

Commercial Usage of UAVs	02
The emergence of UAVs in industry	
Risks for a UAV Operator	05
Understanding your risk exposure	
Risk Management Strategies	12
Minimising your flying risks	

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Emerging Risks for UAVs

Embracing UAV Risk Management

Thought Leadership Series

CONTENTS

Embracing UAV Risk Management	01
Commercial Usage of UAVs	02
Main Risks for a UAV Operator	05
Regulatory Environment	09
Risk Management Strategies	13
UAV Insurance	15
Conclusion	17
Sources	18
Contributors	21



Embracing UAV Risk Management

The emergence of UAVs (Unmanned Aerial Vehicles, or UAVs) has seen a rise in innovation and creativity in the use of UAVs for commercial purposes. As UAV technology has become more advanced, commercial applications have expanded into such diverse industries as construction, film, agriculture and real estate. Bolstered by demand, the commercial UAV market has exploded in recent years, with some estimates forecasting the market to reach anywhere between \$20 billion¹ and \$127 billion².

Unconventional uses such as food delivery and beacon transmitting, are also on the rise - a stark contrast to the device's military origins. With an estimated 600,000 commercial users in the USA alone³, it's difficult to underestimate the impact that UAVs are having on the aviation industry. Average company turnover for UAV activities is \$108,000 and this is anticipated to increase by nearly 40% in 2019.

Yet with all their benefits, their use remains a controversial subject, with privacy concerns and a worrying trend of public safety issues. Some countries have already taken steps to address these concerns, such as the legislation proposed in the UK advocating compulsory safety training for UAV users.

Despite regulation in New Zealand keeping pace with similar jurisdictions, a lack of training and certification means commercial UAV operators face a host of risks that are largely left uninsured, such as civil claims for damage to third party property and criminal prosecution for inadvertent breach of regulations.

With the frequency of UAV incidents in recent months, it's possible that harsher penalties against infringements are on the horizon. A spate of near-misses in 2018 has led to calls for the implementation of a registration scheme⁴. The onus is on UAV operators now to plan for the future and look to minimise their exposure to UAV accidents and any subsequent liability.

This report aims to provide insights into the commercial UAV landscape in New Zealand, highlight the primary risks involved and delve into risk management techniques available to commercial UAV operators.

A spate of near-misses in 2018 has led to calls for the implementation of a registration scheme.

Commercial Usage of UAVs

Globally, UAVs are increasingly becoming more valuable to many businesses⁵ with more than a million UAVs operating commercially⁶ in 2015. The ongoing technological enhancement of UAVs and their increasing agility enables them to fly into restricted spaces and undertake tasks that manned aircraft are not able to replicate.

Media, film and videography

Videographers and film makers are now able to take cinematic shots, traditionally attainable only by major film studios. Using a simple UAV, users can seamlessly shoot scenes both on the ground and in the sky, with the ability to fly close to the ground without casting shadows. The efficiency in production has led to film makers using UAVs to aid filming on major film productions, such as *The Wolf of Wall Street*, *Planet Earth* and *Harry Potter*. UAVs have also allowed videographers and film makers to circumvent health and safety dangers associated with high risk filming areas, such as above volcanoes, in the sea and inside deep chasms, thus capturing unique and previously unattainable footage by traversing boundaries traditional filming methods have not allowed.

News crews have also started adopting UAV technology to report on weather, traffic and news gathering as well as production of advertisements⁷. The ability for a UAV to report the news has had a wide variety of benefits such as:

- > Lateral shots of riots, crowds and rallies
- > Pan-shots of reporters
- > Aerial shots of cities and rural locations
- > Coverage of natural disasters (floods, wildfires and tornados).

Construction and Infrastructure

It is estimated that UAVs can replace up to \$127b in labour and services, including \$45b in the infrastructure sector⁹. With the help of specialised software, builders can transform data collected from their UAV into 3D structural models, topographical maps and volumetric measurements¹⁰. Given the high mobility offered by UAVs along with the ability to easily produce high-quality images at a comparatively lower cost, it is very likely that we are to see a significant uptake in UAV usage by construction firms.

Main industries and sectors organisations operate in and provide services to:

Real estate	39.86%
Construction	37.57%
Film and television	28.75%
Surveying	27.51%
Events	22.93%
Agriculture	22.93%
Local government	22.22%
Tourism	19.22%

Source: Airways New Zealand. 2018 Drone Tracker Report⁸.

UAVs also allow firms to collect data in situations that previously would have been either too dangerous or too time-consuming to carry out safely, such as surveying in high temperature conditions, or conducting inspections on high-rise buildings and powerlines.

The monitoring benefits that UAVs provide are also a boon to the construction industry. One study found that the number of life threatening accidents on a construction site decreased by 91% when monitored by UAVs¹¹. UAVs also offer the advantage of providing photographic or video evidence in disputes or litigation.

UAV manufacturers have begun to capitalise on the rising demand for niche uses of UAVs. For example, New Zealand-based manufacturer ASG Technologies have developed a UAV capable of carrying up to 14 kg steel rope, reducing the time taken for certain jobs to be completed from 6 days to 6 minutes¹². While this is an example of UAVs used in the forestry sector, the same technology can be applied in commercial UAV use for the construction and infrastructure sectors.

Agriculture

Agricultural producers have embraced UAV technology for food production, thus increasing productivity and sustainability. PwC estimates the market for UAV solutions in the agriculture sector to be \$32.4 billion globally¹³. UAVs have been used in the agricultural sector for various purposes including soil analysis, crop planting, spraying, crop monitoring, irrigation and health assessment and aerial seeding¹⁴.

By using 3D mapping, UAVs allow producers to conduct soil analysis to accurately measure and manage nitrogen levels and irrigation.

More novel uses of UAV technology in agriculture includes the ability to herd cattle and sheep using UAVs and the ability to detect disease early in crops by mounting cameras measuring photosynthesis to UAVs¹⁵. While only an estimated 2% of commercial UAVs in New Zealand are used in the agriculture sector¹⁶, it is highly likely that this number will rise in the future, with one study estimating that 80% of commercial UAVs could be used for agriculture¹⁷.

Real Estate

If a key to selling property is a good picture, an aerial camera is the perfect solution. UAVs allow real estate agents to photograph properties from a bird's eye perspective, attracting more interest in properties that they are selling. UAVs offer low-cost aerial views of properties, producing high-quality pictures in a fraction of the time without the need to commission larger, costlier aircraft¹⁸.

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With around half of New Zealand real estate agents estimated to use UAV photography¹⁹, the local real estate industry is in line with global trends, with some estimates valuing the total market for real estate UAVs at around \$265m²⁰.

Insurance

With an estimated global market value of \$1.4b²¹, the insurance sector is one of the more significant growth sectors for the UAV industry. UAVs are changing the way that loss adjusters are performing their jobs, with UAVs capturing a breadth and depth of information in quick time so that customers can receive settlements much faster than before. UAV usage has also been predicted to increase claim adjusters' workflow efficiency by 40-50%²².

UAVs also help insurers to tailor pricing more accurately based on aerial photography, by capturing data on property features that can make it less vulnerable to damage, such as storm shutters or drainage systems.

Emergency Authorities

UAVs can also be effective in emergency situations and are currently used by most emergency authorities, such as:

- > **Firefighters** — UAVs can scout fire locations²³, and provide thermal imaging to pinpoint the location
- > **Police** — Traffic collision reconstruction, investigate active suspects and crime scene analysis
- > **Search and rescue** — UAV technology can spot humans even during the night when equipped with a thermal camera
- > **Lifesaving** – With UAVs being able to fly up to 800 metres offshore, they are increasingly used by lifeguards to spot swimming hazards, such as riptides, and to save stranded swimmers²⁴ with improved response times.

Deploying multiple UAVs at the fraction of the cost of deploying a helicopter means that emergency authorities can cover a greater quantity of ground at a much lower cost, whilst improving response times and reducing costs simultaneously.

What are your main risks as a UAV operator?

The use of UAVs has created a raft of issues for public concern, such as privacy and health and safety. Most countries have enacted strict restrictions around the usage of UAVs, with some legislation outright banning the use of UAVs for commercial purposes.

New Zealand boasts some of the more progressive UAV laws in comparison with the rest of the world. In New Zealand, it is legal to operate a UAV without CAA (Civil Aviation Authority) registration or training required, provided that:

- > The UAV weighs less than 15 kgs
- > Flying is conducted at daytime
- > Flying is conducted maintaining visual line of sight at all times
- > Flying is conducted below 400 feet above ground level in uncontrolled airspace²⁵.

These conditions are in accordance with Part 101, which are the general set of rules established by the CAA to fly UAVs in New Zealand. Permission to fly UAVs in restricted conditions, such as at night time or over private property without obtaining the consent of the property owner, can be granted through the completion of a CAA Part 102 operators' certificate.

Primary risks UAV operators should consider include the risk of UAVs damaging private or public property such as telephone lines, manufacturer defects resulting in UAV accidents, and privacy breaches when flying over private property. There is also the risk of poor operator experience. Many pilots that have not undertaken formal training are likely to be unaware of regulations imposed by the CAA, and may inadvertently breach these regulations.

Operating a UAV is not easy, and many trained pilots still crash or damage their equipment. There are many causes behind UAV accidents, making it difficult to prepare for every eventuality that may cause an incident. However, there are steps to help mitigate the risks of operating UAVs.

Permission to fly UAVs in restricted conditions can be granted through the completion of a CAA Part 102 operators' certificate.

The CAA Part 102 operator's certificate

Part 102 is the natural progression for more advanced UAV operators that seek to fly their UAVs outside of the rules prescribed by Part 101. To obtain a Part 102 certificate, operators must submit to the CAA a written exposition that includes details such as the personnel operating the UAV, the area of intended operations, flight procedures, identification of hazards and risk mitigation and techniques. The certification is best suited for operators such as emergency authorities and real estate photographers²⁶ where obtaining consent from private property owners is not reasonable or practicable. As of March 2018, there are over 100 certified Part 102 operators in New Zealand.

First Party Damage

Despite the best of efforts, sometimes a simple technical flaw in a UAV can trigger an accident. Technical errors, such as outdated software or manufacturer defects, can sometimes cause operators to lose control of their UAVs. An RMIT study found that 64% of UAV incidents were caused by technical defects rather than operator error²⁷. While it is impossible to rule out technical glitches, you mitigate these risks by routinely updating any software and sensors used on your UAVs, as well as regularly servicing your equipment as recommended by the manufacturer.

While it's prohibited under the Crimes Act 1961, the Summary Offences Act 1981 and the Arms Act 1983 to shoot down a UAV flying over property²⁸, there is still a potential risk that a UAV will be shot down, particularly if it is over private property.

Operators also risk the chance of crashing their UAV into numerous objects above the ground including trees, powerlines, streetlights and birds. It is inevitable that at some point an experienced operator will also have an accident or a near miss given the propensity of technical failures and the variability of moving aerial objects.

Bird strikes on airborne UAVs is a risk that is difficult to manage or eliminate. The frequency of bird attacks can vary - one experienced operator in Australia noted the likelihood of an eagle attack as anywhere between 1 in 6 to 8 flights, with evasive action taken in 40% of flights²⁹. Ultimately this is a risk more relevant for operators conducting flights in rural areas, where bird life can be more widespread.

Operating a UAV at night-time or in poor weather also creates a risk of incurring damage. While there are more advanced UAVs on the market designed to operate in poorer conditions, it is still recommended that operators abide by Part 101 rules wherever possible and avoid flying at night or when there is no clear visual line of sight.

A RMIT study found that 64% of UAV incidents were caused by manufacturing defects rather than operator error.

Third Party Injury or Damage

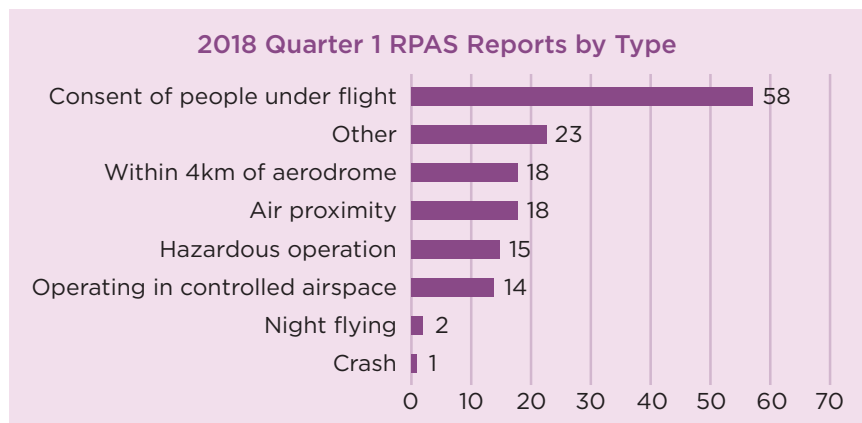
Now that UAVs are becoming more commonplace, aircrafts are put under increased danger by the presence of UAVs.

Perhaps the most disastrous third-party liability operators face is the risk of a UAV striking manned aircraft. If a UAV collides with an airplane windscreen or helicopter rotor, there could be catastrophic consequences, such as engine failure or significant external damage to the aircraft.

Bigger, heavier commercial grade UAVs have a higher chance of causing damage to aircraft and scattering more debris that can injure aircraft or people in the process³⁰. One incident in Canada saw a private UAV operator crash their UAV into a commercial plane 1500 feet above ground level³¹ - the first such instance recorded in the country. Although the plane only sustained minor damage and could land safely, the incident serves as a sobering reminder of the dangers of operating near manned aircraft.

Notable UAV Incidents

- > In 2014, a UK operator lost contact with his UAV, which subsequently flew within 50 metres of a bridge and over a nuclear facility, before crashing into a river. Despite the operator utilising all the necessary precautions and flying within the rules, he was fined £800 and an additional £3,500 in legal costs³².
- > In 2016, a visitor was fined \$500 when the GPS restricted area function on his UAV was automatically triggered while flying over the Auckland Harbour Bridge, forcing his UAV to land on one of the lanes³³.
- > Two UAVs were alleged to interfere with the flight path of airplanes near Auckland International Airport in November 2017, flying at 700 and 1000 feet respectively within controlled airspace³⁴.
- > A tourist was charged in January 2018 and later convicted with operating a UAV in a manner causing unnecessary danger to firefighters and pilots and reckless disregard after allegedly flying a UAV close to eight helicopters that were fighting a fire in Wanaka, resulting in the grounding of helicopters for 15 minutes³⁵. An initial fine of \$4,000 was proposed, but the penalty was eventually reduced to the forfeiture of the UAV³⁶.
- > In March 2018, a UAV was spotted within 5 metres of an airborne commercial jet at Auckland International Airport, endangering the lives of 278 passengers and crew. It was the second notable UAV incident that month, with another UAV reported to have halted 20 flights after it was spotted in restricted airspace³⁷.



Source: Civil Aviation Authority of New Zealand. Aviation Safety Summary January - March 2018³⁸.

Outside of aircraft strikes, there are smaller and less severe – but far more common – third party incidents operators need to be aware of, such as colliding with buildings and windows, getting tangled in powerlines and crashing into parked or moving vehicles. Operators using UAVs for building inspections, for example, need to be mindful of third party injury or damage that can be caused when operating in urban, densely populated areas.

Despite the relatively small size of most UAVs, the potential consequences can be quite significant. For example, UAVs operating in restricted airspaces have been known to shut down air traffic and impose lengthy flight cancellations and delays. Hence, it's important for operators to be aware of any third party liability risks and prepare how to address these prior to flying.

The emerging risk of UAVs being exposed to cyber-attacks

UAVs can handle sensitive information, as witnessed from their use in surveillance operations to real estate agents taking photographs of private property. The high value information that UAVs handle makes them vulnerable to espionage, theft, manipulation and attacks³⁹.

As UAVs become more mainstream and valuable, they are increasingly likely to be targeted by cyber-attacks. It is possible that in the future, greater cyber-security measures will need to be taken to protect the information stored on UAVs, as well as protecting a UAVs from any unwanted intrusions.

Regulatory environment

In addition to first and third-party damage, there are numerous statutes and torts that UAV operators should be aware of, such as the Civil Aviation Act 1990, the Privacy Act 1993 and the Resource Management Act 1991.

Risk of UAVS flying into prohibited areas

UAVs traverse land quickly – yet with the efficiency of travel comes a host of privacy and trespass issues. Areas of land are categorised as either being:

- > **controlled land** — you are unable to fly above the height of a nearby tree or structure
- > **uncontrolled land** — you may not fly above 120m above ground level
- > **prohibited flight zones** — you cannot fly a UAV in this area

The different flying zones in the Auckland region (source: Airshare)



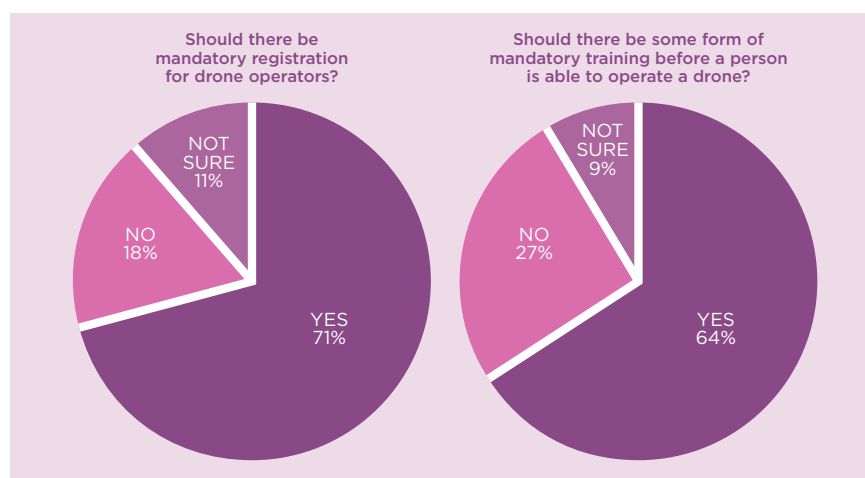
The **Red transparent areas** are control zones. Control zones are managed by Air Traffic Control and extend down to ground level.

The **blue circled areas** indicate a 4km radius around aerodromes.

The **orange areas** are Low Flying Zones. UAV's are not permitted to fly in any Low Fly Zones.

The **green areas** are Military Operating Areas. Permission from the Administering Authority is required.

If pilots breach these conditions they are liable for fines and or imprisonment. In New Zealand there have not been many highly publicised statutory breaches of the Civil Aviation Act, however there have been some instances of people flying in prohibited or controlled zones. These often occur by accident and to date the CAA has taken a more educative approach to enforcing regulation with offenders usually handed infringement notices or small fines. Yet, with an increase in near-misses involving UAVs and large aircraft, it is only a matter of time before a large-scale incident marks a change in the penalties imposed in New Zealand.



Survey of commercial UAV operators. Source: Airways New Zealand. 2018 Drone Tracker Report⁴⁰.

Legislation

The relevant legislation surrounding commercial UAV use is extensive, with the following relevant statutes and torts:

- > Privacy Act 1993
- > Tort of invasion of privacy
- > Crimes Act 1961
- > Resource Management Act 1991
- > Civil Aviation Act

Privacy Act 1993

Since 2013, over a quarter of UAV incidents reported to the CAA have been filed due to operators allegedly flying over private property without consent⁴¹. The ability for UAVs to infringe on private property is an issue of great public debate, due to concerns over exactly who can fly over private property, what type of information they obtain in doing so, and what they plan on doing with it.

As UAVs have clear sight into many private properties, they can intentionally or unintentionally collect private information, and thus be in violation of the Privacy Act. While there are limited steps the Privacy

Commissioner can take against hobbyists, commercial UAV operators are still subject to the Privacy Act. The Human Rights Review Tribunal is the main enforcement agency for complaints or prosecutions.

The Office of the Privacy Commissioner recommends the following steps UAV operators should take to avoid transgressing any privacy laws are:

- > Make people aware you are collecting data
- > Make people aware of how you are using the data
- > Keep the information safe and secure, allowing only authorised personnel to view and use the information
- > Disposing of information after it is used
- > Grant the rights of access to the information by the individuals concerned⁴²
- > Understanding why you are collecting the data

Tort of invasion of privacy

The tort of invasion of privacy deals with situations where:

- > There has been public disclosure of private information;
- > The facts disclosed are of a private nature;
- > The facts made public would be considered highly offensive to a reasonable person; and
- > There is sufficient legitimate public concern in having the information made public.

If this tort is breached, the requirements for criminal prosecution under the Privacy Act 1993 would generally not be met. Therefore the claim for a breach of privacy must be brought by the private individual in a civil court. As with other aspects of common law, the individual who believes that they have had their privacy invaded must bring a civil case against the UAV pilot. As this would be a civil dispute and not a criminal case, it will be handled by the judicial courts and not the police.

Crimes Act 1961

“Intimate visual recordings” of people made without their consent is a criminal offence under the Crimes Act 1961⁴³. While such actions may not be intentional, if they are deemed reckless they may result in the UAV operator being prosecuted. The likelihood of commercial operators running afoul of this statute is unlikely, but operators conducting flights in urban and densely populated areas should be mindful of this law – particularly those flying over private property.

Summary Offences Act 1981

Provisions under the Summary Offences Act 1981 prohibit making or publishing covert intimate recordings of people without their knowledge or consent, and it is also illegal to peer or peep into people's private homes and record any activity within⁴⁴. The application of this law can also extend to UAV usage for illicit purposes.

Resource Management Act 1991

The Resource Management Act (RMA) 1991 is the primary piece of legislation that outlines the management of the environment in New Zealand. From a UAV operator's perspective, the RMA is concerned with discharge of contaminants into the environment, an exposure that agricultural operators should be aware of when conducting aerial spraying and seeding.

The RMA outlines the methods in which you can expose yourself to breaches and methods to avoid a breach. Resource consent can be gained, or a specific contaminant may be expressly allowed by national environmental standards or other regulations. The airspace in which a contaminant is dropped, or spread is of no relevance. The RMA captures any product that contaminates the environment regardless of why and how.

Risk Management Strategies

Most flying risks can be minimised by simply following good practice. This can be achieved by following protocols, such as getting consent prior to flying over private property, abiding by flight restrictions and routinely maintaining and servicing UAVs.

Undergoing training prior to operating your UAV can also help mitigate your risk. This can be done through training courses that are provided by certain UAV manufacturers and training providers, such as Airshare who both conduct introductory training courses providing basic training and awareness around civil aviation rules and regulations in New Zealand.

Much like the need for motorists to understand the Road Code, the same principle applies when flying UAVs. Completing a training course can not only help you gain the necessary understanding of the UAV laws in New Zealand, but can also help put you in a better position when looking to purchase UAV insurance or applying for Part 102 certification.

UAV operators can also log their flights to alert the aviation community of their presence. Flight logging also alerts operators of any regulations and airspace restrictions of their planned flight path⁴⁵.

Having a log book is a requirement to achieve Part 102 certification. A log book will also assist insurers to accurately measure your risk and is a strong indication that you are a proactive, compliant and risk aware pilot. Logging maintenance helps you understand and track a problem and if it persists, identify trends to isolate the reason behind a problem. Certain providers such as Airshare offer flight logging services.

Routinely maintaining and servicing your UAV can also help reduce the risk of incurring vehicle failure. Prior to flights, it is recommended checking that your firmware is up-to-date, as well as any software installed on your UAV. In addition to this, cleaning your UAV after flights, and checking for any cracks or damage to the hull or propellers can help you spot any defects quicker. If you sustain damage to your UAV, it is best to have it repaired rather than risk further damage by continued flying⁴⁶.

Much like the need for motorists to understand the Road Code, the same principle applies when flying UAVs.

Recommendations

Jennifer Thompson of Robertsons', an expert in air law, suggests these steps for minimising your liability or its effects when operating UAVs:

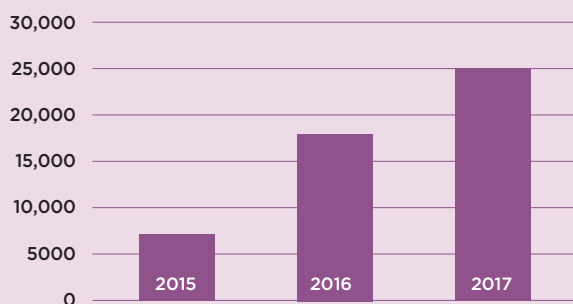
- > Be aware of the harm that could be caused.
- > Be aware of people/animals/wildlife.
- > Be aware that a UAV is not a toy or a camera.
- > Minimise hazards by planning.
- > Get training.
- > Get consent.
- > Be in control at all times and keep within visual line of sight.
- > Be aware of flight procedures.
- > Know the aircraft restrictions in the area.
- > Maintain and service the UAV.
- > Be aware of CAA notification requirements/reporting accidents/incidents.
- > Get insurance.

What is Airshare?

In 2014, Airways NZ (NZ's Air Traffic Control company) launched airshare™ to provide easy to understand information about UAV flying in New Zealand. The airshare™ website provides maps showing where you can fly, safety videos, online training, tips for tourists and a list of Council UAV policies. The site also allows UAV flyers to log their planned flights and gain Air Traffic Control authorisation in controlled airspace.

- > Total flights logged via Airshare since launch: 63,500
- > Made up of 32,500 in Controlled airspace and 31,000 in Uncontrolled airspace
- > Highest use areas in NZ are Auckland and Christchurch
- > Total Registered users: 9,000
- > Made up of 6,500 recreational users and 2,500 commercial users
- > The total number of flights logged in 2017 was 25,080, a 250% increase from 2015.

Airshare Flights logged 2015-2017



airshare
YOUR UAV HUB
www.airshare.co.nz

Source:

AIRWAYS
making your world possible

UAV Insurance

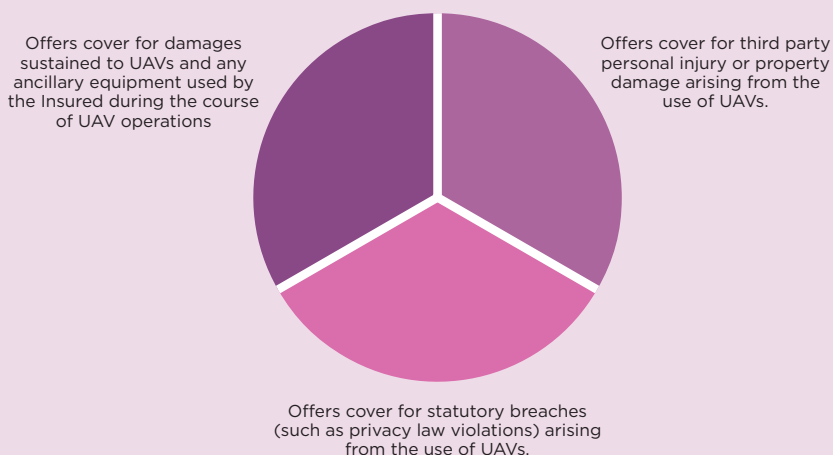
Insurers have also adapted to changing consumer trends in recent years, with both commercial and domestic insurers offering limited insurance cover for UAVs and UAV operator liability. However, it is important to note that many policies only offer cover for damage to UAVs when in storage, or if stolen. Very few insurers cover the damage sustained during flight or any third party or statutory liability.

For some UAV operators, this largely reduces the effectiveness of insurance – a car insurance policy that doesn't cover damage to the car when driving (or to other vehicles) is largely inadequate. There is a large element of the UAV operator industry whose primary risk considerations are not being adequately catered for.

With most standard public liability policies excluding personal injury or property damage arising out of aircraft use, there are limited alternative options for UAV operators to secure insurance for their UAV usage. It seems that many insurers are all too quick to pass the buck when it comes to providing adequate UAV coverage, with contents insurers often refusing to cover UAVs that may be used for commercial purposes.

The ideal UAV insurance policy must offer comprehensive coverage for both first and third-party losses, hence providing an effective risk management mechanism that caters to all the UAV operator's needs.

Breakdown of a commercial UAV operators' insurance policy



The ideal UAV insurance policy must offer comprehensive coverage for both first and third-party losses, hence providing an effective risk transfer management that caters to all the UAV operator's needs. In addition to damage in storage or transit, first party cover for damage in flight must be prioritised, preferably up to the full limit of the insured sum. Likewise, UAV third party liability UAV insurance should also offer comprehensive coverage for damage caused to third party persons and property. One additional aspect that operators may seek to obtain coverage for is statutory liability for breaches of laws and regulations.

By its nature the UAV industry is evolving and innovating faster than policy makers can legislate and with the likelihood of more stringent regulations being introduced in the future, it is wise for operators to develop a positive relationship with insurers before the legislation catches up. Sound risk management and a thorough understanding of operating risks also puts operators in a good standing among insurers, which can have a positive effect on premiums and excesses.

Coverage that UAV Operators should consider:

- > Cover for damage to the UAV hull.
- > Cover for damage to payload that the UAV is carrying eg. camera equipment.
- > Cover for damage to launch station, control equipment and associated parts.
- > Cover for liability arising out of damage caused by the UAV to third parties.
- > Coverage for statutory liability in particular for health & safety issues and breach of Civil Aviation regulations (note this is limited to prosecution rather than simply infringement).
- > Cover for claims and prosecution associated with breaches of privacy legislation.

Conclusion

The allure of UAVs continues to grow with their increasing compatibility across a multitude of industries, but it's important to consider the risks when operating UAVs or any other aerial devices. While offering agility, versatility and numerous other potential benefits to users there remains a need for increased education and awareness around the risks that UAV operators face.

With an influx of various industries finding new uses for UAVs, there will undoubtedly be a surge in new operators globally. It is imperative for the sustainability of the UAV industry that these new operators, along with any current operators, take active steps to be responsible industry practitioners through developing the necessary knowledge and tools to mitigate their flying risks.

With new laws in the United Kingdom requiring registration and training for UAVs larger than 250 grams⁴⁷, it's likely that similar regulation will be adopted in other countries in the future. Whether New Zealand will also implement similar requirements is still a subject of debate, but it's unlikely that an increase in near misses involving UAVs will go unchecked for much longer.

Ultimately the onus is on operators to stay prepared, trained and in control of their UAVs. This can be achieved by obtaining training, routinely conducting any software updates, servicing your equipment and being aware of any relevant requirements prior to flying. Insurance can be used to supplement the essential risk management strategies of UAV operators. By following the necessary precautions outlined in this report, operators can help safeguard their operations, and thus continue enjoying the benefits of UAVs.

"UAV technology is incredibly exciting and New Zealand is at the forefront of innovation in this space. Given the increasing number of applications that UAV's can be used for and the frequency of use, we saw an opportunity to enter the market in 2017 with a comprehensive and complete UAV insurance solution. As the industry evolves, it's important that risk management solutions such as insurance also adapt to respond to the changing needs of the industry. "

Craig Kirk,
General Manager



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James has completed a Bachelor of Commerce at the University of Auckland majoring in Economics and Management. He is currently awaiting commencement of his Master of Commerce program to begin in early 2019. He worked together with an underwriter and relevant experts to produce this whitepaper as part of an internship with Delta Insurance. James is hoping to pursue a future in management consulting in the future, aided by the experience gained from this opportunity.

Contributing organisations



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