk and disruption to other aircraft, aviation operations and people on the ground.”

This is stated as an unequivocal fact. There is no evidence whatsoever of any risk being posed and the author knows of no attempt to analyse events in order to establish any magnitude of risk. In the great majority of reported incidents, they are based upon a single fleeting glance of a phenomena which is classified as a drone based upon no evidence. The commentary makes the imaginative leap that a possible sighting at any range equals a significant risk to aircraft with the emotive connection to an airliner with hundreds of people on board.

It is reasonable to believe that our experience in New Zealand is similar to that in other countries. A recent Official Information Act inquiry of the UK Air Proximity Board revealed that although they had categorised a large number of drone incidents, in all of the years that they had been doing so there was not a single incident which had been corroborated by a second source of information. These “confirmed” sightings include incidents way out at sea and at extreme altitude.

An independent group has gathered data on aviation incidents worldwide since 1996. The Aviation Safety Network <https://aviation-safety.net/> keeps separate records of drone incidents. Prior to 2015 there were 6 recorded incidents of collisions between model aircraft and crewed aircraft over a 19 year period. Since that date, there have been 9 reports of suspected collisions with no evidence of the object struck and 7 reports where the object was positively identified as a drone. It is worthy of note that:

- There is not a single collision or suspected collision involving an airliner.
- There is not a single injury reported
- There is not a single fatality reported.
- There is one incident of a drone colliding with a balloon, the envelope was not damaged

- There are three incidents involving helicopters, all landed normally, one sustained damage to a rotor blade.
- The remaining three incidents involved light aircraft. All landed without incident.

To put these numbers in context, according to the Air Transport Action Group (ATAG) there are approximately 300,000 flights per day or 100 Million per year, worldwide. Last year, 11 airliners were lost in non-drone related incidents.

The UK CAA have produced a Risk assessment paper: CAP1627 Drone Safety Risk assessment Jan 2018. In this paper they analyse the data and in the executive summary make the following statement:

The CAA has undertaken an assessment of available information about the likelihood of an unintentional drone collision and the severity of any possible impact between an aircraft and a smaller unmanned vehicle (defined as under 2kg in this report). The findings are:

- *The drones most likely to end up in proximity to manned aircraft are smaller drones, typically of 2kg or less, flown by operators who either do not know the aviation safety regulations or have chosen to ignore them.*
- *It is considered unlikely that a small drone would cause significant damage to a modern turbo-fan jet engine; even if it did, a multi-engine aircraft would still be likely to be able to land safely.*
- ***The likelihood of a small drone being in proximity of a passenger aircraft when it is travelling fast enough to potentially damage a windscreen is currently observed to be about 2 per million flights, where proximity means within visual line of sight of the aircraft.*** (MFNZ highlighting)
- *The likelihood of a small drone actually hitting a passenger aircraft windscreen at sufficient speed to rupture it is very much smaller than the probability of it being in the proximity of an aircraft.*
- *The windscreens of small helicopters and light aircraft are more susceptible to rupture if struck by a small drone, even when flying below normal cruising speed.*
- *Helicopters face more particular risks because of the additional susceptibility of helicopter rotors to damage from a collision with a drone, and their operating patterns which typically involve lower-level flying and take-off and landing from a range of sites.*

It is generally accepted that 500ft away is the limit of visibility of small recreational drones and that figure is also a minimum desirable separation for aircraft other than large passenger aircraft. A drone being within that 1000ft vertical and lateral window has a likelihood of striking an aircraft of approximately 1 in one million. Physical testing has proved that, at speeds used by airliners below 10,000ft, such a drone would not penetrate a windscreen but could cause damage to an engine or aircraft structure. Further information regarding the ability to see drones is at: <https://www.airproxrealitycheck.org/wp-content/uploads/2019/03/Pilot-Visual-Detection-of-Small-Unmanned-Aircraft-Systems-sUAS.pdf>

Likelihood

According to Airways, there are approximately 1 Million flights per year in our airspace. Based on the UK CAA conclusions we can expect 2 incidents of a drone coming into proximity with an airliner per year in a situation where damage might be caused. Of these proximity events, there is a 1 in a million chance of a collision. That equates to a likelihood of 2×10^{-11} or once every 500 years. Testing reveals that the chance of a small recreational drone breaking a windscreen or causing a forced landing due to multiple engine failure is even smaller.

Summary

We recommend that before any legislative changes are made, the available data is evaluated and put into a New Zealand context. The results of the risk assessment should be made public.

A handwritten signature in blue ink on lined paper. The signature is written in a cursive style and reads "Jonathan Shorer".

Jonathan Shorer
Secretary, Model Flying New Zealand