[redacted]

From: [redacted]
Sent: Friday, 28 May 2021 12:11 PM
To: Enabling Drone Integration
Subject: Submission on Enabling Drone Integration
Attachments: Submission on Enabling Drone Integration.docx

Please find attached my submission.

Regards Brian Howser

Submission on Enabling Drone Integration

28th May 2021

Ministry of Transport

I believe it is important that I add my weight behind the Control Line Model Aircraft exemption from the definition of a drone or remotely piloted aircraft.

My models are flown on two wires and as the pilot I have complete control of the aircraft.

It has a small tank of fuel and once that fuel has been used the motor ceases to run.

We are not in the same field as a radio control aircraft or drones. We go round in circles and only to a recommended height.

I have flown these aircraft for 74 years and see no way that we can be seen as integrated with the transport system or in any way used for commercial application.

Please consider exempting Control Line Model Aircraft from any future drone legislation.

Brian Howser

Member of the Hamilton and New Plymouth Model Aero Clubs.

[redacted]

[redacted]

From: [redacted]
Sent: Monday, 31 May 2021 9:32 AM
To: Enabling Drone Integration
Cc: [redacted]
Subject: Swoop Aero Submission - Enabling Drone Integration Discussion Paper
Attachments: Swoop Aero - Enabling Drone Integration Response.pdf

Kia ora,

On behalf of Swoop Aero, I am pleased to submit our response to the Ministry of Transport's Enabling Drone Integration discussion paper (attached). Thank you for the opportunity to provide input on what is an exciting process to enhance drone integration in Aotearoa New Zealand, which will no doubt result in significant benefits across the sector.

Should you have any questions regarding our response, or require any further clarification, please do not hesitate to contact me.

Ngā mihi nui,

[redacted]

SWOOP AERO

[redacted]

Blenheim, New Zealand

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Winner of the The Australian Business Award 2020 I Product Innovation

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[redacted]
Enabling Drone Integration – Consultation
Ministry of Transport
PO Box 3175
Wellington 6140

Response to Enabling Drone Integration Discussion Document

Dear [redacted]

Swoop Aero is pleased to submit our response to the Ministry of Transport's Enabling Drone Integration discussion paper.

As we develop our operations in Aotearoa New Zealand, we are committed to taking every opportunity to provide feedback, suggestions and recommendations to assist with the continuous evolution and improvement of drone regulations. We therefore welcome the chance to provide feedback on the Enabling Drone Integration discussion document and thank the Ministry of Transport for developing these measures, and for seeking input from the broader community.

Swoop Aero views the development of recommendations to enhance the New Zealand drone regulatory regime and enable continued integration of drones into New Zealand airspace as both timely and necessary. The exponential growth of the use of drones under both Part 101 and Part 102 presents unique challenges and opportunities for regulators, and evolving the current rule set will enhance aviation safety while also ensuring that New Zealand makes the most of the economic and employment opportunities that the continued growth of the sector presents.

We look forward to the release of the finalised recommendations, and to the continued development of the drone sector for years to come.

Your sincerely,

[redacted]

[redacted]
Swoop Aero

Proposed Measures

1. What is your view on the proposed series of measures? Are there any other alternatives you suggest we consider?

Swoop Aero supports the objectives outlined in Paragraph 37 to guide changes to the current regulatory regime. This is particularly important in ensuring equitable access and safe airspace integration. Subsequently, the proposed measures outlined represent a sensible approach to some of the current areas for improvement, and are therefore broadly supported by Swoop Aero. However, it is also suggested that this review presents an opportunity to consider the impact of the broader suite of aviation regulations on the increasingly complex area of drones. This includes consideration on the applicability and use of conventionally piloted aviation parts (such as CAR Parts 21, 43, 92, and 135) as well as international reciprocity and recognition. The combined work of the Ministry of Transport, Ministry of Business Innovation and Employment, and Civil Aviation Authority has dramatically increased the opportunities for innovation and economic growth in New Zealand. Further progressive work in these additional areas is considered vital to continued success.

2. Would the proposed approach help achieve the desired objectives?

The proposed approach would help achieve the desired objectives outlined in the discussion document, however there are several considerations, principally around:

1. implementation timelines; and
2. pathways to compliance in areas that underpin successful integration.

These considerations are detailed in our response.

3. Would the proposed approach help address the problems and opportunities identified?

The proposed approach would address the problems identified, and provide the regulatory platform required to make the most of the opportunities presented in the discussion paper.

4. Are there any other problems and opportunities you can think of?

Considerations with the current approach

1. The biggest consideration with the current approach is engagement and compliance. For example, registration is a good initiative but may require incentivisation to encourage uptake. This approach has been taken in other countries, such as Australia with periods of free registration.
2. The second consideration is availability of standards that support some of the discussed functionality such as RemoteID. While standards have now been developed, there will need to be a level of flexibility in adoption of commercial off the shelf products that fulfil the requirements, as well as home-built options that may be more prevalent in the drone community.
3. The last consideration is sufficient resourcing to enable these progressive changes. This is across all government entities/organisations and regulators involved in the process. For example, if the waiting time for question responses or applications is too excessive, this will discourage update/compliance.

Additional opportunities

As described in question one, there are a series of broader questions that should be considered for inclusion in any work completed from this paper.

1. The first is Technical Certification. Historically, the Federal Aviation Administration (FAA) and the European Aviation Safety Authority (EASA) have led Aircraft certification due to the proportion of activities in their jurisdictions, and size. If this remains, pathways for recognition of their certification activities should be considered.
2. The second consideration is Operational Certification. Operations for drones currently take place under Parts 101 and 102. Consideration should be given to future high frequency operations that are more akin to airline operations. Examples include the use of Part 135 by the FAA.
3. The third consideration is Dangerous Goods. As the use of drones in logistics increases in scope and frequency, a key consideration is the carriage of dangerous goods. The current approach for dangerous goods applicable to Air New Zealand, is not fit-for-purpose.

5. Do you agree with the proposed order of implementation of the measures?

The proposed order of implementation is logical, however shorter timelines would enable New Zealand to pioneer these initiatives, ensuring that we make the most of the opportunities identified in the discussion document. A shorter timeline would also help to focus the attention of both hobbyists and professional operators, seeing positive change over a shorter period of time. We would propose the following timelines:

<1 Year: Rules update and the development of a Basic Pilot Qualification
<1 Year: Registration
<2 Years: Remote Identification
<2 Years: Geo-Awareness and UTM System

Rules Update

Major changes to the Rules

1. Should drones have their own standalone Rule Part?

Given the rapid advances in drone technology, and the exponential growth in use by both hobbyists and professional operators, particularly relative to Gyrogliders, Parasails, Balloons, Kites, and Rockets, Swoop Aero supports the creation of a standalone part.

This may also support appropriate delineation for other airspace uses.

2. Should we review the four-kilometre minimum flight distance from aerodromes?

A four-kilometre minimum distance appropriately accounts for the potential risks posed by operators with no other oversights (such as through operational certification). However, to safely enable flexibility, it may be that specific privileges are considered in these circumstances.

3. Should we change the requirement to gain consent to fly above property by:

a. Using 'safe distances' as an alternative?
b. Relaxing the requirement in another way?
c. Removing the requirement completely?

Swoop Aero believes this requirement should remain. For the objectives listed in the discussion paper to be achieved, there is the requirement to gain support from the wider public, not just those operating drones. If this requirement is relaxed or removed, the perception of drones breaching the privacy of members of the community will only increase, which will likely be highlighted in the media. It is recommended that any relaxation or removal of this requirement is limited to Part 102 operators only, who have demonstrated both a relevant use case and acceptable safety measures.

4. Should we change the requirement to gain consent to fly above people by:

a. Using 'safe distances' as an alternative?
b. Relaxing the requirement in another way?
c. Removing the requirement completely?

Swoop Aero believes that the use of a 'safe distance' should be implemented. Much like the issues related to flying above property, ensuring public safety and reducing the 'annoyance' factor will help to build public support for rule implementation.

The introduction of a basic pilot qualification, while necessary and positive, will not provide enough of a safety layer to ensure the safety of those not directly involved in the operation of a drone, therefore a safe distance should apply.

5. If we use 'safe distances' as an appropriate alternative to the consent provision, what distance(s) would you consider is appropriate?

a. 10 metres
b. 30 metres
c. 50 metres

d. Other.

In our estimation, an appropriate safe distance as a general rule would be 30m.

6. Are there any other major Rules changes we should consider?

No.

Minor changes to the Rules

Q.7 Are there any minor changes to the Rules that would make them easier to understand?

No

Q.8 What do you think of the proposed minor Rules changes?

The introduction of a new rule applicable to tethered drones is fully supported. As part of this rule, it is recommended that standards around tethering are established and introduced (e.g. maximum tether length, tether strength etc).

The requirement of an observer for FPV operations in open environments should remain, due to the lack of situational awareness on the part of the remote pilot when operating FPV equipment, particularly goggles. To ensure simplicity, it is recommended that both the remote pilot and observer have completed the basic pilot qualification, regardless of weight class, if FPV flights are being undertaken.

Q.9 Are there any other changes we should consider?

No

3. Basic pilot qualification

1. Should we introduce basic pilot qualification for Part 101 drone pilots?

It is recommended that a basic, theory-based qualification be implemented for Part 101 drone pilots, in the form of an online test.

2. What impact would a basic pilot qualification likely have on you?

The implementation of a basic pilot qualification would provide a level of confidence that those operating drones have an understanding of the rules and requirements. This would lead to an increased level of safety for Swoop Aero flights, while concurrently enhancing public confidence in drone operators to operate safely, which will benefit the industry more generally, helping to achieve the objectives outlined in the discussion paper.

3. What format should this test take?

a. Electronic/online theory test
b. Paper based written theory test (at a provider)
c. A practical examination of skill and a paper based written theory test (at a provider)
d. Other

Electronic/online theory test. Any additional requirements, such as needing to visit a provider, or practical examination of skill, will likely result in a low level of compliance.

4. Should there be a minimum age for basic pilot qualification?

Swoop Aero believe that a minimum age for a basic pilot qualification may be appropriate, however further consideration should be given to how this would impact the broader drone community, particularly STEM educational uses. As long as there was a mechanism for children younger than 14 to use drones, then this is sufficient. The rationale for the age of 14, in alignment with the applicability of laws to minors is a logical choice.
.

5. Do you agree with the proposed special authorisations given to Part 141 and Part 101.202 approved training organisations?

Drone operators with evidence that they have successfully completed courses delivered by Part 141 and Part 102.202 approved training organisations should not be required to complete a basic pilot qualification, given the comprehensive nature of these courses.

6. Is there any other special authorisations you would like to see? Why?

The purpose of this basic pilot qualification is to ensure that all drone users have a basic understanding of flying drones and aviation to prompt safety in the community. It will ideally be a simple, straightforward process, and beyond the specialist training offered by Part 141 and Part 101.202 approved training organisations there should be no additional special authorisations.

4. Drone registration

1. Should we introduce the proposed drone registration system? Why?

Registration of drones is beneficial to regulators, industry and the public. It allows identification of those operators who may not be as compliant as others, allowing timely and efficient enforcement.

However, consideration should be given to any unintended consequential impacts under the remainder of the Civil Aviation Rules (such as whether this enlivens requirements under other parts).

2. What impact would drone registration likely have on you?

A registration scheme would provide a greater understanding of the drone landscape in New Zealand and inform safety cases for complex operations.

However, that benefit relies on industry uptake. Therefore, key considerations must be cost and registration process simplicity.

3. What do you think of the proposed system design (e.g. digital platform) and requirements (e.g. identity authentication)?

More generally, it is recommended that drone registration should occur without cost to drone operators, which will increase compliance and enhance community buy-in of the process. This will also help to avoid the perception that the introduction of Drone Registration for Part 101 operators is a revenue-gathering exercise. As long as the introduction of things like the identity authentication approach did not add unnecessary complexity or cost to then it appears logical.

4. Should there be a minimum weight threshold for registering a drone? If so, is 250 grams appropriate? If not, what would be an appropriate weight threshold and why?

A 250 gram threshold for registration appears appropriate, given the limited levels of kinetic energy associated with drones of this size.

5. Should certain drones not need to be registered (such as drones flown solely indoors or within specific designated areas (e.g. Model Flying New Zealand sites) from registration? What other drones should not need to be registered and why?

Model aircraft flying has been a popular hobby in New Zealand for decades, with relatively few compliance issues, particularly when compared to drone use. In order to ensure broader community buy-in of the proposed measures, it is recommended that members of model flying clubs, flying their radio controlled model aircraft within formally designated Model Flying New Zealand sites, be exempt from registration.

Additionally, if there are costs associated with registration, then it may be appropriate that certain industry segments such as the emergency services are exempted.

5. Remote ID

1. Should we consider introducing Remote ID? Why?

Swoop Aero supports the introduction of RemoteID.

2. What impact would Remote ID likely have on you?

RemoteID will provide an increasingly important level of information and situational awareness to airspace users, other drone operators, and regulators as the frequency of operations increases.

This is particularly important to Swoop Aero in terms of allowing safe and equitable access to all kinds of airspace.

However, this introduction should be considered as part of a more holistic review on appropriate electronic conspicuity (EC) requirements for all airspace users. Currently, the onus is wholly on drones to stay away from conventionally piloted aviation. However, in many circumstances, groups like General Aviation are not required to carry any form of EC device to support this onus.

6. Geo-awareness

3. Should we consider introducing geo-awareness? Why?

The two proposed geo-awareness actions would greatly enhance situational awareness both for those operating drones and those potentially impacted by drone operations.

1. Standardised Map/Chart. An easily accessible and understandable map or chart, available in a variety of formats, would provide drone users with a resource with which to plan their flights and ensure they are compliant with regulations. For those currently operating drones with limited training and no previous aviation experience, the reading of Visual Navigation Charts can be a challenge. Introducing a drone-specific chart would reduce confusion and enhance compliance and would provide New Zealand with an opportunity to become a world leader in this aspect of drone operations and integration.
2. Geo-awareness technology for certain operations. Due to the costs associated with geo-awareness technology, it is recommended that only those operations that sit outside of Part 101, or its future equivalent, such as BVLOS, operations above 400ft, and operations within 4km of an aerodrome, be required to carry geo-awareness technology as mandatory.

4. What impact would geo-awareness likely have on you?

There would be no significant impact on Swoop Aero operations as long as geo-awareness were built into platforms such as Airshare and could be automatically checked and/or approved.

7. Other Area for Consideration

Whilst a review focused on the aviation regulation requirements for drone integration provides a fantastic basis for further progression, broader governmental issues must be considered including:

1. Noise Requirements;
2. Planning Requirements;
3. Privacy Requirements; and
4. Social License with the community.

These peripheral issues are critically important in allowing the industry to progress from hobbyist to drone airlines.

[redacted]

From: [redacted]
Sent: Monday, 31 May 2021 2:55 PM
To: Enabling Drone Integration; Paul Clegg
Subject: Ministry of Transport - Enabling Drone Integration - Model Flying New Zealand Submission
Attachments: Enabling Drone Integration - Model Flying New Zealand Submission.pdf

Hello,

Thank you for the opportunity to submit on the discussion document, please find the attached Model Flying New Zealand submission.

Sincerely,

[redacted]

[redacted]

MFNZ Submission – Enabling Drone Integration

[redacted] | www.modelflyingnz.org

Overview

Model Flying New Zealand welcomes the Ministry of Transport and Civil Aviation Authority's project on clarification and updating Civil Aviation Rule 101. Model Flying New Zealand has numerous rule change dockets raised with CAA, over the previous 6 years, for rule change proposals.

MFNZ appreciates the document's apparent intention to separate model aircraft, including control line and free flight, from COTS drones. However, the proposed regulation does not provide a definition for either. MFNZ also appreciates Ministry of Transports understanding of the long history of safe operation of model aircraft within New Zealand.

Whilst the document provides some high-level discussion points on the envisioned future legislation, without proper nuancing of the points, it is exceedingly difficult to assess accurately their practicability or impact on Model Flying New Zealand's 2200 members and some 40,000+ model aircraft.

Model aircraft as a sport and a hobby are proven to be the grass level entry point for the majority of todays manned aviation professionals, inspiring huge numbers of young people into the sector. The paper appears to inadvertently restrict this, without having considered the long-term effects of such a change.

The following is in response to Ministry of Transports Discussion Document – Enabling Drone Integration (6 April 2021). Paragraphs are addressed numerically and in *italics.*

Contents

ENABLING DRONE INTEGRATION

Introduction

1 - The document, Enabling Drone Integration, states drones are a rapidly emerging technology. RPAS, including model aircraft, have existed for over a century. "Drones" are not a rapidly emerging technology at all, but rather the use case and user base has changed and expanded in past 10 years. Model Flying New Zealand has existed since 1932.

There is a large difference in skill level, regulatory compliance, and technical knowledge between an inexperienced operator who has just purchased a Consumer Off The Shelf (COTS) multirotor and for instance one whom has built the RPAS themselves. The document fails to recognise the huge variation in operator skill levels, knowledge, and experience between the parties involved, irrespective of if they are operating under CAR101 or CAR102 and simple refers to all as "drone operators".

This paragraph also addresses the definition of "drone" and includes model aircraft within the definition. The document later (Paragraph 179 - *MFNZ gives members special privileges to operate model aircraft and drones*) refers to model aircraft as a separate type which leads to confusion about what is being addressed throughout the document. Without proper definition of the various subcategories of RPAS, and their nomenclature, it is difficult to determine the aircraft, and their use cases, that are being referred to.

By grouping model aircraft under the catch-all terms "drone", many highly misleading statements are introduced which do nothing to promote understanding, i.e., Page 17 – "There is currently a lack of compliance from drone pilots" is simply untrue when applied, for instance, to model aircraft pilots.

The document later purports that a goal of Ministry of Transport is to enable greater public acceptance of the technology. Model Flying New Zealand would encourage all government agencies to move away from "drone" being the default nomenclature in all releases, along with the negative media generated connotations associated with it (some of which are reinforced within the document), Instead aligning with the international standards of "RPAS/UAV/UAS" etc.

Other relevant legislative frameworks applicable to drone operations

15 – The Conservation Act does not address the use of RPAS, it grants consent (IAW CAR101.207(a)(1)(ii)) for recreational users for any recreational activity, including the use of RPAS (Conservation Act 1987 3B(170)). The Act does however address the take-off and landing of aircraft from DOC managed land, likely addressing helicopters (Conservation Act 1987 3B(17ZF)). Overflight of DOC managed land by aircraft, including RPAS, is not restricted within the Conservation Act.

The Privacy Act certainly applies to the use of the RPAS, the same as it does to dashboard cameras and cell phones. With the incredibly low number of RPAS related privacy complaints (3)[1], with none upheld, it is not worthy of discussion within this project and only serves to reinforce the unjustified stigma associated with "drone" technology rather than enabling it.

[1] OIA Request 202007081158 July 2020

The New Zealand drone sector and current trends

17 - Model Flying New Zealand agrees that data on the sector is largely inaccurate, and along with many SMEs in the sector within New Zealand, disputes the conclusions drawn and methodology used, by the Colmar Brunton New Zealand Drone Research survey. Model Flying New Zealand continues to encourage Ministry of Transport to endeavour in gathering accurate data before undertaking any future regulatory changes.

Notably omitted within this section is that peak COTS multirotor sales occurred in December 2018, this is supported by data worldwide, yet this also appears to be the primary sector that the MOT Enabling Drone Integration document is attempting to address.

An effective commitment to drone integration is necessary

35 – Model Flying New Zealand agrees that alignment with international standards is desirable, however this cannot be at the expense of introducing risk-based intelligence lead regulation.

Many regulators around the world have introduced ill-considered RPAS regulation which has not resulted in any meaningful change in outcome. Alignment with such regulation at odds with the New Zealand Governments document - Government Expectations for Good Regulatory Practice[2]

Of note is that the ICAO Model UAS Regulations[3] are currently largely in alignment with New Zealand's CAR101/102 ruleset, being primarily based on them with only minor variances and clarifications to our existing regulatory environment.

We propose to introduce a series of regulatory measures…

39 – The document states that the proposal has been assessed considering the effectiveness of the measures, ease of implementation, proportionality, cost efficiency, and international alignment. This statement raises many questions which are fundamental to the entire proposal.

- How has the above been achieved when data such as the number of RPAS within New Zealand varies by 6 figures?
- If the cost efficiency of a registration system has been modelled on having 200,000 aircraft, but in reality, only 20,000 register, will the system remain financially viable?

Several registration systems already active around the world are experiencing budgetary issues, with the UK system for example expecting 150,000 entries and costing NZ$7.8 million to setup and NZ$5.4 million annually to maintain. The FAA serves a population of 328.2 million people and their registration scheme which has been in effect since 2015 lists 873,576 RPAS[4], including model aircraft, or 1 RPAS per 376 people. These numbers extrapolated for New Zealand's population would suggest 13,077 RPAS would be registered, if it included model aircraft.

Ease of implementation of many factors being proposed is completely unknown. The document proposes technology such as remote ID and Geo-Awareness that has yet to be developed, and then applying that technology to a wide variety of wildly varying RPAS architectures. It is impossible to ascertain the ease of implementation at least in the case of model aircraft, Model Flying New

[2] https://www.treasury.govt.nz/sites/default/files/2015-09/good-reg-practice.pdf
[3] https://www.icao.int/safety/UA/Pages/ICAO-Model-UAS-Regulations.aspx
[4] https://www.faa.gov/uas/resources/by_the_numbers/ 5/12/2021

Zealand would suggest implementation of those technologies is particularly difficult if not impossible in many cases.

Proportionality is key. Even with the documents purported large degree of currently non-compliant operators, RPAS operations are easily the safest form of aviation in existence, and notably one of the safest sports and hobbies, with considerably less cost and risk than for instance Cricket. Perhaps resources can be more effectively directed?

44 – The document states that the accessibility and popularity of drone use is increasing, along with aviation safety, security and privacy concerns and then states: "There is a lack of compliance from drone pilots". This is an erroneous statement. The 1950s zeitgeist included UFOs, and sightings of UFOs dramatically escalated, despite the number of UFOs remaining static. We now have media generated hysteria causing the same situation with RPAS.

Page 20 of the proposal document refers to the Gatwick incident. Gatwick is not an example of a rogue RPAS operator, but rather of public hysteria generated by the media as well as incompetence on the behalf of government agencies. It has recently been stated by the Sussex police that the initial RPAS was likely the light on top of a crane many kilometres away, and subsequent reports were of the police's own RPAS. The Gatwick incident then resulted in the arrest of an innocent model aircraft enthusiast based on his location and selling a model aircraft on Facebook. He was subsequently awarded 200,000 pounds in compensation for wrongful arrest. Referencing "Gatwick" within this document highlights issues with the Ministry of Transports published goal of improving public acceptance of the technology.

45 – The document states that those operating under Part 101 often have limited knowledge of the rules and aviation system. This statement is at odds with all research conducted, including the previous mentioned Colmar Brunton research. Whilst there are a number of users of the technology who require further education, "often" implies that the majority do not understand the CAR, when the correct statement is the inverse of this.

46 – Model Flying New Zealand encourages CAA to further reach out to the community with educational programs, and appreciates the work carried out so far. There are many avenues for education that have yet to be exploited. The CAA remain very much siloed away from the actual RPAS community (recreationally and commercially), outside of Model Flying New Zealand, rather than actively engaging with them. Model Flying New Zealand appreciates its relationship with CAA, but also notes a lack of real engagement with those outside of our organisation. Members of CAA staff have admirably achieved great results in community engagement and safety education, on social media and in the real world, but they have done so without any official CAA structured plan or funding.

47 – Table 2 - Examining the data in the table shows that almost all categories of drone reports demonstrate a strong decline in incidents. The exception being reports of a lack of consent from people under the flight path. The paper later proposes to remove the potential for these reports to be made by deleting the consent requirement. Therefore, the data does not support the need for action that the paper contends.

48 – Table 3 - This table shows clearly that 2018 was the peak for Incursions and that the trend is improving rapidly, this aligns with "peak drone" occurring in December 2018.

49 – Due to the lack of education and understanding of the technology by the general public, complaints to the NZ Police about drone use do not necessarily equate to any breach of the CAR or any hazard to safety. Without applying a filter to those complaints, so only those that are valid remain, both to police and CAA, any raw numerical value is of little use outside of generating hysteria. Incident reports such as "a drone made my house vibrate" are amongst the raw numerical values, and such examples are common within the incident reports.

Model Flying New Zealand supports better enforcement of the Civil Aviation Act and CARs. However, this is likely more practicably addressed by better resourcing of the CAA, and if this were to be combined with an education program that is more engaged with the community, this would not require as much resource to implement.

56 – It is true that operators under CAR101 can operate within uncontrolled and controlled airspace, and that airspace is also shared with other airspace users. However, this statement fails to acknowledge that although both airspace users are in the same airspace, it based on a two-dimensional view. The overwhelming majority of RPAS are well below 400ft AGL and the overwhelming majority of other users are above 500/1000ft AGL. The only hazard to other airspace users occurs when the airspace is actually shared – such as operations under CAR137, or aircraft taking off or landing from aerodromes. The separation, rather than integration, is the mitigation of the hazard. Separation in this manner is also likely the only practicable method going forward. However, this requires further education of both manned and unmanned operators to ensure its effectiveness.

58 – "Drone" delivery and other envisioned technologies will only become feasible if the cost to their operation drops exponentially from current costs. It will also have to mitigate the risks of uncontrollable airborne hazards, such as birds. The same technology for bird avoidance will also allow avoidance of other RPAS and manned aircraft. This technology will also have to be effective without any electronic conspicuity on the object being avoided and will have to be achieved in real-time without any flight plan being filed. The current lack of technology to deal with hazards such as birds, and the costs involved with operation, are far greater hurdles to overcome than any designated corridors or sub 400ft pseudo-controlled airspace. Once these challenges are overcome, the airspace in which the technology operates will largely be irrelevant.

As a society we are not proposing to reimagine the road rules to enable autonomous road vehicles. If autonomous road vehicles are coming, they are expected to integrate with the existing systems, including the hazards associated with those systems, without any regulatory or systematic change to existing infrastructure. This should be the same for autonomous aircraft.

Benefits, costs and risks associated with the proposed approach

62 – Again, what was actually an RPAS flying within CTR, and what was in fact sightings of other reported objects often mistaken as RPAS, such as birds/balloon/manned aircraft/Chinese lanterns, without nuancing a raw value of 81 closures means little.

- How many were actually unauthorised RPAS within the CTR?
- How many were above 400 feet and within 4km of the aerodrome?

64 – ACC reports of 247 claims of drone related injury, with a total cost of $88,918, over a 5 year period. This reinforces the fact that RPAS use is notably safe and of little burden to the taxpayer or ACC system.

Without data to compare the statement, the proposal is misleading. Per year, Horses cost the New Zealand taxpayer on average $35 million in ACC claims[5], or $175 million over the same period. E-Scooters are currently tracking at approximately $500,000 [6] per month. Running[7] comes with exponentially higher costs to the ACC system, and the NZ taxpayer, than RPAS operations.

Of those 247 claims, how many occurred when the RPAS was in flight? These statistics should be nuanced to reflect incidents from when the aircraft was in flight, as per aviation standards and to ensure that any proposed regulatory change is proportionate to the actual, rather than perceived, risk.

66 – The environmental impact of lost drones should not be placed particularly highly on the list of RPAS sector problems that require solutions.

77-79 – Helicopters are not currently used to move freight or to provide courier services between distribution centres, nor are they used for urban air mobility of the general public. What aspect of RPAS as a technology changes this? Holistically, the cost of the pilot in the operation of a helicopter is not a large proportion of the systems total cost, making the system unmanned does not suddenly make the system financially viable, regardless of the regulatory environment. Any future system should be based on risk-based intelligence lead regulation, rather than the marketing hype of venture capitalist traps.

Costs

82 – This statement is contradictory. Cost recovery implies splitting the cost to the Government of implementing the measures between the users of the system. A fair share of the costs based upon the risks that they pose is quite a different calculation. The costs shown in Paragraph 83 demonstrate a wild variation between the attitude taken by different regulators. The risk being that if a system is established based on erroneous data, which then becomes financially impracticable based on real world user numbers. This would then place an excessive cost on the end user, resulting in fewer participants in the system.

[5] https://catalogue.data.govt.nz/dataset/23559842-6f97-4a0e-ba55-92ffb762091d/resource/cca76899-41f8-4eca-88d5-f98f6c591968/download/ar-1146-horse-related-injuries.xlsx
[6] https://catalogue.data.govt.nz/dataset/c303e9d5-7dae-40e7-a42e-c40d76bfd33a/resource/aa5837a6-b743-499f-8e2e-ca1e0f3bbc1c/download/52231-response.xlsm
[7] https://catalogue.data.govt.nz/dataset/916651bf-4753-472d-8c9c-1645e6fcee9e/resource/fe9f507d-5aa6-4880-962b-18f379d067c4/download/ar-285-running-injuries-response.xlsx

84 – Not all RPAS have traditional manufacturers, many commercial RPAS are bespoke custom built to meet a specific role, requiring these RPAS systems to now comply with as yet unknown standard has an unknown compliance cost. If for instance the remote ID hardware is mandated as being "tamper-proof", as per some regulators, then the installation of such a device becomes excessively costly, and impracticable.

Most model aircraft are built by the operator, have no flight controller or control algorithm nor GNSS or other positioning, and therefore have no method of compliance without a completely stand-alone system installed. This again results in excessive compliance costs.

85 – Recreational and commercial operators who currently comply with the existing CAR have done so either by their own volition or through third party training. Imposing regulation such as registration on them achieves nothing but more cost.

Risks

86 – CAR102 already enables implementation of advanced operations, this could be improved if the CAA were suitably resourced to assess applications.

88 – This concern could be alleviated by a refresh of the current rules, incorporating many of the documented clarifications and rule change proposals that have been submitted over the past 6 years, rather than a complete overhaul of the existing system. This would result in a clarified rule set that is easier for new entrants to the system to understand, as well as enabling current operations to continue without over-regulation. It could also allow for better alignment with ICAO Model Regulation.

Questions – Enabling Drone Integration

1. ***What is your view on the proposed series of measures? Are there any other alternatives you suggest we consider?***

The proposal attempts to address several concerns, some of which are not based on evidence, whilst ignoring some of the real issues experienced by the sector. It places extra regulatory burden onto those that already comply with the current legislation, and therefore present little risk, with few corrections to the current issues with the regulation.

The proposed system is infrastructure and resource heavy and without having good data of even the number of users to base the financial modelling on, resulting in the very real risk the system is not sustainable without charging the user fees that are beyond reasonable for the services provided. This will in turn will lead to poor compliance and failure to meet the objectives.

In 2015 New Zealand had some of the most progressive RPAS legislation in existence, proof of this is in ICAO adopting 90% of New Zealand's system in their Model Regulations, and yet now we are proposing to align with unreferenced international standards which have already been demonstrated as lacking or without justification.

Regulations should be based on technology available now, with an eye on what is coming in the future. Approaching it on the premise of correctly predicting what will be available in the future is certain to result in flawed regulation.

Alternative approaches would include options such as, or a combination of –

- Re-engagement with the stakeholders, community, and subject matter experts and collectively developing a system which could once again be an example of progressive, risk-based and evidence lead, regulation. This could be done on any time frame, and operations which go beyond the current CAR101 can entirely be dealt with by a suitably resourced CAA and CAR102. Several alternatives have been suggested by other parties.
- Applying the minor updates submitted over the previous years, addressing things such as; property consent, the definition of "active", where 4km is measured from. Possibly this would result in the adoption of ICAOs model regulation, or similar. This could be done with an updated, correct, RPAS airspace map providing access to the CTR, meeting the proposals' goal for "geo-awareness". This is further discussed within this document.
- Pausing the project for a few years, combined with observation of other regulatory systems effectiveness, before proceeding with better information.

2. Would the proposed approach help achieve the desired objectives?

The objectives of the proposal are not particularly clear, ranging from increasing situational awareness to reducing the environmental impact of lost drones, and whilst a range of proposed changes are suggested, they are not detailed well enough to make many conclusions.

The proposal needs to convey a clearer linkage between problem - objective – solution. An example is the thought process of Remote ID. It is suggested as a solution to enforcing the control of airspace incursions, but then justified as being a help to RPAS users. Model aircraft are judged to be rules compliant and then it is suggested that geo-caging be used to confine members aircraft to designated areas.

Without good data on the sector to base proposed regulation on, it's impossible to predict its effectiveness. Mandatory training may increase knowledge of the rules if done correctly, however it must be done at a cost low enough to ensure adoption, without knowing the cost or the technology to implement it, it's impossible to predict its effectiveness. Registration by itself only serves to gather statistics, and the uptake of the registration system will not be adopted by all, particularly if enforcement remains at current levels.

The proposal has a high risk of implementing over-regulation, which combined with low levels of enforcement will simply result in lower levels of compliance as those who already comply will fail to see the justification of increased regulation and become alienated.

3. Would the proposed approach help address the problems and opportunities identified?

The rule updates have been held in abeyance for some time to be part of this larger project. They are needed to address the current real-world shortcomings and oversights upon initial issue. All the subsequent topics (Pilot qualification, Drone Registration, Remote Identification and Geo Awareness) need to be proven to be necessary through a rigorous process.

- Are they justified?
- Has a Risk assessment been undertaken?

- Has a similar measure been used by another regulator and seen to be both cost effective and safety enhancing?

In 2015, the consent rule was introduced on a whim. It has been widely unpopular, ineffectual, and should be repealed. It would be unfortunate to spend large amounts of resource introducing new schemes only to find later that they had no benefits.

4. ***Are there any other problems and opportunities you can think of?***

The CAAs RPAS team is under resourced and requires more staff that understand the technology. Staff that are willing and enabled to engage with a community which can differ greatly to that of conventional aviation participants. CAA staff need to be enabled and trained to make judgment calls on their own volition, based on evidence and experience. They need to have a better understanding of RPAS, from kites to BVLOS capable aircraft, to accurately assess risk and offer education, and failing that enforcement.

There are large engagement gaps in the previous RPAS education programs, some of which came remarkably close to meeting the mark (such as the "fly your drone" campaign), but then had resourcing withdrawn.

Previous CAA spokespeople have on numerous times approached the media and made erroneous and misleading statements about RPAS operations, which completely undermines any attempts at achieving the goal of greater public acceptance. A change in policy is needed to rectify this.

5. ***Do you agree with the proposed order of implementation of the measures?***

The previously mentioned rule updates are needed foremost. The need for the other restrictive measures is very much unproven. Until there is a risk and cost/benefit analysis, there is little justification for further measures.

CHAPTER I – Rules Updates

Major Rule Changes

94 – Further discussion around what parts of the proposed ruleset would apply to CAR102 certificated organisations is needed. Registration for instance is already achieved, remote ID and geo-awareness goals have likely already been met by the operator's current exposition. Applying more regulation to what is described as risk-based regulation is an oxymoron.

95 – There is little evidence that the proposal is proportionate to risk and is at odds with New Zealand Governments regulatory guidelines.

97 – This requires more discussion, what is actually being proposed? Removing the manned flight applications from CAR101 would likely make sense, by moving manned flight into more appropriate parts. However, if what is proposed is simply changing the number in its title, it will only add to confusion. The content of the rule is of much higher importance.

103 - The rule was created with no risk assessment or safety case other than an intuitive thought that it might be safer if consent were obtained, the operator obtaining a briefing from the owner on the hazards existing at the site. If an operator is flying over an empty field, there is no safety advantage gained by having consent. If a drone is being used to film a sporting event, the crowd is not safer because they know it is happening, they are safer because plans are in place to assure safety through risk mitigation.

108 - Rule 101.205 as presented is overly simplified. The explanation in note 24 relates only to the small number of controlled airfields, rather than the much higher number of uncontrolled aerodromes. Whilst manned traffic numbers at an uncontrolled aerodrome are likely lower than that of a controlled aerodrome, it is the responsibility of both the manned and unmanned pilots to maintain separation from each other within this airspace. This requires a greater understanding of the airspace than when operating within controlled airspace where ATC can ensure separation.

The current rule is poorly written and has the hierarchy reversed, it also lacks a reference point to where 4km is measured from due to errors included in the 2015 issue. The parts should be dealt with in order: Any aerodrome / Controlled aerodrome / Uncontrolled aerodrome.

109-111 – Training the operator to understand the airspace surrounding an aerodrome, and then equipping them to operate safely in it (such as enabling FRTO operation), is a much more practicable method. AIP plates and aerodrome charts already contain the information needed, duplication of this will only lead to confusion and difficulty in document control.

Minor Rules Changes

112 (Table 5) –

- 101.202 – This rule was written to enable Model Flying New Zealand as an organisation. Redacting it from the ruleset is a major change to the CAR, as it defines aircraft airworthiness, and training to a level that allows operations within 4km of an aerodrome.

Whilst CAR101.202 is brief and is likely no longer fully fit for purpose beyond the use of Model Flying New Zealand, whom is easily the largest organisation approved by the Director, it is also key to the existing CAR101 functioning safely.

Removal of CAR101.202 results in CAR101 no longer having its primary training, or airworthiness certification, or authority to request NOTAMs, which seems particularly counter intuitive to risk reduction.

There is no evidence provided that is overly onerous for commercial off the shelf drones, and removing it rather than expanding upon it, introduces significant risk. Incidents such as the Alauda Airspeeder[8], are currently very unlikely to occur within New Zealand due to CAR101.202s existence.

CAR101.202 is erroneously defined in Appendix 4 as "An approved person is one who has appropriate knowledge of airspace designations and restrictions".

- 101.205 – This is listed as both a major and minor rule change?

- 101.7 – This does need to be reviewed. However, there is no reference to "permission" in sub para (c). This provision mirrors the current conditions under which other manned aircraft may enter Danger Areas.

- 101.209 - Where is the evidence that this rule needs to be tightened? VLOS is currently defined over two pages within CAR101, it does require simplification as is currently overly wordy which can lead to a lack of clarity.

- 101.215 - There is no discussion or explanation for the proposal to remove the 15-25kg category. Model Flying New Zealand is easily the largest operator in New Zealand of aircraft within this category. Is the threshold to be lowered to 15kg or are the current controls on 15 -25kg aircraft to be abandoned entirely? What evidence is used to justify this?

117-120 – Model Flying New Zealand supports relaxing the requirements for an observer for FPV operations. Removal of the requirement when operating in a shielded environment fits well with the current shielded rules intentions and mitigates the risks involved.

[8]https://assets.publishing.service.gov.uk/media/602bb22f8fa8f50388f9f000/Alauda_Airspeeder_Mk_II_UAS_reg_na_03-21.pdf

Questions – Rules Updates

Major Changes

1. ***Should drones have their own standalone Rule part?***

Yes, provided it does not add to confusion by changing the number associated. They should be separated into three parts:

I. Unmanned Aircraft
II. CAR101 - Model aircraft, non-person carrying balloons, kites and rockets
III. Gyrogliders and parasails should be aligned with other manned aircraft

2. ***Should we review the four-kilometre minimum flight distance from aerodromes?***

Minimum is likely not the correct term here, but no, the rule is effective however requires clarification and rewording in a more logical manner.

3. ***Should we change the requirement to gain consent to fly above property by:***

C – Removal of the requirement entirely, it's not fit for purpose, impractical and unenforceable.

4. ***Should we change the requirement to gain consent to fly above people by:***

A – Yes, Rule 101.207 or Rule 101.13 should include a clause requiring separation from persons not involved in UA operations. Consent is not a factor and does not lower risk or improve safety.

5. ***If we use "safe distances" as an appropriate alternative to the consent provision, what distance(s) would you consider appropriate?***

B – 30 metres, provided the new rule is worded in such a way to practicable to situations such as multiple people standing together.

6. ***Are there any other rule changes we should consider?***

Minor Changes

7. ***Are there any minor changes to the rules that would them easier to understand?***

Addressed in 9

8. ***What do you think of the proposed minor rule changes?***

They have not been discussed with stakeholders. The proposed changes indicate an erroneous understanding on how they affect stakeholders.

9. ***Are there any other changes we should consider?***

An example rule change would include -

- **101.1** Rewritten to separate out drones, people carrying craft and other UA.
  All other sections will need to reflect the separation of these three groups.
- **101.3** Addition of definitions of

- model aircraft
- shield
- barrier
- minimum mass of 250gm
- active aerodrome
- land based aerodrome boundary
- water aerodrome 4km measured from reference point

- **101.13** The minimum safe operating distance from un-involved persons could be placed here.
- **Sub part (E)** Title changed to replace Remotely Piloted Aircraft with Model Aircraft.
- **101.202** Clarification that the Director will issue a certificate of qualification to an approved organisation. Documentation around the process of 101.202 application, conditions on its approval, responsibilities, privileges, the requirement of a Fit and Proper primary person.

  Further expansion and documentation of the rule, such as training syllabus or aircraft standards, could be covered under a future Advisory Circular or other document external to CAR101.

  101.202(3) should be removed, any airspace user should be able to request a NOTAM, this would help improve effectiveness of the NOTAM system.

  Essentially this would result in a Part 149 "lite" existing internally to CAR101, aligning with ICAO Model Regulation.
- **101.205** Requires re-writing to:
  a. A person operating a model aircraft from an aerodrome, or within 4km of an aerodrome boundary must:
     i. Be the holder of, or be under the direct supervision of the holder of, a pilot qualification issued by an approved organisation or hold a pilot licence or certificate issued under Part 61 or Part 149.
     ii. Have an observer in attendance.
     iii. Have permission from the aerodrome operator or, in the case of a controlled aerodrome the relevant ATC unit.
  b. A person operating a free flight aircraft within 4km of an aerodrome boundary must ensure that the aircraft is launched downwind of an active runway.
  c. A person must not operate a model aircraft, a control line model aircraft or a free flight model aircraft on or over any active movement area of an aerodrome or any active runway strip.
- **101.207** Re-writing to improve clarity and reflect change in overflight on people, removal of 101.207(a)(1)(ii)
- **101.209** Re-writing to improve clarity, simplified and include relaxation of the observer requirement when shielded from 101.209(d)(2)
- **101.211** Removal of "indoors" as its redundant statement when shielded. Addition of ECT/MCT to clarify when night is.

CHAPTER II – Basic Pilot Qualification

122 – The statement that people operating under CAR101 are not traditional aviation participants is incorrect, many model aircraft pilots are also very qualified in various roles within traditional aviation, and flying model aircraft is arguably more traditional than manned aviation! Some of the sector is not traditional aviation participants, and this needs to be reflected in education programs. CAR101.12(b)(1) requires all participants under CAR101 to have knowledge of the rules, if there is an issue with this it is a communication, education, and engagement problem rather than a rule problem.

126 – The statement that previous efforts have not been effective is not supported by the data shown elsewhere in the proposal document.

127 – Whilst MFNZ supports education programs, the definition of "drone" supplied within the discussion document includes RPAS such as control line model aircraft. Requiring airspace training (or many of the other suggested rule changes) for operations, for example, with a physical 30m maximum range from the operator, is likely unjustifiable.

Without properly nuanced definitions for the various types of RPAS, the applicability of any of the proposed changes is difficult ascertain.

128-138 – Competence and skill cannot be assessed with an online theory test, with documented deficiencies in outcomes from online training[9]. Any proposed test would need to be developed to ensure well formulated questions as well as acknowledge the limitation of such a training format. It would also need to show clearly that it does not result in the same qualification, or privileges, as that provided by CAR101.202 or Part 141 organisations. Confusion around the various unofficial online theory tests validity and privileges, such as Airshares, already exist within the community. Without clarity in the scope of this proposed qualification it risks adding to the confusion.

Privacy is not the mandate of the Ministry of Transport or the Civil Aviation Authority.

139 – Education rather than enforcement, particular against children, should be a far higher priority to the Ministry and CAA.

157 – Any proposed qualification would need to be administered in such a way that it puts no, or very low, cost on the end user.

158 – Cost/Benefit analysis of future education campaigns is obviously paramount, some of the suggestions within this document carry little cost. The key to any education campaign is to get engagement with the community, and not the budget level of the campaign.

[9] Comer, D., Baker, R., & Wang, Y. (2015). *Negativity in Massive Online Open Courses: Impacts on Learning and Teaching and How Instructional Teams May Be Able to Address It*. *InSight: A Journal of Scholarly Teaching, 10*, 92-113.
Kirtman, L. (2009). Online Versus In-Class Courses: An examination of Differences in Learning Outcomes. Issues in Teacher Education, 18(2), 103-116.

Questions – Basic Pilot Qualification

1. ***Should we introduce a basic pilot qualification for CAR101 drone pilots?***

Possibly, provided it was done in the manner previously described.

2. ***What impact would a basic pilot qualification likely have on you?***

Little, provided the exemption for CAR101.202 and Part 141 organisations is applied.

3. ***What format should this test take?***

This depends entirely on the scope of the project and level of training expected. Online theory training has been demonstrated as not particularly effective, so provided the qualification was basic it might be appropriate.

4. ***Should there be a minimum age for the basic pilot qualification?***

This requires further analysis and discussion.

5. ***Do you agree with the proposed special authorisations given to Part 141 and CAR101.202 approved training organisations?***

Special authorisations to Part 141 and CAR101.202 organisations should not be considered "special", the existing higher levels of training should be recognised, and these operators exempted.

6. ***Is there any other special authorisation you would like to see? Why?***

The goal of the qualification appears to be to educate new entrants into the RPAS sector, which Model Flying New Zealand supports as a goal. However, the approach needs further discussion to ensure its effectiveness at realising that goal.

Education programs in the future could be approached in a manner which actually engages with the community. Ideas such as CAA endorsed RPAS STEM programs in schools, model aircraft and RPAS public days supported by CAA staff, etc, would all lead to far greater visibility of CAA to the general public and would also result in higher adoption by the sector. Rules need to be explained to new participants in a manner which conveys their intent, rather than conveying them as draconian regulation. For instance, it should be explained that RPAS operate below 400ft because manned aircraft in the most part stay above 500ft. It would also support the goal of public acceptance of the technology.

Model Flying New Zealand, Civil Aviation Authority and MOT goals are all aligned on the topic of education. Model Flying New Zealand would be happy to discuss opportunities and support such initiatives in the future.

CHAPTER III – Drone Registration

161 – All Part 102 expositions list the operators specific RPAS, this is a requirement of the CAA. Whilst there does not appear to be any centralised database of these aircraft within the CAA the data exists, it simply requires collation.

163-167 – The definition and nomenclature should be standardised. If it is a notification system, or a levy, and not registration then it should be referred to as such. Changing terminology throughout the document leads to confusion.

174 – It is unclear as to how marking an RPAS with a unique number reduces risk, and if it does, why does that change with aircraft weight? Either it does not reduce risk, or it does, and if it does not it then leads to the notification systems being over-regulation. If the goal is data gathering, then weight threshold is useful, for instance to exclude a certain data set if it is believed to be of little consequence.

178-180 – Model Flying New Zealand appreciates the understanding by MOT that aircraft operated by its members will be exempt from registration/notification, however "designated area" requires further definition. There is nothing in the current CAR101 that defines what a "designated area" is, the proposal document also appears to confuse a designated area, a Danger Area, and an area used by the organisation prior to 1 August 2015 as per CAR101.207(b)(2).

Designated areas and Danger Areas are very different things. Model Flying New Zealand currently maintains a list of more than 300 flying sites where model aircraft activity takes place, IAW CAR101.207(b)(2). There are 27 Danger Areas where model aircraft activity can take place to a greater extent, extended limits of varying heights and privileges, as defined under various CAR101 clauses.

The statement that "model aircraft are flown under the supervision of MFNZ" is incorrect. Model Flying New Zealand provides a structure and guidance to model clubs and individuals throughout the country. It does not "supervise" model aircraft. Adherence to rules is promoted by best practice, education, peer pressure and the requirements of our insurance scheme.

Model Flying New Zealand is not aware of any other airspace user that is confined to operating in specific areas. Gliders, Hang-gliders, Balloons and General Aviation are able to operate anywhere that it is safe to do so. This includes taking off, overflying and landing. This principle should also continue to apply to model aircraft.

There seem to be two inferred outcomes from confining MFNZ members to designated areas. Firstly, that it will simplify enforcement of regulations since operators within those areas will not need to be checked for qualification and airframe notification. Secondly, that limiting model aircraft operations to designated areas will allow commercial UA operations unfettered access to the whole of the rest of NZ airspace below 500 feet. This is a deeply flawed concept and has never been discussed with stakeholders.

195 – Table 8 – It is of note that of all the RPAS registration schemes worldwide that have been implemented, including the FAAs which has been in existence for 6 years, that it has never led to or been used for prosecution or enforcement.

Operators that are already compliant with the current CARs will continue to be compliant with the CARs and notify their aircraft with the CAA, operators that are not, will continue too not be compliant. This then places the burden of the notification system onto operators that are already compliant. Unless major budgetary constraints are removed and enforcement staffing exponentially increased the system will have little benefit other than gathering statistics on the number of compliant operators with aircraft weighing more than 250g, which is likely not particularly useful data.

As previous stated, without solid data on numbers of participants a notification scheme has very real risks of not being financially viable.

Questions – Drone Registration

1. ***Should we introduce the proposed drone registration system? Why?***

We should examine overseas experience and whether it has any benefits. There is no justification for the model aircraft owned by MFNZ members requiring notification to CAA. Such a system would be burdensome when, on average, each member owns more than 20 aircraft, and would produce no tangible benefits.

2. ***What impact would drone registration likely have on you?***

This entirely depends on what results from this project, the answer will vary wildly depending on outcome.

3. ***What do you think of the proposed system design (e.g. digital platform) and requirements (e.g. identity authentication)?***

Notification/Registration systems already have little justifiable benefit to the end user, for the program to be adopted it would need to be achieved at as little cost as possible to the user or the adoption rate will be poor.

4. ***Should there be a minimum weight threshold for registering a drone? If so, is 250 grams appropriate? If not, what would be an appropriate weight threshold and why?***

The definition of RPAS and Model aircraft should have a 250gm lower threshold and thus all these measures would not relate to them. If a weight limit is to be introduced to any notification system it should be done on the basis of collecting data about a certain type or use case of RPAS, essentially filtering out the noise and reduce the cost and burden on the program and users.

5. ***Should certain drones not need to be registered (such as drones flown solely indoors or within specific designated areas (e.g.Model Flying New Zealand sites) from registration? What other drones should not need to be registered and why?***

The paper has invented the concept of designated areas for model aircraft flying. It then confuses them with Danger areas. Rule 101.207 refers to airspace in use before 2015. This is quite a different concept.

CHAPTER IV – Remote Identification

200 – If CAR102 is considered to be risk-based regulation, why would the CAA impose extra conditions on CAR102 operators? By definition the risks of their operation have already been mitigated without Remote ID.

201 - Which RPAS are likely to require Remote ID? The subsequent paragraphs make it clear that the only perceived benefit is to identify rogue RPAS and yet the consensus is that determined disrupters would disable such a system. Figure 5 illustrates the futility of the system. If an enforcement agent were to visit a park and see the display on his device, how is he to identify which aircraft is being flown by which person or if there is a mismatch between number of pilots and aircraft? What if one aircraft has a bad GNSS positioning fix, and its position report is bouncing around the park?

205 – This statement is confusing ADS-B in with Remote ID, and they are vastly different concepts.

212 – Table 9 – Again, this is confusing ADS-B (or other) type transponders with Remote ID, Remote ID does not enable BVLOS, neither does ADS-B. Remote ID does not improve situational awareness, nor does it mitigate the risk of collision, however depending on airspace ADS-B may.

214-215 – The statements in these paragraphs are incorrect. Most COTS RPAS are not equipped with Remote ID, or the hardware, or software to comply with the proposal at all. Many modern RPAS do feature ADS-B In, however this is not the same technology. Remote ID as described is a transmitter broadcasting on ISM bands (5.8 and 2.4GHz), ADS-B In is a receiver on 1090MHz.

Introducing Remote-ID onto model aircraft is completely unfeasible and impractical.

Questions – Remote Identification

1. ***Should we consider introducing Remote ID? Why?***

No. Remote ID as described does not currently exist on the market. Whilst it might be possible for some manufacturers to implement by modifying software on existing hardware, the benefits do not outweigh the costs to other users. As described in the discussion document, Remote ID is ill considered and researched. There are numerous large technical hurdles which are overly simplified and/or ignored within the document.

2. ***What impact would Remote ID likely have on you?***

Remote ID is of no relevance to model aircraft. Remote ID equipment would be a considerable cost burden to operators, totally impractical in the majority of cases and produce no benefits.

CHAPTER V – Geo-awareness

218 – The term Geo-awareness could be replaced with "airspace map", which provides functionally the same result. It is unclear what is being described within this chapter, as it is described as "on" the RPAS in the initial paragraph.

219 – A CAA controlled map which is drafted to better reflect RPAS use would be useful and have benefit, essentially replacing Airshare with something that is more correct, better promulgated and is without commercial bias or aspirations. An RPAS operation specific Visual Navigation Chart in digital form.

This topic is already being addressed with the AIMS CONOPS program being undertaken by CAA and appears to be a duplication of it.

223 – New Zealand's FIR does not have prohibited airspace or zone.

225 – Geo-caging of model aircraft is completely unfeasible and not practicable. Is this consultation document suggesting implementation of a RPAS specific digital VNC, or is it suggested geo-fencing? These concepts are quite different to each other.

226 – This is a limitation of GNSS technology, not manufacturer guarantee. HDOP is a major factor in GNSS functionality and is a significant factor in RPAS operation. The limitation also will apply to remote ID. It is also easy to deny GNSS reception either physically or via software, and even future technologies such as SBAS do not mitigate HDOP.

230 – Developing a digital map that can be promulgated via an API or likewise is quite different to mandating its adoption and enforcement by manufacturers. DJI, for instance, would likely adopt to implement the API if available and compatible.

Questions – Geo-awareness

3. **Should we consider introducing geo-awareness? Why?**

This topic is particularly convoluted, and it appears what is being suggested is two separate things. One being an updated digital VNC, essentially a functional Airshare that is available via an API, and the other topic is geo-fencing.

Model Flying New Zealand would supports updating the existing infrastructure and doing it in a way that is future proof, such as a digital Visual Navigation Chart. This should be done in alignment with the AIMS CONOPS program to ensure resources are not wasted through duplicate efforts and that the outcome is in alignment with other aviation participants.

It needs to be considered if its operation would require it to be certificated under Part 171 or similar.

4. **What impact would geo-awareness likely have on you?**

Geo-Fencing/Caging on the other hand has no relevance to model aircraft, and other participants in the sector would be better served with education. Geo-fencing/caging would be a considerable cost burden on model aircraft operators, as well as being totally impractical and unfeasible in many cases.

Conclusion

The document, Enabling Drone Integration, struggles to clearly define the challenges ahead and address them. These challenges can be categorised into two groups of problems.

The first problem is the proliferation of newcomers to aviation some of whom are not aware of the rules and accidentally or deliberately fail to comply. This is addressed an ongoing effective education programme and enforcement where required. The data in the paper shows that this policy is succeeding. Falling sales of COTS multirotor to this sector will help reduce the number of incidents. Actions should be proportionate to the risks posed. Historical data shows that actual consequences of incidents are exceptionally low compared to many activities.

The second problem is to ensure that further commercial exploitation of RPAS technology is facilitated in such a manner that the interests of the aviation sector and the general public are not adversely affected. If autonomous RPAS wish to integrate into existing aviation systems, they must do so at the same or higher standards.

The proposal places burden onto model aircraft operators, both affiliated to Model Flying New Zealand and not, without justification. It does so by failing to provide a definition to model aircraft.

The rule change program does provide great opportunity to review and improve our existing system. Some of the proposals in the document do have merit, such as education and providing a more effective and relevant map service to the sector.

Rule changes need to be evidence based, well researched and thoroughly scoped to ensure their outcomes do not have unintended consequences.

Model Flying New Zealand encourages the Civil Aviation Authority, and Ministry of Transport, to investigate opportunities for the three organisations to implement education program in collaboration, as well as improve the public perception of the technology. Engagement with the community should be a primary goal.

Rules are written for those that follow them; more rules do not generate higher compliance levels but simply greater obstacles to those who, by definition, do not represent a high risk. Operators whose objective is nefarious will have no intention of compliance with any current or proposed rules.

The solution to a lack of compliance is always education, followed by enforcement, and there are huge opportunities to achieve both that have yet to be explored. Model Flying New Zealand looks forward to any opportunity it can to help towards this goal.

Chris Jackson

President, Model Flying New Zealand

[redacted]

From: [redacted]
Sent: Tuesday, 1 June 2021 9:18 AM
To: Enabling Drone Integration
Cc: [redacted]
Subject: Alina's MoT Submission on Drones 27052021
Attachments: Alina's MoT Submission on Drones 27052021.pdf

Importance: High

Dear Sir/Madam

Please find enclosed my submission on the consultation document.

Kind regards,

[redacted]

Enabling Drone Integration - Consultation
Ministry of Transport
PO Box 3175
WELLINGTON 6140

[redacted]

1/6/2021

Dear Sir/Madam,

Thank you for the opportunity to comment on your consultation document.

I have been a member of an aeromodelling club for over 25 years and I build model aircraft in my spare time, fly and judge control-line flying. My husband and children are also active aeromodellers. I am a full member of the New Zealand Planning Institute and am a Barrister and Solicitor of the High Court of New Zealand.

I am generally supportive of efforts to bring New Zealand's regulatory regime for drones into line with international standards to avoid any possible infringements of privacy, health and safety issues or conflict with full-size aircraft.

Control-line model aircraft should be defined as:

"A model aircraft that is controlled in flight by one or more lines, attached to a handle, that work the required flight functions. The aircraft is connected to the remote pilot by these lines and so its flight is constrained to the surface of a hemisphere around the remote pilot with a radius equal to the length of the lines.".

My submission seeks that any new regulatory regime should treat control line flying in a similar way as our counterparts in the United Kingdom i.e. create an exemption for control-line flying and round-the pole model aircraft. The United Kingdom adopted EU model flying regulations in 2019 which came into effect on 31st December,2020 refer https://rcc.bmfa.uk/article-16. I agree with the EU and UK rules but would like the exemption to allow for model planes up to 3.5kg to allow for scale models. I have shown my edits highlighted.

The UK Air Navigation Order Exemptions state:

	Air Navigation Order Exemptions
8.1 Control line and round-the-pole Model Aircraft: Flight Restriction Zone Exemption	1) The Civil Aviation Authority (CAA), in exercise of its powers under article 266 of the Air Navigation Order 2016 ('the Order') as amended, exempts the remote pilot and UAS operator of a Control Line model aircraft or a round-the-pole model aircraft, as defined in section 7.1 of this authorisation, from the requirement at article 94A to obtain permission to fly within the flight restricted zone of a protected aerodrome subject to the conditions in paragraphs 2-4 below. 2) General requirements: a) The remote pilot (within the meaning given in article 94G of te Order), is: • In the case of a control line model aircraft: the person that is holding the control lines while the ontrol Line model aircraft is in flight. Or; • In the case of a round- the- pole model aircraft: the remote pilot of the model aircraft. b) the maximum length of the tether line of the control line or round-the-pole model aircraft shall not exceed 25 metres. c) The flight does not take place within the Runway Protection Zone (RPZ) part of the FRZ. d) the maximum take-off mass of the model aircraft shall not exceed 7.5kg, including any batteries, fuel or payloads. ... 4) This exemption only applies to control line model aircraft or round-the-pole model aircraft that are flown for the purposes of sport or recreation. It does not apply to 'tethered' flights of small unmanned aircraft tat are capable of vertical take-off/landing or hovering, such as helicopters or multicopters.
8.2 Control line and round-the-pole Model Aircraft Registration	Note 1: This exemption facilitates section 4.1(3) of this authorisation 1) The Civil Aviation Authority ('the CAA'), in exercise of its powers under article 266 of the Air Navigation Order 2016 ('the ANO'), exempts any person involved in the flight of a

	Air Navigation Order Exemptions
and Pilot Competence Exemption	control line model aircraft, or round-the-pole model aircraft (as defined in section 7.1 of this authorisation) from the requirements of article 265E in relation to the flight of such an aircraft. 2) This exemption only applies to the flight of control line model aircraft or round-the-pole model aircraft (as defined in section 7.1 of this authorisation) that are conducted for the purposes of sport or recreation. It does not apply to 'tethered' flights of small unmanned aircraft that are capable of vertical take-off/landing or hovering such as helicopters or multicopters. 3) This exemption only applies to the flight of control line model aircraft or round-the-pole model aircraft (as defined in section 7.1 of this authorsation) which have a MTOM (as defined in section 7.1 of this authorization) of not more than ~~1~~3.5kg, and which are flown with a restraining device of not more than 25m.

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The United Kingdom has similar laws and legal conventions to New Zealand and has a nuanced approach to this regulatory issue. In my view, this approach achieves a good balance between monitoring drones/radio-controlled model planes and exempting categories of flight that are low-risk.

Yours faithfully,

[redacted]

[redacted]

From: Gerald Wimmer [redacted]
Sent: Tuesday, 1 June 2021 10:55 AM
To: Enabling Drone Integration
Subject: Submission on proposed drone regulations
Attachments: My submission Submission on proposed drone regulations and Drones vs CL models.pdf

Hello

Please find attached my submission on the proposed drone regulation changes affecting model aircraft.

Regards Gerald Wimmer

Gerald Wimmer : Submission on proposed drone regulations

I am currently the [redacted] and been [redacted] for over 30 years. The proposed new drone regulations have included Control Line (C/L) model aircraft that were previously exempted by Section 101 of the Civil Aviation Authority (CAA) drone regulation.

Control Line (C/L) models are not what are normally accepted drones as they are not remotely piloted or autonomous but are instead teathered to the operator with control lines or cables . Unlike drones or kites C/L models operate in a small circular flight path never more then 25 metres from the operator they are connected to. The flight area is in effect a small dome or half sphere with a 25 radius.

C/L models do not overfly property outside the circlular flying area of not more then 25m radius and the models are not generally abondoned or lost like a Autonomous drone, Radio Controlled or Free Flight model may be.
They are far less of a safety hazzard because of the small flight area they occupy and do not carry cameras.

C/L models have flown in NZ for over 75 years without accidentally encroaching into controlled airspace and in fact have been flown in close proximity to full size aircraft as a coordinated operation when Control line contests were held on RNZAF Hobsonville and Whenuapai bases and other areas where full size avaition is taking place because of the small flight area they operate in.
C/L models have safely flown at night under past rules with low risk due to the controlled area that they operate at very low altitude often lower then many buildings and trees.
C/L can be safetly flown indoors as is common in Europe during winter.

Operations are conducted in accordance to existing Model Flying New Zealand (MFNZ) rules or Fédération Aéronautique Internationale (FAI) rules and within existing CAA rules and the MFNZ holds details of each individual member. Operators of C/L models are attached to the model and therefore the operator is easily identifiable. Training of C/L pilots normally occurs at a club level as most operations are team activities with specific training , event briefings and safety equipment. If registration is to be included it should be through MFNZ and on an individual per-person basis and not per model as the number of models is enormous and their flying status always changing.
Changes to the legislation should not disadvantage young people from taking up C/L flying or using local parks as it is so low risk to others.

If control line models are regarded as drones in the legal definition then other tethered flying devices should also be included by definition such as kites and kites used in kite surfing in particular and kite surfers should also be seen as drone operators.
A kite can be flown to a much greater altitude then then a C/L models 25metre limit. Kite surfing also posses more risk then controlline as they not only fly higher but are 10 times heavier then any C/L model which are generally limited to 3.5kg (Except FAI governed C/L scale where the current limit is 7kg).

C/L models have been excluded from the regulations of other drone users in the UK under the provions of Authorizing Article 16 of their CAA rules. C/L flying is generally seen as a low risk activity in most countries due to the small flight area and realitive low weight of the models we fly and the fact that after 80 years most countries with control line fliers have a well developed regulatory body and individual clubs to govern them.

[redacted]

From: [redacted]
Sent: Tuesday, 1 June 2021 9:41 AM
To: Enabling Drone Integration
Subject: Submission to the Discussion Document Enabling Drone Integration
Attachments: Submission to the Enabling Drone Integration Discussion Document.pdf

Dear Sir/Madam,

Attached is my submission to the Discussion Document Enabling Drone Integration.

Thank you for the opportunity to make a submission.

Best Regards,

[redacted]
Survis Ltd
[redacted]
www.survis.co.nz

Submission to the Enabling Drone Integration Discussion Document dated 6 April 2021

[redacted] Survis, 1 June 2021

The following is submission to the proposed approach to enhance the New Zealand drone regulatory regime and enable the integration of drones into the civil aviation system.

[redacted] have been working in the surveying and mapping sector for the past 40 years. I am a Registered Professional Surveyor, Fellow of the Royal Institute of Chartered Surveyors and current member of Survey & Spatial NZ. I teach surveying at Unitec, Auckland and at the School of Surveying, University of Otago. I have coordinated several UAV/drones workshops as part of industry conferences.

I have been using UAV/drones professionally in my work for the past eight years and have taught various organisations in the South Pacific who operate under NZ CAA rules.

In 2020 I became an Approved Person or Organisation under CAR 101.202.

The current CAA rules applicable to UAV/drone operations in New Zealand are very good. They allow the surveying and mapping industry to use drones to capture images of the land and produce maps and plans that in turn provide valuable information to clients for them to make investment and development decisions. They also greatly assist South Pacific emergency response organisations to quickly and efficiently assess post cyclone damage so that aid agencies are able to respond rapidly.

The current regulatory regime of drones rules under Part 101 and 102 works well. It allows the use of drones in an "open" system while requiring additional steps if an operator wishes to operate outside of the Part 101 rules.

Sections 44 includes a statement about the lack of compliance by drone pilots. I strongly do not agree with this generalised statement. Many drone operators make a lot of effort, which costs time and money, to understand and comply with the rules. There will be some pilots who do not follow the rules such as some motorists do not follow the road rules. Would the Ministry of Transport state that "There is currently a lack of compliance from motorists.". I think not. The key to reducing non-compliance is education.

CAA has undertaking some very good drone education initiatives predominately around the rules. This has mainly been through the channels of websites and social media. Most of the direct drone training and education has been undertaken by industry. This has been predominately driven by users in the commercial sectors such as real estate, surveying, and infrastructure inspections.

There has been little or no direct education in the recreational sector. My recommendation is that there should be greater education and knowledge transfer in the following areas:

- Education in schools and tertiary organisations
- Community education
- Sport and recreation activities. (Boating, outdoor sports, etc)

An example of education in schools could start with running introductory courses at the intermediate and high schools.

An example of community education could be community education programmes at local high schools that run various courses and programmes. A similar example would be the Coastguard DaySkipper courses.

In summary greater resources and funding in education should be provided to increase awareness of the rules and therefore greater compliance by drone pilots.

In response to Chapter I – Rules Update

I support the removal of the consent provision. With developments in drone technology, it is very unlikely that a drone will crash in an uncontrolled state. In my experience, I have never had, nor have ever heard of, an uncontrolled drone crash.

The ability to fly over property without consent would significantly increase the productivity for surveying and mapping users. Land information imagery could be collected over larger areas for purposes such as detailed mapping, Council GIS map updates, land development and climate change monitoring.

Rather than trying to be prescriptive in the safe distance to fly above or adjacent to people a possible rule wording could be:

"A drone must not be operated in a manner that may cause damaging or injury to any property or people."

I do not support the proposed changes to the 4km zones. I support the continued use of the 4km zone around aerodromes. Having a consistent circle at the set distance removes any ambiguity and is easy to understand. If different types of zones were introduced such as the DJI GeoZones it would be confusing and difficult for some drone pilots to understand.

Rather than relax the distance and change the shape of the zone make it easier to understand how to seek permission (e.g. aerodrome contact information) and how to fly (e.g. with an observer), by greater education and awareness targeted at drone users.

I support the continued use of the Part 101.202 rule. There should be a far greater use made of the 101.202 provision. With the objective of greater education, many organisations such as high schools and tertiary organisations should be supported in having someone in their organisation become 101.202 certified. They would be able to train young drone pilots who may look at using drone technology as part of their career and may go on to take further professional training.

By becoming Part 101.202 certified these "persons or organisations" could then introduce the CAA rules to instruct and teach students as part of established and recognised teaching syllabus or course programmes in areas such as agriculture, construction, real estate, and surveying.

In response to Chapter II – Basic Pilot Qualification

I support the introduction of an online basic drone pilot qualification and concur with the benefits listed in Table 7. I agree with the proposed special authorisations given to Part 141 and Part 101.202 approved training organisations. The introduction of an online drone pilot qualification should be voluntary, not mandatory.

One area that is not covered in the proposed rule changes or authorisations is the use of an aviation radio by a drone pilot. A drone pilot is not permitted to operate an aviation radio. Having the ability to use an aviation radio to broadcast the drone's location and operating plans would increase safety and help to reduce risk.

I recommend that the rules be amended so that any person who has an aviation radio licence can operate an aviation radio to broadcast their drone flight information. As an example, I was recently operating near an aerodrome where glider training operations were in progress. Although I had permission from the aerodrome operator it would have been an advantage if I could broadcast my flight information to the gliders flying nearby rather than having to spend considerable time in trying to locate and phone their operations person.

In addition, having the ability to undertake an aviation radio licence course would greatly assist in understanding the aviation phases and terminology used by manned aircraft pilots.

In response to Chapter III – Drone registration.

I do not support the mandatory registration of all drones and their owners. I believe that this will be unworkable and very difficult to implement and manage. Its introduction will incur costs that will not see benefits for many of the proposed registrants.

The benefits listed in Table 8 can be achieved through the use of improved information, communications and education rather than drone registration.

For example, the Maritime New Zealand website https://www.maritimenz.govt.nz is an excellent example of communicating recreational and commercial maritime information to boat and ship users without the requirement for all boats or boat owners to be registered.

In response to Chapters IV – Remote Identification and Chapter V – Geo-awareness.

I support Remote Identification and Geo-awareness for operations under Part 102 such as flights above 400ft and BVLOS. One example of this is where a mapping drone is able to operate above 400ft and beyond visual line of sight yet is able to be tracked by the ATC and any other interested party on a third-party application such as FlightRadar24.

With regard to paragraph 219 and an official map. I recommend that MOT/CAA provides all applicable information online in an international recognised digital format for third parties to make the maps and provide these.

An example of this is the LINZ Data Service whereby Land Information NZ provide the land information digital content in various mapping formats to allow any user to download, free of charge, and create their own map. Using this method, online content is updated constantly which results in maps linked to this data never going out of date.

Impact on South Pacific Countries using the CAA Drone Rules

The Discussion Document does not address the how the proposed changes will impact the use and regulation of drones by South Pacific Island countries who have adopted Part 101 and Part 102 rules for drone use in their respective countries.

While some of the proposed changes may benefit drone users such as the removal of the consent requirement, consideration should be given to the cost of implementing some of the proposed changes versus the benefits that will be provided.

Conclusion

Thank you for the opportunity to make a submission on the Discussion Document.

[redacted]

Survis

[redacted]

[redacted]

From: Rob Hale [redacted]
Sent: Tuesday, 1 June 2021 4:21 PM
To: Enabling Drone Integration
Subject: Submission on Enabling Drone Integration

Sirs

MULTI-ROTOR DRONES
I present my submission to the Enabling Drone Integration consultation.

I refer you to United Nations report S /2021/229 which finds that lethal autonomous weapon systems are here now, available and in use.

Under these circumstances the only safe and sane thing to do is to ban all multi-rotor drones totally, before someone sets up an anonymous, pre-programmed automated ambush of a commercial plane. We are an island so this can be done, not easy but necessary.

Customs can be supported to trap Drones and Drone components at the border including drone batteries (which are normally in a particular case / package that fits that drone).

Allowing drones to fly over private property is totally unacceptable and contradicts the Laws Of Trespass. Bear in mind a plane at 500 feet plus is transitory and the angle of any camera taking photographs is very shallow and does not normally produce detailed pictures. Multi-rotor Drones hover and the camera lenses are now sub miniature and produce excellent film.

Flying over State Highways or any road is also not acceptable as it will cause a distraction to the drivers on the road and live streaming cannot be controlled. Likewise using multi-rotor drones for freight should be banned.

I am **not** tempted to say there should be a small number of commercial drone operators. The fire risk is way too great. THESE BATTERIES CANNOT BE PUT OUT, EXTINGUISHED OR CONTAINED, they are self-fuelling once they are alight. With climate warming the general fire risk increases exponentially.

You have a hard task ahead of you; banning these multi-rotor drones is necessary.

I am a member of three flying clubs and fly in North Auckland and the BOP on three different flying fields. I am an electric Winged Model flyer and have watched as these multi-rotor Drones become a Plague. They often fly over property without permission, using pre-programmed flight paths and first person view (FPV), live streaming pictures back to phones and laptop computers. These pictures and film have been and are being uploaded on to social media, again without the permission of those who have been filmed.

It is essential that you continue to ban all multi-rotor drones from flying over private property without permission and beyond line of sight.

Robert Hale
[redacted]

[redacted]

From: Rob Hale [redacted]
Sent: Thursday, 3 June 2021 7:41 PM
To: Enabling Drone Integration
Subject: Part 2 Submission on Enabling Drone Integration from R. Hale.

Sirs

MULTI-ROTOR DRONES
I present Part 2 of my submission to the Enabling Drone Integration consultation. My previous submission was emailed to you 1/6/2021.

Radio controlled multi rotors use 2.4 to 2.483 GHz for the actual manual control and 5 GHz for the FPV. Both of these systems get interference from other systems that operate on these wave bands or are causing general high level EMF.

I will deal with the FPV first.
When interference occurs, the viewing device, FPV goggles, mobile phone, laptop etc, the view is trashed in what looks like old fashioned TV interference. The pilot cannot see where he/she is flying. This total loss of view, invariably results in a "fly away" and the inevitable crash, somewhere, often out of view, sometimes kilometers away. Crashed batteries are bad news and the more crashes the greater likelihood of a serious fire, such as the Port Hills fire or crashing through a window into someone's house and setting it on fire.

2.4 to 2.483 GHz radio systems for Multi rotor and Drones and Fixed Wing models are the current systems in use and are subject to interference. I fly three different Makes of radio controllets, two which are top of the line that claim to be interference free; they are not. I have "fly aways" and get dumped into crashes. I watch the other makes have their interference. They fly away and crash locally on the flying field or near by. Not only are the receivers subject to this interference so are the onboard sophisticated Flight controllers that drones and multi rotors use. Part of the problem is that 2.4 GHz is crowded with other stuff which is outputting a lot more than the 1/10 of a watt that is the limit. Micro waves, blue tooth WiFi (WiFi can be and is boosted to 5 watts) and miscellaneous EMF from electricity companies transformers, welding machines etc. I have been observing this for the last five years. The percentage of crashes due to interference per lift off is 8/9 % half of which are "fly aways". All flying sites I know are prone to interference some considerably more than others. Having invested considerable hours and effort in destroyed models I have now solved this problem for this prone site by following the only person who doesn't have interference. I have moved back to Old Fashioned "long wire" FM radio. FM radio is not suitable for multi-rotors as the aerial is far too long.

2.4GHz and 5.0GHz are not safe for multi-rotors. Where a winged plane can glide and land, a multi-rotor stops, hovers and then falls out of the sky, potentially on top of a person or property. The parachute systems that the heavier ones are required to carry are inadequate. Good ones make the multi-rotor drone too heavy.

Multi-rotor fliers seem to be very casual with their batteries. They have bad habits of fast charging (not good for batteries), overcharging (even worse than fast charging) and they rarely take their batteries back to storage level when they go home. This does shorten the life of the battery. These first two issues have caused fires.

If a battery crashes in a multi-rotor, the owners tend to ignore the fact that it is deformed, and fly it again until the battery fails and the drone crashes. All this can cause fire.

My company writes sophisticated engineering software.

Hacking, we live in an Internet world that is constantly being hacked. Hackers are patient and clever. A Hacker will spot these Flight Controllers.

Flight Controllers, some not all, self update their software; they do this any time they are live with a battery and can latch on to WiFi signal (at home on the bench, in the air). They do not have any "Fire Wall" or "Anti Virus" protection - this is an open door to the whole world of Hackers.

Updating any Flight Controllers software is an open door for "worms, Trojans and Hackers" These can be quite small and hard to know you've got one. From here they can pass on to neighboring Flight Controllers, laptops, anything with WiFi or Blue Tooth capabilities. They can wait and at a preset time upload the main larger, programme, partner with other compromised controllers and cause chaos, in the air, on a Private computer network, or Company networks at the hackers' choosing. I am reasonably certain the DHB hack was not done this way but it could have been.

These drones and multi rotors are a Plague. They are getting out of hand and should be Banned. If you do not have the courage to ban them completely at least ban these Flight Controllers and their importation into New Zealand. This would prevent the importing of the automated Hunter Killer drones and multi rotors. Set up processes through NZ Model Flying NZ where the current Flight Controllers should be replaced with independently certified non up-dateable Flight Controllers.

Robert Hale
[redacted]

[redacted]

From: [redacted]
Sent: Wednesday, 2 June 2021 4:48 PM
To: Enabling Drone Integration
Subject: Chris Allen - Drone Integration
Attachments: CCE02062021.pdf

[redacted]

2 June 2021

Enabling Drone Integration - Consultation
Ministry of Transport
PO Box 3175
WELLINGTON 6140

Dear Sir/Madam,

I'd like to take the opportunity to comment on your consultation document.

I support in general the intent of your efforts to bring New Zealand's regulatory regime for drones into line with international standards, to avoid any possible infringements of privacy, health and safety issues, or conflict with full-size aircraft.

However, in line with the precedent set by current regulations in the United Kingdom I would like to propose an exemption to your regulations:

*Control-line model aircraft that are **physically constrained** by control lines of less than 25m.*

I am a veteran aeromodeller, flying in dozens of national, world and trans tasman championships over the last 60 years. I have competed and flown radio controlled, free flight and control-line aircraft. Control-line aircraft are distinct in their tethered control method. The aircraft is operated and constrained by one or two cables, limited in length to 22 meters by New Zealand and international competition rules. Meaning that even the largest aircraft, controlled by a tall pilot, would be limited to 25 meters of altitude from the ground. These models are **not** remotely piloted and are in constant line of sight.

They are lightweight, the heaviest in the 2kg range and the majority under 1800 grams. They are not operated for commercial use, rather recreation and sporting activities of acrobatics, speed and agility.

As such, they are never "Drones" nor meet the definition of unmanned aircraft due to their tethered nature and manned control method (tethered and connected to a human for control).

Specific areas of your document have incorrectly classified control-line aircraft.

- Page 5 includes control-line model aircraft within the definition of Unmanned aircraft, then in Page 6 in the introduction para 1 defines "Drones are aircraft that can be remotely piloted or flown autonomously"

  Control-line model aircraft cannot be remotely piloted nor flown autonomously. I would suggest they do not fall under this definition and be exempt.

- Page 15, para 42 talks to "who flies what".
  Control-line aircraft are physically connected to the pilot. Pilot identification is always able to be established.

- Page 29 para 108 and following.
  - The existing rule CAA para 101.205 covers remotely piloted aircraft or free flight model aircraft.
  - Control-line model aircraft are not covered by this rule
    - This is due to the physically constrained environment (25m of altitude) a control-line model operates in.
  - It would be reasonable that control-line aircraft retain this exemption due to their limited operational requirements.

- Page 30, paragraphs 115 and 116 talk to 'tethered drones". While this may be needed it is suggested that a limitation of greater than 25m is applied. This would enable control-line model aircraft to continue to operate in their limited physical environment.
  - The existing rule CAA para 101.203 limits operation of control-line model aircraft to control systems of 30m or less

- Page 48, Question 5. I note the intent that drones operated under MFNZ rules and in designated areas will not be expected to be registered and agree that this is practical. This is also particularly applicable to control-line model aircraft

- Page 53, Q2. Given that control-line aircraft operate in a limited physical environment it would seem unnecessary for remote ID to apply.

- Page 53 Para 215, suggests that drones "have a life span if one to two years". This is incorrect with regard to model aircraft in general (not just control-line model aircraft) in that model aircraft may last decades. I personally own model aircraft that are over 30 years old. Care will need to be taken with any regulation that it does not, unintentionally, cause existing model aircraft to be made redundant in a short period.

- Page 57, Q4. Given that the operation of control-line model aircraft is physically constrained the requirement of remote ID and the related potential Geo regulation would not be practical or relevant.

With many competitions being won by milliseconds, any imposition of remote ID or geo regulation to New Zealand control-line aircraft - and the associated weight - would place us at a significant disadvantage in international competitions.

A suggested way forward:

It would be reasonably simple to apply an exemption to control-line model aircraft that are ***physically constrained*** by control lines of less than 25m. This is in line with the president set by current regulations in the United Kingdom.

I would be more than happy to be contacted, should you require any further information or assistance in implementing the exemption.

Regards,

Chris Allen

[redacted]

From: [redacted]
Sent: Thursday, 3 June 2021 9:43 AM
To: Enabling Drone Integration
Subject: Waitaki District Council submission: Enabling Drone Integration
Attachments: Waitaki District Council submission Enabling Drone Integration June 2021.pdf

Good morning

Please see Waitaki District Council's submission on the discussion document "Enabling Drone Integration – 6 April 2021."

Regards

[redacted]

[redacted]

Web: www.waitaki.govt.nz
[redacted]

Waitaki District Council
20 Thames Street
Private Bag 50058
Oamaru
Waitaki District
Otago 9444
New Zealand

Waitaki
DISTRICT COUNCIL
TE KAUNIHERA Ā ROHE O WAITAKI
Growing strong communities.

Disclaimer

3 June 2021

Enabling Drone Integration - Consultation
Ministry of Transport
PO Box 3175
WELLINGTON 6140

enablingdroneintegration@transport.govt.nz

Waitaki District Council submission: Enabling Drone Integration

Waitaki District Council (WDC) appreciates the opportunity to contribute to New Zealand's regulatory framework applicable to the operation of unmanned aircraft.

The Waitaki district reaches inland from the Waitaki River mouth, up the Waitaki River Valley, through Ōhau to the top of the Ahuriri River Valley. It extends south to Ōamaru, and down the east coast beyond Palmerston to Flag Swamp. It covers a large land area (7,152 km²). The Waitaki district has a population of ~23,200 (2020). Ōamaru is the main town centre of the district and the seat of Council and home to over 50% of the district's population.

Background

WDC as a local authority is responsible for facilitating and promoting community wellbeing; protecting the public from nuisance; protecting, promoting, and maintaining public health and safety under the Local Government Act 2002 and managing noise effects under the Resource Management Act 1991 (section 16 - duty to avoid unreasonable noise for all occupiers of land, and any person carrying out an activity in, on, or under a water body or the coastal marine area).

WDC is also an airport authority (Ōamaru Airport) – a CAA non-certificated aerodrome. The Ōamaru Airport is located 17km north of Ōamaru in a rural area surrounded by farms and rural activities and industries. Ōamaru Airport is home to a flight training school and a CAA registered heliport, along with other associated airport infrastructure. WDC signed an MoU with Dawn Aerospace in 2020 to begin test launches of unmanned rocket-propelled space plane flights out of Ōamaru Airport (operating under Part 102 of the CAA).

There is a registered CAA heliport (for emergency purposes only) in the centre of Ōamaru situated adjacent to Ōamaru Hospital.

The Ōmarama airfield is owned by Ōmarama Airfield Limited – a CAA non-certificated aerodrome. It is a Council Controlled Organisation (CCO) of Waitaki District Council with Council owning a 50% share. This airport operates intensive gliding operations between September and April.

For Council owned land including open spaces, local roads and road reserves, sports fields, beaches, parks and reserves, under Council policy, a permit is currently required from Council to fly an unmanned aircraft.

Key submission points

1. Overlapping issues and solution integration

WDC considers that there are several crossover issues associated with managing unmanned aircraft including public privacy, road use and safety and the quiet enjoyment on Council reserves – it is challenging to consider the issue of safety in isolation from that of nuisance and privacy.

- **WDC recommends that an integrated assessment of amenity, privacy and safety issues is undertaken prior to any recommended regulatory changes**

2. Fostering a consistent approach to managing nuisance effects

The operation of unmanned aircraft will also have the potential to result in effects to non-users near their operation.

If the national requirement for landowner permission to fly over private or public land is removed, there is likely to be more reliance on local regulatory measures to manage associated nuisance eg. in the form of a bylaw. There is a risk that this may result in an inconsistent approach across districts – resulting in uncertainty for users and the public. However, there is also an opportunity for central government to consider a model bylaw for drones which may promote consistency.

- **WDC encourages a consistent approach to the management of nuisance effects associated with unmanned aircraft – this could be in the form of model bylaw provisions for unmanned aircraft**

3. Licencing of operators

A current challenge with enforcement is the inability to track owners of unmanned aircraft. Having access to licence information of registered users would give the ability for local authorities to more effectively enforce nuisance breaches associated with the use of unmanned aircraft.

WDC has concerns that the proposed licencing of all drone operators may not work when there is uncontrolled importation of drones, and they are ready availability at a low cost.

In principle the licencing of all operators should assist local authorities if enforcement proceedings were needed. However, in practice, the system to licence operators is unclear, and the ability to enforce unlicensed drone operators would be challenging at the local level.

- **WDC supports the proposed training requirements for all drone users**
- **WDC supports the requirement to register all unmanned aircraft if the implementation of such a system was clear and practical**

4. Appropriate no-fly zone radius around airports and heliports

Due to one of the two CAA registered heliports in the Waitaki District being located in central Ōamaru, the current 4km no-fly zone covers most of Ōamaru's urban area.

As discussed above, the Ōamaru airport and heliport are located 17 km to the north of the town, creating an additional 4km radius of no-fly zone. Operating unmanned aircraft near the airport poses safety issues relating to the functioning of the airport eg. by neighbouring rural

landowners who may utilise unmanned aircraft to assist with farming operations. Without an enforcement presence at the airport, WDC relies on complaints received by airport operators and leaseholders.

- **WDC supports the licencing of all unmanned aircraft, however, the way the system could be effectively implemented will need to be carefully thought through**
- **WDC recommends a standardised no-fly zone distance be maintained from airports (and heliports) to minimise inconsistent management approaches and inconsistent interpretation of rules across districts and regions**

5. Safety

WDC has concerns around the potential safety ramifications for the use of drones over roads (resulting in the distraction for persons operating vehicles) without requiring landowner permission. Currently, where the operation of a drone interferes with the normal operation of traffic, then Traffic Management Plan approval is required from Council's Roading unit.

Another potential safety and/or nuisance issue associated with not requiring landowner permission to fly is that of drone use over a sports stadium or ground. For example, when not located within 4km of an airport / heliport and complying with the 101 regulations, there could be the ability to use a drone to hover over a sports game or event for the purpose of watching the game from outside of the venue.

- **WDC discourages removing the requirement for landowner permission to fly unmanned aircraft over public and private land**

6. Criminal activity

The Waitaki district has seen an increased use of drones flying over people or private property without permission. There is the public perception that drones flying overhead without permission could be aiding criminal activity. While we understand that this is not a CAA issue, WDC is concerned that removing the requirement for landowner permission may make enforcing this type of activity even more challenging.

7. Unformed roads

WDC notes that MoT is considering future-proofing its transport network, and the future use of these networks for drones may be considered as part of this. Local authorities have the ability under section 342 of the Local Government Act 1974 (and with the permission of the Minister of Lands for rural roads) or through the Public Works Act 1981 to stop a road that Council has jurisdiction over. This changes the status of road to fee simple land, and once a road is legally stopped the land can be retained, sold or transferred for an alternative use. There is the potential risk that reductions in paper roads could reduce the opportunity for transport corridors for unmanned aircraft such as drones in the future.

- **Note possible implications for the connectivity of future transport corridors associated with the stopping of unformed roads by local authorities**

Thank you for the opportunity to make a submission on the Discussion Document - Enabling Drone Integration.

For any enquiries, please contact:

[redacted]

Yours sincerely

[redacted]

[redacted]

From: Brendan Robinson [redacted]
Sent: Thursday, 3 June 2021 11:46 AM
To: Enabling Drone Integration
Subject: Drone integration submission
Attachments: CL MoT Submission on Drones .docx

Hi team,

Please find attached my written submission for this.

Regards
Brendan Robinson

Enabling Drone Integration - Consultation
Ministry of Transport
PO Box 3175
WELLINGTON 6140

[redacted]

3rd June 2021

Dear Sir/Madam,

Thank you for the opportunity to comment on your consultation document.

In general I am supportive of efforts to bring New Zealand's regulatory regime for drones into line with international standards to avoid any possible infringements of privacy, health and safety issues, or conflict with full-size aircraft.

I am an experienced aeromodeller (40 years+) with particular interests in control-line and free flight model aircraft as well as radio controlled models. I have flown at two control-line world championships as well as flying in 30 plus years at the national championships with New Zealand. In this submission I particularly comment with regard to control-line model aircraft.

The key characteristic of a control-line model aircraft is that it is physically constrained by two control cables (on rare occasions single or three line control may apply). These cables are no more than 22m long (limited by New Zealand and international rules). This means the models can only physically operate within a 50m circumference circle and cannot go over 24m altitude, allowing for pilot movement and height. These models are not remotely piloted but are piloted through the physically constraining control cables.

The aircraft are light with very few models over 2kgs in weight with the vast majority under 1800 grams.

These models are only operated for recreation including sporting competitions. Lumping control line models in with drones is completely wrong as has been outlined above as they are physically constrained.

Remote ID's will be physically impossible to retrofit into many of my current models or would render them useless due to the added weight. I have some racing models that compete in the top world international racing class governed by the FAI international rules and to my knowledge there are no rule changes for remote id's to be fitted to models that have been discussed by international governing body.

I personally have models that are well over 20 years in age and to suggest that they only have a limited lifespan is an assumption on your part.

It is a recreation that I actively participate in and these changes were to be implements would lead to the loss of this recreational activity the proposed rules are too restrictive and simple not relevant to control line models

I strongly urge you to rethink these changes as they are flawed.

Specific Comments:

- Page 5 includes control-line model aircraft within the definition of Unmanned aircraft, then in Page 6 in the introduction para 1 defines "Drones are aircraft that con be remotely piloted or flown autonomously"

  Control-line model aircraft cannot by either remotely piloted (given the physical control constraints) or flown autonomously.

  On this basis they would not fall under the definition of a drone

- Page 29 para 108 and following.
  - The existing rule CAA para 101.205 covers remotely piloted aircraft or free flight model aircraft.
  - Control-line model aircraft are not covered by this rule
    - This is due to the physically constrained environment (50m) a control-line model operates in.
  - It would be reasonable that control-line aircraft retain this exemption due to their limited operational requirements.

  - The existing rule CAA para 101.203 limits operation of control-line model aircraft to control systems of 30m or less

- Page 57, Q4. Given that the operation of control-line model aircraft is physically constrained the requirement of remote ID and the related potential Geo regulation would not be practical or relevant.

A suggested way forward:

It would be reasonably simple to apply an exemption to control-line model aircraft that are physically constrained by control lines of less than 25m. This is in line with the rules applying in the UK.

This will also be in line with the current exemption under CAA para 101.205

I am happy to contribute further to this discussion, if required.

Yours faithfully

Brendan Robinson

[redacted]

From: [redacted]
Sent: Thursday, 3 June 2021 12:21 PM
To: Enabling Drone Integration
Subject: Submission from Southland District Council
Attachments: Council Submission on Discussion Document - Enabling ~ lodged with Ministry of Transport 3 June 2021.pdf

Good afternoon.

Please find attached Southland District Council's submission on 'Discussion Document – Enabling Drone Integration'.

We really appreciate this opportunity to provide feedback.

Kinds regards,

[redacted]

[redacted]
Southland District Council
PO Box 903
Invercargill 9840
[redacted]
www.southlanddc.govt.nz

[redacted] | Email - emailsdc@southlanddc.govt.nz
Southland District Council - Working Together for a Better Southland

SOUTHLAND
DISTRICT COUNCIL

Submission

Discussion Document – Enabling Drone Integration

Introduction

Introduction

Southland District Council (Council) appreciates the opportunity to comment on the Discussion Document – Enabling Drone Integration (the discussion document) produced by Ministry of Transport/Te Manatu Waka (the Ministry).

Council would like to acknowledge the work completed by the Ministry to date.

Council currently has a Use of Unmanned Aerial Vehicle (UAVs) Policy that is an enabling policy that generally allows UAVs to be flown on or above Council owned or controlled land.

Drone operators are able to fly their drones over property owned by Council without a permit as long as they do not fly:

- over a sports field if in use by others, or within 50 metres of any organised activity taking place in a reserve or Council controlled open space
- over or above Council owned or controlled cemeteries, commercial forestry or formed roads
- over or within 50 metres of other users of open spaces - if another open space user moves within this range, the UAV user must immediately land their UAV
- over or within 50 metres of any building on Council land or any playground equipment or swimming pool
- within 50 metres of livestock, wildlife or sensitive wildlife habitats - if livestock or wildlife move within this range, the UAV user must immediately land their UAV
- within 50 metres of a reserve boundary where residential housing or stock farming adjoins
- within 100 metres of another UAV user.

If an operator wishes to fly a drone in any of the situations outlined above, Council approval is required.

Council has a restricted area at the Te Anau lakefront where helicopters and floatplanes operate, where approval is required from SDC and DOC, and as part of the approval process, consultation is undertaken with other aircraft operators.

Approval also must be sought for drone use related to any organised event and from any lessee, licensee or event organiser.

Submission points

General feedback

Council has concerns about the extent the public is being involved to develop the new policy and regulatory framework for drone usage. Council is not aware of the extent engagement was undertaken to generate the discussion document. Council also only became aware of this formal consultation process near the end of the consultation period. On this basis, Council recommends, if the Ministry is undertaking other formal consultation processes in the future, notifying the local government sector before or at the beginning of the consultation period. Council also has concerns that the wider community are still not aware this consultation process is open/has taken place.

Rules updates

Standalone rule for drone operations

> Council notes that the Ministry are considering creating a new part of the rules for drone operations. It is proposed this rule part would exclusively outline the rules applicable to drones, and would encompass the new regulatory requirements proposed in the discussion document.

Council support this proposal and believe having a specific rule that applies to drones would make the rules clearer and more accessible for operators and the wider public. This, in turn, may improve public safety.

Changes to the consent provision

> Council notes that the Ministry are considering relaxing or removing the provisions requiring drone operators to obtain consent from a landowner/occupier before flying drones above private property. It is stated that relaxing the provisions might mean that drone operators would have a presumptive right to fly over private property and people, provided they follow flight rules that impose minimum flying distances from people and property. Operators would also have to adhere to other legal requirements such as New Zealand privacy law and principles. If the consent provisions are removed, it would be on the basis that the series of measures proposed in the discussion document are sufficient to mitigate identified safety/security risks.
>
> Council recognises that the consent requirement was introduced to minimise the safety risks to people/property. It is also noted that the Ministry believe the current consent rule is not benefitting safety, that it is hard to enforce, and that the rule was not intended to address privacy or nuisance issues, as other government agencies are responsible for addressing privacy issues.

Council strongly opposes removing or relaxing the consent provision. The public currently have the right to unimpeded access to Council's parks and reserves, reflection and privacy at our cemeteries, privacy at playgrounds and swimming pools, no disturbance of wildlife and stock, and no distractions on our roads.

The restricted area at Lake Te Anau protects other aircraft operators. This site, and possibly others in the future, are not currently covered by the aerodrome rules but drone-use has the potential to cause issues if the other aircraft operators are not aware of drones in the area.

If the consent provision is removed, we understand that councils would be responsible for any noise complaints. Although section 16 of the Resource Management Act 1991 would apply, without guidance or noise standards for drones, it would be difficult for councils to follow up and act upon any noise complaints.

In regards to privacy, Council understands that any complaints regarding privacy would be directed towards the Privacy Commissioner, however, councils are likely to be the recipients of initial complaints, and from an operational perspective, this would increase the number of complaints councils would receive and need to respond to. Council also believes that the Ministry and the Privacy Commissioner should work together to make the public aware of how they can make a complaint and seek redress, if there is a privacy concern relating to a drone. Council wants to ensure that people and property are protected from the close scrutiny that drones afford the drone operator.

If the new provisions are too enabling, councils may not have the ability to adopt bylaws to address issues with drones. Councils cannot make bylaws that are contrary to legislation (section 17 Bylaws Act 1910), and bylaws can only be made for particular purposes (section 145 of the Local Government Act 2002).

Council is also concerned that if more drones are flying above people and property, there may be more of a need for drone operators to have public liability insurance. Council suggest proof of insurance be required as part of drone registration.

If the consent provision is relaxed, Council believes it is essential that minimum flight distances are imposed. Council has concerns about drones flying near livestock and wildlife, and believes drones should be at least 50 metres away.

If the consent provision is removed or relaxed, the Ministry should consider whether the rules should differentiate between private land and public land (such as council owned land and roads). If consent still has to be sought to fly drones over public land, organisations such as councils would be able to apply their local knowledge, to put in place appropriate rules/policies for drone operation.

Reviewing the minimum flying distance from aerodromes

Council notes that the Ministry is considering reviewing rule 101.205, which specifies that people cannot fly a drone closer than four kilometres from any aerodrome, controlled or uncontrolled, except in some circumstances. The discussion document states that the rule may be too restrictive at some sites. Council understand that proposed changes could include setting a standard baseline of four kilometres from aerodromes and publishing alternative areas available for drones to operate inside four kilometres. This could lead to a graduated altitude with lower levels close to the aerodrome and in the circuit area, increasing as the distance from the aerodrome increases. Consideration would also be given to the protection of arrival and departure areas for other aircraft.

Council has concerns about the proposal to review this rule. Council believe this rule is clear and consistent, which facilitates awareness of the rule and compliance. Inconsistent rules, even if clearly articulated in mapping and geo-awareness technology, may result in greater confusion and breaches, which in turn, may jeopardise public safety. Council believe permission should still be sought to fly a drone within a four kilometre boundary of the aerodrome, from the aerodrome operator, so a NOTAM (notice containing information essential to personnel concerned with flight operations) can be issued to other users.

Introducing mandatory basic pilot qualification for part 101 drone pilots

Council notes that the Ministry are considering introducing mandatory basic pilot qualification for Part 101 drone pilots, in addition to CAA-led education initiatives. This would mean that anyone operating a drone under rule part 101 will have to:

- pass an online theory test and obtain a basic pilot qualification
- be supervised by someone who holds a basic pilot qualification and is at least 16 years old
- be tested/trained through an approved training organisation.

Council supports this proposal, and believes increased awareness of the rules may lead to better public safety. However, as drones are readily available and people have not had to have a pilot qualification before, Council is a little sceptical that all operators would actually obtain this qualification. Going

forward, it might be appropriate (although hard to implement) to require drone operators to provide proof of their pilot qualification, prior to purchasing a drone.

Geo-awareness

Council notes that the Ministry are proposing to require

- the creation of a single standardised map available in different formats (ie paper or digital) that provides all necessary aeronautical information for drone operations to all pilots and industry; and
- the use of geo-awareness technology on certain drones or for certain operations, eg drones used for specific and/or advanced operations.

Feedback

Council support the proposal to have a single standardised map, as having a single geospatial source of truth is a critical step.

To enable such a system, the map will need to consume automated GIS information feeds. Ideally, this should be done via Open Geospatial Consortium (OGC) standards such as Web Feature or Map Services (WFS/WMS).

Although ESRI is the dominant GIS ecosystem, not every council nor other relevant authority are using ESRI ArcGIS. Therefore, proprietary ESRI web protocols should either be ruled out in favour of OGC WMS/WFS, or data sharing arranged.

The authoritative map will need to display dynamically updating data streams.

Identifying areas where drone flight should be prohibited

Council believe it is crucial that the Ministry work with councils and community groups as the rules and geo-awareness work is carried out, to ascertain areas where drone flight should be prohibited (areas that should be geo-fenced). Areas that should be geo-fenced could include sites that are culturally significant, areas where there are flights but not the protection of the 4km aerodrome restriction, and restrictions to ensure compliance with the Conservation Act 1987.

[redacted]

From: [redacted]
Sent: Thursday, 3 June 2021 12:50 PM
To: Enabling Drone Integration
Cc: Tim Robinson
Subject: Drone Integration NZALPA Submissions [NZALPA-EDMS.FIDX73688]
Attachments: Submissions on MoT Drone Consultation(192093.3).pdf

Dear Ministry of Transport,

It was a pleasure to meet with you and discuss this work. We look forward to being able to participate further with you.

Kind regards,

[redacted]

ALPA NEW ZEALAND AIR LINE PILOTS' ASSOCIATION

[redacted]

Website www.nzalpa.org.nz
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NEW ZEALAND AIR LINE PILOTS' ASSOCIATION

3 June 2021

[redacted]
Ministry of Transport

By email

Dear [redacted]

Enabling Drone Integration – Consultation Submissions

1. It was a pleasure to meet with you on 5 May at our offices. It was incredibly helpful and reassuring for us to engage with you in person on the important matters that you are considering.

2. NZALPA is a professional association and independent union. Established in 1945, NZALPA represents over 2600 pilots, air traffic controllers and flight service operators and is the Voice of Aviation in New Zealand. We are a founding member of the International Federation of Air Line Pilots Associations (IFALPA) in 1945, and the Global Air Traffic Controllers Alliance (GATCA) in 2018, and we are actively involved with IFALPA, GATCA and the International Federation of Air Traffic Controllers' Associations (IFATCA). We have also recently opened a membership category for drone pilots.

NZALPA Position

3. We are aware of the growing potential and capacity of the drone sector to provide meaningful solutions for social and economic problems. At the same time, we are also aware of growing public complaints and concerns about operators that demonstrate for us a lack of public confidence in the regulation of drone operations. For our own interests we are concerned to ensure that all measures taken are consistent with good safety risk management processes and reduce the risk of personal harm and injury to people.

NZALPA Submissions

General Submissions – Proposed measures

4. NZALPA supports the series of measures that are proposed in the Discussion Document – Enabling Drone Integration (the 'document'). Ultimately for NZALPA the development of a safe and efficient Unmanned Aircraft Traffic Management (UTM) system is of fundamental importance – as manned aircraft operators and users share airspace with unmanned drones/RPAS and UAV's.

5. NZALPA sees the measures proposed as stepping-stones or building blocks towards a fully developed and safe UTM system. Some of the proposed measures are 'must haves' for a UTM system. NZALPA views the document's proposals of drone pilot qualification, drone user and equipment registration, remote identification, and Geo Awareness as the must haves in a future UTM and therefore fully supports these measures.

6. We believe that the proposed approach will achieve the desired objectives so long as there is a commitment to ensure that the Rule changes and regulation adopted in this document's series of measures continues to be reviewed and developed as drone technology and operating numbers increases.

7. The drone industry and its effects are such a fast-moving technology that Rules developed for their operation will only be as good as the technology in use. This is especially the case for remote ID and Geo-awareness. NZALPA supports Rules being constantly reviewed and developed to keep up with rapidly improving drone technology.

8. We believe that the proposed measures are necessary and should be implemented now. They will go some way to addressing the problems and opportunities identified but the full proposal will need to be implemented before the challenges can be fully addressed.

9. NZALPA is concerned that the first of these measures – Rules updates, Basic pilot qualification and Registration - may take up to three years to implement. However, having met with the Ministry of Transport Drone team, we understand three years is a conservative timeframe and they are likely to be implemented in a timelier fashion. NZALPA's view is the sooner the better.

10. We agree with the proposed order of implementation of the measures. Ultimately a full-integrated UTM system is the goal and the priority order of these measures is appropriate given current drone technology and user operator statistics available.

Rules Updates

11. We believe it makes sense and is appropriate for drones to have their own Rule Part. As stated in the document, this should provide Rule clarity for drone operators and enhance operator education, compliance and assist with enforcement of the Rules.

12. NZALPA recognises that this 'one size fits all' provision in relation to the four-kilometre minimum flight distance from aerodromes may be overly restrictive. This is especially so given the large variation in the use of uncontrolled aerodromes in New Zealand – as mentioned in the document. We would support a review of this provision provided any decision making to look at alternative areas within 4 km of an aerodrome, or graduated lower levels closer to aerodromes, is based on a robust safety risk management analysis.

13. For NZALPA, the issue of consent to fly above people and property is all about safety and reduction of personal injury – especially in circumstances where manned emergency services are carrying out their work to save lives and property. If the consent requirements currently in place are proving to be ineffective due lack of operator compliance, then NZALPA would support a change to safe distances, as an alternative.

14. NZALPA could support the removal of the consent requirement completely if an alternative safe distance requirement was introduced and all other New Zealand privacy laws and legislation was adhered to.

15. If safe distances were used an alternative to consent provision, we would consider 50 meters an appropriate distance. This is a conservative starting point that can be subject to Rule review over time. If this distance proves to be unworkable or ineffective then the distance could be reduced, again subject to a comprehensive safety risk mitigation case being carried out.

16. NZALPA would like to see the consideration of –

a. A Certificate of Airworthiness requirement, or equivalent, for drones more than 15kg MTOW.
b. Compulsory Insurance (at least third party) for all drones weighing above 250g.

17. NZALPA supports the minor Rules changes as proposed in Paragraphs 112- 120 of the document

Basic Pilot Qualification

18. NZALPA strongly supports a basic pilot qualification for Part 101 drone pilots, given that the large majority of drone users are covered under Part 101 and this is where the greatest number of complaints and incursions into controlled airspace seem to be originating from. It seems improved Rule changes need to really target the recreational drone users, and most of these are covered by Part 101.

19. NZALPA views a basic pilot qualification as another tool in the aviation industry's toolbox to ultimately reduce the number of complaints and incursions currently being recorded in CAA, Airways and Police figures. It is based on the premise that improved knowledge and education in the operation and regulation of drone usage will lead to better compliance with the Rules. It is essentially taking the 'ignorance' factor out of the causal factors leading to complaints and incursions.

20. Following discussion with yourselves, it seems an electronic/online theory test would be the most simple and efficient way of reaching drone users whilst also being the most cost effective to administer.

21. However, NZALPA believes the validity of the qualification should not be indefinite but should have an appropriate validity period to reflect the likely changes in drone regulation, as New Zealand progresses towards an UTM system. A validity period of five years would therefore seem appropriate, given the ease with which an electronic/online test can be administered.

22. We do not believe there is a need for a minimum age for basic pilot qualification.

23. We support the proposed special authorisations given to Part 141 and Part 101.202 approved training organisations.

Drone Registration

24. NZALPA has long been an advocate for drone registration – both user and equipment. A well operated registration system should allow for more targeted drone education, provision of information, better communication of ongoing changes to drone Rules and operation, better enforcement of drone infringements and more public and industry confidence in the usage of drones and their integration into an UTM system. The proposed drone registration system would also bring alignment (in overall consistency) with the overseas jurisdictions that are listed in the document.

25. Drone registration will enable far more confidence in the regulation and safe operation of drones in New Zealand airspace given the positive outcomes – as listed in our General submissions – that should occur. Over time these should lead to a reduction in drone airspace incursions and public complaints.

26. NZALPA supports this proposed system design. It appears to reflect a platform that is consistent with digital platforms becoming commonplace in several other industries. NZALPA supports identity authentication.

27. We believe a minimum weight threshold of 250g is appropriate and necessary. This would enable alignment with registration thresholds in overseas jurisdictions.

28. NZALPA generally supports the drone registration exemptions as listed. These organisations are well established in the aviation eco-system and are responsible participants. However we would be interested in a regular review of these exempted users – especially those drones under the 250g threshold – if it is seen that these drones and users continue to make up a large portion of drone airspace incursions, once a registration requirement has been introduced.

Remote Identification

29. Like the use of transponders, ADS B/C and TCAS systems in manned aircraft, remote identification for drones has got to be the first step in fully integrating drones into an Air Traffic Management system. NZALPA cannot, at this time, see how drones could be integrated into a UTM system unless remote identification was adopted.

30. Remote identification would enable better enforcement of drone Rule infringements and airspace incursions whilst also allowing (on a developing basis) more flexibility for drone operators, especially commercial operators, to gain exemptions from general drone regulation relating to airspace restrictions and usage.

Geo-Awareness

31. Geo-awareness is a fundamental aspect of drone regulation operation required if we are to strive for a fully integrated UTM system. NZALPA fully supports geo-awareness and as drone technology continues to develop geo-awareness aspects should continue to be a part of Rule changes to reflect the newer technology.

32. A standardised digital mapping solution is a good start to geo-awareness Rules changes, if this digital solution is consistent with current aviation airspace mapping and is easy to access and use.

33. Geo-awareness will enable the public to have more confidence that drones are being operated in a safer and more efficient manner, in what ultimately will be a shared air traffic management system.

Conclusion

34. NZALPA congratulates the Ministry of Transport on the considerable progress it has made to date on bringing to operation a working set of regulations for drone operations. Going forward, the Ministry should balance the urgent need to have effective rules in place against the ongoing need for safety risk management analysis. In this case, this is best done by implementing the rules, as proposed, but regularly reviewing and developing those rules to take account of safety best practice.

Yours sincerely

[redacted]

[redacted]

From: [redacted]
Sent: Thursday, 3 June 2021 1:38 PM
To: Enabling Drone Integration
Cc: [redacted]
Subject: DOC submission for Enabling Drone Integration
Attachments: DOC submission - Enabling Drone Integration.docx

Kia ora

Thanks for the opportunity to share our thoughts.

Please find attached a submission from DOC, led from our Management Planning team.

We would welcome the opportunity to discuss options with you, especially if discussions around removing/relaxing landowner consents are advanced.

Also, kudos for a well-presented discussion paper!

Ngā mihi

[redacted]
Department of Conservation | Te Papa Atawhai
[redacted]

National Office
W2.25 |18 Manners Street, Te Aro, Wellington 6011

Tākina te hī, tiakina te hā, o te ao tūroa
Conservation leadership for our nature
www.doc.govt.nz

Department of Conservation (DOC) comments on proposed changes to Rule Part 101.207(a)(1)(i)-(ii) - the Consent Provision Rule

Thank you for the opportunity to comment, and for considering our comments from the agency consultation period.

The following submission is all related to Chapter 1 of the discussion document, and the questions posed at the end of that chapter.

On the remainder of the discussion document, DOC is generally supportive of education and licensing for drone pilots. We also see possible benefits in drone registration and remote ID in managing compliance regarding drone use on and over public conservation lands and waters (pcl&w). We are keen to discuss how this information could be useful to DOC once these ideas progress. We are happy to provide GIS mapping and other information that might support these developments.

Chapter 1, Question 3:

Q.3 Should we change the requirement to gain consent to fly above property by:

a. Using 'safe distances' as an alternative?

b. Relaxing the requirement in another way?

c. Removing the requirement completely?

DOC relies heavily on the Landowner Consent Provision Rule [Part 101.207(a)(1)(ii)] to effectively manage drone use over pcl&w

Our primary concern is a 'safe distances' approach is too narrow in scope to allow for the effective management of all potential impacts of drones. The benefits of the landowner consent provision in Part 101 extend beyond managing safety risks on DOC managed land.

DOC has a statutory responsibility to manage the adverse effects on pcl&w. Drones can cause adverse effects on visitor experience, wildlife, tangata whenua values, and DOC operational functions. We are glad to see this acknowledged in the public consultation document (paragraph 107).

As you note in paragraph 107, "further consideration would need to be given to the impact such removal may have for other systems, e.g., public conservation land managed by DOC". If the landowner consent requirement is to be removed, further provisions beyond the 'safe distances' rule would be required to enable DOC to satisfactorily perform our management responsibilities.

We hope the following provides more context on those potential impacts and proves useful in finding positive solutions.

Due to the way the Conservation Act 1987 (the Act) is written, DOC is only able to manage aircraft flights (including drones) under this Act if they are taking off from or landing on pcl&w. Therefore, a major benefit of the Consent Provision Rule is it provides DOC the ability to manage drone use where the drone is neither taking off or landing on pcl&w. We rely on Rule Part 101 to require authorisation for the drone to be flown over pcl&w in accordance with our statutory documents and operational planning.

The advantage of a consenting regime over a blanket rule is DOC can be selective in the areas it approves for drone use. This ensures some locations remain free of drone activity, providing areas of natural quiet for visitors who seek this, protecting wildlife, preventing damage to historic sites, and protecting wahi tapu sites. Drone flights requiring landowner consent is also an effective way for

DOC to ensure drone flights are only authorised in areas where flights are consistent with the provisions of DOC's statutory documents.

Possible options could be:

- Exploring an exception for pcl&w, whereby the consenting requirement is relaxed elsewhere but a consent is still required from DOC for pcl&w.
- Exploring a stricter set of rules around drone use on pcl&w. Under this system a consent would not be required from DOC, but DOC keeps the public updated on where drones can or cannot be flown. There is a risk with this option that the change would be more inefficient than the status quo due to the place specific considerations that go into granting permits for each place. This risk could be over come through investment in an online system which communicates restrictions for specific areas to drone users, but no such system currently exists nor is one budgeted for.
- Future changes to conservation law may allow a more flexible approach, but these would be some years in development.

This list of options is not exhaustive list. We would appreciate the opportunity to work through these, and other possible solutions, with MOT and CAA.

Chapter 1, Question 4:

Q.4 Should we change the requirement to gain consent to fly above people by:

a. Using 'safe distances' as an alternative?
b. Relaxing the requirement in another way?
c. Removing the requirement completely?

DOC would like to explore adding wildlife to the 'flying over people consent' if the 'safe distances' approach is to be deployed

As noted above, an approach with safe distances and no consent would limit DOC's ability to protect wildlife without changes to conservation legislation. If the safe distances approach was to be deployed, we believe wildlife should be added. The current attention is on property and people. The advantage of this approach is it would afford protection to wildlife off pcl&w as well.

We also note it is not clear whether safe distances constituted vertical, horizontal, or some other distance. If assuming it is vertical, DOC would like to see some horizontal distance considered to best protect people and wildlife along property boundary lines.

Chapter 1, Question 5:

Q.5 If we use 'safe distances' as an appropriate alternative to the consent provision, what distance(s) would you consider is appropriate?

a. 10 metres
b. 30 metres
c. 50 metres
d. Other.

DOC considers 50 metres (or longer) to be the most appropriate 'safe distance'

DOC's preference is for the 50-metres distance option as, among the options, it affords the greatest level of protection to people (and wildlife). We view the 'safe distance' as the area below which DOC would require a consent to be obtained.

DOC already faced challenges in maintaining the natural ambience of some places in the face of increased overflights from aircraft. Our concern is that the lower drones are able to fly, the greater the potential impact on visitor experiences and human enjoyment of natural areas.

Although one drone flying above 50-mentres is unlikely to have dramatic impact on the natural ambience of a place, multitudes of drones might. A non-consent driven process would hinder DOC's ability to set limits (numbers, flight times etc). We appreciate we would retain the ability to require users who launch or land a drone on pcl&w to obtain a permit, and therefore be able to impose limits on those.

Thank you again for the opportunity to share our thoughts and we look forward to working with you to progress a drone system that works better for both users and landowners/land managers.

[redacted]

From: [redacted]
Sent: Thursday, 3 June 2021 4:44 PM
To: Enabling Drone Integration
Cc: [redacted]
Subject: Office of the Privacy Commissioner response to Enabling Drone Integration discussion document

Good afternoon,

Thank you for the opportunity to submit on the *Enabling Drone Integration* discussion document. Given many of the questions posed by the document do not relate to privacy matters, or only tangentially so, we have opted to provide our comment via email. That said, we recognise that any future drones regulatory framework will be an important piece of the puzzle in addressing the privacy concerns raised by the increasing use of drones.

General comment

As the document rightly notes, regardless of which specific proposals are progressed, the Privacy Act 2020 will apply to drone operators, companies, regulators, and any other entities that interact with the drone sector (all 'agencies' in the terminology of the Act) – these responsibilities are not superseded by the regulatory framework proposed. This is an important point to make clear to all those involved in the sector, as agencies will need to proactively take account of privacy when designing drone systems or operations that may impact on the privacy of others (e.g. real estate agents taking pictures of a house for sale, and incidentally capturing personal information of others). Ensuring that privacy concerns are adequately addressed will be a key part of building social license for the use of drones, especially if mass operations in urban areas is expected.

In its role as privacy regulator, OPC currently receives some complaints/enquiries relating to drone activities. While these numbers are not overwhelming, they have been steady, and we continue to encounter issues with identifying both the operator of any offending drone and whether any camera the drone is carrying is actually recording.

At least two of the proposals (*Basic pilot qualification* and *Drone registration*) envision collecting personal information. It is important that, to protect individual privacy, only the minimum necessary amount of personal information is collected to meet the lawful purpose of each proposal (information privacy principle 1 in the Privacy Act) – we expect that the detailed design of these proposals will give due consideration to all of the Privacy Act principles.

We note that the benefits and costs of the various proposals seem under-developed at this stage (especially costs) – there is, for example, no estimation of the costs of the drone registration scheme. It is therefore difficult for us to consider the balance of the purported benefits/costs of the proposed approach against the privacy intrusion. We look forward to further detail on these points as the proposals mature, and would appreciate future opportunities to comment as they do.

Comment on specific proposals from a privacy perspective

- *Rules updates:* for this proposal, of most interest from a privacy perspective is the review of the consent provision. While the intention of the rule is (primarily) to protect individuals and property on the ground, it has incidentally provided a degree of privacy protection, requiring individuals to explicitly consent to overflight of their property. We acknowledge that this has only ever been a limited protection (especially given the fact that drone-carried cameras can capture footage well beyond the scope of the flight area above a specific property), and Civil Aviation Rules were not originally designed for this purpose; nonetheless, there is a clear privacy nuisance dimension to drone operations over private property, and the removal of the rule would leave this explicitly unaddressed, potentially exacerbating this privacy problem. The Civil Aviation Rules, while focused

primarily on aviation safety/security, do cover issues outside of these (for example, Part 93 Noise Abatement Procedures). We recommend that, if a rule-making process is pursued, there is an explicit reference in the rules to the issue of nuisance, which could cover privacy concerns. Where enforcement is required against this rule, it may be appropriate to consider building in consultation with the Privacy Commissioner on the specific breach, or for the Commissioner to take the lead on enforcement. Regardless, we recommend the Rules should take account of the potential privacy nuisance explicitly.

- *Basic pilot qualification:* as noted in the paper (para 134), the broad requirement for a basic pilot qualification is a useful opportunity to educate drone operators on privacy issues relating to their flying. However, there is no detail on the 'online portal' that would provide the test, and what personal information this system would retain (if any). Presumably individuals will be required to provide personal information to take this online test for the qualification - what type of personal information would be necessary? How long would this information be retained? Would it be utilised for any other purpose other than confirming pass/fail of a test, and any required enforcement activity? We recommend that OPC be consulted on the development of any portal.

- *Drone registration*: this proposal would involve the collection of a range of personal information (name, date of birth, physical address, passport/drivers licence numbers, contact details including phone and email), which would then be held by the CAA. While the CAA already maintains an aircraft register with personal information, this proposal would be a significant expansion of that database. Based on the numbers provided by the Colmar Brunton survey cited in the paper (at least 171,932 drones in February 2019), and the expectation that at least 75% of recreational users and 96% of commercial users would be required to register, a drone registration scheme would be considerably larger than the current aircraft register (of 5,000 aircraft).

  We do not believe that the safety case has been made that justifies the collection of this amount of personal information. While wider aviation safety is a meaningful concern (including the rising airspace incursions), based on the information in the discussion document, it appears that the vast majority of drones will be operating at low altitude and thus more a general public safety concern; the paper has not articulated how this safety concern is any greater than for a range of other routine activities (e.g. playing cricket at a busy park). The data provided (pg.17-18) relating to the consent of people under the flight path shows the most marked increase, though this rule is proposed to be removed so it is unclear whether this is still regarded as a safety concern. Para 173 notes the potential for injury to an individual, but this is very brief and gives no sense of likelihood or extent of injury. Earlier in the paper (para 64) there is a reference to ACC claims for drone-related injuries (247 claims), but no comparison is made to other injury rates. We note that for the 1 July 2018 – 30 June 2019 year, there were 2,027,789 new ACC claims. By comparison, concussions (and only concussions) from snow skiing had a similar claim rate to drones (234 claims for 2020), yet quite reasonably no registration scheme is required for using skis. We would welcome further information on the safety case behind the scope of the registration scheme, given the amount of personal information intended to be collected.

  If a drone registration scheme proceeds at the scope currently envisioned, we would expect that the CAA will be undertaking an assessment of their IT systems to ensure they are sufficiently robust to securely protect that level of information. We would also expect to see clear protocols around how long the information will be retained for (no longer than necessary, as per principle 9 of the Act), avenues for users to ensure the information is accurate (principle 8), and any other use beyond the original purpose for which it is collected (principle 10). These are more detailed design issues for CAA to consider in due course through a Privacy Impact Assessment, but will have a meaningful bearing on the functioning of the register.

  The paper also notes (para 188) that certain information on the register may be made available publicly, but only at the drone owners consent. While the consent requirement appears to be a good one, if there is a decision to go beyond this point and make some information publicly as a matter of course, then there would need to be a very clear purpose for this.

  Drone registration would have the benefit of making it easier for OPC to identify drones users who may have operated in breach of the Privacy Act (e.g. using a drone to video people in their private

homes without their permission) and have had a complaint lodged against them, assuming that the drone registration number is captured.

- *Remote identification* and *Geo-awareness*: these proposals appear to be at a still immature state of development, and the privacy impacts are difficult to determine at this stage. Remote identification would be additionally useful for identifying operators who may be in breach of the Privacy Act and whose drone is not recoverable at the time of the breach (i.e. it flies away!), while Geo-awareness measures may similarly help operators to stay outside of sensitive areas that may result in the collection of personal information. We look forward to seeing more about these proposals as they develop.

We look forward to learning more about all these proposals as your thinking progresses and would welcome the opportunity to engage with MoT to help shape the approach to the regulatory framework from a privacy perspective.

Happy to discuss any of the above.

Cheers,

[redacted]

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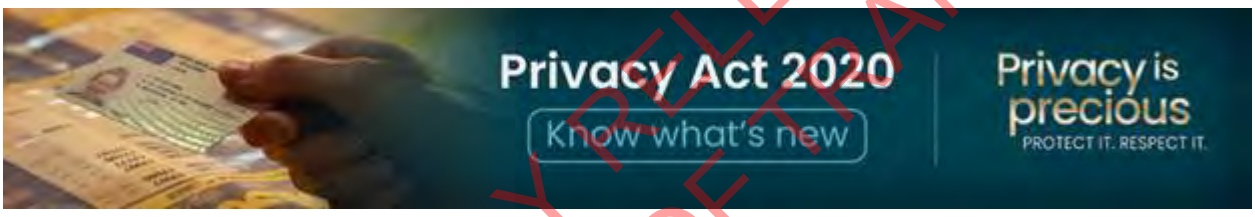


[redacted]

From: [redacted]
Sent: Thursday, 3 June 2021 7:52 PM
To: Enabling Drone Integration
Subject: Tauranga Model Aircraft Club submission

TMAC
Tauranga Model Aircraft Club Inc.

The Tauranga Model Aircraft Club has been in existence for over 75 years representing the interests of aero modelers from the Tauranga, Bay of Plenty region. We are affiliated with Model Flying New Zealand and believe that our club already has measures and rules in place to ensure that our members operate in a safe and respectful manner. In the extreme event of an accident our members have $10,000,000 indemnity cover for any single event. Our members are encouraged to qualify for their "Wings" which means they must pass both theoretical and flying competency tests. We typically fly from our Club field located within the TECT Park- a remote location 29 kms from Tauranga City- specifically established to cater for noxious recreational activities. We currently have a flight ceiling of 1000 feet AGL but always operate under the premise that we must give way to full size aircraft without exception.

In the discussion document there is mention of 'equitable sharing of costs' to any changes imposed. We are concerned that the remote identification and geo awareness proposals will create significant extra costs to modellers, many of whom fly multiple aircraft. We also believe that these costs will in turn have a negative impact on the 'social' role that 'Clubs' provide. This being an environment at the junior end, that provides intellectual stimulus for youth who often progress into STEM and aeronautical careers and at the upper end, one which again provides intellectual stimulus, retention of coordination skills and camaraderie. Any financial impact from the proposals could have a negative socio economic cost.

We see no gains in having constraints imposed on our flying site nor any advantages to having remote means to identify models flown at our site.

We would like to see the "Enabling Drone Integration" proposals recognise our Club flying site as an area exempt from the new requirements. We would also like to be able to nominate and gain exemption within a reasonable time frame, other sites within our region from which we can fly, from time to time. Thus allowing us to occasionally host competitions at sites away from our usual Club field , and to allow flying from remote hills for the activity of slope soaring- depending on wind strength and direction.

We are a conscientious group of aero modellers who have a vested interest in the safe operation of our models often worth thousands of dollars. We are not renegade flyers who inconvenience or jeopardize the safety of others. We would like to be recognised as an organisation that takes safe model flying seriously.

[redacted]

[redacted]

From: Robert Hallam [redacted]
Sent: Thursday, 3 June 2021 9:25 PM
To: Enabling Drone Integration
Subject: Enabling Drone Integration - Consultation
Attachments: Submission.pdf

Hello,

Please find attached my submission for the Enabling Drone Integration consultation.

Regards,
Robert Hallam.

Drone integration discussion document feedback

Questions from the Drone integration discussion document (Page 25)

Q.1 What is your view on the proposed series of measures? Are there any other alternatives you suggest we consider?

My view is that the proposed measures are overreaching and unnecessarily imposing on hobbyists and will fail to achieve the desired outcomes.

Q.2 Would the proposed approach help achieve the desired objectives?

I believe there is a large under representation and under estimation of the number of non commercial off the shelf craft in the discussion document which has resulted in a failure to address the unique challenges associated with each.

Q.3 Would the proposed approach help address the problems and opportunities identified?

I do not believe the proposed measures would address the problems or allow the opportunities due to the following reasons:

- Lack of ability to integrate geo awareness with open source flight systems
- Severe under-representation of non commercially available craft
- Qualifying any flying RC craft as a drone despite their distinctly different use cases, physical profiles, electronic and physical constraints resulting in a failure to address the challenges associated with each.
- Attempting to use rules and regulation in place of education.

Q.4 Are there any other problems and opportunities you can think of?
Complete absence of club or recreational representation
Rules and regulations don't equate to increased conformity as they are targeted at those already abiding by the rules and regulations, concerns with an increased workload for enforcement on an already overworked police force.
Citing privacy concerns whilst proposing complete abolishment of requirement to obtain consent to fly over personal property making way for additional privacy concerns

Q.5 Do you agree with the proposed order of implementation of the measures?
Proposed order of implementation is irrelevant if the proposed measures are not up to task.

Questions – Rules updates (Page 33)

Q.1 Should drones have their own standalone Rule Part?
No

Q.2 Should we review the four-kilometre minimum flight distance from aerodromes?
No

Q.3 Should we change the requirement to gain consent to fly above property by:
a. Using 'safe distances' as an alternative?
b. Relaxing the requirement in another way?
c. Removing the requirement completely?

a. safe distances (vertical and horizontal)

Q.4 Should we change the requirement to gain consent to fly above people by:
a. Using 'safe distances' as an alternative?
b. Relaxing the requirement in another way?
c. Removing the requirement completely?

a. safe distances (vertical and horizontal)

Q.5 If we use 'safe distances' as an appropriate alternative to the consent provision, what distance(s) would you consider is appropriate?
a. 10 metres
b. 30 metres
c. 50 metres
d. Other.

d. Distance should be based on noise pollution produced by craft in question, a craft producing a greater noise should be at a greater distance than a smaller, quieter craft.

Q.6 Are there any other major Rules changes we should consider?
Minor changes to the Rules
No

Q.7 Are there any minor changes to the Rules that would make them easier to understand?
No

Q.8 What do you think of the proposed minor Rules changes?
Weight boundaries are perfectly clear, see https://www.aviation.govt.nz/drones/your-drone-questions-answered/how-heavy-can-a-drone-be/

Q.9 Are there any other changes we should consider?
No

Questions – Basic pilot qualification (Page 40)

Q.1 Should we introduce basic pilot qualification for Part 101 drone pilots?

I don't believe this is necessary as this introduces an additional barrier helping prevent young individuals from being interested in the technology and potentially pursuing a career related to aviation.

Q.2 What impact would a basic pilot qualification likely have on you?

Marginal apart from privacy concerns, I feel it would enable collection of personal data by government officials for use in making additional regulations without the hobbyist or the majority of drone user's best interests (97.07% of flights are recreational according to New-Zealand-drone-research-2020) in mind.

Q.3 What format should this test take?

a. Electronic/online theory test
b. Paper based written theory test (at a provider)
c. A practical examination of skill and a paper based written theory test (at a provider)
d. Other.

d. In theory if a test made sense why should it be limited to any one type?
What would a practical skill test measure? There are vastly different skill sets for different types of craft.
DJI (and similar) photography platforms - minimal / no skill required as these fly themselves/.
FPV quad copters – High / Very high level of skill required.
Fixed wing (VLOS) – High / Very high level of skill required (different skill set to that required for FPV quad copters).
How would each of these physical skill sets be measured?

Q.4 Should there be a minimum age for basic pilot qualification?

If a basic qualification is introduced (which I don't think there should be) there shouldn't be a minimum age, there are enough barriers in place already for someone interested in model aviation without adding minimum age as a factor.

Q.5 Do you agree with the proposed special authorisations given to Part 141 and Part 101.202 approved training organisations?

Yes

Q.6 Is there any other special authorisations you would like to see? Why?

No

QuestionsS – Drone registration (Page 48)

Q.1 Should we introduce the proposed drone registration system? Why?

I do not think introducing a drone registration system will have the desired impact as actors with malicious intent will still continue to not register their drones, the only thing you can achieve here is registration of people who are already abiding by the rules.

Q.2 What impact would drone registration likely have on you?

It would incur a significant cost as the majority of my 14 craft would require registration, why should I incur a cost to cover registration when I already abide by the rules and regulations?

Q.3 What do you think of the proposed system design (e.g. digital platform) and requirements (e.g. identity authentication)?

RealMe seems like a good as solution as any to use.

Q.4 Should there be a minimum weight threshold for registering a drone? If so, is 250 grams appropriate? If not, what would be an appropriate weight threshold and why?

There is no representation for foam fixed wings of which a limit of 250g effectively targets all fixed wing craft given the average weight of most foam fixed wing model craft of 800g to 2000g my proposal is the upper range of this at 2000g.

Weight is taken as the primary measure for registration but does not take into account size or primary construction material, as foam craft are a lot larger than quadcopters/multirotors (another reason against classifying all flying craft as "drones").

If a craft is capable of being flown into an area where it's unwanted (by a malicious actor) how is the weight relevant?

For example John who wants to fly in an area where it is not legal to do so could do this with a quadcopter/multirotor or fixed wing craft of any weight, weight is not relevant here but the individual is. Target the individual instead of every separate craft.

Q.5 Should certain drones not need to be registered (such as drones flown solely indoors or within specific designated areas (e.g. Model Flying New Zealand sites) from registration? What other drones should not need to be registered and why?

Any custom built at or below 2KG for reasons stated above, or used for recreational purposes, the FAA does not require you to register a sub-250 gram drone, unless you are using it for commercial operations under Part 107. Then it must be registered.

Questions - Remote ID (Page 53)

Q.1 Should we consider introducing Remote ID? Why?

No, the craft isn't the concern the individual is. If someone wanted to ignore remote ID they could by either simply excluding it from a build, removing it from an existing craft, or circumventing it in another way.

Q.2 What impact would Remote ID likely have on you?

It would add substantial additional weight and complexity, cost, power draw, to 5 of the 14 custom built craft I own in which there is zero physical room for additional equipment, this requirement doesn't make sense as I'm (and the people I fly with) already abiding by the rules and going out of my way to fly away from people and personal property.

It would broadcast personally identifiable information to the general public.

It would add an additional point of failure should it be required the system is operational before flight takes place (although this wouldn't able to be implemented with current open source flight control systems, more a concern for flying photography platforms like DJI).

Questions - Geo-awareness (Page 57)

Q.3 Should we consider introducing geo-awareness? Why?

No, this does absolutely nothing to increase situational awareness or decrease the risk of collision for a model RC flyer or manned craft, the limited broadcast range for any aviator would mean by the time the offending craft was spotted the time left to safely manure would be marginal at best.

Complexity of adding RID to craft negates the effectiveness of the idea, use notify by app instead. refer point to malicious actor not following this.

The complexity and cost in developing and adding remote ID to a craft (both retrofit and inbuilt) seems like an absurd path to pursue when a mobile phone possesses all of the connectivity and processing power needed to achieve the same desired outcomes with an application. The user could simply open the app, wait for a location fix, and hit "start flying", it could even terminate their flight once the user moves outside the original geolocation when they started their flight.

Q.4 What impact would geo-awareness likely have on you?

It would not work on 4 of the craft I own as onboard recording causes interference around the 1.3GHz frequency preventing any GPS module on board from obtaining a fix (I have spent countless hours trying to work around this) this is a common issue with onboard HD recording systems.

It would add additional weight and complexity to the craft I own increasing the chances of injury or personal harm in the event of an incident.

The additional complexities involved would mean it is no longer feasible for me to run community events and encourage young individuals to develop an interest in model aviation through events at maker faire, wings over Wairarapa, and via STEM outreach with Victoria University.

Section 8: Final comments

Please read and respond to the following comments regarding the Enabling Drone Integration document.

1)

In paragraph 15 it states "There are unique privacy concerns associated with drones equipped with cameras or other technologies, allowing personal information to be collected." Yet the proposal for is for remote ID which would broadcast personal information. Is there really privacy concerns around drones or is the intent of the Enabling Drone Integration document something else?

2)

Paragraph 27 states and lists the involved parties in the Unmanned Aircraft Integration Leadership group. "The Unmanned Aircraft Integration Leadership Group, 9 which is made up of senior officials from the Ministry, CAA, MBIE and Airways, develops and approves a programme of work that is consistent with the Government's vision for drone integration." In the survey "New Zealand drone research " conducted by the CAA, MOT and MBIE in June of 2020 on page 7 (Key survey results) we see that there are 271,121 recreational users and 7,939 businesses using drones, this means that 97.07% of flight are of a recreation nature, looking at the Unmanned Aircreaft Integration Leadership group there would appear to be no recreational or community representation.

3)

Paragraph 28 states "...the aim of the transport system as a whole is to improve the well-being and liveability of New Zealanders" yet the proposed rules and regulations would make it harder for an individual to be involved in recreational drone or model RC flight, not having access to this hobby and the benefits it brings could detrimental to an individuals mental health which would be in direct opposition to the strategic direction cited above.

4)

Paragraph 37 point 2 states the intent to implement "• appropriate standards of safety and security by deterring and identifying drone pilots operating illegally "- rules and regulations do not equate to compliance, how are you going to get those who currently aren't abiding by the rules to register or take a test?

5)

Page 15 figure 3 under Drone registration states "Mandatory notification of all drones weighing more than 250 grams by their owners" the need for this would be negated by simply having a

notify to fly app, this would come at a lower cost to the taxpayer as well as being easier to implement.

6)

Page 13 figure 3 under Geo-awareness states "Creation of a single standardised map available in different formats that provides all necessary aeronautical information "This would be easily consumed on the aforementioned mobile app, the same one could be used for displaying the map to end users as well as notifying interested persons of flights taking place, removing the need for complex and expensive hardware that wouldn't work on all craft.

7)

Paragraph 42 states one of the main reasons for implementation of rules updates, drone registration, and basic pilot qualification as being "• the need to address the current aviation safety, security and privacy issues caused by non-compliant drone pilots..." Please explain how a mandatory basic pilot qualification isn't just forced education as previously stated education didn't have the outreach desired. Please explain how changing rules and regulations leads to increased compliance of those rules and regulations by those who aren't already abiding by or intending to abide by the rules.

8)

Paragraph 43 states "Importantly, this proposal is also aligned with the work programmes of New Zealand's main aviation partners..." but again manages to exclude any form of recreational representation despite studies done by MOT, CAA, and MBIE showing that 97.07% of drone flights are recreational in nature.

9)

Table 2: Annual drone reports by type (CAA) Please provide a comparison and breakdown of manned aviation complaints over the same time period of 2015 to 2020.

10)

Paragraph 48 states "Similarly, Airways has also reported an increase in the number of incursions in controlled airspace that have increased from 33 in 2015 to 81 in 2019." however Table 3 shows that in 2020 the number of incursions decreased and that it is a downwards trend, why does the document fail to mention this?

11)

Paragraph 50 states "...The main difficulty is identifying the wrongdoer, whether directly on the spot when only the drone can be seen at a distance (the pilot's location cannot be known if too far from the drone or intentionally hidden), or at a later stage, after receiving a complaint..." please elaborate on how increasing rules and regulations, with mandatory registration and test taking (which is another form of education) will increase the number of users abiding by the rules. If education will increase the number of users abiding by the rules then why force those already abiding to suffer by causing them additional barriers and costs to enjoying a hobby?

12)

Paragraph 53 states "Since then, there has been a significant growth in the number of users and drones and an increasing demand for more complex operations..." Please provide numbers of the increase in users since 2015.

13)

Paragraph 61 states "Illegal drone incursions (i.e. unapproved drone activity) in controlled airspace have become a growing concern worldwide over the last few years, and have caused numerous airspace closures, e.g. disruptions caused at Gatwick and Heathrow airports in 2019 in the United Kingdom..." Please refer to the following regarding the Gatwick incident: https://www.theguardian.com/uk-news/2020/dec/01/the-mystery-of-the-gatwick-drone

14)

Paragraph 62 states "Drone incursions into these zones result in their closure for 15 minutes as per Airways' guidelines. There were 81 such closures in 2019." Please provide the numbers for closures from 2015 – 2020

15)

Paragraph 64 states "Between 2015 and September 2020, ACC recorded 247 claims for drone-related injury (most involving lacerations or punctures), of which 224 resulted in a payment, total costs being NZD 88,918 (excluding GST)." This number seems vastly insignificant when contrast to other ACC claims, yet there is no comparison or baseline to provide context to the reader on if this is a significant cost or not. An average claim of $396.95 (excluding GST) is hardly worth mentioning when you compare it to the number of claims and average cost from 2015 – September 2020 for something else like Jogging.

Source: https://catalogue.data.govt.nz/dataset/3eb52d25-2aa1-4861-aff4-8b4bede6da64/resource/28b114b3-ad87-4ead-bc77-6b6449b654d4/download/51939-response.xlsm

From the above data we can ascertain that the average number of claims per year for jogging was 14,455.8 and the average cost of jogging related injuries for 2015 – 2020 was $4,853.80. This is far greater than the average cost of a drone related injury claim for the same time span (12.22 times greater). Why is no context of the costs given in the Drone integration discussion document?

16)

Paragraph 66 states "As explained, drone use may have negative impact on society. For example, it can cause privacy (for drones equipped with cameras) and noise issues..." This implies that every flying craft classified as a drone (this can include RC helicopters, quadcopters or multirotors (LOS and FPV), fixed wings, and flying photography platforms) has a camera, the quality of cameras varies immensely as the majority of FPV systems are analogue consisting of quality around 700 TVL (TV Lines), with these analogue equipped systems quality and definition isn't enough to spy or cause privacy concerns. Regarding noise please provide information on how the CAA / MOT / MBIE plan to mitigate noise concerns of autonomous drones.

17)

Paragraph 67 states "These measures are necessary to legitimise recreational and, more importantly, commercial drone use…" yet the proposed measures would make the majority of recreational flights illegitimate. Please provide information regarding how the new rules and regulations would legitimise recreational flight compared to the current rules and regulations.

18)

Paragraph 68 states "The proposed measures are assumed to improve enforcement through more effective resolution of reported incidents…" Please provide evidence on how the proposed measures will improve enforcement through more effective resolution of reported incidents, otherwise this comes across as an exercise in spending taxpayer money based on an assumption.

19)

Paragraph 84 states "Drone manufacturers and retailers may incur costs from the imposed measures if the measures decrease drone uptake, and therefore drone sales, and if it requires them to build in additional software or hardware on board the aircraft." Why not simplify the entire approach and reduce costs and complexity whilst increasing accessibility and maintainability by using a mobile app?

20)

Paragraph 85 states "Similarly, drone operators would have to spend time and resource complying with the proposed measures." Why should operators who haven't been causing harm or complains have to face additional costs to cover those who aren't abiding by the rules and regulations?

21)

Paragraph 99 states "…This could be achieved through the introduction of basic pilot qualification that would improve education and knowledge of Part 101 pilots, drone registration and Remote ID that would allow for better enforcement, and geo-awareness that would enable better situational awareness." We already have geo-awareness in the form of airmap on mobile devices: https://play.google.com/store/apps/details?id=com.airmap.airmap

22)

Paragraph 104 states the following regarding the consent provision (Rule 101.207(a)(1)(i)-(ii)) "This has prompted us to consider relaxing or removing this provision. Any changes to this Rule would be based on the outcome of a safety case conducted by the CAA." If privacy and safety is the primary concern here surely removing the consent provision rule is unconducive to promoting this? According to table 2 the number of complaints regarding consent of people under flight path not obtained was the highest of all report types at 579.

Please explain how removing this consent provision will reduce the number of people that wish to complain regarding consent of people under a flight path, please also provide information on how risks to wildlife will be mitigated.

23)

In Table 5 regarding rule 101.215 Aircraft mass limits the proposed changes read as follows "There is a need to define what gross mass is. Weight boundaries are not clear..." Please refer to the following literature regarding weight limits: https://www.aviation.govt.nz/drones/your-drone-questions-answered/how-heavy-can-a-drone-be/

24)

Paragraph 136 states "To ensure the effectiveness of this proposed measure, mandatory testing and qualification would apply to any person operating a drone under Part 101 in New Zealand, regardless of the weight of the drone..." Please explain the how this would apply to a drone weighing <40 grams which is basically a child's toy. Is the expectation that the child would no longer be able to fly without taking a mandatory exam? At what weight does something become insignificant enough to not take the exam, by the very rules and regulations proposed I would have to have a basic pilot qualification to fly a paper air plane. Please provide clarification.

25)

Paragraph 154 states "Examples of possible offences that would be introduced alongside the new obligations are flying a drone without a qualification, or flying a drone that is not physically marked. " Please provide examples of physical marking requirements, how would a user place registration markings on something like a TinyHawk (L 110mm x W 95mm x H 39mm)?: https://emax-usa.com/products/tinyhawk2

26)

Paragraph 158 states "By comparison, some CAA Rule education campaigns, which include the creation of websites setting up rules and promotion, have cost the CAA close to NZD 100,000... " Please provide best estimates of total costs for the Drone Integration project.

27)

Paragraph 162 states "We are proposing to require owners of drones to register their drones with the CAA (more specifically with the Director of Civil Aviation). " I have 14 drones, some of the people I fly with have upwards of 30 each. This would incur a significant cost that is unjustified as a hobbyist. We aren't required to register firearms in New Zealand why should we have to register drones? The drone isn't the issue but the individual is. Focus on an equivalent of "Registering the user"

28)

Paragraph 171 states "We are proposing that all drones weighing 250 grams or over should be notified. Drones being operated under both Part 101 and 102 would have to be notified. For those being operated under Part 102, notification would be part of the certification process. " The FAA does not require registration of drones above 250g unless they are used for commercial purposes under part 107, why shouldn't we follow the same rules? Why impose heavier and more restrictive rules on hobbyists using drones for recreational purposes?

29)

Paragraph 174 states "We propose to exclude very small drones that present a negligible safety risk for the environment they operate in from being registered. These drones often have very limited capabilities and performance (e.g. not able to carry a payload, minimum speed, and battery life), and a short life span32. Given the low safety risks of drones weighing less than 250 grams, we believe that introducing this threshold is proportionate to the desired safety outcomes and will avoid over regulation." If the FAA deem drones above 250g to not require registration (for recreational use) why does the exact same drone suddenly become "unsafe" in New Zealand and require registration? Why not base risk on battery life as the majority of hobbyist drones have less than 5 of flight time. Compare that to the majority of DJI photography platforms that have flight times upwards of half an hour.

30)

Paragraph 175 states "In New Zealand, it is estimated that nearly a quarter of the drones operated recreationally, and four percent commercially, weigh under 250 grams. 34 We believe that, as long as their pilots follow the Rules and fly safely and securely, these drones do not need to be registered." Please explain how a drone weighing 250g or less flown in a reckless and unsafe manner is still considered safe compared to a drone weighing 3KG flown in a safe and considerate manner.

31)

Paragraph 182 states "To ensure the effectiveness of the system, the following information would need to be provided: • drone information including make, model, serial number, weight and type of drone, purchase date (if applicable), or if custom made, photograph of the drone, plus any other relevant information" as someone who rebuilds their custom craft (reaching 5 years old) on a regular basis at what point does a craft need to be re-registered? If I change one prop to a different colour does that count? What if I change the colour of the top plate or motors? New flight controller? New frame? Different colour camera or VTX holder? Please provide guidance around this.

32)

Paragraph 215 states "For operators of drones without such capability, there would be the cost to equip with Remote ID and meet the standard. However, we anticipate it to be minimal as the majority of drones operating in New Zealand should already be equipped with some forms of Remote ID capability" There appears to be severe underestimation of non commercially available drones and custom builds (I imagine this is due to everything that flies (RC helicopter, custom build multirotor / quadcopter, fixed wing, gliders) being classified as a drone.) As a hobbyist with a substantial knowledge and background in electronics and programming there are exactly zero custom built drones that are "Remote ID ready" that I am aware of. If you had any form of community or club representation you would know this. Please provide numbers around the amount of custom built craft in use before assuming "the costs of retro fitting a drone might not arise". And forcing those users to abide by rules that would make their hobby unviable.

Also note that the majority of my craft (and other's in my situation that I fly with) would be no newer than 2 years old whilst averaging at 6-8 years. (second hand, rebuilt, etc...) with no signs or reason for them to be replaced in the upcoming 2 years, I would be surprised if they were not still airworthy in 10 years time. To the best of my knowledge this would consistent amongst the majority of hobbyists performing recreational flights (FPV and racing as well as fixed wings or gliders).

[redacted]

From: [redacted]
Sent: Thursday, 3 June 2021 9:36 PM
To: Enabling Drone Integration
Subject: Enabling Drone Integration Submission
Attachments: Drone Integration Submission D Keys.pdf

Dear Sir/Madam,

Attached is my submission for drone integration enablement.

Regards
--
[redacted]
Higher Vision
[redacted]

Drone Integration Submission from [redacted] - Higher Vision

Thank you to the Ministry of Transport for the invitation to make submission on the proposed rule changes affecting drone/UAV operation in New Zealand.

My name is [redacted] and I have flown commercially in New Zealand for over 20 years. I hold a New Zealand ATPL and have accumulated around 12,000 hours in fixed wing aircraft from a Cessna 172 up to a Boeing 787. I am currently employed by Air New Zealand and on leave due to COVID. My most recent flying experience was as a First Officer on the Boeing 787 Dreamliner. I own and operate a drone/UAV company operating under Part 101 while awaiting an initial audit for our Part 102 application.

I support the idea of modification to the current rules and commend the proactive approach to this change and the invitation of submissions from the industry and public. However I find some of the proposals to be overbearing, unnecessary and potentially a breach to privacy and civil rights. I have outlined below the proposals that should be omitted and some alternatives.

I will start at licencing. I believe the Ministry is on the right track. UAV licencing should be introduced under Part 61 and have syllabi in the form of AC's similar to manned aircraft. This will also enable consistency for Part 141 providers. A licence issued under Part 61 would allow an operator to carry out operations under (a modified) Part 101. The online course mentioned in the proposal should also still exist, but this should form a part of a safety awareness programme. It should be free to obtain (or a very minimal charge) and be a prerequisite to any further training and give the pilot limited privileges for flight. This would increase the uptake and increase the reach of the safety message. This would allow the user to operate Shielded (shielded operations are a great idea) & over their own property or in a designated UAV area, below a designated height (50 feet - 100 feet). This lower height reduces risk from lack of knowledge of appropriate airspace (Part 91) and Part 101 rules.

I strongly disagree with Remote Identification and Geofencing or Georeferencing. Both of these will be a burden of cost, time and operational flexibility to compliant operators. Neither will stop rogue operators who will 'crack' or modify software or hardware.

Registration is something that should be implemented but only where the risk level is elevated such as UAV's >15Kg, aircraft capable of speeds in excess of 100 Knots, fully autonomous or BVLOS operations.

Both of the above examples will not achieve situational awareness that is not already obtainable by operating under the current Part 101 Rules. They will not improve compliance by operators currently operating outside of the current Part 101 Rules either.

As stated earlier, parts of the current Part 101 Rules should be left while others could be modified. 'Shielded Operations' provide a great deal of flexibility for a multitude of operators and operations while reducing compliance cost to both regulators and operators.

Permission for flight over property should be removed for appropriately trained operators using aircraft maintained to a determined schedule. Maintenance on aircraft below a set threshold (5KG) should also be able to be carried out by a competent person (Part 61 licenced individual). Under Part 101, the maximum height without NOTAM should be reduced; 400 feet AGL is far too close to manned aircraft areas of operation. Especially when you consider the awareness around the drone height above ground level or above take-off height.

Part 102 could/should still remain for operations that cannot be undertaken within the Part 101 framework. I think there should be common rules in place for Part 102 operators. Prescribed operations such as flight over property without consent, higher altitudes (up to 400 feet, above 400 feet by NOTAM) should be set out in a separate Rule Part 102. To be able to operate under these rules, operators must comply, as they do now, with annual competency checks, maintenance schedules etc. At the moment a Part 101 operator can operate up to 400 feet over parks/reserves etc while a Part 102 operator has a burden of time and cost to achieve the same operation. This distinction between Part 101 and Part 102 would give local authorities, councils etc, more scope to regulate who could fly where and under what conditions.

Compliance monitoring should be increased. Man hours could be utlised on this aspect rather than registration. After increasing operator and public awareness through education programs, there should be no excuse for ignorance. Penalties should be severe and immediate (forfeiture of aircraft if operating without a licence) or instant fines (operating over property without permission or qualification). The implementation of remote identification would be a huge cost for operators and for regulators in compliance monitoring. The same result could be achieved through education and stricter licencing requirements. Again, this will not stop operators who are flying outside of the current regulations.

I also strongly disagree with the idea of creating drone/UAV specific charting and/or geo-awareness software. The current VNC's provide all the required information along with appropriate apps (OzRunway etc). Combined with the appropriate training, they would provide seamless integration for manned and unmanned operations. There is potential for mis-information due to the different forms of media to be out of sync. A common operating environment will lead to a safer and more efficient integration.

I would be more than happy to be involved in any further discussions or working groups. I look forward to continued upfront and transparent communication between all interested parties.

Regards

[redacted]
Higher Vision
[redacted]

Garrick Wood

From: Andrew Robinson [redacted]
Sent: Thursday, 3 June 2021 10:50 PM
To: Enabling Drone Integration
Subject: Submission on Enabling Drone Integration

Submission on Enabling Drone Integration
Ministry of Transport
PO Box 3175
WELLINGTON 6140

3rd June 2021

Control Line Model Aircraft

I have flown Control Line model aircraft for over 40 years in New Zealand under the governance of Model Flying New Zealand (MFNZ formerly NZMAA). I have competed in numerous NZ National competitions and am a national record holder. I have competed at overseas competitions and represented New Zealand in World Championship competitions that were organised by CIAM (Commission International for Aero Modelling) the aero modelling sub-committee of the FAI (Federation Aeronautic International) the world governing body for air sports.

I propose that Control Line Model Aircraft be exempt from the definition of a Drone and also exempt from the definition of a remotely piloted aircraft.

In the consultation document you do not define what a Control line model aircraft is. Control line model aircraft need to have their own separate definition. Not all model aircraft are drones. Control line models and Drones are very different machines in the way they fly and are operated.

They are NOT a remotely piloted aircraft, but rather a DIRECT CONTROL model aircraft.
They can never go beyond the visual line of sight

A Control Line Model Aircraft can only fly because one, two or three wires run from the pilot to the aircraft. There is no remote control via radio waves involved, only direct physical control via the wires that control an elevator which gives the model Pitch control. There is no Yaw or Roll control as that is fixed by because the model is attached to the wires.

They are not capable of sustained flight without connection to the wires and thence the pilot.

For competition the wires are never longer than 21 metres and so the aircraft can only ever fly in a hemisphere of up to 24 metres in height, including the height of the pilot with an outstretched arm at the top of the hemisphere.
In-fact the current CAA Regulations, Part 101, Subpart E, Clause 101.203 specifically regulate Control Line model aircraft to a maximum of 30 metres length.
www.aviation.govt.nz/rules/rule-part/show/101/5

Control Line model aircraft have happily co-existed with full-size aviation for the past 75 years since the end of WW2. Many at uncontrolled Aerodromes and some at ATC controlled Airports.
To the best of my knowledge there has NEVER be a reported incident of a Control Line model aircraft coming into contact with a full-size aircraft, either in the air or on the ground.

There is absolutely no reason or justification for Control Line Model Aircraft to be part of an integrated drone policy.

Please consider exempting Control Line Model Aircraft from any future drone legislation.

With regards,

Andrew Robinson.
[redacted]

Member of the New Plymouth Model Aero Club.
[redacted] Model Flying New Zealand.

[redacted]

From: Ann Hale [redacted]
Sent: Friday, 4 June 2021 9:32 AM
To: Enabling Drone Integration
Subject: Submission on Enabling Drone Integration

Dear Sirs

Submission on the Discussion document Enabling Drone Integration

As a property owner I am appalled that you should be considering any relaxation of the current laws pertaining to the use of multi-rotor drones. In fact I believe the existing laws should be tightened to drastically prevent their proliferation.

Privacy and Quiet Possession is paramount.

Privacy and quiet possession of a property is absolute. This applies to property owners and to all tenants leasing property.

If neighbours intrude on your property and refuse to leave they can be served with a trespass notice. If neighbours cause disturbance with loud noises, they can be asked to desist. If they do not the noise abatement laws can be used.

So drones allowed over private property without permission would be contrary to privacy and quiet possession laws.

There are currently major problems with the intrusion of drones over public spaces such as beaches, waterways, parks and forests. Tightening the rules for the use of drones is essential.

Photography
Virtually all drones have cameras that can be used while the drone hovers, streaming data to a receiver, such as a phone, tablet or computer or direct streaming to Facebook, You Tube and other social media platforms.

Allowing drones to fly over private property without permission is tantamount to enabling paparazzi to walk on to anyone's property and photograph them. I believe this is contrary to photographic copyright laws.

Safety
Some specialized drones can fly at more than 150 kilometres/hour. Even a small drone hitting someone at speed has the potential to kill. Likewise a drone dropping a 1 kilogram package on a person could be fatal. Extending drone rules to enable delivery of goods to the public is a dreadful idea and should be banned.

Most drones are powered with small Lipo batteries. Drones can crash and often do, and the potential fire damage from batteries is another reason to tighten up on their use. The fire cannot be put out in a battery until it has died (run out of oxygen). Could some of the recent rural fires have been started in this way? With drier and warmer weather due to climate change there will be an even higher fire risk.

If rules change to allow drones to fly anywhere using FPV (first person view) or using pre-programmed flight paths with no line of sight there could be appalling consequences. A person using FPV has no peripheral vision, no line of sight, and no awareness of other air traffic including aeroplanes.

Registration

The large numbers of multi-rotor drones in the community are not known. A few commercial ones are registered.

Aeroplanes have to fly over 500 feet on designated flight paths with trained and licensed pilots and a full airworthiness certification of the planes. The same control applies to helicopters and even to gliders. There is a reasonable understanding by a property owner that these planes are fully controlled and abide by the strict rules.

Therefore as a property owner I am happy for the CAA to control my property rights over 500 feet above my property. I am totally against anyone flying any other "vehicle" over my property other than those that are fully registered, airworthy and controlled by very distinct laws.

Control of Drones
There are already well publicised cases of drone flyers breaking all the rules laid down by the CAA and drones being flown over National Parks and Department of Conservation land contrary to their rules. Sadly many drone owners fly well beyond the capability of their equipment and their own skills.

The CAA already have a problem with rogue flyers intruding in restricted airspace for aircraft. Please, you should be tightening the rules for drone use as in other countries, rather than loosening the rules for rampant drone use.

Please accept and consider my submission seriously.

Ann Hale
[redacted]

[redacted]

From: [redacted]
Sent: Friday, 4 June 2021 10:51 AM
To: Enabling Drone Integration
Subject: Submission on proposed changes to "drone" rules.
Attachments: MoT Submission on 'drones'.pdf

My submission is attached.

Addresses for future contact for clarification are provided in the submission.
Please acknowledge receipt.

[redacted]

[redacted]

4/06/2021

Submission on changes to "drone" regulatory regime

This submission is made in respect of flying model aircraft as a subset of the general "drone" category.

1. Introduction

1.1 [redacted] I am a chartered professional engineer, a company director and a business advisor. My career has included provision of advice to Ministers, generally in respect of the State Owned Enterprises portfolio, and Airways Corporation and Civil Aviation in particular. I have served as a director on numerous boards, including Deputy Chair and governance roles for entities within the Ministry of Transport portfolio. I am a Fellow of the Institute of Professional Engineers NZ (aka Engineering NZ).
I am also Vice President of the Tauranga Model Aircraft Club (TMAC) and a frequent flyer of model aircraft. I own and operate some 20 fixed wing radio-controlled model aircraft. I hold a Model Flying NZ (MFNZ – formerly NZ Model Aeronautical Association) "wings" qualification and am also registered with MFNZ as an instructor and examiner under the MFNZ Part 101 "wings" qualification regime.

I make this submission in a personal capacity. TMAC will also be providing a submission reflecting the club views.

1.2 Model Aircraft Flying in NZ

This is variously described as a sport or a hobby. The practice is extremely diverse ranging from small indoor models, to large models weighing many kilogrammes and operating under radio control. Types include sub disciplines such as control line, gliders, aerobatics, scale, sport and free-flight. Power may be muscle power, rubber, internal combustion engine, electric motor or gas turbine. Performance envelopes are typically 100-150km/hr for radio controlled internal combustion and as high as 800km/hr for specialist dynamic soaring gliders. The smaller aircraft can be flown on school or Council owned playing fields, while the majority of models are flown on designated club fields, sanctioned by MFNZ, Councils and CAA. Slope soaring gliders are commonly flown from high, wind facing slopes, cliff tops etc.
There are more than 80 model aircraft clubs in NZ with in excess of 2000 members. (see https://www.modelflyingnz.org/clublocations.html). These are generally affiliated to MFNZ and operate under a common qualifications structure administered by MFNZ.
Flyers holding an MFNZ wings qualification and having paid their annual sub to MFNZ, are covered up to $10 million for 3rd party loss in the event of an incident. Furthermore, many flyers have additional coverage under their personal effects policies.
MFNZ, through its Special Interest Groups, coordinates a series of national and international competitions which are held under the auspices of FAI (Fédération Aéronautique Internationale - see https://www.fai.org/).
A common theme is that these machines are operated under visual line of sight conditions. The challenge for the operator is in the personal skills of manually controlling the model, guiding it through manoeuvres, seeking thermals, etc. While some models have relatively sophisticated electronic systems for eg feedback of height data, variometer, speed etc, very few, if any, are capable of autonomous flight.

These machines are flown for recreational purposes. It is thus important that any changes do not impact adversely on the sport/hobby.
The demographics of participants generally fall into 3 main categories:

- **Students.** Aeromodelling provides a valuable development experience associated with STEM subjects. Many of our junior pilots advance their careers into technically oriented occupations – skilled trades, engineering, aerospace, medicine etc. This aspect of the hobby needs to be nurtured.
- **Income earning** – Typically this covers a range of flyers who have established their careers and have disposable income. They fly more advanced (expensive and technically complex) machines and frequently own many different models.
- **Retired** – a large number of model flyers are retired. The activity provides intellectual stimulus in problem solving and retention of coordination skills. The aeromodelling fraternity provides a strong national social group sharing a common interest. In this group financial resources are often limited and we would not wish to see any financial impediments being imposed.

1.3 Example - The Tauranga Model Aircraft Club (TMAC).
TMAC was formed in 1947. The club is one of the oldest clubs in the Bay of Plenty. The club operates from a dedicated airstrip at TECT Park, where TMAC has a lease in perpetuity for some 10Ha of land. The airspace is described as "danger area NZD237 pursuant to Civil Aviation Rules, Part 71 *Designation and Classification of Airspace".*
NZD 237 comprises all that airspace bounded by a circle. 2km radius, centred on S 37 56 47.0, E 176 08 48.2 from the surface of the earth to an upper limit of 2500 feet above mean sea level.
TMAC is affiliated to Model Flying New Zealand (MFNZ), and operates under the MFNZ wings qualification system. This qualification requires the trainee to demonstrate a knowledge of basic aerodynamics and model setup, a knowledge of safety procedures, local club rules, and a knowledge of Civil Aviation rules insomuch as they apply to the operation of model aircraft. The qualification also has a practical skills component, where the student pilot is required to demonstrate that he/she can adequately control the aircraft., through a series of standard manoeuvres including take-off, 3 axis directional control, flying, stall recovery and landing. The wings qualification is linked to the MFNZ third party insurance cover for individual pilots. Pilots who do not hold a wings badge cannot access the flying site and must fly under supervision. Pilots who hold the wings badge are covered for damage to third parties' property as described in 1.2 above.

The effectiveness of the current system can be demonstrated by reference to there having been **no instances of accidents involving third parties over the 75 years that the club has been in operation.**

2. Submission

References given in this submission refer to numbered clauses in the Ministry of Transport discussion document "Enabling Drone Integration – 6 April 2021"

2.1 Terminology (ref 1)

It is surprising that the consultation document refers to "drones". This is incorrect terminology. The correct terms are variously **"RPAS"** = remote piloted aerial system, or **"UAV"** = unmanned aerial vehicle. The populist term "drone" originates from an initial reference in the Star Wars movie series and trivialises the serious nature of the problem.

- **I suggest that the appropriate terminology be used.**

2.2 The role of MFNZ

There are many references to MFNZ, the adoption of MFNZ rules, and "*under the supervision of MFNZ*". In clause 178 it states that "*drones operating under the supervision of MFNZ would not need to be registered*" and in 179 the document recognises that MFNZ provides special privileges to its members. However, clause 147 proposes that holders of qualifications obtained through Part 141 and Part 101.102 CAA approved training organisations do not need to undertake a "wings" test. It is not clear whether MFNZ is already regarded by CAA as being a CAA approved organisation, or if MFNZ will be required to gain some qualification. This should be clarified as does the status of clubs whose members, also members of MFNZ, carry out the training and examination process. Clubs operate under guidelines set by MFNZ. They are separate legal entities and are not "under the supervision of MFNZ".

- **I submit that MFNZ be formally recognised as a CAA approved training organisation and that any reference to MFNZ also refers to affiliated club and MFNZ members who are appointed by MFNZ as instructors or examiners.**

2.3 A separate class for Model aircraft

I recognise that there is an increasing presence of RPAS for commercial and recreational use and that additional controls may be needed to provide equitable access to airspace and to impose sanctions for irresponsible behaviour. However, a 'one size fits all' approach will penalise low risk activities and may not impose appropriate controls on high-risk activities. Model flying should be isolated as a separate case where time proven controls already exist. Much of the change proposed is related to misuse of RPAS (ref 15) but there is very little evidence of this having occurred within the model aviation community. It would be inequitable (ref 82) to impose an administrative or economic burden on a large group which is not part of the problem.

Also refer footnote to ref 44 *"there is currently a lack of compliance from drone pilots".* This statement is incorrect insofar as model aviation is concerned.

- **I suggest that model aircraft flying on approved sites and under the controls established by MFNZ, be accepted as a separate class of RPAS, and not subject to the overarching rules for all RPAS.**

2.4 What problems are we trying to solve" (ref cl 92)

None of the issues raised in the table under cl 92 relate to model aviation. Model clubs already operate to individual rules and which are generally consistent with MFNZ guidelines. The TMAC rules can be accessed here - https://drive.google.com/file/d/1xNpYplLye_Jh7p3iPyhEFKFtDpKpndLI/view?usp=sharing

Clubs already have means to sanction members who transgress these rules. In TMAC case, the rules are reviewed continuously and have proven to be effective with no cases of serious incident reported in 75 years of operation.

- **I submit that for model aviation flyers operating on MFNZ approved sites, no further rule changes are required. Model aircraft should be treated as a separate group, capable of self-regulation, distinct from the "drones" category.**

2.5 Equitable sharing of costs (ref cl 82)

" A key principle is that any costs should fall equitably so that participants are paying their fair share based on risk". To date flying of model aircraft has been well managed with very few (if any) serious incidents reported. It can be demonstrated that the activities of MFNZ, its member clubs, and individual members, do not impose any significant risk to aviation or to the public. It would thus be inequitable for the new regime to impose any economic or administrative burden to the model aviation community.

Model aviation also provides societal benefits eg for our youth in providing valuable practical application of STEM, leading to careers in sciences and technology. For the older group, model aviation provides mental stimulation, retention of coordination skills and a sense of community. These groups are fragile to cost of entry and any economic charge could have detrimental socio-economic effects.

- **I submit that any changes to the new regime must not impose economic cost or administrative burden on the model aviation community.**

2.6 Aircraft gross mass limits (ref s112 – Part 101.215)

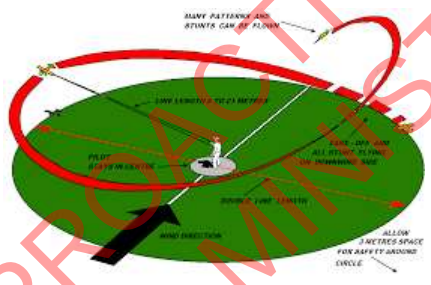
Removal of the 15-25 Kg category implies that any model over 15Kg would need full certification under part 102. The current regime allows for inspection by MFNZ (specifically the MFNZ large models Special Interest Group). There are many models of this size within the model aviation community and to date the inspection regime appears to have been effective.

These models represent hundreds of man-hours of construction time and an investment of many thousands of dollars. Pilots who operate these machines are very cautious and meticulous flyers. They have too much at stake to act irresponsibly. There is no justification for additional compliance requirements in this category.

- **I submit that the current inspection regime for large models in the 15-25Kg class be retained.**

2.7 Tethered Drones (ref 115)

It is proposed that a separate set of Part 101 rules be established to cover "tethered drones". Many of our members fly traditional "control line" models which fall into this category. The model is directly and mechanically controlled by the pilot by a set of lines generally not exceeding 20m in length. Thus, the flight volume of the airspace is a hemisphere defined by the length of the lines, and centred on the pilot. MFNZ rules require that the control handle be fitted with a safety strap to prevent flyaway if the pilot releases the handle. In this way there is no difficulty in determining the operator – he/she is physically attached.



- **I submit that control line model aircraft be excluded from the part 101 rules amendment**

2.8 Pilot qualification - effectiveness of current training system.

122 is incorrect. Trainee pilots operating within the MFNZ "wings" scheme **are currently** required to undertake training and gain a qualification.

My experience as an official of several model aircraft clubs is that the current regime is effective in providing safety to public and aviation. In the case of TMAC there have been no accidents to private property or to aviation in 75 years. In this environment it is hard to justify requiring additional controls. It is encouraging that the consultation document describes MFNZ as a competent training organisation and suggests that the

existing MFNZ wings qualification is acceptable under the proposed regime.
The adoption of an on-line Part 101 theory test (ref s 129) would be ineffective as it would not evaluate flying competence – eg situational awareness, depth perception, 3 -axis coordination, stall recovery, cross wind landings etc. It would also partially duplicate the more detailed theory process already in place by model flying clubs throughout New Zealand.
Clause 151 and 135 suggest that practical examination of flying skills is unnecessary. This is not appropriate for model aircraft flying. The current MFNZ wings test has a large component of practical skills testing and this is seen as essential to ensure safety. We do not want people with no practical skills to attempt to fly unsupervised. This would almost certainly result in crashes and endangerment.

- **I support the proposal that the MFNZ qualification be an acceptable proof of competence under Part 101. (ref 147)**
- **I suggest that this recognition also be extended to model aviation clubs working within the MFNZ system.**
- **I support the concept of no minimum age for gaining part 101 wings. Many of our junior members are below this age and one aged 13 is recognised as a NZ aerobatics champion. Age does not correlate with competence.**
- **Practical flying skills testing is essential for flying of model aircraft.**

2.9 Registration
Many of our members own multiple flying models (in my case over 20). The likely number of model aircraft in NZ is likely to exceed 33,000. To maintain a register of all model aircraft would be administratively cumbersome, potentially expensive and would not provide any additional safety.
An example is that in the case of TMAC, an auction is held every year where many models are sold, generally without the seller knowing the buyer. If individual models were to be registered, this would require a tracking system and an obligation on any intermediary party to manage the change of ownership documentation. This would be an un-necessary administrative burden on clubs which are staffed by volunteers.
An alternative approach is that all MFNZ members have a membership number and some clubs (esp overseas) require that that number be shown on each model. This is a comparatively simple and inexpensive process which would enable the tracking of any model involved in an incident.
Many of our members fly small "park flyers", or hand launched gliders on Council approved playing fields and parks, or eg gliders on hillside slopes where they may share airspace with full size gliders, parafoils, hang-gliders etc. In this case registration may be useful, but again, many of our members own multiple models and it would be administratively cumbersome to have each model individually registered. As with gun licensing, it would be more appropriate to register the owner and for the owner's registration number to be shown on the model.

- **I support the proposal that models flown within MFNZ rules and on an MFNZ approved flying site, be exempt from registration. (ref 178, 179. 180)**
- **Registration, if required, could be carried out by MFNZ with the owner's registration number being shown on each RPAS.**
- **Where registration is required, it would be administratively simpler to show an owners registration number rather than having each RPAS individually registered. (ref 199)**

2.10 Remote Identification
The stated problems to be solved are largely irrelevant to the model aviation community (ref 200).
Most MFNZ sites are listed on aviation maps as a hazard. Requiring each model to carry a transponder is unnecessary as anyone entering that airspace should already be aware that they are entering a risk area.

Model aircraft are small, and manoeuvrable, with continuously changing flight vectors. Their flight envelope is comparatively compact. It is unlikely that any remote monitoring system would be able to provide a precise or useful real time position signal. It must also be recognised that model aviation is a hobby, with many models being scratch built or assembled from components. With most participants in the hobby owning multiple models, the cost of fitting every model with a transponder is likely to be beyond realistic economic value.

- **I do not support the adoption of remote identification.**

2.11 Geo-awareness

The concept of being able to obtain a map showing airspace limitations is supported.

Geoawareness is already in use by a very small group of aeromodellers who compete to fly a course defined by GPS. The pilot operates under visual line of sight and receives a signal via earphones of when to turn. These systems are currently regarded as expensive, geeky and exotic and are not in general useage.

Geo-caging is irrelevant as (eg) the TMAC flying area is designated as being a circle 2km in radius centred on our airstrip. Line of sight flying is not only mandatory but it is unlikely that a pilot would be able to see a model at a range of more than a few hundred meters. The risk of a pilot wilfully flying outside our designated flying area is non-existent as they would not want to risk a disorientation or loss of control situation.

Geofencing is also not relevant for the same reason, and also because the whole concept of model flying is to replicate the experience of manually flying a full-size aircraft. To have a model equipped with an autonomous flying capability defeats the very concept of the sport.

To the best of my knowledge there has never been a complaint to TMAC about breach of airspace. It begs the question as to what problem is being solved here.

2.12 Non MFNZ sites

In addition to model aviators flying on MFNZ approved sites, there are many instances where this is not possible. This includes:

Public Displays – often held at airports, or large public open spaces. Flying at airshows is generally covered by a NOTAM or other aviation permit. It should not be necessary for models normally flown on an MFNZ approved site, to undertake a registration process if they are used for a one-off event**. If registration is deemed necessary, the registration system needs to be real time/low cost such that if a model generally used on an MFNZ site is subsequently used for eg an air display, it can be real time registered prior to the event, and deregistered after.**

Open spaces within cities – school playing fields, public parks etc. Most Councils have already set standards for eg model mass, motor size/type, hours of operation. These sites generally operate as a shielded operation and provided current Part 101 rules are obeyed, there is no need for further regulation. Councils have power to intervene in nuisance cases.

Schools – often as part of a STEM learning experience. This is similar to the city open spaces case, but the school has the ability to authorise and to trace any model aviation activity.

Farms and lifestyle blocks – where the owner flies over his own property. This is an area which needs to be managed sensitively. The existing part 101 rules are fully adequate. **Registration should not be needed.**

Slopes and cliffs – eg for gliding and slope soaring. Generally, these are in remote locations but I recognise that their may be some competition for airspace with other users eg parapente, hang gliders etc. To date this has not been an issue and is normally resolved on site by discussion between participants. Registration, will not resolve any issues**. CAA and MFNZ should work together to gain approval for these sites to be recognised as MFNZ approved sites.**

2.13 Other

- Ground effect vehicles (GEV), aka wing in ground, aerodynamically alleviated marine vehicles, hovercraft, maglev and equivalent ground effect vehicles should be excluded from the RPAS category. Some of these are already generally classified by the International Marine Organisation as "ships" although they operate free of contact with the water surface.
- Model aircraft have been overlooked in your pictorial Appendix 1. Is that an indication that model aircraft have not been considered in the development of the document?

Summary

The changes proposed in the document "Enabling Drone Integration – 6 April 2021", appear to have been made without consideration of the model aviation community. While it is recognised that in recent years there has been an increase in the numbers of aerial devices sold over the counter by appliance stores, which may have led to instances of ill-informed or irresponsible behaviour, this is **not** a characteristic of model aviation. Much of the analytical justification used in the document is undocumented emotive hearsay or guesswork, with little statistical reliability.

Model flyers have demonstrated an appreciation of safety over a period as long as aviation itself. The activity has well developed training and qualification systems and has a safety record unmatched by almost every other recreational activity. The safety statistics for model aviation are well documented and reliable.

Further regulation and sanctions are unlikely to improve safety performance within model aviation. Many of the reported incidents do not relate to model aviation, and have arisen from a lack of understanding, which is best addressed by education. Malcontents who deliberately flaunt regulations, will simply ignore any new rules and in some cases will deliberately defeat any electronic measures.

The changes proposed are unnecessary, economically and administratively burdensome, and will not result in any improvement in model aviation statistics.

-- // --

If it aint broke, don't fix it, or would you prefer the alternative - if it aint broke fix it until it is?

Qualification

This submission is made on a personal basis and has not been peer reviewed. Should there be any substantial errors or misinterpretations from the discussion document, which you wish to clarify, I may be contacted [redacted]

[redacted]

[redacted]

From: [redacted]
Sent: Friday, 4 June 2021 12:11 PM
To: Enabling Drone Integration
Cc: [redacted]
Subject: Enabling Drone Integration Submission
Attachments: MOT Statement - Ferntech.pdf

To whom it may concern,

Please find attached Ferntech NZ Ltd feedback regarding drone Integration and regulation in New Zealand.

Kind regards

[redacted]

--

[redacted]

Ferntech
COMMERCIAL AERIAL SOLUTIONS

[redacted] | ferntechcommercial.co.nz

Ferntech

04 June 2021

Enabling Drone Integration

Ferntech provide UAVs to consumers, businesses and government agencies, these groups use drones for recreational activities, industrial applications, agricultural spraying and custom applications. At Ferntech we believe in a bright future, one where drone technology helps people create a safer, productive and sustainable world.

We are a distributor for DJI drones in New Zealand and we can confirm that the figures used by Colmar Brunton for estimated drone ownership in New Zealand over 250 grams and/or above $500 are significantly overstated. It is disappointing we were not asked for this data directly which we would have been prepared to share to help assist such the formation of such an important future for New Zealand.

Drone technology is evolving at an extremely fast rate and we are supportive of rules and regulations that will promote safety, however, Ferntech generally does not support the proposed regulatory measures documented in the discussion document.

In addition to the submission below which is similar to UAV NZ we very strongly recommend any regulatory measures should be inline with overseas regulations where it only applies to UAV which weigh over 250 grams. This is a clear no brainer given the numbers of "UAV craft/toys" below 250 grams is so large and the risk of any damage so low that to impose such regulations on below 250 gram craft would make us look out of touch with the realities of the industry and not in line with global regulation.

Regards

[redacted]

Ferntech

General Response to Proposed Regulatory Measures

We thank the Ministry of Transport for releasing the discussion document entitled *Enabling Drone Integration* and inviting submissions from industry and the public.

Our organisation generally does not support the proposed regulatory measures documented in the discussion document. This submission outlines why we do not support most of the measures, but also provides clear alternatives that we believe achieve the same intentions. The two biggest areas for improvement should be the areas of safety promotion and enforcement, tied in with rule changes that are consistent with our existing aviation system and do not unfairly stigmatise unmanned aircraft operations.

Our organisation supports funding to the Civil Aviation Authority to support safety promotion efforts of the current rules, and eventually the proposed framework presented below.

Our organisation also supports legislative changes that would provide Police with the necessary powers to;

(1) require an unmanned aircraft to land, and

(2) require the operator of an unmanned aircraft to provide their details to an enforcement officer.

Where appropriate, legislative change should also allow for organisations to utilise tools that allow for tracking of rogue operations (e.g., frequency trackers and radio frequency spectrum analysers). These are consistent with evidence that suggests the two most effective strategies for preventing rule violations are better safety promotion (to prevent violations caused by ignorance) and better enforcement (to punish deliberate violations). Funding for these initiatives can be obtained by re-allocating funding for other proposed regulatory measures such as registration.

Our organisation supports updating the rules applied to unmanned aircraft, however, we provide an alternative solution under the section entitled *Alternative Rules Changes.*

The proposed basic pilot qualification will not be sufficient for many unmanned aircraft operations and may detract from the higher level of training that many Part 101 operators already undertake through Part 141 organisations. It does nothing to stop rogue operators from operating their aircraft unsafely, whilst providing little benefit to those undertaking low-risk operations.

Drone registration and remote identification do not prevent rogue operators from operating their aircraft unsafely, however, they do increase the regulatory burden for compliant operators. The assertion that these will improve situation awareness is specious. One does not need to know the registration of an unmanned aircraft to know where it is located in airspace (when radio calls are made for current unmanned aircraft operations, typically these will be in the form of "[Organisation's Name] Unmanned").

Remote identification is also not necessary as separation from manned aircraft can already be achieved through operating within visual line of sight (below 400ft and outside 4km of published aerodromes), using air band radio to give position reports (when above 400ft or within 4km of an uncontrolled aerodrome), or flying within controlled airspace under the instruction of air traffic control. There are also other forms of electronic conspicuity that may be more appropriate (e.g., ADS-B/FLARM), but these should only be applied using a risk-based approach rather than being a blanket requirement under Part 101 or Part 102. Such an approach is consistent with operations that currently occur in manned aerospace and within some Part 102 organisations.

New Zealand already has a single standardised map that provides all necessary aeronautical information, it is called a visual navigation chart (VNC). These can be purchased as a physical map or can be purchased through apps on tablets and smart phones.

They have been used for decades within manned aerospace. The AIMS CONOPS programme undertaken by CAA is currently dealing with what will comprise a future higher level of digitisation for all aeronautical navigation documentation.

The proposal to examine geo-awareness appears to be duplicating this work. Evidence suggests that current unmanned aircraft operators are already more likely to use VNCs than Airshare

and are also more likely to be able to correctly read VNCs than maps on Airshare. An Official Information Act request to Airways New Zealand also shows that during the period 1 January to 22 November 2019, there were only 2,894 unique unmanned aircraft operators who used Airshare. This suggests that the proposed geo-awareness approach will be less effective than simply mandating the use of VNCs prior to unshielded operations.

Alternative Rules Changes

Our organisation supports a three-tiered approach to the regulation of unmanned aircraft operations, alongside supporting rule parts that are consistent with current approaches within the aviation industry. The three tiers of this system are:

1. General operating rules (more restrictive that the current Part 101) – these allow for anyone to fly an unmanned aircraft within certain parameters
2. A licensing regime (create an equivalent to Part 61 for unmanned aircraft) – this will allow for tighter standards around theory requirements and flight testing, accompanied with greater permissions in terms of the operations that can be undertaken. Many current operations occurring under Part 102 would move into this category. Ratings would also be a feature, allowing for qualifications to match more specific operating settings (e.g., night ratings, FRTO ratings, type ratings for large aircraft, etc.).
3. A certification process (similar to the current Part 102, but only for Part 101 variances that cannot be achieved with standardised licensing proposed under tier 2) – this will allow for more nuanced risk-based approaches for organisations undertaking higher risk operations (e.g., BVLOS, autonomous operations, urban air mobility, etc.)

Our organisation also supports the introduction or adaptation of the following supporting rule parts:

1. An equivalent (or adaptation) of Part 149 for recreational organisations operating unmanned aircraft, such as Model Flying New Zealand. This would allow such organisations to establish their own licensing systems for their own members.
2. An equivalent (or adaptation) of Part 141 for unmanned aircraft. This will ensure that the organisations conducting pilot training apply consistent standards, supported by syllabi that would be advisory circulars to the Part 61 equivalent for unmanned aircraft.
3. An equivalent (or adaptation) of Part 66 for unmanned aircraft. This will ensure that persons who conduct maintenance on unmanned aircraft above a certain weight

4.
5. threshold have appropriate qualifications and experience. This would also allow for persons to obtain certificates of maintenance approval and certificates of inspection authorisation for aircraft above a certain weight threshold.
6. An equivalent (or adaptation) of Part 147 for unmanned aircraft. This will ensure that organisations conducting maintenance training apply consistent standards, supported by syllabi that would be advisory circulars to the Part 66 equivalent for unmanned aircraft.
7. Equivalents of Part 145, 146 and 148 for organisations that maintain, design and/or manufacture unmanned aircraft above a certain weight threshold.

This proposed system would be highly beneficial to the unmanned aerospace industry in New Zealand, providing far greater airspace integration by having commonality between manned and unmanned aircraft operations. Contrary to the assertions presented by the Ministry of Transport, our organisation does not believe that unmanned aircraft operations require a fundamental re-design of airspace or operating requirements. Rather, our organisation believes that a translation of existing standards to unmanned aerospace will serve the New Zealand aviation system better in the long-term. A tiered system allows for a risk-based approach to regulation, where the inherent air-based and ground-based risk of different operations require different standards to be met.

While the specifics of the three-tiered approach and supporting rules changes would need to be discussed in detail, the diagram below presents a high-level picture of how a risk-based approach could be taken to apply the correct regulatory measures to the correct operations.

Lower Risk (general operating rules)	**Moderate Risk** (licensing)	**Higher Risk** (certification)
Visual Line of Sight (VLOS)	Extended VLOS (EVLOS)	Beyond VLOS (BVLOS)
Under 5kg	5 – 25 kg	Over 25 kg
No flight over people or other people's property without consent	Above people and property	Above crowds or sensitive infrastructure (e.g., major airports)
Photography, remote sensing, etc.	Dropping of articles, agricultural spraying, etc.	Passenger carrying operations, fully autonomous operations, etc.
Shielded areas and below 400ft in uncontrolled airspace	Class G airspace (above 400ft), controlled airspace, special use airspace, and unshielded operations within 4km of a published aerodrome	
Day flying and shielded night operations	Night flying (outside shielded areas)	

[redacted]

From: [redacted]
Sent: Friday, 4 June 2021 1:26 PM
To: Enabling Drone Integration
Subject: Submission – Wing
Attachments: Wing submission to Ministry of Transport (June 2021).pdf

Good afternoon,

Please find attached Wing's submission to the *Enabling Drone Integration* consultation. We would be pleased to discuss these matters further.

Kind regards,

Wing [redacted]

Comments from Wing to the Ministry of Transport
Public Consultation on Enabling Drone Integration

June 2021

Introduction

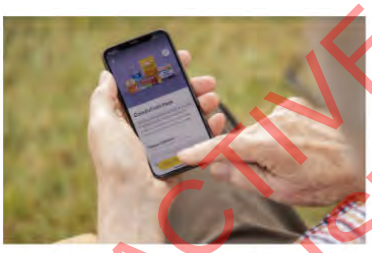
Wing welcomes the opportunity to respond to the *Enabling Drone Integration* consultation with the Ministry of Transport. The consultation represents an important step towards facilitating safe and responsible UAS operations at scale in New Zealand. Wing offers the following comments based on our experience as a UAS designer, manufacturer, operator and UAS Traffic Management (UTM) Service Provider (USP) on three continents. Wing welcomes further dialogue with the Ministry to share our perspective in detail.

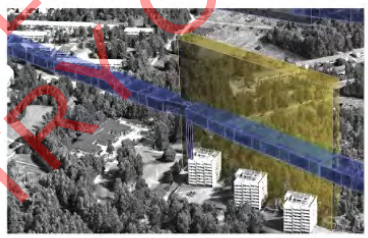
Background

Wing is an aviation company that enables the delivery of small packages by drone as a safer, faster, and cleaner alternative to pickup or delivery by road. Wing has developed a small, lightweight, and highly automated aircraft for safe delivery to homes, and a range of UTM capabilities to help diverse operators share the airspace.

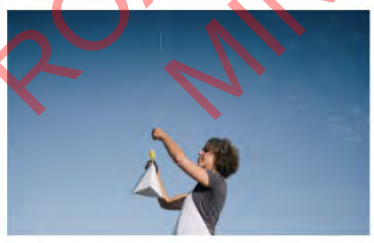
Today, Wing provides commercial drone delivery services on three continents, with operations in Australia, Finland, and the United States. Wing has completed tens of thousands of delivery flights to customers in four cities, including two capital cities (Helsinki and Canberra). Wing operates commercially Beyond Visual Line of Sight (BVLOS), over populated areas, along flexible routes, with one fleet manager supervising multiple aircraft.

Today, the Wing UAS can transport ~1.5kg of food, medication, or other supplies up to ~10km away at approximately 113km/h**.** Wing aircraft pickup and deliver packages by tether while hovering safely above the ground at ~7m. Wing aircraft deliver the package to a pre-approved location selected by the customer, such as a yard, driveway, or other clearing. The Wing UAS can deliver in under 10 minutes.


1. Order and preparation


2. Planning


3. Checks and takeoff

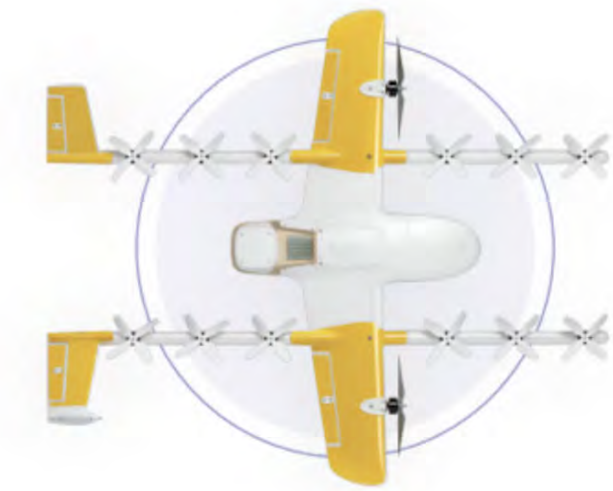

4. Pickup


5. Cruise


6. Delivery

In Australia and Finland, Wing is approved to operate on the basis of the Specific Operations Risk Assessment framework (SORA) developed by the Joint Authorities for Rulemaking on Unmanned Systems (JARUS). In the United States, Wing is the first FAA-certified Part 135 Air Carrier for

commercial unmanned operations. The first Wing aircraft to complete a commercial delivery in the US is held by the National Air and Space Museum in Washington DC.



Length ~ 1.3m
Wingspan ~ 1.0m
Weight ~ 5.2kg

Carries ~ 1.2kg
Cruises ~ 104 km/h
Delivers ~ 10km away

In addition, Wing has developed a USP, known as OpenSky. Wing is committed to promoting the safe, responsible, and open use of airspace by all. To that end, OpenSky provides freely-available geo-awareness services and automated airspace authorisation services in Australia to help recreational and commercial UAS operators plan safe and compliant flights. Further, Wing has implemented network remote identification for Wing delivery flights in the United States.

Drones can help to make our cities safe, connected, and sustainable

Wing offers delivery by drone as a safer, faster, and more sustainable alternative to transport by road. Today, our communities rely on roads to pickup or deliver their everyday basics, from food and groceries to medicine. COVID-19 has accelerated these trends, demonstrating the importance of road delivery as a lifeline for households and local businesses.

However, transport by road is unsafe, inefficient, and unsustainable, and it cannot keep up with this demand. For example, over 14 percent of private vehicle miles travelled in the US are related to shopping.[1] Globally, 'last mile' deliveries are expected to grow 78 percent by 2030. That growth will increase the delivery vehicles on our roads by 36 percent, generate 32 percent higher delivery emissions, and add 21 percent to the commute time of every resident.[2]

As part of a multimodal transport system, drones can help to relieve the pressure on our roads. Drones can respond to growing demand for timely delivery while avoiding the accidents and emissions of road vehicles. At scale, drones can help to support safer, better connected, and more sustainable cities:[3]

[1] Federal Highway Administration, *National Household Travel Survey*, 2017.
[2] World Economic Forum, *The Future of the Last Mile Ecosystem*, 2020.
[3] Virginia Tech, *Measuring the Effects of Drone Delivery in the United States*, 2020; Accenture, *The Potential Impact of Delivery Drones in Australia*, 2021; Gaia, *Benefits of Drone Deliveries in Helsinki*, 2020.

- **Safe.** Drone delivery with Wing is **safer than driving, flying, or walking** a package to a customer's home. In a single US city, drone delivery could avoid up to 473 million kilometres per year in road travel, equivalent to taking over 25,565 private cars off the road. By reducing road use, drone delivery could avoid up to 580 road accidents per year in a single metropolitan area.

- **Connected.** Wing can help to connect residents and local businesses with deliveries across **10km in under 10 minutes**. At scale, drone delivery could place 3-8 times as many local businesses within reach of a household in Finland, saving residents in Helsinki up to 1.5 million hours in avoidable travel for shopping or pickups. By expanding geographic reach and improving service, drones could help to generate 2.2 billion AUD in new annual sales for local businesses in Australia. Drones could also improve the availability of food options and healthcare services for residents in underserved areas with limited transport.

- **Sustainable.** Drones can produce **94 percent lower emissions per package** than delivery by car in the United States, and lower emissions than a gas or electric van carrying multiple time-sensitive packages. At scale, drone delivery could help to reduce 500-550,000 tons of CO_2 emissions per year in Australia, equivalent to the carbon storage of 16-18 million trees.

Integration will depend on frameworks for safe and responsible operations at scale

Realising these benefits will depend on policy frameworks that promote safe and responsible UAS operations at scale. However, UAS are diverse, featuring a range of operations (VLOS to BVLOS), aircraft (low automation to high automation), operators (recreational to commercial), and environments (rural to urban). Frameworks for approving complex operations, establishing UTM, and fostering public trust will need to support and encourage that diversity.

Operational approval

Wing supports approval processes that are risk-based, performance-based, and adaptable. The SORA framework is a rigorous implementation of these principles, and incorporates input from regulatory authorities in 61 countries, including New Zealand, the European Union, Australia, Singapore, and the United Kingdom. The SORA process enables authorities to review the proposed concept of operations, operating environment, and applicable mitigations to determine the risk profile of the operation. The SORA framework then imposes safety requirements on the operation, aircraft, systems, and personnel that are proportional to the risk.

- **Risk-based.** SORA imposes requirements that reflect the specific risk applicable to a specific operation in its proposed operating environment. SORA avoids "one size fits all" requirements that may not be appropriate for particular operations or systems.

- **Performance-based.** SORA defines a target level of safety for the operation as a whole, and recognises different mitigations to achieve the desired performance. These include

both design or operational mitigations. Under SORA, all operators must demonstrate that they meet or exceed the same high target level of safety.

- **Adaptable.** SORA acknowledges that designs may change rapidly in response to improved technology, or new considerations, such as community feedback and public acceptance. The safety impact of any changes can be assessed quickly against the desired target level of safety, and improvements can be incorporated without a lengthy recertification process.

Wing encourages the Ministry to continue endorsing performance-based, risk-based, and adaptable approaches to risk assessment for complex UAS operations. In particular, Wing would support the use of SORA as an acceptable means of compliance for Part 102 assessments.

By comparison, Wing encourages authorities to avoid "one size fits all" requirements for complex operations. Different operators may apply different mitigations for ground risk and air risk while meeting the same target level of safety. These include strategic and tactical, cooperative and non-cooperative, and operational and design mitigations. Prescriptive requirements may not be appropriate for particular operations, and may encourage design choices that are less safe overall.

Example: Wing applies a range of mitigations to ensure safety on the ground and in the air

As a UAS designer, manufacturer, and operator, Wing employs a range of mitigations to ensure safe BVLOS operations in populated areas.

Ground risk

The Wing UAS is designed to ensure that operations are safer for bystanders on the ground than any other form of transport by road or air. The UAS is designed for a target level of safety equal or better than the risk faced by pedestrians from automobile traffic. Wing can overfly densely populated areas while still exceeding the target level of safety. Relevant mitigations include:

- **Reduced likelihood of a failure of flight.** The aircraft is equipped with redundant systems to ensure high reliability, including 12 hover motors, two batteries, and multiple navigation sensors. These significantly reduce the probability of a catastrophic failure. In addition, the aircraft is highly automated with onboard fault-detection and contingency management. If the aircraft detects a fault, it will perform a safe contingency action, such as a gentle hover landing.

- **Reduced likelihood of collision.** The Wing flight planner can avoid overflying areas with known high population densities (eg. open stadiums) to minimise the probability of a collision in the event of a failure.

- **Reduced likelihood of injury.** The aircraft features a small, lightweight, foam airframe with frangible components to significantly reduce energy transfer dynamics in the event of an impact. A third party has validated the impact dynamics and risk of injury to people on the ground.

These ground risk mitigations have been validated through extensive system and subsystem testing, real-world operations, and third-party studies.

Air risk

In the air, the Wing UAS meets a target level of safety equal to or better than manned aviation. Relevant mitigations include:

- **Reduced likelihood of encountering a manned aircraft.** A range of mitigations help to reduce the risk of a manned aircraft entering the operating area. The Wing UAS can operate in underutilised and low risk airspace, such as Very Low Level airspace over populated areas or Very Low Level controlled airspace. These operations typically occur below the minimum altitude for regular manned traffic. In addition, local manned operators are notified of UAS operations through outreach, Notice to Airmen, and aeronautical charts.

- **Reducing likelihood of a collision with a manned aircraft.** A range of mitigations can help to reduce the risk of a collision with a manned aircraft, in the event a manned aircraft enters the operating area. For example, Wing can detect and avoid manned aircraft equipped with ADS-B transmitters. In addition, a remote pilot supervises multiple Wing aircraft during operations, and may command the aircraft to land if required.

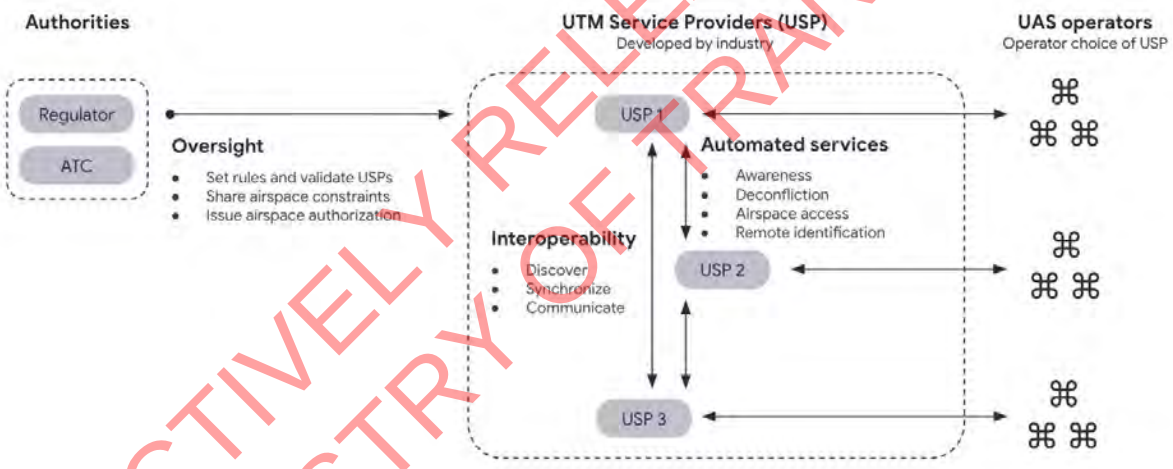
These air risk mitigations have been validated through extensive airspace analysis and tens of thousands of safe delivery flights.

UAS Traffic Management

Delivery is just one of many exciting applications for UAS. However, integrating diverse UAS operations will depend on systems that enable operators to share information with other airspace users and authorities. As the Ministry notes, traditional approaches to Air Traffic Management (ATM) cannot support the expected volume and diversity of UAS:[4]

> *Traditional airspace management systems are not adequate to enable rapid growth in numbers and complexity of drones entering the aviation system, now and in the future. New tools and systems that are digital and automated are needed to manage future air traffic and navigation* – Ministry of Transport[5]

To support the safe, secure, and scalable use of airspace by all, Wing envisions a digital, collaborative, and distributed network of USPs. A network of competitive USPs can offer automated services to help operators conduct safe flights. USPs will be interoperable, sharing information with other USPs for purposes such as strategic deconfliction or network remote identification. USPs are developed by third parties in response to the evolving needs of UAS operators, but in accordance with rules set by the regulator.



Safety through oversight

In this model, competent authorities will set operating rules for USPs, and establish a testing and approval process. These rules describe minimum performance requirements for reliability, security, and privacy. They should identify key safety and security performance outcomes, but recognise a range of implementations and ancillary services:

> *The rules... only minimally define USS behavior. Further processes, features, and capabilities are up to each USS to determine as they develop their unique service offerings*[6]*... UAS operations are expected to vary greatly in CNS performance considering*

[4] FAA, *UTM CONOPS 2.0*, 2020 at [1.1].
[5] Ministry of Transport, *Enabling Drone Integration*, 2021 at [57].
[6] FAA, 'LAANC USS Performance Rules V4.0', 2020 at [3].

> *the many vehicle types and intended operations. The expectation is that the variance in performance will be managed by the USS when providing different services… Generally, it is not expected that the regulator will dictate specific CNS performance for airspace that is not under ATC control*[7] – FAA

> *[The U-space regulation] should provide enough flexibility for the drone industry to evolve, innovate, and mature… Therefore, the U-space regulation should be performance- and risk-based. It should ensure interoperability*[8] – EASA

In addition, authorities will identify authoritative data sources. These sources may include supplementary providers of terrain, obstacle, weather, surveillance, or airspace data, subject to minimum rules for data quality. Authorities may provide certain kinds of authoritative data to USPs directly, such as notifications, airspace constraints, or information to support the provision of automated authorisations into controlled airspace.

Safety through interoperability

USPs will need to share information with other USPs to support safe and secure operations. For example, USPs can share flight intent to enable other USPs to help operators strategically deconflict their flights, or share aircraft information and position for remote identification.

A USP will need to "discover" other providers supporting operations in local airspace. For example, a Discovery and Synchronisation Service (DSS) is a service that enables USPs to identify other USPs from which they need information.[9] The USPs can then share information using a common data exchange protocol. Multiple USPs may host instances of a DSS.

An ecosystem of distributed and interoperable USPs best supports the safe, secure, and scalable use of airspace. A centralised platform connecting all USPs may be vulnerable to failure, spoofing, or attack. It aggregates sensitive data about UAS customers or operators, and is costly to build and maintain. A distributed framework helps to mitigate these risks. It ensures sensitive flight information is shared only as required between the relevant USPs, improving resilience, security, and privacy. Further, it shifts the cost of building and maintaining this infrastructure to industry, which will enable USPs to adapt and improve services as UAS operational needs evolve.

Safety through automated services

With authoritative data and interoperable communication, USPs can provide highly automated services to help UAS operators plan their flights. While these services support UAS operators, operators are ultimately responsible for safe and compliant conduct. Foundational services may include geo-awareness, remote identification, airspace authorisation, and conflict detection services. Regulators and industry have shown that key UAS services can be implemented today to support diverse UAS with variable performance characteristics (see *Overall approach – Q5* below).

[7] FAA, *UTM CONOPS 2.0*, 2020 at [2.4.2.1].
[8] EASA, 'Opinion 01/2020', 2020 at [2.2].
[9] See, eg, ASTM International, *Standard Specification on Remote ID and Tracking*, F34-11-19, 2020.

Community acceptance

Public trust is vital for successful UAS integration. Wing has developed a number of technologies, mitigations, and best practices to ensure that Wing UAS meet local expectations for neighborly flying. In particular, Wing works closely with local authorities and local communities prior to launching a delivery service.

- **Engage.** Before launching services, Wing proactively engages communities to outline our approach to safety, privacy, and neighborly operations, in accordance with Wing's community engagement guide.[10] These efforts include public outreach events, information pamphlets, and digital communication with residents.

- **Understand**. Following launch, Wing actively solicits feedback from local communities to identify any challenges. Wing conducts ongoing engagement with users and non-users across the operating area.

- **Respond**. Wing endeavours to respond to feedback. For example, Wing has developed noise-abatement hover rotors to minimise the volume and pitch of the aircraft. During delivery, residents will experience sound equivalent to regular neighborhood traffic. In addition, Wing adapts the service to reflect the needs of local customers. Wing has delivered a diverse range of goods depending on local demand, including food, medication, hardware, household supplies, and school library books.

[10] Wing, *Community Engagement: Best Practice for Drone Operators*, 202, available here.

These efforts are helping to ensure a high level of trust in responsible and regulated UAS operations. Virginia Tech recently completed a survey of 821 residents in Christiansburg, Virginia to understand perceptions of drone delivery after a year of active Wing operations.[11] Their findings suggest that the vast majority, 87 percent, of residents like drone delivery. Some 16 percent of all respondents had interacted with Wing at dedicated outreach events, illustrating the scale of community engagement efforts across the city. Nearly 60 percent reported that their perception of delivery drones had changed positively during COVID-19. In total, 89 percent had used or would use the service if available, and 87 percent indicated that they like drones for package delivery as much, or more, than other applications for drones.

Conclusion

Wing believes that New Zealand can play a leading role in the safe and responsible integration of valuable UAS operations at scale. Wing would welcome further opportunities to help support the ongoing development of policies for UAS integration in New Zealand.

[11] Nelsen, Guthrie, Vinsel, 'When the drone is in your backyard', *Issues in Science and Technology,* 2021, available at https://issues.org/when-the-drone-is-in-your-backyard-nelsen-guthrie-vinsel/.

Annex: Response to selected questions

Overall approach

Q1-3. What is your view on the proposed series of measures? Are there any other alternatives you suggest we consider? Would the proposed approach help achieve the desired objectives? Would the proposed approach help address the problems and opportunities identified?

Broadly, Wing supports the proposed measures, including the establishment of a simple UAS registration system, the implementation of remote identification, and the implementation of geo-awareness services. These measures will help to unlock several opportunities identified by the Ministry:

Opportunities	**Wing response**
Improved compliance	Geo-awareness information will help UAS operators to find safe areas to fly, and check that they comply with known airspace restrictions or operational requirements. This information can be shared with UAS operators in a simple and accessible format through USPs. Remote identification will help to encourage responsible behaviour among UAS operators. Remote identification data can help to promote compliance, support accident investigations, and enable authorities to discriminate between lawful and malicious UAS operations. See important considerations in *Questions – Remote ID* below.
Better enforcement	A UAS registration system, coupled with remote identification, can help to improve accountability among UAS operators. Any requirements should be simple and accessible to maximise opportunities for compliance.
Regulatory costs	Risk-based and performance-based regulatory frameworks can help to significantly reduce the cost and complexity of operational approvals. Wing encourages the Ministry to avoid prescriptive requirements that could impose undue costs on the regulator, and on recreational or commercial applicants. Further, the use of harmonised frameworks such as SORA will help to ensure that regulatory processes are rigorous and efficient. Harmonisation promotes competition, encourages innovation, and helps regulators to develop a shared body of

	experiences, resources, and expertise to support the safe growth of the industry.
Greater social acceptance	Together, these measures will help to improve social acceptance by providing UAS operators with authoritative data to plan safe flights (geo-awareness) and promoting compliant operations (registration and remote identification). In addition, Wing encourages the Ministry to consider: • **Sharing best practices for community engagement between UAS operators.** Sharing real-world operational experiences, in New Zealand and around the world, will help to encourage responsible behaviour among recreational and commercial operators. • **Investing in communication campaigns to explain UAS safety and regulation to members of the public.** Globally, public awareness of UAS regulation is low. Greater communication about the objectives and requirements of existing UAS rules will help to foster public trust in regulated UAS.
Pathway to BVLOS integration	Further measures will help to support the integration of BVLOS operations at scale (see *Q4* below).
New market opportunities and jobs	Accelerating drone integration in New Zealand is likely to foster significant investment in UAS research, development, and operations. In addition, Wing encourages the Ministry to consider accelerating the implementation of UTM. Implementing a digital, collaborative, and distributed UTM framework will help foster a domestic UTM industry with multiple, competitive, industry-provided USPs that support diverse UAS operators.
Improved access to goods and services	Accelerating drone integration in New Zealand will help to realise the benefits of diverse UAS operations. These benefits include safer, better connected, and more sustainable cities (see *General comments* above).
Regulatory costs	The proposed measures are likely to reduce the cost of regulation and enforcement. In particular, the proposed UTM capabilities will help to promote safety, compliance, and responsible flying while shifting the cost of implementation and

	service delivery to industry.

Q4. Are there any other problems and opportunities you can think of?

Further measures will help to support the integration of BVLOS operations at scale. For example, Wing encourages the Ministry to accelerate the implementation of other UTM capabilities, such as strategic deconfliction services. These services can be implemented today, and would help to integrate multiple BVLOS operators in shared airspace.

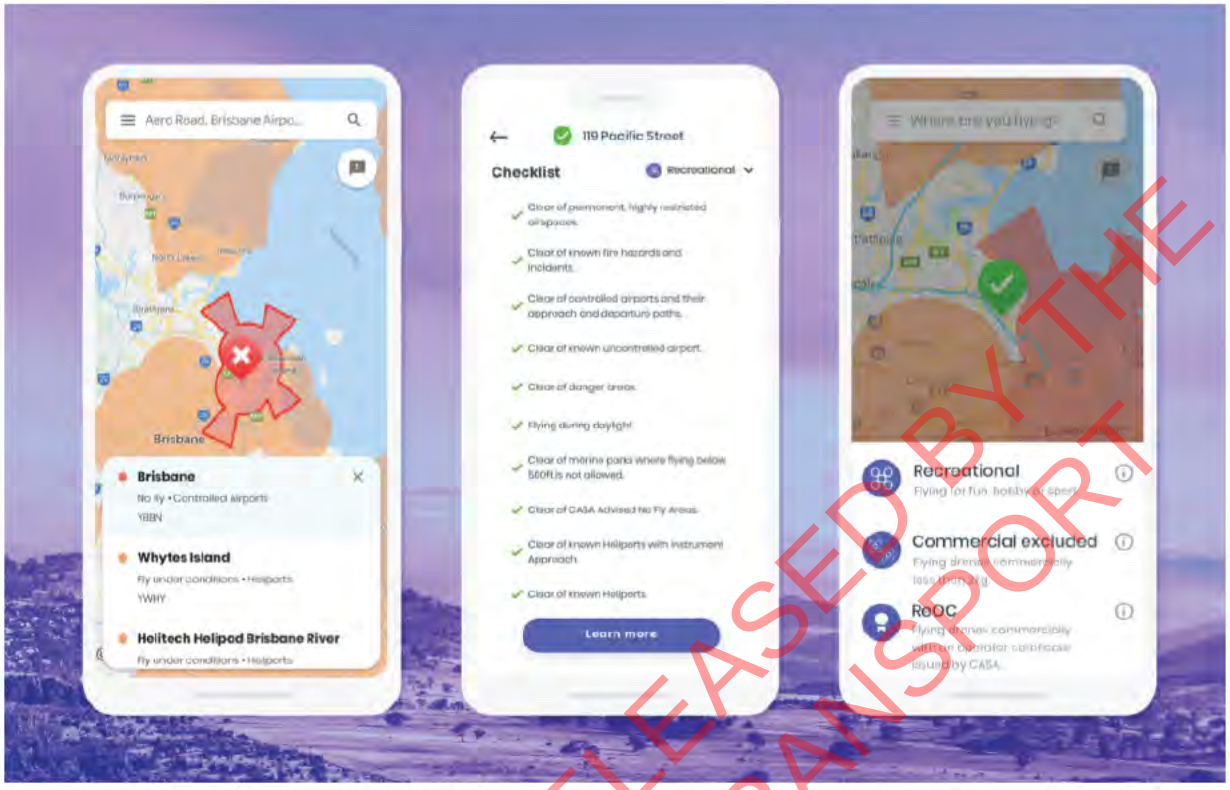
The Ministry may also consider policies to encourage greater cooperation between manned and unmanned aircraft. For example, authorities can develop modified priority rules that require UAS to give way to cooperative manned aircraft in designated airspace. Authorities can also offer subsidies to promote the adoption of cooperative electronic conspicuity technology by manned operators, as with the New Zealand ADS-B subsidy scheme, or permit the use of affordable but non-certified devices in low risk uncontrolled airspace. In addition to facilitating airspace integration, greater cooperation would improve safety for participating manned aircraft.

Q5. Do you agree with the proposed order of implementation of the measures?

Wing encourages the Ministry to consider a shorter roadmap to implementation than 3-5 years. Many of the proposed capabilities – including registration, geo-awareness, remote identification, and other UTM services such as automated airspace authorisation – can be implemented today. These capabilities will help to support better safety, compliance, and security outcomes, and help to accelerate UAS integration in New Zealand.

Geo-awareness. Geo-awareness services can help operators find safe areas to fly, taking into account airspace restrictions and operational requirements. In Australia, the Civil Aviation Safety Authority (CASA) has developed performance-based rules and validation processes for USPs offering geo-awareness services. Since establishing this approval framework, CASA has approved multiple USPs to provide services to UAS operators.

Wing has made geo-awareness services freely-available in Australia via our USP, OpenSky, to help recreational and commercial UAS operators plan safe and compliant flights.

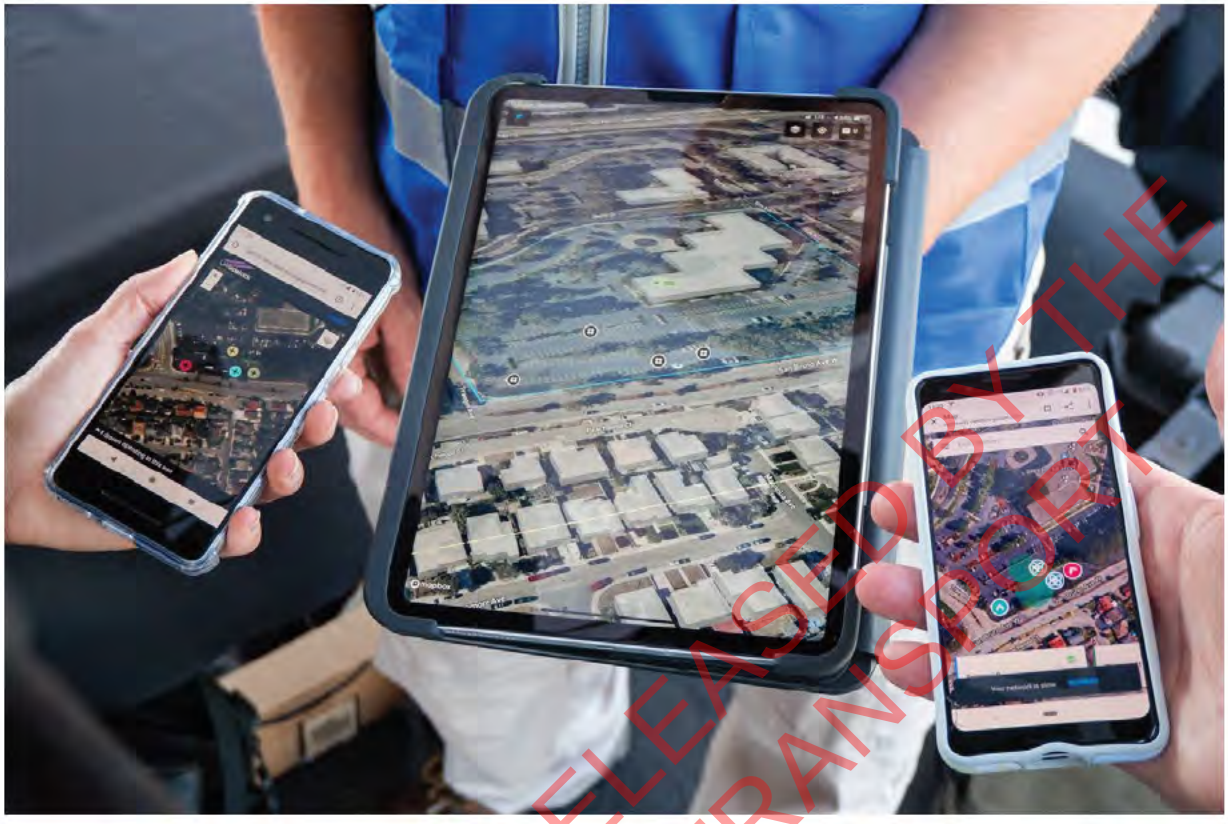


Above: UAS operators can use Wing's OpenSky app to identify safe areas to fly, taking into account applicable operating rules and airspace constraints. CASA has approved multiple USPs to provide geo-awareness services to UAS operators in Australia.

Remote identification. USPs can share UAS flight position data to help observers on the ground identify nearby aircraft for security, enforcement, or accident investigation purposes. Wing has led demonstrations of remote identification through a network of USPs in the United States and Switzerland. The demonstrations complied with the ASTM *Standard Specification for Remote Identification and Tracking*.[12] A network of eight USPs shared data to help observers identify nearby UAS on six different display apps. By sharing information over the USP network, these apps were able to provide a correct and consistent depiction of all UAS.

> *The networked Remote-ID solution in particular proved fully satisfactory. Data exchange among participants worked flawlessly, the display providers were able to show a fully consistent picture of the airspace* – Swiss Federal Office of Civil Aviation (FOCA)[13]

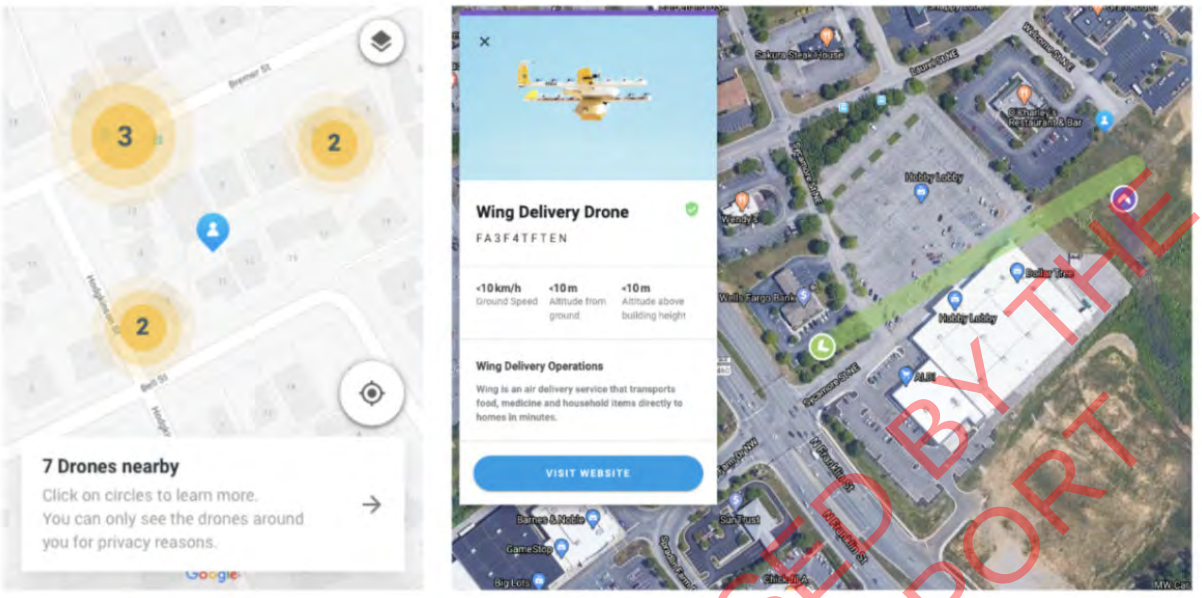
[12] ASTM International, F34-11-19, 2020 at [5.5.4.5].
[13] FOCA, 'SUSI demonstration', 2019, https://www.bazl.admin.ch/dam/bazl/en/dokumente/Gut_zu_wissen/Drohnen_und_Flugmodelle/2019-09-16-Remote-id-demo-FOCA-report.pdf.download.pdf/2019-09-16-Remote-id-demo-FOCA-report.pdf at 1.



Above: Multiple USPs can share flight intent and position to provide a consistent depiction of the airspace to observers on the ground.

FOCA has since implemented a voluntary network remote identification service across Switzerland, and the European Commission has enacted regulations for network remote identification in designated U-Space airspace.[14] Further, Wing is trialling remote identification for Wing delivery operations in the United States. Observers on the ground, including law enforcement, can use a smartphone app to identify a nearby Wing aircraft, with technical mitigations to prevent the aggregation or misuse of sensitive data.

[14] Implementing Regulation 2021/664 (EU) art 8.



Above: In the United States, observers on the ground can use an app to identify nearby Wing aircraft.

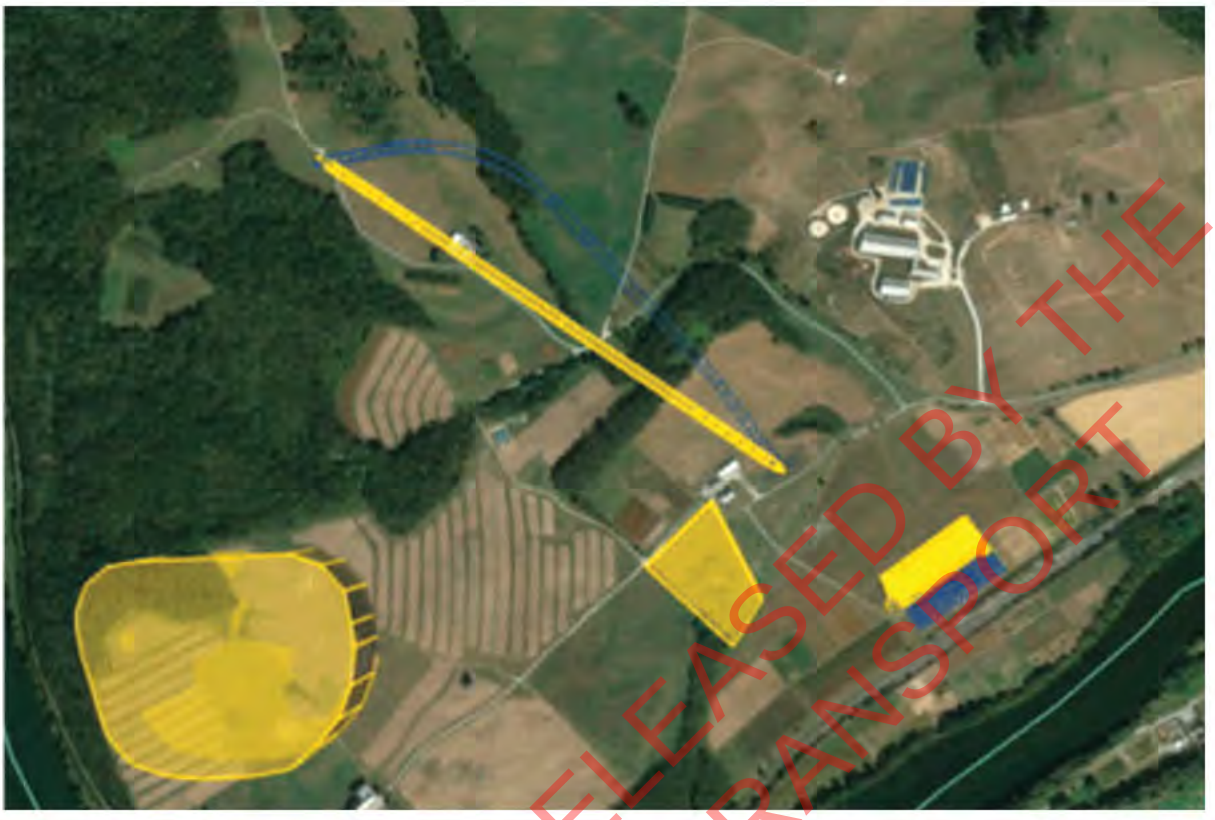
Airspace authorisation. USPs can help to facilitate digital and automated requests for airspace authorisation in controlled airspace. In the United States, the FAA has established performance-based rules and validation processes for USPs that facilitate authorisation requests in controlled airspace around some of the nation's busiest airports (LAANC). Authorisation requests are communicated digitally via USPs up to the start time of the proposed operation, and certain requests may be approved automatically. The FAA has approved 16 USPs to provide LAANC services, including Wing. In Australia, CASA has implemented a system for USPs to facilitate automated authorisations in controlled airspace, and Wing is working with DSNA and other partners in France to establish a similar framework.

Rule	Operation Type	USS Responsibility	Notes
[3.4.4f]	Operations exceeding 400 feet (§107.51b)	Block	This request type is not supported by LAANC.
[3.4.4g]	Operations at night (§107.29)	Block	USSs must employ a reasonable algorithm for periods of nighttime excluding civil twilight.
[3.4.4h]	Operations in an NSUFR or the DC FRZ (§107.47)	Block	This request type is not supported by LAANC. NSUFRs may be full-time or part-time (see respective datasets). The DC FRZ is full-time.
[3.4.4i]	Operations in a Prohibited or active Restricted SUA (§107.45)	Block	This request type is not supported by LAANC. USS may use active times from an FAA source (see [3.4.4b]). In order to meet this rule without the burden of processing active times, USSs may block all Prohibited and Restricted SUAs all the time.
[3.4.4j]	Operations at civil twilight (§107.29)	Advise	USSs must alert operators that during civil twilight periods, operating an sUAS is only permitted if the sUAS is lighted with anti-collision lighting and is visible for at least 3 statute miles.

Above: The FAA has developed performance-based rules for USPs (USS) that facilitate digital and automated authorisation in low level controlled airspace.

Strategic deconfliction. USPs can share flight intent for purposes such as conflict detection and strategic deconfliction. For example, the European regulation for U-Space anticipates that USPs will strategically deconflict UAS operations before flight.[15] Wing has contributed to demonstrations of strategic deconfliction with NASA, the FAA, and the United Kingdom Department for Transport's Connected Places Catapult. These demonstrations involve multiple USPs with a range of VLOS and BVLOS participants. Strategic deconfliction via a USP network can support diverse UAS operations, ranging from highly automated to homebuilt UAS.

[15] Implementing Regulation 2021/664 (EU) art 10.



Right: USPs can share flight intent through the UTM network to enable strategic deconfliction between different VLOS and BVLOS aircraft with varying levels of automation.

Major changes to the Rules

Q1. Should drones have their own standalone Rule Part?

Wing supports a standalone Part for UAS. A standalone Part will help to ensure that traditional requirements for manned aircraft, operations, or personnel are not applied prescriptively or inappropriately to UAS.

Q2. Should we review the four-kilometre minimum flight distance from aerodromes?

Wing encourages the Ministry and CAA to implement a digital and automated system for authorisation in low level controlled airspace (see response to *Overall approach – Q5* above). Supported by USPs, these systems have been implemented in the United States, Australia, Switzerland, and elsewhere.

Q.3 Should we change the requirement to gain consent to fly above property by:
a. Using 'safe distances' as an alternative?
b. Relaxing the requirement in another way?
c. Removing the requirement completely?

Wing acknowledges that existing consent requirements apply to Part 101 operations. However, the public is unlikely to distinguish between Part 101 and Part 102 operations in practice. Retaining consent requirements for flight over property may give rise to an expectation that all UAS operations are subject to consent, which would pose significant challenges for UAS integration and social acceptance.

The airspace should be freely accessible to UAS operators if they meet the required target level of safety, and comply with other applicable requirements. A requirement or expectation for case-by-case consent could make valuable UAS operations unviable. The useful range and payload of small UAS are highly sensitive to piecemeal airspace restrictions, and a system of landowner consent would effectively close off navigable airspace. It may pose unintended risks to safety too, increasing traffic congestion within airspace over consenting property, and increasing the risk of avoidable accidents.

Further, fragmented airspace may produce inequitable outcomes for residents. Certain landowners could effectively determine whether neighbouring properties can access essential UAS services. For example, a small number of landowners located between a UAS operator and a customer ordering medication could deny access to the customer. In addition, fragmented airspace is likely to create drone "highways" with significant UAS traffic funnelled over a small number of properties that have given positive consent. Where possible, UAS operations should be dispersed over the community. Harmonised airspace helps to promote equal access to new services and technologies, and helps to avoid over-trafficked thoroughfares.

In general, Wing encourages authorities to ensure that any restrictions or requirements are technology-agnostic. UAS should not be held to a different standard than other airspace users, and the Ministry notes that manned aircraft are not subject to similar rules. Performance-based operational regulations can help to achieve the desired safety outcome without resorting to ineffective and unenforceable requirements such as third-party consent.

Q4. Should we change the requirement to gain consent to fly above people by:
a. Using 'safe distances' as an alternative?
b. Relaxing the requirement in another way?
c. Removing the requirement completely?

In general, Wing encourages authorities to adopt performance-based rather than prescriptive requirements for safety. For example, standoff distances alone may not reflect the overall risk of an operation, which is affected by other variables including the likelihood of a failure, the likelihood of a collision in the event of a failure, and the likelihood of an injury in the event of a collision. Different operators using different UAS may apply different mitigations for these risks. "One size fits all" requirements do not account for these variations. By comparison, Wing welcomes the performance-based approach to safety for complex operations in Part 102.

Basic pilot qualification

Q1. Should we introduce basic pilot qualification for Part 101 drone pilots?

The recreational flyer community is essential to the future of UAS innovation. Wing recognises the importance of educating recreational users about UAS safety, and supports efforts to introduce new flyers into the aviation safety culture. Wing encourages the Ministry to observe the following principles in developing any basic pilot qualification:

- **Cost.** High compliance rates will depend on an affordable testing process. A costly process will impose higher fees on recreational flyers, which may result in low compliance rates among existing flyers, and the exclusion of new or prospective flyers.
- **Complexity.** Preserving an open community will depend on a qualification process that is appropriate and adapted to the risks associated with recreational flight. Complex or irrelevant material, or a mandatory training process, could reduce compliance among existing flyers, and deter prospective flyers.
- **Technology.** Qualification requirements should account for the availability of new tools to help recreational flyers plan and manage their flights. For example, UTM capabilities such as geo-awareness services – typically available in a smartphone app — can help operators to check safe areas to fly and validate their flight against applicable flight rules. In that environment, any pilot qualification should focus on key principles and best practices, and avoid overwhelming applicants with detailed technical content.

Q3. What format should this test take?
a. Electronic/online theory test
b. Paper based written theory test (at a provider)
c. A practical examination of skill and a paper based written theory test (at a provider)
d. Other

In general, simple and accessible qualification processes will help to ensure high compliance rates. Online delivery of the proposed basic theory test will best satisfy the principles outlined above.

Q4. Should there be a minimum age for basic pilot qualification?

Wing supports the participation of minors in recreational flying. To that end, eligibility criteria should permit minors to undertake the test, with the consent of a guardian, and permit untested minors to fly under the supervision of a qualified pilot. Given the lower risk characteristics of many recreational operations, the supervision requirement could be expressed in general terms.

Drone registration

Q1. Should we introduce the proposed drone registration system? Why?

Wing agrees that UAS should be registered. Alongside remote identification, registration can help to promote compliance and facilitate the investigation of incidents. Wing encourages the Ministry to ensure that registration processes are simple and affordable to ensure high levels of compliance. For example, USPs can help to facilitate registration via smartphone apps or web interfaces. In addition, for recreational operators with multiple homebuilt aircraft, one registration application should suffice for all aircraft owned by the operator.

Q4. Should there be a minimum weight threshold for registering a drone? If so, is 250 grams appropriate? If not, what would be an appropriate weight threshold and why?

In general, Wing cautions against the use of arbitrary weight or energy thresholds to determine UAS classification for any purpose. However, Wing supports simple and affordable registration for as many UAS as possible. A 250g threshold for registration would ensure that most drones capable of operating outdoors are captured by the registration requirement while excluding small aircraft that are unlikely to pose a safety or security risk.

Remote ID

Q1. Should we consider introducing Remote ID? Why?

Wing is committed to the safe, open, and secure use of airspace by all. To that end, Wing supports the remote identification of UAS. With proper safeguards, remote identification is an important capability that can help to encourage responsible flying and improve security:

- **Promote compliance.** Remote identification can improve accountability among UAS operators.
- **Investigate accidents.** Remote identification can facilitate the investigation of accidents or serious incidents.
- **Respond to threats.** Remote identification can help authorities to identify security threats and decide on the appropriate response.

Working together, regulators and industry have contributed to the development of an ASTM *Standard Specification for Remote Identification and Tracking*. Wing welcomes the Ministry's support for the ASTM standard. The standard provides a framework for implementing foundational UTM services in an interoperable USP environment. The standard emphasises that UAS operators can comply with remote identification requirements in several ways depending on specific UAS capabilities and operating environments.

In particular, Wing encourages authorities to permit the use of network remote identification: sharing UAS position to observers on the ground via the USP network. Network remote identification supports privacy protection, enables participation by diverse UAS, and ensures that

hobbyists can comply with non-equipped or homebuilt aircraft. These characteristics will help to maximise compliance, improving safety and security outcomes for all airspace users.

By comparison, broadcast remote identification may pose challenges for certain operations. For example, UAS operate between hospitals, businesses, and individual homes. Sensitive information can be inferred from the UAS position, including information about the customers or recipients of UAS services. The unprotected broadcast, collection, and aggregation of this data over a wide area may compromise customer and operator privacy. Instead, network remote identification enables USPs to limit the sharing, retention, and display of this information while ensuring that law enforcement and other observers can access necessary data.

Wing does not support the use of remote identification for flight safety (eg. as a tactical deconfliction, collision avoidance, or detect and avoid (DAA) mitigation). Operators may use a range of mitigations to meet the target level of safety in their specific operating environment, and establishing a framework for airspace integration should be the subject of a separate policy process. The expectation that remote identification is a tactical mitigation for safety may give rise to infeasible or unnecessary performance requirements.

Q2. What impact would Remote ID likely have on you?

Wing has enabled remote identification for Wing delivery operations in Christiansburg, Virginia, United States. Observers on the ground can use a smartphone app to identify nearby Wing aircraft (see *Overall approach – Q5* above). Wing also intends to comply with European remote identification requirements.

Geo-awareness

Q3. Should we consider introducing geo-awareness? Why?

Geo-awareness information will help UAS operators find safe areas to fly, and validate that flights comply with known airspace restrictions or operational requirements. This information can be shared with UAS operators in a simple and accessible format through USPs. Wing does not expect that "drones [will need] to be equipped with appropriate technology" for operators to utilise geo-awareness services.[16] In jurisdictions around the world, a range of apps – simple to specific – have been developed for handheld devices that help operators to promptly and reliably access required airspace information.

To enable USPs to provide geo-awareness information to UAS operators, authorities will need to identify authoritative data sources. These sources may include supplementary providers of terrain, obstacle, weather, surveillance, or airspace data. Authorities may provide certain kinds of authoritative data to USPs directly, such as notifications or airspace constraints. Data should be

[16] Ministry of Transport, *Enabling Drone Integration*, 2021 at [230].

available to approved and credentialled USPs via secure but open-access protocols: a thriving USP ecosystem depends on efficient and non-discriminatory access to authoritative data.

A distributed and competitive approach to service delivery via USPs will help to shift the burden of providing geo-awareness services to industry. It will help to improve resilience, avoid vulnerabilities, and reduce cost and complexity in sharing geo-awareness information with UAS operators. In the United States and Australia, multiple USPs offer freely-available geo-awareness services to recreational UAS operators.

Q4. What impact would geo-awareness likely have on you?

Wing has made geo-awareness services freely-available in Australia via our USP, OpenSky, to help recreational and commercial UAS operators plan safe and compliant flights.

[redacted]

From: [redacted]
Sent: Friday, 4 June 2021 1:35 PM
To: Enabling Drone Integration
Cc: [redacted]
Subject: Enabling Drone Integration- NZHGPA Submission
Attachments: Drone integration- NZHGPA Submission.pdf

Please find attached a submission on behalf of the NZHGPA CEO and members relating to the proposed rule changes regarding drone integration into New Zealand Airspace.

Regards,

[redacted]

New Zealand Hang Gliding and Paragliding Association

Enabling Drone Integration Consultation
Marion Hiriart
Ministry of Transport
PO Box 3175
Wellington 6140

31May 2021

Dear Marion,

Enabling Drone Integration- Consultation

The New Zealand Hang gliding and Paragliding Association (NZHGPA) thank you for inviting us to your explanatory presentation and allowing us the opportunity to provide feedback on the proposed changes to the New Zealand drone regulatory regime.

Our associations' particular emphasis is to protect the rights of the free-flying community and to ensure the safety of our members operating outside of controlled airspace under visual flight rules. Any drone activity should only be approved where it can be demonstrated to be capable of combining safely with existing airspace users.

The NZHGPA is a strong advocate for maximising and retaining uncontrolled airspace on behalf of our 1500 members. We aim to ensure that future generations may continue to enjoy the freedom of free-flight sport aviation without unnecessary restriction, regulation or equipment burden.

The current unregulated approach to consumer drones has proven safety implications for our NZHGPA pilots. There have been several 'near-miss' incidents, and two mid air collisions documented with the Civil Aviation Authority between hobbyist drones and paragliders in New Zealand. The collisions resulted in one of the drone pilots being prosecuted by CAA, convicted and fined a considerable sum. The other Drone Operator could not be traced. Fortunately, the paraglider pilots were not injured, however it does highlight the point that it is only ever the manned aircraft at risk in these situations while the drone pilot is safelyon the ground!

Experience shows that some drone pilots see us as targets to go and film rather than as manned aircraft to be avoided. This attitude is predominantly found among recreational drone users and should improve with pilot education. So-far we have had good interaction with and cooperation from commercial operators and have not had the same issues develop.

This 'professional divide' leads us to believe that there is a strong case for splitting up regulatory requirements depending on the nature of the drone operation, and we feel that this is largely achieved by the proposed changes to Part101/102. We predict industry growth to potentially overtake conventional manned aviation in numbers and expect that it will eventually be necessary to develop a standalone Rule Part.

[redacted]

The NZHGPA support the introduction of a basic drone pilot qualification as proposed. We have no desire to restrict recreational drone use however request that the basic pilot qualification theory test specifically include questions relating to hang glider and paraglider operations.
Uncontrolled airspace should be available for all users, however there must be a demonstrable learning process and proof of understanding of the rules prior to being permitted to operate.
It is essential for our safety that recreational drone operators understand their responsibilities when operating in the vicinity of paragliders and hang gliders, and we believe that education is currently lacking in this area.

It is important that drone users understand that 'Uncontrolled' does not mean 'no rules'.

The proposed basic pilot qualification for drones of over 250 gm appears to be a reasonable starting point, still allowing 'toy' drone use without restriction but ensuring that operators of heavier and faster drones have at least a basic understanding of the rules and consequences of non-compliance.

The NZHGPA also support the proposal for compulsory registration of drones above a certain weight but see many issues in enforcing this. Many of the drones available for purchase online are over the proposed 250gm weight threshold and can easily be imported anonymously.

Overall, we think that the proposed changes to the Part 101 rules will have a positive impact on our member safety and see the changes as a chance to improve pilot education. Ease of participation in any testing regime will be essential to its success and for most drone users this will mean having the training available online at no cost and the testing also completed electronically. We do anticipate some difficulty in the areas of monitoring and compliance but believe that any change that improves overall safety in the system is worth pursuing.

Advanced Operations. (Part102)

We agree that drones offer many opportunities for new business or for better and more cost-effective ways of carrying out existing tasks. Usage will increase as new and innovative uses are found for the technology and more capable drones are produced. The NZHGPA encourage all such developments but only where they can be made without endangering our members or other airspace users.

To make the most of emerging technologies drones must eventually be permitted to operate beyond the operators' visual line of sight (BVLOS). This adds new complexity to any operation to ensure both the safety of the drone and of other airspace users.

We do not believe that creating restricted airspace solely for drone operations is the best way forward at this stage. The establishment of drone airspace corridors seems both restrictive to the drone operator and a step backwards for the aviation system. Advances in dynamic airspace allocation will eventually replace the outdated block allocation model of airspace design and BVLOS drones may well act as a catalyst to trigger airspace modernisation.

Due to current limitations of battery capacity and weight, it is not yet physically possible or affordable for our member pilots to carry electronic conspicuity devices. This has been acknowledged by CAA through the granting of an exemption to the Rule requiring ADS-B transponders in controlled airspace, attached as Annex 1. We have operated safely for over 50 years using the VFR principle of see and be seen, and consider this a fundamental characteristic of uncontrolled airspace that should always be available. Any new operation should be required to safely integrate with existing users without adding additional equipment or cost to others.

Rhys Akers NZHGPA Airspace Officer, C/-PO Box 131, Matamata 3440
Email: **airspace@nzhgpa.org.nz** Web: **www.nzhgpa.org.nz** [redacted]

Where drones plan to operate BVLOS in uncontrolled airspace the NZHGPA believe that they must be regulated and employ approved see and avoid/detect and avoid (SAA/DAA) technology to ensure airspace user safety. Current systems such as Iris technology's Casia detect-and-avoid system have been approved on a case-by case basis in the USA, Canada, India and South Africa and are seen as a good starting pointto set as a minimum requirement prior to approval here.
More information can be found at: https://www.irisonboard.com/

Remote identification is not a major consideration for NZHGPA members and has not been considered further for this submission.

The proposed Geo-awareness requirement is an area that we feel could be successfully used to improve the safety of our members. The current Airshare app has common hang gliding and paragliding sites included in the maps and we have had some success with drone operators calling club members to check on our flying intentions after seeing warnings within the app.
The mapping features of any developed geo-awareness software should ideally be available to all users online and via mobile devices for planning purposes. The NZHGPA would appreciate the opportunity to have our sites included in any future mapping app as they currently are in Airshare.

The NZHGPA feel that implementation of the proposed pathway for drone integration is likely to have a positive impact on aviation safety. Due to the rapidly changing environment any regulation introduced will still demand a degree of flexibility and will require regular review. As future regulation changes will potentially impact free-flight safety, the NZHGPA requests consultation prior to further amendments of any rules developed plus, if in the future a working group or committee is formed from a cross section of aviation the NZHGPA requests that the association be included to represent the Adventure Aviation Sector.

Thank you for the opportunity to make a submission on these proposed changes. We feel that careful consideration prior to regulation has the potential to positively affect the safety of our member pilots.

Yours sincerely

[redacted]

Attached

Annex 1 - 21 EXE 65 - CAA ADS-B - Exemption certificate

[redacted]

Annex 1 – 21 EXE 65 - CAA ADS-B - Exemption certificate

Exempts HG/PG from carrying ADSB within Controlled Airspace with Prior Clearance

21/EXE/65

Exemption from the Requirement in Civil Aviation Rule

CAR 91.255(a)

PURSUANT TO Section 37 of the Civil Aviation Act 1990,

I, Dean Winter, Acting Deputy Chief Executive Aviation Safety, acting under delegated authority, being satisfied that—

(a) the requirement in CAR 91.255(a) that except as provided in rules 91.253 and 91.255D, a person must not operate an aircraft in transponder mandatory controlled airspace designated under Part 71 in the New Zealand FIR unless the aircraft is equipped with an ADS-B system which meets the minimum performance standards and requirements under rule 91.257, is unreasonable in the case of aircraft that cannot practicably and reasonably be equipped with an ADS-B system; and

(b) the risk to safety will not be significantly increased by the granting of this exemption.

HEREBY EXEMPT—

Persons operating aircraft that cannot practicably and reasonably be equipped with an ADS-B system because of the characteristics of the aircraft type

FROM—

the requirement in Civil Aviation Rule CAR 91.255(a) that except as provided in rules 91.253 and 91.255D, a person must not operate an aircraft in transponder mandatory controlled airspace designated under Part 71 in the New Zealand FIR unless the aircraft is equipped with an ADS-B system which meets the minimum performance standards and requirements under rule 91.257.

PROVIDED THAT—

1) The person operating an aircraft without an ADS-B system obtains specific authorisation from the ATC unit having jurisdiction over the relevant airspace as part of the ATC clearance to enter that airspace; and

2) If the Director of Civil Aviation determines that a suitable technology option becomes available, the Director will advise through the CAA website that this exemption will be revoked.

This exemption does not in any way compel ATC to authorise access to controlled airspace for aircraft without an operable transponder. While the exemption enables access, the authorisation would be managed by ATC on a case by case basis or subject to prior agreement as stated on condition #1.

21/EXE/65 1 of 2

This exemption shall remain in effect until 5th February 2026, unless withdrawn earlier in writing by the Director.

SIGNED at Wellington

This 9th day of February 2021

by Dean Winter
Acting Deputy Chief Executive
Aviation Safety

[redacted]

[redacted]

From: [redacted]
Sent: Friday, 4 June 2021 1:48 PM
To: Enabling Drone Integration
Subject: Submission - Enabling Drone Integration
Attachments: Enabling Drone Integration Submission May 2021.pdf

Dear MoT.

Please refer to the attachment for the Enabling Droner Integration.
We would appreciate a receipt acknowledgement.

Kind regards

[redacted]

Flight Test NZ Ltd
PO Box 65, Whitianga 3542, New Zealand
[redacted]
www.flighttestnz.co.nz

Enabling Drone Integration

Submitted by Flight Test NZ Ltd and Drone Trust Ltd

Background

Flight Test NZ is a CAA certified Part 141 aviation training organisation operating since 1998. RPAS training activities are conducted under the Drone Trust name.

Drone Trust services include on line theory RPAS pilot issue courses at both 101 and 102 standard, practical flight assessments for 101 or 102 RPAS pilot certificate issue, and Part 102 operational competency assessments, preparation of Part 102 UAOC expositions for clients, RPAS consulting services.

The founders and management team are experienced aviation persons that are involved in both manned and unmanned aviation activities, from airlines, general aviation, training and military backgrounds.

We make the following submissions to the Ministry of Transport Enabling Drone Integration.

1. In principle we agree with the overall strategy of the proposals. However the proposals must be all implemented otherwise as standalone changes they will remain largely ineffective.
2. Education is the key. Funding needs to be allowed to promote the changes and bring the public on board. Without sufficient funding to promote the changes and obligations of RPAS pilots' large sections of the general population will remain unaware of the requirements and intent of the rules, negating much of the work that will be required to implement the proposal. While industry can play a part in this, the Government needs to be actively involved by committing adequate funding resources.
3. The proposal has changes being sequential, we believe that they could be overlapped, for example registration and remote identification should be combined as they work together to gain the benefits of these changes
4. Barriers to minimise entry into the training and regulatory system should be kept as minimal as possible.

Rules update Clauses 90-100

1. RPAS rules should be standalone. This sector of aviation is growing and will expand into much larger operations than the traditional small drones that are commercially available. the rule should be designed to allow flexibility to move with the ever-changing RPAS scene.
2. We support the removal of the current RPAS rules in CAR 101 into a new standalone rule. This raises the question of where Part 102 remains. If there is going to be a standalone rule

incorporating Part 102 into the new Rule with appropriate changes to link in with the revised "101"rules is desirable. This keeps RPAS rules in one place.

3. Terminology is creating confusion amongst many of the public. Specifically between the qualifications gained from completing various industry provided courses. Typically pilots receive a RPAS Pilot Certificate Part 101 standard or to Part 102 standard as applicable to the training course. Wording does vary between training providers. There is no common wording here. We would prefer to see the use of the term "licence" again to either a 101 or 102 standard as it denotes it is personal to the pilot. Unfortunately unless an RPAS qualification is incorporated into Part 61 is has no backing of being an aviation document and it is unclear that the "licence" terminology can be used.
4. The second area of confusion involves the Part 102 Unmanned Air Operator Certificate (UAOC). Many people think that if they obtain a RPAS Pilot Certificate to Part 102 standard this is the same as a Part 102 UAOC. As a training provider we know that many hours have been lost in explaining the difference between the two to clients.
5. We submit that common terms be used for individual pilot qualifications as happens in manned aviation, and that a list of definitions applicable to all RPAS activities be incorporated into the rule.
6. To support the new Rule an Advisory Circular needs to be provided. This expands on the rule and provides valuable guidance to the industry

Changes to Consent Provisions. Clauses 101-107

1. The consent provisions as described in 101.207 (a)(1) (i-ii) should be removed from Civil Aviation Rules. We agreed there is a low risk from a safety perspective. However the perception of the public is of drones intruding into their personal property airspace therefore the privacy concerns that many hold needs to be adequately addressed within other laws.
2. Mandating a minimum operating height of say 30m (100ft) over land without consent would reduce impact on the inhabitants.
3. The proposal of requiring safe distances is however very prescriptive and is liable to create differing opinions of what that distance looks like between members of the public and the RPAS pilot. There is nil reliable method of measuring a prescribed distance other than judgement,
4. Safe distances from what? - a person, livestock, bare land, inhabited property, a shed etc etc all create different levels of intrusion by the property owner.
5. Considerations about operations above other land uses, eg roads, rail, DOC, land of cultural or religious significance need to be addressed.

Minimum Flying Distances from Airports. Clauses 108-111

1. We are not supportive of relaxing the 4km rule.
2. The graduated maximum height vs distance from the airport is unworkable from a safety perspective. While it has some merit in single runway situations then take off and landing fans require greater levels of clearance. Multiple runway airfields that are common at many smaller towns simply become too complicated to allow segments of greater flexibility. The wide mix of recreational aircraft, gliders, or microlight, often operating at low levels in

uncontrolled airports/heliports create significant safety risks if UAVs are allowed more freedom closer than the current 4km limitation.

3. Heliports raise additional considerations of approach and departure paths unless they have defined sectors for this phase of flight.
4. Some lakes are designated as water aerodromes and have a 4km boundary around the whole of the lake edge. This is too restrictive for the low frequency operations typical of these water ports. A sector based protected area to allow the water-based aircraft to operate would be suitable here.
5. We would consider a further review of this rule if a geofencing option that applies to all UAVs is available to protect high risk areas of airports and heliports.
6. The requirement to hold an RPAS pilot qualification to operate within 4km should be retained.

Minor rule changes. Clause 112

1. We submit that all RPAS training should be provided by a Part 141 Aviation Training Organisation. The current provision of allowing RPAS training to be provided for 101 level operations under the Part101.202 is not a level playing field. Part 102 level training requires a Part 141 certified organisation.
2. Part 141 organisations are required to meet a significantly higher entry and ongoing operating standard. This in turn has a massive impact on the costs of operating a Part 141 based business.
3. Additionally Part 101.202 individuals and organisations are not subject to the same CAA access, audit scrutiny, senior person requirements, nor are they required to comply with Part 100 Safety Management System rules. SMS is an integral part of Civil Aviation for almost every other aviation industry organisation and should be incorporated into RPAS training. (Ref Clause 158 and the questions that follow that clause).
4. We believe that having all training under a Part 141 provider would give the public more confidence that RPAS training is subject to the same levels and standard of scrutiny as other parts of the industry are.
5. We therefore submit that Part 101.202 (1) and (2) be revoked and replaced with the requirement to hold a Part 141 aviation training organisation certificate to conduct RPASS related training.
6. We feel the current requirements for RPAS with a MAUW >15kg to be inspected by an organisation or individual approved in accordance with 101.202 (4) (5) (6) shall be largely retained for home built or modified RPAS. For RPAS manufactured and distributed as an off the shelf product that can be operated un-modified in accordance with the manufacturers publications, we feel the manufacturer shall have to meet minimum standards for RPAS airworthiness. Resources shall be allocated at the CAA to assess basic airworthiness standards for new RPAS products or manufacturers. Airworthiness review may consider the following:
    a. Manufacturers experience in the industry.
    b. Quality of manufacturers safety, maintenance and operational documentation.
    c. Any history of airworthiness related issues with manufacturers of other products.
    d. If the manufacturer has a system to alert operators of airworthiness issues as they arise (service bulletins or similar).

If a manufacturer's RPAS is approved in accordance with this proposed policy this shall be published so that new operators/purchasers are aware that RPAS/manufacturer has been assessed and the RPAS meets the airworthiness requirements.

7. CAR 101.205 is complicated and we have found this to be challenging to get the public to understand. Public have difficulty in understanding the differences between the 4km rule and controlled airspace, the differences between an airport operator and Air Traffic Services. We support having more clarity on this rule. Note our submissions on not relaxing the 4km rule.
8. Danger areas. CAR 101.207 (a) the current wording allows for the operation of an UAV above person provided they are in a Danger Area. Danger areas cover many different type of dangers. If the intent of the rule is to allow RPAS operations in a danger area specifically set aside for what is currently known as model flying, then this needs to be clarified to include unmanned aircraft. Other danger areas should have wording to require the RPAS pilot to obtain knowledge of the type of danger and if the area is active.
9. CAR 101.207 wording is not clear in respect to Restricted, Military and Volcanic areas. Clarity would improve the understanding of non aviators.
10. CAR 101.211 Night Operations. Clarity to allow night operations under Part 102 provided training by a Part 141 organisation has been given.
11. CAR 101.215 We propose that the current mass based limits be revised to consider impact energy calculation. This would make the system more of a risk based approach in line with other systems such as the Joint Authorities for Rulemaking on Unmanned Systems (JARUS) Specific Operations Risk Assessment (SORA) process .

Additional Rule Considerations

12. The current Part 101 rule allows for commercial operations by anyone without any training or CAA approval. This is a significant departure from the rest of aviation whereby anyone who is receiving hire or reward for providing an aviation service is required to be the holder of an approved document, or aviation operating certificate.
13. A Part 102 UAOC is primarily used by organisation's who want more flexibility from the 101 rule restrictions. Part 102 also allows for more complex operations and in this respect is working. It is however only capturing a small percentage of commercial operations.
14. We submit that all commercial operations require approval from CAA to create separation from private / recreational activities. We suggest that this be in the form of a "Part 102 Lite UAOC" rather than the full Part 102 UAOC as we currently understand it.
15. A Part 102 Lite would restrict the operator to operate in accordance with Part 101 rules (or whatever is created under the standalone rule proposal) .
16. To minimise the CAA workload the applicant could apply online, in a registration format identifying the organisation, address, and contact person, type of operations, types and identification number of UAVs being operated, names of pilots and their RPAS qualifications. Some form of personal identification and a declaration to abide by 101 and to keep the details updated. We are open to further discussion on this submission.
17. We believe this would go a long way to identifying drone operators and providing a higher level of compliance with the rule, as well as providing CAA with a greater level of visibility on RPAS operations in New Zealand.

18. Compliance cost for operators would be minimal – perhaps a registration fee. However this would be insignificant when compared to the costs of obtaining a full Part 102 UAOC.

Definitions to be added to Part 101 Clauses 113-114

1. To be consistent with the overall theme of the rule changes additional definitions will be of benefit. This is supported.

Tethered RPAS. Clauses 115 -116

1. The new standalone rule should incorporate tethered drone rules. These should be promulgated amongst the industry on their content. Considerations: maximum altitudes, type of tether system, airworthiness, safety features, fail safe, emergency situations, pilot training and qualifications, where can they be flown.

Relaxing the FPV requirements Clauses 117 - 120

1. We have concerns that by relaxing the FPV this tacitly supports BVLOS or EVLOS without an observer.
2. We do not support a maximum altitude for FPV even if it is set low eg 30M. Most aircraft operations are conducted above 500ft and therefore above the 400ft maximum for RPAS operations. This however does not protect the low level operations of agricultural aircraft.
3. Shielded operations using FPV would be acceptable provided the definition of a shield is robust. Current shield definition is weighted towards a barrier between the operator and an airport rather than a 360 degree shield.
4. FPV restrictions can be relaxed when UAV and aircraft can communicate with each other providing a warning to both pilots when there is potential conflict. This links in with introducing Identification, Registration and UTM phases of the rule change.
5. The requirement for training for observers should form part of the Basic pilot qualification education referred to in Chapter III. Does a separate observer training course need to be included?

Chapter III Basic pilot qualification. Clauses 125 – 134

1. We support the introduction of mandatory basic online RPAS pilot training (clause 127). This is consistent with the rest of aviation where training, albeit at varying levels, is required. Paper based or classroom based training is cumbersome, expensive and time consuming to supervise or administer. For example, the tourist or new drone purchaser having to wait for the next course will be untenable for many. Keep it online so it can be completed anywhere, anytime even prior to entering the country.
2. We foresee great value in being able to have a database to enable educational messages to be distributed by CAA to the RPAS community.
3. The proposal is a basic online theory course only, with nil practical flight assessment. We consider this to be the minimum requirement for knowledge, however it is insufficient to meet the requirement for “aviation knowledge” to enable RPAS pilots to operate within 4k,

of an airport or heliport in accordance with CAR 101.205 (3) (i) (A). To meet this requirement the RPAS pilot must have successfully completed training including a practical flight test by an RPAS examiner to what is commonly known as Part 101 RPAS Pilot Certificate. Part 102 RPAS Pilot Certificate also meets this requirement as it is at a higher standard than the 101-pilot certificate.

4. The above then gives three levels of pilot training (1) Basic entry (mandatory), (2) a 101 level certificate to meet the 4 km rule, (3) a Part 102 level certificate for those pilots operating for a Part 102 UAOC or Part 102 Lite organisations.
5. We submit there needs to be a standardisation of terminology in the names of pilot qualifications. Our preference is that the basic level training is called a Basic Certificate whereas Part 101 and 102 level qualifications are called a RPAS Pilot Licence 101 or 102. We believe that the term "licence" provides an element of value to the holder. If a new standalone rule is introduced, then the "101 " terminology we currently use will need to be changed. Therefore should the 101 rule remain for RPAS only and the other 101 activities move to a new rule?
6. We do not propose any medical or fit and proper person requirements. Although education in operating with medical, drug and alcohol conditions should form part of the syllabus.
7. In practice the theory syllabus between Basic and a Part 101 pilot certificate will be minimal.
8. Online training is robust and convenient. Our organisation has already set up online training and conducts training in New Zealand, Pacific Islands, and USA.
9. Our company has been approved by FAA to deliver their Recreational UAS Safety Test (TRUST) drone pilot training which makes it mandatory for recreational drone pilots to complete an online training course. There are many parallels with the FAA TRUST programme and with what is being proposed in the Enabling Drone Integration.
10. Our experience in RPAS online training is extensive. Online training needs to be easy to access, and convenient for the user, while providing quality content to meet the regulators requirements.
11. Robust systems to protect privacy, provide unique course completion identification is paramount.
12. The training content needs to be SCORM compliant and auditable by CAA.
13. The syllabus and training requirements for each level of RPAS pilot qualification should be promulgated within an Advisory Circular. This will provide much needed guidance to the industry and other participants.
14. There are significant cost considerations to set up, maintain and most importantly support the users of the training system (ref Clause 158). If industry is expected to provide this basic certificate via a learning management system as a free course, as FAA and CASA have set up, then industry needs to be able to direct RPAS pilots to fee-paying higher-level qualifications.
15. We also refer to our earlier submission (items 1 - 5 in Minor rule changes) in respect that all training should be conducted by a Part 141 aviation training organisation.
16. Additional considerations for the need to have qualifications and training structure for instructors, and examiners. There is currently nil requirement other than acceptance by CAA as an appropriately experienced person. This opens up a pathway for future high level RPAS qualifications eg remotely piloted heavy freight aircraft, or agricultural operations.

Who Would Take the Test and Age Considerations Clause 135 -148

1. We ask the question: is this Basic qualification to be made a requirement prior to purchasing a drone? If so then the retailer and suppliers of drones need to be on board with this and provide their clients with that initial information to complete the course and provide evidence of this prior to purchase.
2. This also raises the question of how to treat online purchasers that import their drone from offshore retailers. We appreciate this is a more difficult situation to monitor however if (1) above is adopted then a high percentage of drone pilots will be captured.
3. We agree that the holder must be at least 16 years of age however they can directly supervise younger persons.
4. We agree that holders of existing RPAS qualifications or those who take a higher-level qualification via a Part 141 organisation need not be required to conduct the Basic certificate course.

Clause 150.

1. We note an unlimited attempt regime is being proposed. From experience we do not agree with this as applicants will be tempted to proceed directly to the chapter quizzes and final text and by the process of elimination via multiple attempts will obtain a pass without reading of the content. The course provider should have necessary software to restrict these practices.

Flying without Qualification Clauses 152 -155

1. Enforcing the training requirement to hold the Basic Certificate will be highly dependent on registration and identification for the drone linking it back to the pilot. Without these components in place CAA will be limited in their ability to enforce this rule.
2. Drawing on our experience from our involvement with the FAA Recreational UAS Safety Test (TRUST) training programme there are processes to identify that each person who completed the Basic training is recorded allowing enforcement actions to be used if required.

Drone Registration Clauses 159 - 201

We support the concept of drone registration. This is enforcement tool and forms part of the identification process.

Remote ID Clauses 201 - 217

We support the introduction of remote ID. This is primarily an enforcement tool as it becomes a strong method of identifying the UAV and its owner.

Geo-awareness Clauses 218 - 232

1. We agree with the proposal to develop one single standard of map for RPAS operators to reference. We propose that this should be provided in both a digital form, plus retain the option of a hard copy form with an effective process established to communicate short notice changes that fall outside the revision schedule.
2. Retention of a hard copy map solution is important for operations that may occur outside of mobile phone data coverage, where digital systems may not be able to load or update.
3. We feel any digital geo-awareness tool shall be provided to organisations (who meet certain standards) to host on their own digital platforms free of charge. This partnership between regulator and business helps to reduce cost to the regulator whilst increasing access options for users. This partnership allows businesses to market other products and services to its users. This is a model we have experience with through our dealings with the FAA.
4. We also propose the development of a robust process for short notice airspace geo-awareness revisions that mirrors the current NOTAM system, however has filters applied to categories NOTAMs that are only applicable to drone operations. This process is implemented in the United States and these changes are called DROTAMS (Drone NOTAMS). This is important to ensure drone operators are not overwhelmed with excessive NOTAMs (as is the current situation) that are irrelevant to their operations and contain aviation language they do not understand. Failure to filter NOTAMs results in a reduction of the effectiveness of these bulletins, and increased risk of important changes being missed.
5. We propose that airspace changes that are known sufficiently in advance to be published in the AIP supplement also be included in this Geo-awareness map, and the new DROTAMs system. This will mean drone pilots only need to refer to one place to get any temporary airspace changes.
6. We also agree with the requirements to include geo-awareness and or geo-fencing/geo-caging on higher risk operations such as BVLOS or autonomous operations. We feel this would have a negligible impact on these types of operators as they are likely to invest in such systems for pilot/operator situational awareness and sense and avoid systems.
7. Funding would need to be allocated to support the ongoing maintenance of the geo-awareness map and DROTAM system. It is our understanding that the current NOTAM system does support the application of categories for each NOTAM so that it can then be filtered by applicability to individual users.

End.

04 June 2021

[redacted]

From: [redacted]
Sent: Friday, 4 June 2021 2:19 PM
To: Enabling Drone Integration
Cc: [redacted]

Subject: Submission
Attachments: Submission - Enabling Drone Integration Consultation.docx

[redacted]
Glacier Country Heliport
Franz Josef Glacier
[redacted]

GLACIER COUNTRY HELIPORT

1 June 2021

Enabling Drone Integration – Consultation
Ministry of Transport
P O Box 3175
WELLINGTON 6140

To whom it may concern:

This submission is made by Glacier Country Heliport (NZGH), 33 Main Road, Franz Josef Glacier, South Westland. This heliport is operated by Destination Westland Ltd, Hokitika.

The Aeronautical Information Publication states that this is the busiest heliport in New Zealand. In the three years preceding COVID 19, approximately 135000 people flew from this heliport, mostly on sight-seeing tours or ice hikes onto the glaciers. There is no air traffic control however there are accepted flight paths, formal reporting points and a co-operative approach to sharing the airspace to ensure safety for all users and their passengers.

The submission has been considered by heliport management in conjunction with the heliport's Safety Committee. Safety Committee members are both helicopter and fixed wing operators in the Franz Josef and Fox Glacier areas and a representative from each company usually attends safety committee meetings. These representatives are Lead Pilots and/or senior aviation staff involved in day to day running of the businesses.

We accept that the use of drones is a positive development that will provide useful information, activities and some recreation for many people. We are supportive of drone use within our area, using the current restrictions and communication channels that have been developed. We have experienced many issues with drone activity but we are beginning to see a more co-operative approach from drone operators in what is a very high density aircraft traffic area. This has taken some years to achieve and a substantial effort on the part of aircraft users in this area. Our submission supports safe and responsible use of drones. We are concerned that relaxing of current rules would create further issues, not resolve them.

For these reasons, we submit the following information as areas of concern or suggestions:

Rules Updates

We have evidenced those drone operators certificated within this Civil Aviation Rule (CAR) Part 102 to be operating in a safe manner with co-operation and consultation with all air users prior to their commencing drone work. This is working well in our area however has not been without issues requiring CAA005 reports to be made.

We continue to have issues with those operating within CAR Part 101 where tourists (mostly) are launching drones from anywhere including the heliport public areas, Department of Conservation tracks and carparks, the main street in Franz Josef etc. Reports made to CAA of breaches have not always been able to identify the operator. Some breaches reported failed to be acted upon within a 3 month timeframe and meant that fines were not an option and no examples have been made of those breaching rules.

Submission: We submit that there need to be sufficient staff available to enforce rules.

Submission: That there is sufficient funding available for advertising, perhaps within airports or onboard aircraft targeting international tourists, of the rules of drone use in New Zealand.

Submission: The 4km area around aerodromes/heliports remains as a prohibited area for drone use, especially where there is no air traffic control. If Part 102 operators wish to fly within a 4km, they have the ability to work through sharing airspace with larger aircraft if they are responsible and safety conscious.

Submission: The 400ft above ground needs to specify AGL below aircraft so that, for example, launching a drone off the side of a mountain does not put the drone at 1000ft once it has moved away from the drone operator. This example has happened here and puts the drone in the path of larger, passenger carrying aircraft.

Basic Pilot Qualification

We are not confident that this would sufficiently cover all considerations for sharing the air space with larger aircraft which may have multiple passengers on board. An online test that is 'simple' is not evidence of situational awareness required of commercial or private pilots.

Submission: The online test includes education and a demonstrated understanding of:

- 400ft AGL
- Radio Use and requirement to have at least a 'listen only' radio
- Knowledge of mandatory broadcast zones and reporting points within
- Local area procedures/flight paths
- Whether there is a registered aerodrome/heliport in the vicinity
- Whether there is other recreational activities that would be affected – ie. Para ponting operations
- Aeronautical Information Publications
- Visual Navigation Charts
- Airshare website

A thorough knowledge of these subjects is currently required for safe operation of aircraft.

Submission: We signal concern about the minimum age for drone operators being too young.

Drone Registration
We agree with the requirement to register drones.

Our experience has largely shown that Part 102 operators, although confused at times due to a lack of air traffic control in this area, are responsible and safe.

Those operating under Part 101 have shown themselves to be either ignorant or prepared to wilfully disregard rules. It seems more likely that those operating under Part 101 will possess smaller drones which may be the biggest threat to aircraft as they cannot easily be seen and are more likely to be operated by non-skilled, public with little or no experience in aviation.

Submission: Make it a requirement to register ALL drones, regardless of size. If drones under 250gm cannot be registered, prevent them being used in New Zealand.

Remote Identification
We agree in principle with remote identification for drones however wifi, Bluetooth, cellphones are insufficient for safe communications in places like South Westland where there is rugged, uneven terrain and little cellphone coverage still in many areas. Radios are the preferred option for these reasons.

Submission: That drone operators have a radio, at minimum as a 'listen only' option and agree to land immediately if there is an aircraft in the near vicinity.

Geo Awareness
We agree with the requirement for geo awareness.

Submission: Prevent the current ability for a 'work around' for geofences allowing them to be avoided by some users.

We welcome the opportunity to discuss this submission further if you require clarification or further information.

Yours faithfully

[redacted]
Glacier Country Heliport

[redacted]

Garrick Wood

From: [redacted]
Sent: Friday, 4 June 2021 2:28 PM
To: Enabling Drone Integration
Subject: Drone Integration Submission
Attachments: Southern Alps MBZ User Group Submission re Enabling Drone Integration.docx

Please see attached submission
Thank you
[redacted]

Southern Alps MBZ User Group
[redacted]
Franz Josef Glacier
[redacted] [redacted]

2 June 2021

Enabling Drone Integration – Consultation
Ministry of Transport
P O Box 3175
WELLINGTON 6140

To whom it may concern:

This submission is made by the Southern Alps MBZ User Group (SAUG). SAUG is a group of air users in the Southern Alps MBZ which covers from Franz Josef to Karangarua and across Mt. Cook to Lake Tekapo.

Commercial aircraft operators are mandated by the NZ Civil Aviation Authority to join and participate in this group where flight paths are agreed, promulgated and adhered to. Any changes to flight paths or additional operators coming to the area are considered by the SAUG in terms of safety.

As a User Group we have worked hard to implement safety procedures and have developed a process for drone operators. This process was developed with the SAUG and its stakeholders, Department of Conservation, heliports and aerodromes. As a group, we do not support any drone operation under Part 101 and expect Part 102 drone operators to engage with us to work through safety concerns prior to their flight. The heliports and aerodromes included in the SAUG support this process by declining Part 101 drone operations within the 4km area.

There is no air traffic control in the MBZ however there are flight paths, formal reporting points and a co-operative approach to sharing the airspace to ensure safety for all users and their passengers.

We accept that the use of drones is a positive development that will provide useful information, activities and some recreation for many people. We are supportive of drone use within our area, using the current restrictions and communication channels that have been developed. We have experienced many issues with drone activity but we are beginning to see a more co-operative approach from drone operators in what is a very high density aircraft traffic area. This has taken some years to achieve and a substantial effort on the part of aircraft users in this area. Our submission supports safe and responsible use of drones. We are concerned that relaxing of current rules would create further issues, not resolve them.

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We welcome the opportunity to discuss this submission further if you require clarification or further information.

Yours faithfully

[redacted]
Southern Alps MBZ User Group (West)

Cc [redacted]

[redacted]

From: [redacted]
Sent: Friday, 4 June 2021 2:29 PM
To: Enabling Drone Integration
Subject: TDC submission - Enabling Drone Integration 04/06/2021
Attachments: Council Submission - Enabling Drone Integration 2021_06_03.pdf

Please find attached Tasman District Council's submission on Integration Drones Discussion Document.

Many thanks
Claire

[redacted]
Private Bag 4, Richmond 7050, NZ

tasman district council | Te Kaunihera o te tai o Aorere

Office of the Mayor
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tasman district council | Te Kaunihera o te tai o Aorere

3 June 2021

Enabling Drone Integration consultation
Ministry of Transport,
PO Box 3175,
Wellington, 6140

Tasman District Council Submission - Enabling Drone Integration: Discussion Document

Introduction
The Council welcomes the opportunity to provide feedback on the Discussion Document on Enabling Drone Integration.

The Council interest in the Discussion Document comes from several different perspectives across the Council's activity, as follows. The Council:

- Operates two aerodromes in Motueka and Takaka, and is a 50% shareholder in Nelson Airport.
- Owns and operates drones which it uses for infrastructure development, maintenance and renewals, river management, environmental monitoring, enforcement and compliance.
- Employs contractors that operate drones in for instance commercial forestry management.
- Provides consent for drone pilots to fly over Council land via a policy and by considering individual requests.

The Council's current Interim Policy on Giving Consent to Fly Unmanned Aircraft 2015 is attached to this submission. Council staff have been preparing a review of this policy however at this stage there has been no engagement with the Council's governance on possible changes to the existing policy.

General Comments
The Council agrees with the need to address the current issues caused by non-compliant drone pilots and to have confidence that those breaching the law can be identified.

In recent years the Council has received few complaints from the public about drone use over Council land. The number of requests to fly drones over Council land has also been quite low. We suspect that there are high levels of ignorance about the rules that apply to flying drones amongst pilots and significant levels of non-compliance. This view seems to be supported by the information in the Discussion Document.

The Council agrees with the view that drones are rapidly developing technologies that are challenging the way aviation is regulated in NZ. Similarly, we agree that drones can perform a wide range of activities never envisioned for manned aircraft and the range of uses of drones is only likely to expand further in the future.

Drones are expected to grow in popularity. The range of applications of drones in business and operations are likely to grow in the future. Drone flying is already a popular recreational activity and we see this is likely to continue to grow in the future.

Given this situation the Council supports the Ministry's work to further consider the regulatory measures to support the integration of drones into the aviation system.

Whole of Government Approach and Holistic Approach Required
The Council supports the all of Government approach noted in the discussion document to drone integration. The Council would like to see this holistic approach extended to incorporate a coherent view across the range of regulations that apply to drones and their enforcement. The Council doubts that a fragmented approach, where for instance CAA takes responsibility for the enforcement for aviation regulations, the Privacy Commissioner is required to enforce the privacy regulations and Councils are expected to enforce noise issues from drones, is likely to be successful in to the future. A more joined up, comprehensive approach to enforcement would be desirable.

We are unsure whether the CAA and Privacy Commissioner are currently equipped and resourced to be able to carry increased enforcement loads. We also consider, that unless at the very serious level, drone regulation infringements will be at the low end of the priorities for NZ Police.

The meaning of excessive noise in the RMA section 326(1)(a) appears to exclude aircraft during, immediately before or after flight. Consequently, councils' ability to regulate noise issues from drones via the RMA looks doubtful. Even if the legislation enabled this, the practicalities of councils taking enforcement action would be challenging.

There are a range of potential reasons for regulating the use of drones in certain spaces/over certain land. In examining the Council's current Policy on Giving Consent to Fly Unmanned Aircraft and considering its review there are a number of reasons why we have not provided consent or may not provide consent in the future as the default position for certain areas. These reasons include the following:

- Risk of health and safety of people (including risk to drone pilots entering areas with hazardous chemicals or other hazards to retrieve crashed drones).
- Risk of damage to property (including risk of drone pilots causing damage to public infrastructure e.g. water treatment plants, water reservoirs, when retrieving crashed drones).
- Risk of disturbance of wildlife
- Risk of disturbance of mourning/solemn remembrance of the deceased (cemeteries)
- Risk of noise and visual disturbance of people in quiet, sedentary enjoyment of garden parks etc.
- Risk of igniting fire.

The Council notes the Ministry's intention to further consider the impact of its proposals on public conservation land managed by DOC, where the consent provision allows DOC to manage the effects of drone use on wildlife, tangata whenua values, DOC operations, and visitor experience. However, we draw the Ministry's attention to the land managed by this Council (and many others) which has conservation values and contains wildlife that is sensitive to drone use. In enabling drone integration consideration needs to be given to how best to manage drone use to avoid negative impact on these values.

The Council is unclear how the Ministry's proposals will intersect with other (non-aviation) forms of regulation. The current prohibition of drone use in the Moturoa/Rabbit Island

Reserve Management Plan is one example of this interaction of different regulations that needs further consideration.

Drone use on Moturoa/Rabbit Island
Under the Reserves Act the Council is expected to develop Reserve Management Plans for its reserves. These plans 'shall provide for and ensure the use, enjoyment, maintenance, protection, and preservation, as the case may require, and, to the extent that the administering body's resources permit, the development, as appropriate, of the reserve for the purposes for which it is classified…'.
In the case of Moturoa/Rabbit Island the Council has developed a reserve management plan and in that has prohibited the flying of drones in order to give effect to the requirements in the Reserves Act.
There is an acknowledgement in the discussion document of the interaction between the aviation regulations and some other legislation but not the Reserves Act.

Should we review the four-kilometre minimum flight distance from aerodromes?
As noted at the start of this submission, the Council is the operator of two aerodromes. We are particularly concerned about ensuring the safety of manned aircraft in and around aerodromes. Clearly drone use in close proximity to aerodromes has the potential to create significant health and safety and damage risk for manned aircraft.

The Council accepts the view expressed in the Discussion Document that there is wide variation in the use of uncontrolled aerodromes and a one-size fits all circumstances may not be appropriate. However, having a consistent standard around all aerodromes helps in communicating a clear message to all drone pilots.

In considering the specific arrangements for use of drones in close proximity to individual aerodromes the Council would like some assurance that there will be adequate engagement with the aerodrome operators and local pilots to gain a really good understanding of the local conditions and use of the aerodrome. This engagement should ensure that those developing the arrangements for drone flying are well informed about the specifics of the individual aerodromes.

Should we change the requirement to gain consent to fly above property by:
a. Using 'safe distances' as an alternative?
b. Relaxing the requirement in another way?
c. Removing the requirement completely?

In general, the Council considers there to be some merit in relaxing the requirement to gain consent because:

- The current provisions generate administrative costs for us in developing/reviewing a policy to give effect of the requirement, and considering and responding to requests for consent.
- We have the strong suspicion that many drone pilots either are not aware of the requirement to gain consent and/or ignore the requirement.
- Even for drone pilots knowledgeable and motivated to meet the requirement, doing so can be problematic.

- The arrangements are different between Council areas, adding to the complexity for drone pilots.
- Widespread drone use is gradually becoming more publicly accepted.

However, the Council notes that there may be a number of legitimate reasons why the owners and/or users of land may not want drones operating. Only some of these relate to safety which appears to be the CAA's focus. Earlier in this submission we listed the range of reasons we may limit drone use over certain areas of Council land. The Council would be concerned if private landowners are completely excluded from having some sort of say in drones flying over their property.

In the recent question and answer session organised with LGNZ, the idea that Council's may introduce bylaws to control aspects of drone use, not associated with safety concerns, was contemplated. Such an approach would lead to inconsistent rules around the country for drone operators which could be problematic. The Council considers that the general bylaw provisions in the Local Government Act 2002 should not be relied upon as a mechanism to develop bylaws to control drones. This is because the enforcement tools available to Council's to take action on bylaws created under these powers are extremely limited and of little practical use in many situations. Rather if bylaws are considered to be part of the fabric of drone regulation and control, there should be some specific legislation providing councils the power to make the bylaws with appropriate enforcement measures.

We consider that if the requirement to gain consent is relaxed there needs to be an effective alternative (in addition to the other measures proposed in the discussion document). Safe distances seems to be the only method really identified as a current alternative. The Council understands that the relaxation of the requirement to gain consent would only proceed in combination with some of the other measures such as the requirement to register drones and remote identification. This could be effective but depends on how it is applied. The Council would like to consider nature of this control and how it would be applied before commenting further.

The Council agrees that drone pilots would have to adhere to other legal requirements such as privacy law and principles. As noted earlier in the submission we have concerns about how this will operate in a comprehensive and coherent way.

Q.4. Should we change the requirement to gain consent to fly above people by:

a. Using 'safe distances' as an alternative?
b. Relaxing the requirement in another way?
c. Removing the requirement completely?

As noted earlier in this submission we feel that drone use is becoming more generally accepted. There remain significant privacy risks and we understand that the Privacy Commissioner is responsible for regulating the privacy aspects. Again, we seek a coherent and joined up approach across the various agencies involved.

Drones flying over people at events, playing sport and a range of other situations can be annoying, disruptive and potentially hazardous, in addition to the privacy concerns. Safe distances may be an appropriate alternative to the requirement to gain consent to fly above people, but the Council would like to consider the nature of this control and how it would be applied before commenting further.

One particular instance in which there will be a desire to regulate drone use over people is the case of major events, particularly where the broadcast rights have been sold.

Should we introduce basic pilot qualification for Part 101 drone pilots?
The Council is supportive of the proposal to introduce a national level basic pilot qualification for Part 101 drone pilots. This could be a useful method of at very least ensuring that pilots are made aware of the regulations, knowledge and skills involved in flying drones.

Achieving the right balance between ensuring that pilots have an appropriate level of ability and not making the requirement so arduous many pilots will ignore it is tricky. We consider that an online basic theory test would be a good way of striking this balance. Common to other online testing there is a risk that the person whose details are entered may not be the person actually taking the test.

As with all regulation, having an effective form of compliance and enforcement is important. For this reason the Council considers that the introduction of a requirement for basic pilot qualification would mean that a register of qualified pilots would need to be established and maintained. We appreciate that creates significant complexities in terms of data management and privacy.

The Council's drone pilots have been through suitable training and we support the proposal to exempt pilots who have qualifications through Part 141 and Part 101.202 CAA approved training organisations should be exempt from taking the test as long as they can prove so. However it will be important that these people are included in the register of qualified pilots to support good enforcement.

Should we introduce the proposed drone registration system? Why?
The Council supports the introduction of a national level drone registration system and sees clear advantages for enforcement from being be able to easily connect a drone to its owner. In addition, drone pilots knowing their drone can be connected to them should also play a role in encouraging pilots to take more care to stay within the rules.

Any drone registration system needs to be simple for both drone owners and enforcement agencies to use. It needs to be at the national level to ensure consistency across New Zealand, as pilots can easily move around New Zealand.

The Council does not have a view on the specific minimum weight threshold for registering a drone, however considers it sensible to include all drones of a weight that have the potential to create health and safety issues, damage property or disturb wildlife etc.

Should we consider introducing Remote ID? Why?
The Council supports the introduction of remote ID being further considered. We see clear potential benefits in improved health and safety, better detection of rule breaking and improved enforcement, as well as better understanding of drone use in general to inform future policy development and system management.

We consider that there may be issues with transitioning to this requirement. Many older drone models will not have this capability and may have quite long operational lives. We are unsure whether retrofitting this capability on older drones is possible and if so whether it is cost effective.

Should we consider introducing geo-awareness? Why?
The Council considers that there are significant potential benefits from introducing geo-awareness. We see particular benefits from there being one source of truth in map form. We consider that this is comprehensive and authoritative, including all areas where flying drones in prohibited or restricted through the full range of legislation and regulations. A map of areas subject to aviation regulations alone would be significantly less useful.

We consider that geo-fencing seems like a sensible option to avoid drones inadvertently being flown into prohibited airspace, as the technology advances. Geo-fencing may have application for e.g. major events, maybe emergency situations and other occasions where there is a desire to exclude drones for a limited period of time. We would be concerned if geo-fencing resulted in there being no drone flying whatsoever in controlled airspace. Some parts of the Tasman District such as Waimea pains and Motueka have relatively large controlled airspace, however flying drones in these areas periodically is important for us for river management for example.

Yours faithfully

[redacted]

Attachment 1

Interim policy giving consent to fly unmanned aircraft over Council land

Policy effective from 15 September 2015

Policy Summary

Provided you follow the CAA operating rules and subject to conditions*, you have Tasman District Council's permission to fly unmanned aircraft over Council land, with the exception of:

- Council offices and libraries;
- Council land managed as plantation forest;
- Mapua precinct and wharf area, and Waterfront Park;
- Washbourn Gardens;
- Pethybridge Rose Gardens;
- Takaka Memorial Gardens;
- Council cemeteries;
- Motueka sandspit (Council owned portion. Refer to the Department of Conservation on rules for its portion of the spit);
- any Council land that is leased to another party (e.g. bowling greens, tennis courts, grazing licences); and
- any location on Council land during an organised gathering of people (including sporting events).

Council may consider specific requests to fly over these areas.

If you want to fly over land within the 4km zones around aerodromes, you will either need to stick to shielded operation (stay low), or obtain permission from the aerodrome operator and comply with their requirements. Council's Property Services Manager is the aerodrome operator for the Motueka Aerodrome.

***Tasman District Council conditions when flying unmanned aircraft over Council land**

- Comply with the Office of the Privacy Commissioner guidance on preserving peoples' personal privacy by not flying over other people or adjoining private property without their consent.
- Be courteous of other park users, who often are there for the quiet enjoyment of the park.
- Do not operate over a sports field if in use by others.
- Do not operate within 20 metres of or be flown over other users of a park or livestock.
- Do not operate within 20 metres of sensitive wildlife habitats (such as coastal or river margins).
- Do not operate within 20 metres of nesting or roosting birds (such as godwits, banded rail, terns, NZ dotterel).
- Do not operate within 20 metres of, or be flown over, any building on Council land.
- Do not operate during a fire ban period.
- Cease operation if requested by Council staff.

- Any person proposing to use unmanned aircraft for commercial purposes must obtain specific permission from Council.

Any breach of the above conditions could result in termination of your permission to fly unmanned aircraft over Council land.

Introduction

Property owner consent is required to fly drones/UAVs/model aircraft over land that is owned, managed or leased by Council. This page outlines the interim approach Tasman District Council is taking to property owner consent. The interim approach will be reviewed once national guidance from Local Government New Zealand becomes available.

The Civil Aviation Authority (CAA) regulates civil aviation in New Zealand, and sets the rules around the use of Remotely Piloted Aircraft Systems: Unmanned Aerial Vehicles (UAV), Unmanned Aerial Systems (UAS), model aircraft and drones – unmanned aircraft.

New rules introduced by the CAA came into effect on 1 August 2015. These rules require people to obtain approval from the land owner or the occupier of the land you want to fly over. This rule comes in addition to the existing CAA and Air Traffic Control rules on where and how you can fly unmanned aircraft, and what permissions you need to get before doing so.

Council isn't responsible for setting, monitoring or enforcing these rules, but we are summarising them here in an attempt to make them clearer to users, especially casual UAV/drone operators.

Where can you fly and what permissions do you need?

General CAA rules and Air Traffic Control

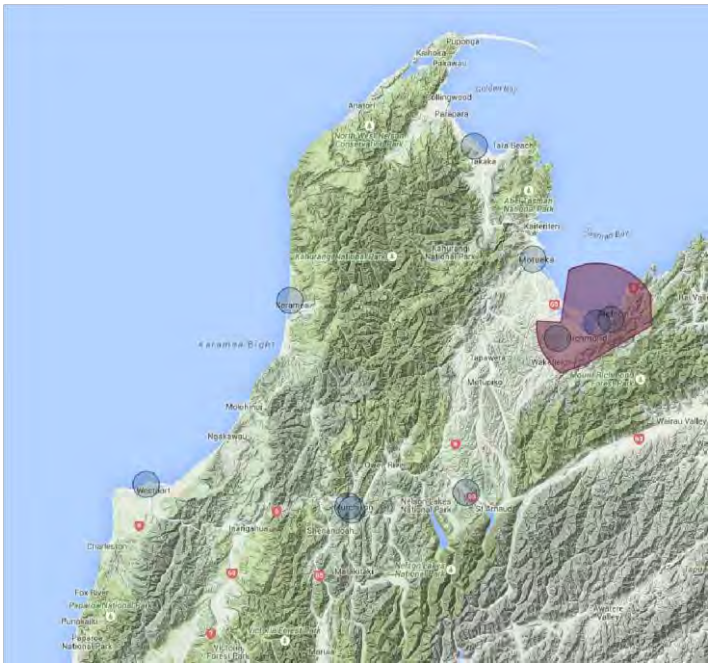
Part of Tasman District (including Rabbit Island, the Waimea Plains, Eves Valley and parts of Redwood Valley and the Richmond Range) sits below the Nelson controlled airspace. This means that if you want to fly anything in that airspace, you need permission from Air Traffic Control.

In addition, CAA defines four-kilometre zones around all aerodromes, where the use of the airspace is further restricted. In these zones, you need to have a pilot licence (or to be accompanied by someone who does) in addition to having permission from Air Traffic Control. This restriction applies specifically to any aerodrome listed in the Aeronautical Publication of New Zealand. These aerodromes are shown on the map linked to below.

In the case of the 4km zone around the Motueka Aerodrome, 'Flight Restriction Zones' have been established to protect aircraft using this aerodrome. Within the Purple flight restriction zone you can fly up to 20 metres above sea level without prior approval. If you want to fly higher than 20 metres above sea level you will also need permission from The Property Services Manager at Council (he is the Motueka Aerodrome Operator).

Map of controlled airspace and 4km zones (shows the controlled airspace for Nelson Airport and the location of aerodromes at Takaka, Motueka, Eves Valley, Nelson, Lake Station/Nelson Lakes, Murchison and Murchison Hospital)

- Flight Restriction Zones for the Motueka Aerodrome



Airspaces within Tasman District:

- NZMR – Murchison
- NZUR – Murchison Hospital
- NZLE – Lake Station/Nelson Lakes
- NZTK – Takaka
- NZMK – Motueka
- NZEV – Eves Valley
- NZNS – Nelson (controlled aerodrome)
- Nelson controlled airspace

To obtain authorisation from Air Traffic Control, register and log your flights on the Airshare UAV hub. The hub also provides a wealth of other information, including links to the CAA rules and news on the UAV industry.

Exemption: shielded operations

You don't need to get a pilot licence or Air Traffic Control authorisation if you're flying as a "shielded operation" which CAA defines as "an operation of an aircraft within 100m of, and below the top of, a natural or man-made object". This means you can fly your unmanned aircraft in Tasman District as long as you keep your aircraft lower than the highest tree / building / ridge within 100m of where you're standing. But you need to have permission from landowners first.

Landowner / occupier permission

The new rules introduced by the CAA require people to obtain approval from the landowner or the occupier of the land you want to fly over. What this means:

On private land

Fly over your own property or get permission from whoever owns / occupies / is in charge of the land you want to fly over.

On land owned, managed or leased by Council (including parks and reserves)

Provided you follow the CAA operating rules and subject to Council's conditions (set out below), you have Tasman District Council's permission to fly unmanned aircraft over Council land, with the exception of:

- Council offices and libraries;
- Council land managed as plantation forest;
- Mapua precinct and wharf area, and Waterfront Park;
- Washbourn Gardens;
- Pethybridge Rose Gardens;
- Takaka Memorial Gardens;
- Council cemeteries;

- Motueka sandspit (Council owned portion. Refer to the Department of Conservation on rules for its portion of the spit);
- any Council land that is leased to another party (e.g. bowling greens, tennis courts, grazing licences); and
- any location on Council land during an organised gathering of people (including sporting events).

Council may consider specific requests to fly over these areas.

If you want to fly over land within the 4km zones around aerodromes, you will either need to stick to shielded operation (stay low), or obtain permission from the aerodrome operator and comply with their requirements. Council's Property Services Manager is the aerodrome operator for the Motueka Aerodrome.

The CAA rule also says you need to get consent from any person you want to fly over (this can be given verbally).

CAA rules also have an overriding requirement to not operate in a manner that is hazardous to people or property.

How must you fly?

Other rules and conditions apply, whether you're flying with or without a pilot licence and authorisation from Air Traffic Control/the aerodrome operator. We advise people to always read the rules in full, along with the relevant advisory circulars on the CAA website. The advisory circulars aim to help people interpret the rules and understand how to comply with them.

CAA operating rules

- never fly higher than 120 metres / 400 feet above ground level
- only fly during daylight hours
- always fly within visual line of sight – you need to be able to see the aircraft with your own eyes at all times (i.e. not through binoculars, a monitor, or smartphone)

  at all times take all practicable steps to minimize hazards to persons, property and other aircraft (i.e. don't do anything hazardous). Give way to all other aircraft, and have abort systems in place in the event of a system failure (know how your aircraft will behave if a failure occurs)

If you are concerned that these rules are being breached, please contact the CAA on isi@caa.govt.nz or phone 0508 4SAFETY. If there is an imminent threat to people or property, please contact the Police.

Tasman District Council conditions when flying unmanned aircraft over Council land

- Comply with the Office of the Privacy Commissioner guidance on preserving peoples' personal privacy by not flying over other people or adjoining private property without their consent.
- Be courteous of other park users, who often are there for the quiet enjoyment of the park.
- Do not operate over a sports field if in use by others.
- Do not operate within 20 metres of or be flown over other users of a park or livestock.
- Do not operate within 20 metres of sensitive wildlife habitats (such as coastal or river margins).

- Do not operate within 20 metres of nesting or roosting birds (such as godwits, banded rail, terns, NZ dotterel).
- Do not operate within 20 metres of, or be flown over, any building on Council land.
- Do not operate during a fire ban period.
- Cease operation if requested by Council staff.
- Any person proposing to use unmanned aircraft for commercial purposes must obtain specific permission from Council.

Any breach of the above conditions could result in termination of your permission to use Council land for the above purposes.

Privacy Act

You also need to comply with the Office of the Privacy Commissioner guidance on preserving peoples' personal privacy by not flying over other people using the park or over adjoining private property without their consent. Note that the Privacy Commissioner's CCTV guidelines apply to how someone might use drones fitted with cameras and comply with the Privacy Act:

What types of aircraft can you fly over Council land?

You are only permitted to fly unmanned aircraft weighing less than 25kgs on public land. However, anyone operating an unmanned aircraft that weighs between 15 - 25kgs must be a member of an organisation approved by the CAA (e.g. Model Flying New Zealand).

The rules and permissions set out on this page cover electric-powered, remote-controlled model aircraft commonly referred to as "drones" that are capable of vertical take-off and landing. They also cover small hand-launched gliders less than 1.5m wing span.

The rules and permissions set out on this page do not cover the following:

- Fixed-wing electric-powered model aircraft greater than 1m wing span;
- Gliders greater than 1.5m wingspan and bungee-launched gliders;
- All internal combustion engine (petrol)-powered aircraft; or
- All jet-powered models.

These types of unmanned aircraft can only be flown on private property or officially recognised sites under the control of approved operators, such as model aircraft clubs.

What about flying my kite?

As long as your kite is moored (i.e. you have it on a string) and kept under 120m / 400ft, you can fly it where you like so long as it is used carefully and you take into consideration nearby people, stock and wildlife.

More tips and resources

Read up on CAA rules Civil Aviation Authority website

Map it out Visual Navigation Charts

Get authorisation Airshare UAV hub

Check before you fly Controlled airspace and 4km zones

Know your responsibilities Duties of pilot-in-command

Use the right frequencies Frequencies legal for unmanned aircraft

[redacted]

From: [redacted]
Sent: Friday, 4 June 2021 2:40 PM
To: Enabling Drone Integration
Cc: [redacted]
Subject: NZ Airports - Submission on Enabling Drone Integration
Attachments: NZ Airports Submission MOT Enabling Drone Integration 4-6-21 FINAL.pdf

Hi,

Please find attached the NZ Airport's submission on *Enabling Drone Integration*.

Yours sincerely,

[redacted]

[redacted] | W www.nzairports.co.nz

Level 8, Midland Chambers, 45 Johnston Street, Wellington 6011
PO Box 11369, Wellington 6142, New Zealand.

NZ AIRPORTS

NZ AIRPORTS ASSOCIATION

4 June 2021

Enabling Drone Integration - Consultation
Ministry of Transport
PO Box 3175
Wellington 6140

Email: enablingdroneintegration@transport.govt.nz

Submission on the Ministry of Transport Discussion Document 'Enabling Drone Integration'

(Discussion Document dated 6 April 2021)

1. Thank you for the opportunity to provide feedback on the Ministry's Discussion Document 'Enabling Drone Integration' dated 6 April 2021 (the 'Discussion Document').

2. NZ Airports also appreciates the opportunities that have been provided for early consultation as the drone environment develops, and in particular for NZ Airports representatives to meet on 21 April 2021 to be briefed on the Discussion Document.

3. This submission is from NZ Airports and is made on behalf of the Association's members[1]. Individual airports may also provide comments, and this submission should be read in conjunction with any separate submissions from airports.

4. NZ Airports has no objection to this submission being made public.

5. NZ Airports will be pleased to provide any further information required in support of this submission. The contact person is:

[redacted]

General

6. NZ Airports supports the Ministry's approach in the Discussion Document to use 'drone' as a generic term to describe all forms of unmanned aircraft to which CAR Parts 101 or 102 apply for the purposes of this consultation.

7. Airports have a strong interest in the management and regulation of drones, to both embrace the integration of drone technology in the aviation system and to ensure that the transition to

[1] Ardmore Airport, Auckland International Airport, Chatham Islands Airport, Christchurch International Airport, Dunedin International Airport, Gisborne Airport, Hamilton Airport, Hawke's Bay Airport, Invercargill Airport, Kapiti Coast Airport, Kaitaia Airport, Kerikeri Airport, Marlborough Airport, Masterton Airport, Matamata Airport, Motueka Airport, Nelson Airport, New Plymouth Airport, Palmerston North Airport, Queenstown Airport, Rangiora Airport, Rotorua Airport, Takaka Airport, Taupo Airport, Tauranga Airport, Timaru Airport, Wanaka Airport, Wanganui Airport, Wellington International Airport, Westport Airport, Whakatane Airport, Whangarei Airport

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Wellington, New Zealand

increased use of drones does not reduce safety or productivity of existing aviation participants, particularly in the vicinity of aerodromes.

8. NZ Airports acknowledges that -

   8.1. the introduction of drones into the aviation system is a global issue, and no doubt New Zealand will want to make progress at a measured pace to align internationally as much as possible; and

   8.2. the pace of change in technology and the rapidly increasing availability and use of drones presents challenges for safe integration in aviation.

Integration of drones into the aviation system

9. NZ Airports supports the Government's long-term objective of safe integration of drones into New Zealand's civil aviation system and ultimately within the wider transport system.

   9.1. NZ Airports continues to support maximising the social and economic benefits from the use of drones while integrating appropriate drones safely with the NZ aviation systems.

NZ Airports supports integration of appropriate drones into the aviation system.

10. The Discussion Document correctly identifies the wide range of drones (scale, operating environment and uses) that are available.

    10.1. NZ Airports submits that more should be done to separate drone activities into two separate groups for managing safety risk and potential integration into the aviation system –

        10.1.1. Those that fly in airspace that is shared with traditional manned aircraft.

        10.1.2. Those that fly outside airspace that is shared with traditional manned aircraft.

    10.2. To date the only distinction in drone operations has been those drones subject to CAR Part 101 and those subject to CAR Part 102.

    10.3. Part 101 flights are able to operate in airspace that is shared with manned aircraft.

        10.3.1. This risk is currently managed by requiring "agreement" with an aerodrome operator if within 4km of an aerodrome or air traffic control approval to access controlled airspace.

        10.3.2. There is a large proportion of this group that do not intend, nor require, access to shared manned airspace – this group need to be defined and managed in a separate way. They are not, and need not be, familiar with aviation rules and should have certainty of airspace that can be occupied without being shared with manned aircraft.

        10.3.3. To achieve that goal there may be changes required to airspace designation. At present controlled and uncontrolled airspace extend downwards to ground level. Is that appropriate other than within 4km of an aerodrome?

Air space designations need to be reviewed to provide for separation of drones that are not intended to be in the aviation system and integration of those that share airspace with manned aviation.

10.3.4. Defining airspace that separates those aircraft and drones that are within the aviation system from those that are not is a key step for integration. As the designated Airspace Authority, the CAA should engage with aviation participants to advance this work. Airports are stakeholders in the aviation system and are keen to be part of that process.

10.3.5. The definition of airspace needs to be easily interpreted by those drone operators that are not in the aviation system. Procedures, resources, and rules are needed to ensure that those drone operations not in the aviation system remain out of the manned airspace, and likewise if a manned aircraft does have reason to fly into airspace that has been defined for non-aviation participants there need to be procedures to manage or mitigate the risks.

10.4. CAR Part 102 is used for certification of those that may generally fly in shared manned airspace. Drones that may fly in shared manned airspace may therefore be operating under CAR Part 102 (and those under CAR Part 101 with controlled airspace clearance or agreement of an aerodrome operator) within 4km of an aerodrome.

10.4.1. NZ Airports suggests that this arrangement is not sustainable as drone activity increases.

10.4.2. CAR Part 102 certification provides no transparency for other airspace occupiers of the basis upon which flights are being shared in airspace. The certificates for operation are entirely a matter between the certificated operator and CAA.

10.4.3. CAR Part 102 in effect provides for specific operational requirements similar to rule exemptions, and in this respect is unlike (and inconsistent with) most other rules which set out transparent requirements for the certificated operator to comply with as part of an overall aviation system.

10.4.4. Individual CAR Part 102 certifications risk creep in standards, inconsistency between operation conditions, and even potentially conflict in conditions, particularly over time. In the case of drones, individual certification is being used as a substitute to having rules that would otherwise transparently disclose how drones and manned aircraft use shared airspace.

10.4.5. We submit it is poor regulatory practice, and a safety system design flaw, to have a subset of operations in shared airspace operating under authorisations about which other operators are essentially in the dark.

10.5. Rules and airspace designations are urgently required to manage drones in airspace shared with manned aircraft.

Reliance on CAR Part 102 to manage the risk of drones in airspace shared with manned aircraft is inappropriate.

10.6. NZ Airports has consistently submitted that drones intended to operate in airspace that is shared with manned aircraft should be subject to the same regulatory environment as manned aircraft in relation to –

10.6.1. Airworthiness and registration of aircraft on a CAA register.

10.6.2. Qualifications of the pilot in command (defined appropriately for unmanned aircraft.

10.6.3. Compliance with aviation rules.

10.6.4. All aspects of the aviation system as would apply to manned aircraft.

10.6.5. Enforcement and penalties.

10.7. Aviation regulation in New Zealand follows a "closed system" or "life cycle" model that has stood the test of time and applies appropriate safety processes to all participants. It incorporates, "entry control", education, surveillance and monitoring, compliance activities, and "exit control". This system has been described by the CAA in its Regulatory Operating Model[2]. Extracts from the model, including a diagram of the life cycle of aviation participants, are attached as **Appendix 1** to this submission. This approach supports the division of drone operations and operators into those within the aviation system, and those operating outside it.

10.8. Drones not intended to fly in airspace shared with manned aircraft should be managed outside of the aviation system – but with sufficient controls or regulation to ensure operators know where their limits apply to stay out of shared manned aircraft space.

10.9. In the absence of a mature aviation system with respect to drones, airports have been participating by entering into agreements with drone operators within 4km of an airport. Ideally there should be no need for such arrangements. Aerodromes do not get involved in approving flight of manned aircraft near the aerodromes, because those operators and equipment are fully inducted into the aviation system. If the rules were clear (as per the principles set out in 10.6 above, and the CAA's Regulatory Operating Model), drone flights would simply be just another aircraft movement.

Non-aviation system participant drones should be excluded from manned airspace within 4km of an aerodrome. Those drones participating in the aviation system comply with aviation rules and fly in shared manned airspace with the same rules (i.e., not requiring airport agreement unless that applied to all aircraft)

11. Until such time as a rule set and airspace designations integrate drones with manned aircraft, NZ Airports advocates that the current arrangements within 4km of an airport remain subject to the following points being considered -

11.1. Aerodrome operators have many experiences with drones operating within 4km of an aerodrome and have concerns for safety based on those experiences.

11.1.1. The lack of transparency with CAR Part 102 certification and experiences with drone operators (both Part 101 and 102) being found to be not being fully aware of risks contributes to these concerns.

Although the majority of drone operators try to do the right thing, most do not have an awareness of airspace issues around aerodromes such as Ardmore and demonstrate poor knowledge of approach paths flown by manned aircraft, especially low level helicopter approach sectors that are not in line with the runway;

11.1.2. Confusion with the status of flights logged through Airshare has been a concern when flight is within 4km of an aerodrome.

11.1.3. The limited visibility of drone operations that is available to ATC is not available to aerodrome operators where there is no ATC (or outside the hours of ATC).

[2] See CAA Regulatory Operating Model - Version 2, 5th February 2014 (aviation.govt.nz)

11.1.4. We understand that flights logged in Airshare do not involve any active management during their operation and it is often unclear when an operation has been concluded.

11.1.5. The ability of drone operators to issue NOTAMS within 4km of aerodromes has arisen as a concern for airport operators.

11.2. More attention needs to be given to the risk of un-commanded flight of a drone into manned airspace within 4km of an aerodrome. Unlike aircraft systems, redundancy is not likely to be part of the drone control system for drones operated outside the aviation system. Therefore, the probability of an aircraft versus drone collision near aerodromes would not meet the ICAO 10-7 safety level.

11.3. If the 4km requirements were to be refined in any way, they should at least apply to the take-off and approach surfaces and the circuit area of the aerodrome. The aerodrome Obstacle Limitation Surfaces (specifically the approach/take-off fans and visual segments) are where commercial passenger aircraft are low, slow, and not very manoeuvrable.

11.4. There are legitimate needs for drones to operate on or in the vicinity of airports. These should be managed and regulated the same as manned aircraft except if operated within a building (such as a hangar). The current requirement for airport agreement (or air traffic control clearance in the case of a controlled airport) for drones operated within the confines of a building at or within 4km of an aerodrome is unnecessary.

12. The Discussion Paper, despite the policy intent and the name of the paper (Enabling Drone Integration), does not appear to advance integration, but rather reinforces the adoption of separation with no path evident to integration.

13. A key aspect for integration of drones into the aviation system arises from the concept of "see, detect, and avoid" that underpins visual flight rules. As many drones may not be adequately visible to other pilots, integration into the aviation system needs a solution to overcome this safety risk.

13.1. Current progress on introducing ADS-B for aircraft surveillance presents one opportunity to make headway on this issue, but it requires system design effort, and we therefore pose some questions –

13.1.1. The mandatory requirement for ADS-B(out) only applies to controlled airspace. Is this adequate for an integrated drone environment?

13.1.2. Is there sufficient recognition of the value of the role ADS-B(in) could play in overcoming this issue?

13.1.3. Are there drone surveillance technologies that could simply integrate with ADS-B?

13.1.4. Is timing to resolve this of the essence, given the current programme of ADS-B installations?

13.1.5. Appendix 2 of the Consultation Document "Drone projects across government" appears to be the only reference to ADS-B in and out. The NSS programme appears to have anticipated ADS-B potentially having a role in the integration of drones, but it does not appear to have been developed.

13.1.6. Is the supplier of ADS-B surveillance infrastructure (Airways Corporation) adequately structured, mandated or contracted to ensure a holistic approach is taken to surveillance in a drone-integrated aviation environment?

System design is required to overcome the VFR dependence on 'See, detect and avoid' in an aviation environment that integrates drones with manned aircraft. ADS-B should be integrated with drones.

13.1.7. Should drones operating in shared manned airspace be required to be radio-equipped and operated with appropriate rating? (This may be more onerous than the requirements for piloted aircraft which can operate NORDO and nil-transponder in Class G airspace, however the drone is not always able to be visually detected in the same way that an aircraft is)

Drone aircraft registration

14. Consistent with the principles set out in 10.6, NZ Airports supports a mandatory requirement for drone aircraft registration.

14.1. For drones that are going to share manned airspace, the drone registration system needs to be integrated, or designed to be consistent with, the manned aircraft register. It should be subject to the same rigour, integrity, transparency, and access as occurs with other aircraft.

14.2. Aircraft that are not in the aviation system may have a different system to ensure distinction from those that are part of the aviation system. Consideration might be given to free registration to minimise barriers to compliance.

NZ Airports supports regulated registration of all drones that are part of the aviation system (those intended to be flown in shared manned airspace).

Drone Pilot qualifications

15. Consistent with the principles set out in 10.6, NZ Airports supports a mandatory requirement for drone pilot qualification.

15.1. If a drone is to be flown in airspace shared with manned aircraft, the pilot needs to have adequate understanding of the rules.

15.2. NZ Airports disagrees with drone pilot qualifications (whether or not under CAR Part 102) being outside the aviation system if flight is allowed in airspace shared with manned aircraft. We consider this would be inconsistent with good safety system design and long-standing CAA regulatory models. Existing pilot qualification rules should be relied upon or adapted if specific drone pilot issues are identified.

15.3. Note that NZ Airports draws a distinction between drones that are flown in airspace shared with manned aircraft and those outside the aviation system.

15.4. To help ensure that drone flights operating outside of the aviation system do actually remain clear of shared manned airspace, a simple qualification could be required (simple multichoice test) similar to what occurs when applying for a motor vehicle learner licence.

NZ Airports supports pilot qualification requirements for the flight of drones in airspace shared with manned aircraft. The qualification must be part of the aviation system.

Surveillance of drones

16. More clarity is required of the party who is responsible for monitoring usage, compliance and enforcement of drone activity that is outside the aviation system for manned aircraft. The

responsibilities around this are currently unclear. Integration of drones in shared manned airspace should be the CAA as the designated Airspace Authority.

17. Airports want to be able to work closely with an authorised agency to quantify the risk and use data to provide targeted education around the larger airports (such as Auckland). Available technology to monitor drone usage is subject to restrictions in the Radiocommunications Act. Established drone surveillance products available to be used elsewhere in the world cannot be used by NZ airports. The policy paper is silent on this, and we believe it is a gap that needs to be considered and included in this scope of work.

Yours sincerely,

[redacted]

[redacted]

NZ Airports
4 June 2021

Appendix 1, CAA Regulatory Operating Model (2014), Extracts

Page 3,

5. Overarching Regulatory Principles

- Public interest is paramount.
  - While the CAA works with participants, it represents the public interest in civil aviation safety. It acts independently as a regulator in holding participants to account for their safety performance.
- Participants are responsible for good safety management.
  - A responsible aviation community is the front line of safety assurance. Participants exercising privileges in the civil aviation system are responsible for the safety of their operational activity. The Civil Aviation Act 1990 requires that participants shall carry out their activities safely and in accordance with relevant prescribed safety standards and practices. Where required by Civil Aviation Rules (Rules), participants must establish and follow a management system that will ensure compliance with relevant safety standards. Under this system approach the expectation is that participants:
    - fully understand their safety regulatory responsibilities;
    - are qualified and resourced to fulfil their responsibilities;
    - willingly comply with regulatory requirements;
    - understand and apply documented procedures and approved practices;
    - investigate and rectify safety problems when they occur; and
    - demonstrate a commitment to safe practices within their organisation.
- Attitudes and behaviour of participants and all persons carrying on activities in the civil aviation system are key to effective safety performance.

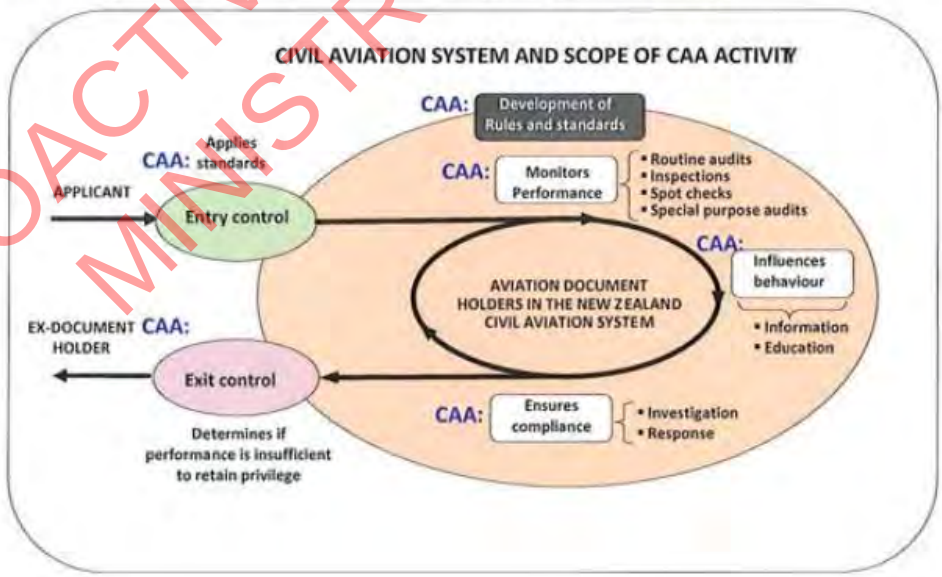
Page 6,

9. 'Life Cycle' Approach to Regulation in the Civil Aviation System

The boundary of the civil aviation system is determined by civil aviation legalisation and Rules. Rules specify the activities for which an aviation document is required and prescribe the requirements for entry and continued operation in the civil aviation system.

The diagram below shows the life cycle of a participant within this system and the regulatory activities and interventions of the CAA at the various stages in the life cycle.

Figure 2: Scope of CAA Activity within the Life Cycle of Aviation Participants



Pages 6, 7

Within the system there is various CAA activity at each stage as follows:

- **Entry Certification** – Participants are required to show how they fully comply with the appropriate requirements and have the ability to maintain compliance. The Director's entry certification and licensing function is applied at this point. At this point the regulator acts as the 'gatekeeper' to the aviation system to ensure that all who enter it can operate safely. The onus is on the person or organistion seeking to enter the system to demonstrate that they meet all the requirements and that, in the case of organisations, all necessary management systems that may be required by Rules are in place. The same process is applied to any changes to an operating certificate (certificate amendment). In all cases the organisation's management system becomes the basis for entry into, and subsequent operation within the system.

- **Continued Operation** – Participants must continue to meet requirements while operating in the system (and ideally willingly exceed minimum requirements). In the case of organisations this includes the continued effective operation of their management systems required under Rules. Regulatory activities include appropriate monitoring (surveillance), provision of advice and technical guidance material, safety promotion and other activities to support this outcome. This includes investigation and enforcement action as appropriate. A participant's aviation document may have conditions placed upon it limiting the exercise of privileges under the document if this is considered necessary in the interests of safety.

- **Exit** – A participant may exit the system voluntarily, requesting the suspension or revocation of an aviation document. The Director may suspend or revoke an aviation document where such action is necessary in the interests of safety or for reasons of non-compliance with other regulatory requirements, e.g., payment of fees and charges.

[redacted]

From: Michael Harrod [redacted]
Sent: Friday, 4 June 2021 2:50 PM
To: Enabling Drone Integration
Subject: Submission on Enabling Drone Integration paper

Hello,

I would like to submit some feedback on the recent Enabling Drone Integration paper. Being a time-poor husband and father of two young children I have struggled to absorb and process the document, review other responses and articulate my thoughts before today's deadline. But, thank you for the opportunity to contribute.

Although not an MFNZ member, I strongly support MFNZ's submission:

https://drive.google.com/file/d/1U8eGmNYq6cxD8r83JtUcmuk09mTOBo5o/view?usp=sharing

Also, FliteTest (based in Ohio, USA) last year formulated a response to the FAA's Notice of Proposed Rulemaking (NPRM) which does a fantastic job of summarising and similar concerns I have about the possible effect of the regulation being considered in New Zealand:

https://www.youtube.com/watch?v=MgCGnuK1g0E

It may be of interest to know that this sort of recreational or home built fixed-wing model flying is alive and well in New Zealand and not necessarily controlled by MFNZ. Ominous requirements in the form of Remote ID or RPAS registration run the risk of stifling education and innovation in our country, and acting as a barrier to entry for inspired young minds who would join the hobby.

I will try to briefly list additional points from my own perspective.

- The term "drone" is loaded with negative connotations and stigma that model aviation hasn't earnt, and should be stripped from any policy intended to cover other craft e.g. fixed wing models and gliders.
- There is an assumption that drones have a 1-2 year lifespan and therefore will tend towards compliance as they will tend to be new. This in no way applies to model aircraft. Many of mine are more than 10 years old, many of them I have purchased secondhand and repaired.
- Registration as a concept seems reasonable to me provided the costs are kept down. I don't mind an annual pilot registration fee, even lodging photos of models online, but would not want to have to register and pay a fee for every single cheap scrappy experimental model I own at a dollar amount that is aimed at people who own a single drone with a price tag of $1000 upwards. The economics would quickly fail to stack up and I suspect this would deter the majority of model aircraft owners from complying.
- Further to the above, home built models can get crashed and repaired regularly, sometimes combining parts from other models. Registration starts to get blurry in this scenario.
- Not that I am a drone pilot, but I think that FPV flying in conjunction with a shielded operation should be possible without an observer, provided all other rules are being followed and safety remains paramount.
- I have no desire to fly over people and take all the measures I can to avoid this e.g. flying at remote locations and hours of the day to minimise the chance of others being around. However, sometimes a member of the public will wander past (obviously non-consenting) in a park as they are free to do, and I would like to avoid this becoming a sudden breach of the rules. So, for that reason I support

the idea of maintaining a "safe distance" (e.g. 30 metres including altitude) as opposed to considering any path over a non-consenting person to be a breach.

- I believe a lot of people will continue to get involved in the hobby without the training and guidance provided by organisations such as MFNZ. For that reason I strongly support more online learning, testing and certification. This, of course within the practical limits of what can be assessed without an in-person test. I think the investment in developing the regulations and administering them over time needs to have corresponding resources allocated to assisting, educating and certifying. Put another way: The more regulatory burden placed on the casual hobbyist to remain compliant, the more support they deserve in the form of education and enabling technologies such as AirShare.
- There is a lot of uncertainty around Remote ID and almost all opinions I've encountered dismiss it immediately as unwanted, unnecessary, and not technically feasible. I struggle to see how it could work, but don't dismiss it as a possibility. Particularly if it enabled flying model sailplanes at altitudes above 400ft, following all other airspace regulations of course. Or, flying in controlled airspace in a compliant manner with all necessary declarations of intention etc. Online training and enabling technologies are things I would invest in if it allowed more freedom within a compliance framework.
- I can't emphasise enough the value to a family of being able to "play" and learn in this hobby in a way that is affordable and free from over-regulation. I hope to be able to pass on to my children all the freedom I have enjoyed, should they want to participate in this wonderful, decades-old hobby.

Thanks,

Michael
[redacted]

[redacted]

From: [redacted]
Sent: Friday, 4 June 2021 3:09 PM
To: Enabling Drone Integration
Subject: UAV ops for Real Estate

Dear Sir/Madam,
I am writing this for suggestions which I learnt from 4.5 years experience through Real Estate companies in South Island.

In this letter,many commercial sensitive matters are included so PLEASE DO NOT DISCLOSE MY NAME,ADDRESS,CONTACT NUMBER etc for future reference.

[redacted]

My RC background,
My brother had a RC shop [redacted],so naturally I started RC model flying for fun.(late 1970th) [redacted],I brought a Hirobo Shuttle gas powered RC helicopter with me.
On and Off during busy times,then back RC flying (Drone/UAV)for as a hobby,went to Hong Kong to purchase DJI Phantom 1 (in Sep [redacted])
Attend Massey University UAV course in August [redacted]
Late [redacted],Started to use UAV for local Real estate agents(Harcourts) to capture aerial photos for their listings.
[redacted] I have visited Yuneec drone company in USA to learn and bought Typhoon H with thermo sensor

Continuing to present time

My Aviation background
After graduated English conversation school in CHC,I Joined Garden City Helicopters in [redacted]
as a Japanese speaking guide,(later stage I helped for importing 2nd hand helicopter from Japan)
Started to lean helicopter flying in [redacted]
Got PPL then gained CPL(done a theory in Motueka)in 1990 then became a C Cat instructor in [redacted]
Same year,I got a Flight Attendant job(International) in Air NZ ,worked between [redacted]
[redacted] I went to USA by myself to purchase R44(ZK-HAB) kept for 3 years
sold R44 and Replaced with Hiller UH12-B(ZK-HAB) kept a same rego and sold in [redacted]
As far as I remembered I have attended RHC safety course 3 times in CA
I also attended a few safety related CAA seminars in NZ
I raised an idea to Mr.John Currie(founder of GCH aviation) to start a UAV division in his firm.
Now John is retired(?) and his sons are operating a big company.
By the way,my partner(spotter for my UAV at present), [redacted] has NZ-PPLH

My big concern
UAV photography/videography is used for Real estate as is common now,
as far as I heard, more than 70% of Real estate agents are using(used) aerial images for their listings.
Compared to 40 years ago technology,nowadays UAVs are so advanced,not called Toy anymore.So easy to fly and do a job(1 inch sensor & 4k or 8k video!!) in the air without any skill/knowledge.
However RC is not 100% trustable,lost UAV by radio jam or lost object during the flight by human error.Trade me proved this,manty remote controllers and spare batteries are for sale.
The big problem is the UAV itself(without limit setting),it can climb up higher than Mt.Cook and control distance could be reached close to 4 miles and it can cruise at max of 40kts.
30 years ago battery powered RC model had 3 min flight time in the air vs 31 min for some DJI tiny UAV.

I studied aviation subjects and learnt a lot from my flights,(both Manned/Unmanned)
It could be very dangerous if we leave it as is.

Urgent education is necessary for all UAV operators,I believe operators who have a certificate by 141(101/102) or Part 61 licence holders or MFNZ members are all safe to Manned aircraft. Because they know and spend time & money and follow the rules. BUT UAV used for commercial/own benefit purpose flights by non-educated people are dangerous.
They bought a drone and may have watched a CAA safety video but not certified,
No licencing system yet,same in Japan JCAB.
4 private authorized bodies are doing education(2-3 days course with certificates) for UAV flyers.

I talked to a few agencies and their answers are always the same,"No worries,we know the drone rules,but we are Real estate agents,Drone matters are Photographer's job!"
I understand that the relationship between Vendor/agent/photographer
Photographers=Drone operators are weakest position because majority of them are Contractors
So sometimes businesses that are exceeding the safety limits,especially for their ad deadline date,need more attractive pictures(ie in dawn time, after evening civil twilight etc).
Another big problem is always seeing their ad after its action.(visible in the following week's newspaper or their online listings) It is difficult to find by whom to take the footage.
Almost impossible to stop its activity on the spot.

I personally think the licencing system,sit exam,Registration,Remote ID etc for UAVs are good but can not solve the problems.

How about this idea?
Using a Real estate group for reducing risk/complaint to CAA
REINZ has 15000 members,NZIPP,pro photographer group has 2500 members and addition to that heaps of Trade me individual clients.If they listen to CAA's new regulations,it will help for keeping the safeness in NZ skies.
The biggest advantage for us(CAA and manned aircraft operators) is their ads are visible
as evidence! Youtube is hard,because they can withdraw listing at any time however it shows all flight path(some were flying over the many roofs)
Hard copies(newspaper,Real estate mag etc) are the most useful tool,because these are not deletable.
So quite easy to identify when, where and by whom.
Also easy to pick up a PIC for sales & marketing people.
When I showed NVC to a person in charge,he said," I have never seen anything like this map and where is the boundary?? Where is the 4 km radius???) So he has no idea at all.

1.Start campaign "Stop Drone scaring" Monitoring aerial images to Real estate agents before new regulations apply.
I believe Wodbourne CTR is the best example to use,
because it has large area with less population,(=more space for each property=more attractive aerial photos for their ad)Civil/Military airport,Omaka aerodrome is a World famous air show place, held every 2 years(this year in early Sep) and many vintage aeroplanes fly in and out through transit lane , Due to this Covid,economy is still not recovering well but hope more flight lessons will be resumed after this Covid.
Also geographics wise,Southern side of CTR is hilly(400 amsl),and many nice houses
(over NZ$1mil)are built there. Real estate agents are very keen to sell those.
ie Ridges residential area, Elevation is 400+UAV limit 400=800ft amsl this is high enough to encounter a danger to UAV/Manned in the air.
Also Inexperienced aeroplane pilot+Fly around Omaka with new residential houses for sale are bad combinations too.

over [redacted] new houses are built in Omaka landings(next to Omaka field),this would be a nightmare if air collision happens in the area.

2.Contact head office of REINZ and Trade me property(because on TV ad,they have listing/sold? properties every xx min)
to get and remind them for their drone operator who comply with CAA rules.
It will reduce unlawful UAV flyers. I guess few young agents/local photographers are starting to use their own drones for their business. Still photo first then when they get confidence,they start doing Video.
The video is getting worse,because the UAV's flight in the air is much longer time than the still snapshots.
More longer flying is more risk

Real estate companies have to ask UAV operators to supply image/footage with **Flight ID#**

It would be helpful for Real estate companies to have a precise map
to determine the area which integrated with VNC.

3.Need to Modify or update the Airshare submit form for more user friendly but more strictly screened (by digitally) to reject request from cowboy pilots to get a Flight ID#
ie,if location is under the special airspace, it changes the colour to the yellow in the form as caution mark

The UAV types is not so important because similar images can be produced by $500 drone and $10,000

Question of "Contactable by radio" is not applicable to those do not have air band radio nor FRTO

Installing an expensive Transponder for a cheap UAV is not common either.

4.To get a **Flight ID#** ,especially WITHIN 4 km rule,they must tick the box
*Are you a certified person to fly?
Yes/No
If Yes,(if No please ask certified persons to do a job)---this will create more business to the 141 organizations.Win win situations.)
Fill the below
Full name of pilot of the day
Name of Certified body(141 training school)
Certification # or Date
Part61 Licence #
Model Flying NZ membership #

Full name of Spoter/Observer
---
and prior to the flight
Remind them other points

*an evidence of e mail to the aerodrome operator with Flight ID#
*notify neighbours distributed Consent form with agent's name,contact#--If any objection discuss with tem and sort it out prior its flight
*Consent--Permission from Council etc(if any)

Consent form to neighbour is leave to agents but I believe this communication has to be made between Vendor+Real estate agent and neighbours.
Through my experience,prior to the listing, agents must meet with vendors for the contract etc,to get a neighbour's consent should be conducted by them not by UAV operator.
In the consent form,due to weather condition etc,it is safe to have a bracket days,this main purpose is notification of its activity and hear any objections,if date and time is fixed,it will be caused more risk for UAV operator,fly in poor weather etc)
UAV operator has all responsibility,they can concentrate for their flying

After succeeded the filling correctly it changes to a normal white colour

---

Another points,
Volunteer work for UAV
This is also through my experience, When I wanted to make contact with Blue circle people
Their responses were slow and not taken seriously enough for UAV operations.
I understand that if I get daily telephone calls from Real estate related people asking permission to use their area,I will be sisk of responding(because no money/business involved)
Especially for the Hospital helipad,who can predict the Rescue chopper will fly next time?
My idea is If Blue circle aerodrome people have a designated email address which is especially provided for UAV flyers. ie; uavrequest@akirahospital.xxxxx
This will be useful for both parties, to request with Flight ID#,aerodrome people will feel easy/safe.

Another points,
No exemption for Real estate aerial photo/video

To use UAV for Real estate, it should not be a shortcut,
Thya must display **Flight ID#**
When I talked to people they did not know the name of "Airshare" however everyone knows CAA. So need to educate the relation/constitution of CAA/Airways(Airshare)

*All photo/video have **Flight ID#** and if exceed its limit must show 102#
*No SHIELD operation- From the image on the listing,it is difficult to show/easy to excuse within 100m from highest point.
No location boundary, No matter what you are in a small countryside village or in the big cities,Once UAV in the air,and using its footage for their benefit(privatery/commercially)it should have **Flight ID#**

Same time,all UAV pilot has to understand this Flight ID is a not a PERMISSION
They must follow the all rules and regulations

Maybe in the future,
Some charges involve getting the **Flight ID#**--ie $5/# granted??
It will help in covering the cost for Airshare(answering phone calls from UAV operators during their duty) and contribute to making a good relationship between UAV operators/aerodromes.

I believe this **Flight ID#** system will solve the present problem and keep NZ skies safe.

To stop the drone scaring, Use Real Estators listing as an evidence,also watch their Youtube footage, this would be the quickest and cheapest way to start the project.

CAA can make direct contact to a person in charge for the listing, probably only one in each company.
The PIC has to be aware of what is going on and he/she can stop listing on the paper or uploading to Youtube stuff.

Conclusion,
Please start a Monitoring campaign ASAP through the Real Estate group from the Top tree.
I was trying to educate locally but I realized my position is not strong/powerful enough to get through the summit. Everyone is into "No penalty,who cares" mode.
In Blenheim,only populated less than 30,000 but it has more than 10 Real estate agents in town,
I am concern about

ie:Passed a driving test and got a driving licence,then started drinking at a pub the following week because there are No traffic officers to do a breath check in this village.
Marlborough Aeroclub CIF said he can go around town to the agents and distributes the latest safety material.
But I think he will be getting the same result as mine.

I feel it is not fair, I spent time and money and followed all regulations(time consuming) but no benefit.It is far easier to toss up my drone without a permit in 2 min work to receive $200
That is why,I strongly suggest the"Stop Drone scaring"project ASAP.
Before the airshow!

If something happens it is too late to put all my area into NO Fly zone!!
This means I will lose my fun & small income

Sorry this is a long email and not written in proper English.

Thank you for your consideration.
Hope this could reach you in time(1700 4th June 21)

My big wish is if I can be involved in a safety course with REINZ/NZIPP which is supported by CAA/Airways corp throughout the country. [redacted]

Best Regards
[redacted]

PS.I am waiting for an invitation for a local air space community meeting in BHE.
Hope I can meet them soon.

[redacted]

From: [redacted]
Sent: Friday, 4 June 2021 3:09 PM
To: Enabling Drone Integration
Subject: Submission - Enabling Drone Integration
Attachments: ASMS Submission - Enabling Drone Integration.pdf

On behalf of Aviation Safety Management Systems Ltd, please find attached a submission in response to the Enabling Drone Integration discussion document.

This submission is intended to be made public and will be uploaded to our website in due course.

Regards

[redacted]
ASMS
Aviation Safety Management Systems
Aviation Safety Management Systems Ltd
[redacted]

W: www.asms.co.nz

4 June 2021

Enabling Drone Integration - Consultation
Ministry of Transport
PO Box 3175
Wellington 6140

Submitted electronically: enablingdroneintegration@transport.govt.nz

Aviation Safety Management Systems Ltd (ASMS) is a leading consultancy in New Zealand's unmanned aircraft sector. ASMS is a Part 141 certificated aviation training organisation and one of the largest drone training schools in New Zealand. We provide training to civilian operators, Police, Fire and Emergency New Zealand, and elements of the New Zealand Defence Force. We provide a basic pilot qualification, an advanced qualification suitable for operation under Part 102, night ratings, and agricultural ratings. ASMS is also a leading provider of expositions for Part 102 certificated operators.

The Ministry of Transport has released the discussion document entitled *Enabling Drone Integration* and invited submissions from industry and the public. ASMS has significant concern with the Ministry's proposals; so much so that those proposals have provided the impetus for us to join UAVNZ and support a joint approach across industry.

Our submission is organised as follows:

- Part A provides our general comments and alternative proposal. This closely follows the UAVNZ joint statement.
- Part B provides our answers to the questions posed in the discussion document.

Aviation Safety Management Systems Ltd thanks the Ministry for the opportunity to respond to the Enabling Drone Integration consultation paper. However, we are concerned that the proposals in the paper "miss the mark": they address problems that are overstated, and do not address the real issues to drone integration. We support the proposals advanced by UAVNZ.

We are also concerned that there are no specific questions around cost recovery. The Ministry's proposals will impose costs on existing drone operators for little or no benefit in return. As suggested by Dr Shelley in his separate expert submission, there is a strong argument that the Ministry's proposals have been advanced to attract foreign investors. The only way to be sure that there is a net benefit from the proposals is to ensure that those investors, who will benefit from the proposals, are also the ones to pay for the associated costs.

Yours faithfully

[redacted]

Aviation Safety Management Systems Ltd

[redacted]

Aviation Safety Management Systems Ltd

Part A General Response and Alternative Proposal

A.1 General Response to Proposed Regulatory Measures

Our organisation generally does not support the proposed regulatory measures documented in the discussion document. This submission outlines why we do not support most of the measures, but also provides clear alternatives that we believe achieve the same intentions. The two biggest areas for improvement should be the areas of safety promotion and enforcement, tied in with rule changes that are consistent with our existing aviation system and do not unfairly stigmatise unmanned aircraft operations.

Our organisation supports funding to the Civil Aviation Authority to support safety promotion efforts of the current rules, and eventually the proposed framework presented below. Our organisation also supports legislative changes that would provide Police with the necessary powers to (1) require an unmanned aircraft to land, and (2) require the operator of an unmanned aircraft to provide their details to an enforcement officer. Where appropriate, legislative change should also allow for organisations to utilise tools that allow for tracking of rogue operations (e.g., frequency trackers and radio frequency spectrum analysers). These are consistent with evidence that suggests the two most effective strategies for preventing rule violations are better safety promotion (to prevent violations caused by ignorance) and better enforcement (to punish deliberate violations). Funding for these initiatives can be obtained by re-allocating funding for other proposed regulatory measures such as registration.

Our organisation supports updating the rules applied to unmanned aircraft, however, we provide an alternative solution under the section entitled *Alternative Rules Changes.*

The proposed basic pilot qualification will not be sufficient for many unmanned aircraft operations and may detract from the higher level of training that many Part 101 operators already undertake through Part 141 organisations. It does nothing to stop rogue operators from operating their aircraft unsafely, whilst providing little benefit to those undertaking low-risk operations.

Drone registration and remote identification do not prevent rogue operators from operating their aircraft unsafely, however, they do increase the regulatory burden for compliant operators. The assertion that these will improve situation awareness is specious. One does not need to know the registration of an unmanned aircraft to know where it is located in airspace (when radio calls are made for current unmanned aircraft operations, typically these will be in the form of "[Organisation's Name] Unmanned"). Remote identification is also not necessary as separation from manned aircraft can already be achieved through operating within visual line of sight (below 400ft and outside 4km of published aerodromes), using air band radio to give position reports (when above 400ft or within 4km of an uncontrolled aerodrome), or flying within controlled airspace under the instruction of air traffic control. There are also other forms of electronic conspicuity that may be more appropriate (e.g., ADS-B/FLARM), but these should only be applied using a risk-based approach rather than being a blanket requirement under Part 101 or Part 102. Such an approach is consistent with operations that currently occur in manned aerospace and within some Part 102 organisations.

New Zealand already has a single standardised map that provides all necessary aeronautical information, it is called a visual navigation chart (VNC). These can be purchased as a physical map or can be purchased through apps on tablets and smart phones. They have been used for decades within manned aerospace. The AIMS CONOPS programme undertaken by CAA is currently dealing with what will comprise a future higher level of digitisation for all aeronautical navigation documentation. The proposal to examine geo-awareness appears to be duplicating this work. Evidence suggests that current unmanned aircraft operators are already more likely to use VNCs than Airshare and are also more likely to be able to correctly read VNCs than maps on Airshare. An Official Information Act request to Airways New Zealand also shows that during the period 1 January to 22

November 2019, there were only 2,894 unique unmanned aircraft operators who used Airshare. This suggests that the proposed geo-awareness approach will be less effective than simply mandating the use of VNCs prior to unshielded operations.

A.2 Alternative Rules Changes

Our organisation supports a three-tiered approach to the regulation of unmanned aircraft operations, alongside supporting rule parts that are consistent with current approaches within the aviation industry. The three tiers of this system are:

1. General operating rules (more restrictive than the current Part 101) – these allow for anyone to fly an unmanned aircraft within certain parameters.
2. A licensing regime (create an equivalent to Part 61 for unmanned aircraft) – this will allow for tighter standards around theory requirements and flight testing, accompanied with greater permissions in terms of the operations that can be undertaken. Many current operations occurring under Part 102 would move into this category. Ratings would also be a feature, allowing for qualifications to match more specific operating settings (e.g., night ratings, FRTO ratings, type ratings for large aircraft, etc.).
3. A certification process (similar to the current Part 102, but only for Part 101 variances that cannot be achieved with standardised licensing proposed under tier 2) – this will allow for more nuanced risk-based approaches for organisations undertaking higher risk operations (e.g., BVLOS, autonomous operations, urban air mobility, etc.)

Our organisation also supports the introduction or adaptation of the following supporting rule parts:

1. An equivalent (or adaptation) of Part 149 for recreational organisations operating unmanned aircraft, such as Model Flying New Zealand. This would allow such organisations to establish their own licensing systems for their own members.
2. An equivalent (or adaptation) of Part 141 for unmanned aircraft. This will ensure that the organisations conducting pilot training apply consistent standards, supported by syllabi that would be advisory circulars to the Part 61 equivalent for unmanned aircraft.
3. An equivalent (or adaptation) of Part 66 for unmanned aircraft. This will ensure that persons who conduct maintenance on unmanned aircraft above a certain weight threshold have appropriate qualifications and experience. This would also allow for persons to obtain certificates of maintenance approval and certificates of inspection authorisation for aircraft above a certain weight threshold.
4. An equivalent (or adaptation) of Part 147 for unmanned aircraft. This will ensure that organisations conducting maintenance training apply consistent standards, supported by syllabi that would be advisory circulars to the Part 66 equivalent for unmanned aircraft.
5. Equivalents of Part 145, 146 and 148 for organisations that maintain, design and/or manufacture unmanned aircraft above a certain weight threshold.

This proposed system would be highly beneficial to the unmanned aerospace industry in New Zealand, providing far greater airspace integration by having commonality between manned and unmanned aircraft operations. Contrary to the assertions presented by the Ministry of Transport, our organisation does not believe that unmanned aircraft operations require a fundamental re-design of airspace or operating requirements. Rather, our organisation believes that a translation of existing standards to unmanned aerospace will serve the New Zealand aviation system better in the long-term. A tiered system allows for a risk-based approach to regulation, where the inherent air-based and ground-based risk of different operations require different standards to be met.

While the specifics of the three-tiered approach and supporting rules changes would need to be discussed in detail, the diagram below presents a high-level picture of how a risk-based approach could be taken to apply the correct regulatory measures to the correct operations.

Lower Risk (general operating rules)	**Moderate Risk** (licensing)	**Higher Risk** (certification)
Visual Line of Sight (VLOS)	Extended VLOS (EVLOS)	Beyond VLOS (BVLOS)
Under 5kg	5 – 25 kg	Over 25 kg
No flight over people or other people's property without consent	Above people and property	Above crowds or sensitive infrastructure (e.g., major airports)
Photography, remote sensing, etc.	Dropping of articles, agricultural spraying, etc.	Passenger carrying operations, fully autonomous operations, etc.
Shielded areas and below 400ft in uncontrolled airspace	Class G airspace (above 400ft), controlled airspace, special use airspace, and unshielded operations within 4km of a published aerodrome	
Day flying and shielded night operations	Night flying (outside shielded areas)	

Part B Answers to Questions

B.1 Questions - Rules updates

B.1.1 Major changes to the Rules

Q.1 Should drones have their own standalone Rule Part?

Yes, but only if rearranging the deck chairs on the Titanic was an effective strategy against icebergs. A standalone Rule Part will not achieve anything significant; it is currently very clear which parts of Part 101 apply to drones and which parts do not. (For example, the rules relating to kites, balloons, and rockets do not apply to drones.)

Q.2 Should we review the four-kilometre minimum flight distance from aerodromes?

A benefit of the current approach is that a UAV operator can identify an aerodrome on a Visual Navigation Chart (a standard planning tool used by all pilots) and automatically knows that there are certain rules that always apply within 4km of the boundary of that aerodrome. If some aerodromes have a 3km limit and others have a 5km limit then there is increased potential for confusion. In addition, the *Enabling Drone Integration* paper has not presented any analysis to support the need for change. What would be the change in the number of air proximity incidents? Unfortunately, the Ministry has not presented any evidence presented that would enable the quantification of any benefits from improved safety around large aerodromes or reduced compliance costs around small aerodromes.

Q.3 Should we change the requirement to gain consent to fly above property by:

a. Using ‘safe distances’ as an alternative?
b. Relaxing the requirement in another way?
c. Removing the requirement completely?

No. Drones remain inherently unreliable technology, and there needs to be a way of ensuring that drone operators are aware of this and aware of the potential for their craft to fail. Property owners might not be fully aware of the risk when they consent to a drone to be flown over the property, but at least there is the opportunity for the discussion about acceptable areas to fly. This also enables privacy obligations to be better met, and the property owner/occupier to modify their behaviour if they consider that there might be safety or privacy risks but are otherwise happy for the flight to occur.

Removing or relaxing the requirement for consent gives the impression that is is generally acceptable to fly above property. However, the Civil Aviation Act 1990 – and any predecessor legislation, dating back to the Air Navigation Act 1920 (UK) – is very clear that the owner of an aircraft bears strict liability for damage to property. This provision needs to be publicised more so that drone operators are aware of it. An appropriate means of doing this would be for CAA to possibly develop a “drone code” or more informative page on their website that includes all relevant legislative and regulatory requirements, not just those in Part 101.

The use of safe distances is problematic as discussed in the answer to Q5 below.

Q.4 Should we change the requirement to gain consent to fly above people by:

a. Using ‘safe distances’ as an alternative?
b. Relaxing the requirement in another way?
c. Removing the requirement completely?

Removing this requirement is even more problematic than removing the requirement to gain consent to fly above property. The picture on the next page shows a Matrice 210 operated by Police in the United Kingdom, shortly after it suffered an in-flight motor failure at 300ft above ground level (AGL).

Given the research conducted by Dr Shelley, it is highly likely that this would cause significant injury to a person were it to fall on a person from 300ft. This is not an isolated incident, with numerous drone crashes reported due to inflight motor failure or inflight battery failure.

The real problem is that neither drone pilots nor the general public have a good understanding of the risks involved. This could potentially be solved by an education campaign. It could also potentially be solved by an outright ban, but to date there is no evidence that harm has been a significant problem. This suggests that the current regulatory settings, while perhaps not ideal, may be working.

Figure 1: UK Police operated Matrice 210 after suffering in-flight motor failure

Source: https://assets.publishing.service.gov.uk/media/5f452e37d3bf7f69a89b6c24/DJI_Matrice_210_UAS_registration_na_030319_01-20.pdf

Q.5 If we use 'safe distances' as an appropriate alternative to the consent provision, what distance(s) would you consider is appropriate?

a. 10 metres
b. 30 metres
c. 50 metres
d. Other.

This question and the listed answers suggests an over-simplified understanding of how safety risks arise. The "safe distance" is a function of the momentum and kinetic energy of the craft, so will depend on the mass of the UAV, the speed at which it is flying, the height at which it is flying, whether

it is fixed wing or multi-rotor, the frangibility of materials, etc. Science needs to inform any choice of distance.

Q.6 Are there any other major Rules changes we should consider?

Yes:

- Introduce a Part 61 Remote Pilot licence.
- Introduce a new rule to enable certificated organisations to deploy and employ counter-drone systems.

B.1.2 Minor changes to the Rules

Q.7 Are there any minor changes to the Rules that would make them easier to understand?

Yes:

- Define gross mass.
- Define active runway and active movement area, or otherwise use a different phrase.
- Specify that the 4km is measured from the boundary of the aerodrome.
- Rewrite 101.209(b) and (c) to avoid duplication.

Q.8 What do you think of the proposed minor Rules changes?

Given the substantial time taken to get from Taking Flight (July 2019) to the Enabling Drone Integration paper (April 2021), it is reasonable to expect that the Ministry would have prepared a draft of the proposed rule changes so that respondents could see exactly what is proposed. Instead we are presented with relatively vague statements that do not clearly detail exactly how the proposed changes would be implemented.

The proposed minor Rules changes suggest a lack of understanding of the existing rules. In relation to the minor changes suggested in Table 5:

101.202 Approved person or organisation: Please provide evidence that this rule does not work well for commercial off the shelf drones. The training requirements in 101.202(1) and (2) are *entirely* appropriate. The NOTAMs requirement in 101.202(3) doesn't work in practice, but only because of a policy decision by Airways Corporation, not because there is anything wrong with the rule. The provisions regarding large (> 15kg) drones in 101.202(4), (5), and (6) are again entirely appropriate: drone this large are dangerous, particularly if they are not constructed or designed appropriately. However, I understand that these requirements might not work well for someone who wants to import a cheap and poorly constructed drone from China and then operate it without adequate safeguards.

101.205 Aerodromes: The *only* clarification required in this rule is that the 4km is measured from the boundary of the aerodrome. There is nothing else in this rule that requires change.

101.7 Restricted, Military Operating, and Danger Areas: Absolutely no change is required to this part of the rule from the perspective of drone integration. These are all types of special use airspace, and it is appropriate to have a single rule that covers them all. The only reason that the rule is not titled "Special Use Airspace" is because that would lack clarity for people who do not have an aviation background. If there are issues with part (c), which relate to gyrogliders and parasails, i.e. *manned* aircraft, then those issues should be addressed when gyrogliders and parasails are moved to the appropriate manned aircraft rule.

101.209 Visual Line of Sight operation: yes, the rule would benefit from being edited. However, visual line of sight is defined, and defined very clearly, in 101.209(d). Note also that the definition of visual line of sight aligns with other regulatory instruments, such as the definition of a visual surveillance device in the Private Security Personnel and Private Investigators (Code of Conduct—

Surveillance of Individuals) Regulations 2011. Any change to the definition of visual line of sight would need to consider alignment with other regulatory instruments.

101.215 Aircraft mass limits: Yes, there should be a definition of gross mass. At the moment the definition is implied based on the normal usage of net versus gross, and implies that it is the all up weight of the drone including batteries (or fuel) and any payload. Whatever the definition adopted, the weight boundaries are very clear. If the drone will be greater than 15kg then 101.215 applies, and if the drone will be greater than 25kg then it cannot be operated under Part 101. The suggestion to remove the 15kg-25kg category is clearly not based in either safety or science, and we note that the suggestion has been made without any supporting evidence. For the sake of clarity, however, a 15kg drone that suffers a battery failure and drops out of the sky will kill you if it hits you. The same is likely to be true for a drone of half that weight.

Q.9 Are there any other changes we should consider?

Modify 101.202 so that the "approved person or organisation" is required to be a certificated organisation. Some approvals have been "loose" and there is no defined process for obtaining an approval.

Direct Airways Corporation to issue NOTAMs requested by drone operators who hold a current pilot qualification issued by a Part 141 certificated organisation. Airways flatly refuses to issue NOTAMs requested by such persons unless they are operating under the authority of a Part 102 certificate, even if the NOTAM would improve aviation safety. Please advise if you would like examples and we will be happy to provide them.

Remove manned aircraft – gyrogliders and parasails – from the unmanned aircraft rule.

B.2 Questions - Basic pilot qualification

Q.1 Should we introduce basic pilot qualification for Part 101 drone pilots?

No, it is a complete waste of time. An online test with unlimited attempts has no educational value whatsoever. Individuals taking the test can just Google the answer and then copy and paste it in. No learning takes place when answers can be changed until the right answer is happened upon.

And to make the situation even worse, the Ministry proposes that the test would "be valid indefinitely" (para 150). It is well known that people's knowledge "fades" over time. This is recognised throughout the aviation system with pilots in other forms of aviation being required to undertake recurrent training and demonstrations of knowledge and competence.

The proposed basic pilot qualification is an excellent example of the politician's syllogism. Although no learning takes place, and thus the aviation system is no safer, this would make it look like something was being done.

Q.2 What impact would a basic pilot qualification likely have on you?

If repeated random guesses are sufficient to enable flight within 4km of an aerodrome then the basic pilot qualification will have some small impact on ASMS's training school. Those people who are currently aiming for a tick-box / "Weetbix box" qualification will do the online test rather than doing our in-person course. However, we note that one training provider already has a relatively cheap online offering with an infinite guess test, so we anticipate that most who will be seduced by the low cost will already be undertaking that course so we would not expect to experience any incremental impact.

Q.3 What format should this test take?

a. Electronic/online theory test
b. Paper based written theory test (at a provider)

c. A practical examination of skill and a paper based written theory test (at a provider)
d. Other

There should be a more restrictive version of the 101 rules (no flight over people, no flight within 4km of an aerodrome) that requires no pilot qualification. Extending beyond those restrictions should require a pilot qualification that includes a minimum of 3 days classroom-based training, a minimum of 1 day flight training, a paper-based written theory test, and a practical demonstration of skill.

Q.4 Should there be a minimum age for basic pilot qualification?

With the Ministry's proposed "unlimited amount of attempts" (para 150) even an 8 year old should be able to guess the multi-choice questions and go back and change the answers until they pass.

Q.5 Do you agree with the proposed special authorisations given to Part 141 and Part 101.202 approved training organisations?

This is not a "special authorisation", it is recognition that pilots who have been trained by these organisations have actually been trained and will have a much higher level of knowledge than someone that has done the online test.

Q.6 Is there any other special authorisations you would like to see? Why?

Please stop using the term "special authorisation". If drones really are the aviation of the future then start using the language of the aviation industry. In-person theory training and practical assessment delivered by a Part 141 certificated training organisation should always carry a higher status and greater privileges than a simple online test that can be taken an infinite number of times.

As noted in our cover letter, ASMS does provide night ratings and agricultural ratings, but it is entirely unclear whether this is what the Ministry means by a "special authorisation".

B.3 Questions - Drone registration

Q.1 Should we introduce the proposed drone registration system? Why?

No, because it won't work, in the sense that it won't stop incidents from happening.

Registration has been introduced in multiple jurisdictions overseas. If it actually works then there would be evidence demonstrating so. The lack of such evidence in the *Enabling Drone Integration* paper is telling.

Furthermore, as noted in Shelley (2020), if there is a low probability of identifying the owner of a drone in the absence of a drone registration scheme then there will also be a low probability of identifying the owner who chooses not to register their drone when there is a registration scheme.[1] Shelley demonstrates with a mathematical proof that when the probability of identification is low then registration has little or no effect on the level of non-compliant operations.

Q.2 What impact would drone registration likely have on you?

As a certificated organisation ASMS would be obliged to register its drone fleet and pay the relevant registration tax. To the extent possible we would seek to pass this on to customers.

Furthermore, some of our fleet get damaged during normal training activities. This means that from time-to-time an aircraft is removed from service, or an aircraft is built up from parts from other drones. Every single time that we have to deregister an airframe and register another airframe is an impost on

[1] Andrew Shelley (2020) *Essays in the regulation of drones and counter-drone systems* (Doctoral dissertation, Victoria University of Wellington). http://researcharchive.vuw.ac.nz/handle/10063/8900

our time. Every single piece of paper (or online form) that we have to complete just to satisfy a regulator takes time away from running the business.

This would not help us integrate into the aviation system any more than we already are, but it would impose a regulatory impost.

Q.3 What do you think of the proposed system design (e.g. digital platform) and requirements (e.g. identity authentication)?

Digital is good – CAA's existing processes are inefficient and definitely should not be duplicated for drone registration. In what world is it reasonable for a work request to be raised and a bill of several hundred dollars generated just so an operator can change their address? This has been the experience of several of ASMS' clients in the manned aviation world (Part 115, Part 119/135, Part 119/125).

Q.4 Should there be a minimum weight threshold for registering a drone? If so, is 250 grams appropriate? If not, what would be an appropriate weight threshold and why?

The 250 gram registration threshold has an interesting history. As demonstrated in Shelley (2016),[2] the 250 gram threshold was originally the product of a back-of-the-envelope calculation which in practice translates to a typical aviation accident rate if flown over a sparsely inhabited area. Others have since built on my original analysis and modified aspects of it. However, it has ***never*** been explained how registration changes the accident rate or the impact energy of the drone. This means that *the whole premise for using 250 grams as a registration threshold is deeply flawed*.

If registration is intended to improve safety (as opposed to just being a means to extend and perpetuate the regulatory system) then there needs to be some thought about the weight at which a drone becomes significantly more hazardous. This hazard will arise from a combination of factors such as kinetic energy (both bigger and faster are individually more hazardous), lethality of spinning blades, and ease of control. For registration to have a meaningful impact on safety it would also need to be coupled with either or both of purchase controls and a licence to operate.

But if the intent is just to find another way to track people and levy a tax, why stop at 250 grams? Why not 80 grams?

Q.5 Should certain drones not need to be registered (such as drones flown solely indoors or within specific designated areas (e.g. Model Flying New Zealand sites) from registration? What other drones should not need to be registered and why?

Drones flown indoors do not need to be "integrated" into the aviation system. The only time that a manned aircraft will be in the same location as these small drones will be when the manned aircraft has crashed and significantly damaged the building that the drone was being flown in. Similarly, indoor drones will not affect flying cars.

B.4 Questions - Remote ID

Q.1 Should we consider introducing Remote ID? Why?

No, because it can be readily bypassed. If someone bypasses remote ID it is not possible to determine who the operator is, which in turn means that those with nefarious intent will bypass remote ID.

Q.2 What impact would Remote ID likely have on you?

---

2 Andrew Shelley (2016) A Model of Human Harm from a Falling Unmanned Aircraft: Implications for UAS Regulation, *International Journal of Aviation, Aeronautics, and Aerospace*, Vol 3(3). https://commons.erau.edu/ijaaa/vol3/iss3/1/

Remote ID in and of itself, will have no direct impact on our operations. But if coupled with registration then we would have to pay the registration tax – a tax that is nothing more than a regulatory impost that we would receive no benefit from.

B.5 Questions - Geo-awareness

Q.3 Should we consider introducing geo-awareness? Why?

No, as it is unlikely to achieve anything.

It is concerning to read that the Ministry proposes to require "the creation of a single standardised map available in different formats (i.e. paper or digital) that provides all necessary aeronautical information for drone operations to all pilots and industry" (para 221). What is most concerning about this statement is that there is *already* a standardised map that provides all necessary aeronautical information – the Visual Navigation Chart (VNC). The VNC is also available in both paper and digital form.

Geo-awareness could be considered further, but it is difficult to see exactly what problem it would actually solve. The Ministry makes the somewhat nebulous statement that a current problem is the "lack of support for more advanced drone operations and inability to integrate drones into the civil aviation system" (below para 220). Nothing in the subsequent paragraphs in the *Enabling Drone Integration* paper actually clearly spells out how geo-awareness will support more advanced drone operations or better integrate drones into the civil aviation system.

Almost all drones used for commercial purposes already have GPS, which does provide an awareness of the position in space. A pilot who is prepared and has planned their mission will then know what airspace they are in, typically from having consulted a VNC. However, GPS can and does fail, and it can be both jammed and spoofed; because of this more advanced operations may require an alternative to GPS, such as inertial navigation.

Geo-awareness may be seen as a way of introducing geo-fencing by stealth, with the intent to first introduce geo-awareness and then subsequently require an incremental change to geo-fencing. If that is the intent then it is worth reflecting on the warning from the

UK Centre for Protection of National Infrastructure (2020, p. 14):[3]

> *Geo-fencing is . . manufacturer specific and therefore has no effect against UAVs manufactured by someone else. It is only geo-awareness and not geo-fencing which is currently mandated at a European level, meaning that not all restricted airspace will automatically be geo-fenced.*
>
> *Geo-fencing will not stop a determined malicious actor*

Note also that Shelley and Jackson (2020) demonstrate that geo-fencing can be bypassed by the curious, by those who want to fly responsibly like manned aircraft pilots, and by those with malicious intent.[4] The same techniques can be used to bypass geo-awareness.

[3] Centre for Protection of National Infrastructure (2020, August). *Countering Threats From Unmanned Aerial Systems: Making Your Site Ready*. https://www.cpni.gov.uk/system/files/documents/40/14/c-uas-branded-doc-public-V4.1.pdf

[4] Andrew Shelley and Chris Jackson (2020) *Proof of Concept for a Drone-Borne Improvised Explosive Device*, Working Paper, Aviation Safety Management Systems Ltd and Jackson Unmanned Aerospace Ltd.

Q.4 What impact would geo-awareness likely have on you?

None. We have “cracked” our fleet of DJI Phantoms so that compliance with airspace requirements is strictly the responsibility of the pilot.

[redacted]

From: [redacted]
Sent: Friday, 4 June 2021 3:16 PM
To: Enabling Drone Integration
Cc: [redacted]
Subject: Airways New Zealand Submissions - Enabling Drone Integration Consultation 2021
Attachments: Airways Drone Regulatory Submissions 04.06.2021.pdf

Dear MOT

Thank you for the opportunity to participate in the 'Enabling Drone Integration' consultation.

Please find attached Airways' submissions on the proposals set out in the discussion document.

Kind regards

Kate

[redacted]

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making your world possible

4 June 2021

Ministry of Transport
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Submissions: New Drone Regulatory Measures

Introduction

1. Airways Corporation of New Zealand Limited ("**Airways**") thanks the Ministry of Transport ("**MOT**") for the opportunity to provide submissions on its discussion document *Enabling Drone Integration* released on 6 April 2021 ("**Discussion Document**") and for the constructive engagement throughout the policy development process so far. We look forward to continuing to work with you further on drone regulatory matters.

2. As New Zealand's air navigation services provider, Airways is committed to ensuring safe skies for today and tomorrow. Airways' services enable the safe integration of all aircraft, including drones, into New Zealand's controlled airspace. Our experience and expertise in airspace management and related systems means we are well placed to contribute to the development of a regulatory landscape that meets the needs of growth in the drone sector and other emerging technologies.

3. Airways works across the international stage delivering consultancy, airspace design, and aviation systems in more than 60 countries. We are internationally recognised as having created innovative best-in-class traffic management systems and being a leader in safe airspace management. In 2014 Airways launched its drone user hub and traffic management solution, AirShare. Through AirShare, Airways has gained a lot of valuable experience internationally and domestically with the drone industry and related systems, including experience relating to registration, the display of relevant aeronautical information, and approval processes between traditional ATM and drone operators.

4. For the purposes of this submission, we have focused on the areas we consider most relevant to Airways for the current policy framework phase. While we have responded in detail on some proposals at this stage, we remain interested in engaging in the detail on these and other proposals in the next phases of the rule development process.

5. The Airways contact for any matters regarding this submission is:

[redacted]
Airways
6 Leonard Isitt Drive
Auckland
[redacted]

Executive summary

6. As recognised by MOT, drones are rapidly emerging technologies within a fast-growing drone market. Given that the technologies are constantly evolving and progressing, Airways sees technology as being highly influential in shaping the regulatory rules and more generally for the safe and efficient integration of drones into the aviation system.

7. Airways supports the proposed implementation steps outlined in the Discussion Document. We understand that, following this consultation, final policy recommendations will be presented to Cabinet by the end of 2021. We agree that it is important to have the certainty of settled policy framework. This will create a strong platform for the next phase of developing fit for purpose regulatory rules, while providing flexibility to account for technological development and operational engagement.

8. We see an ongoing consultation process as important to ensuring rule developments are aligned with the policy framework and provision of a world-class regulatory regime. Airways would welcome further opportunities to engage in the post-consultation policy work before final policy recommendations are made and on an ongoing basis as the rule development stage gets underway. It would be helpful to consider options for engagement that best make use of industry experience and expertise. For example, the ongoing engagement process could provide for working groups and key industry stakeholders to exchange ideas and investigate opportunities for additional information-gathering through activities such as trials. Airways is well-placed, and would welcome the opportunity, to contribute to that process given our operational experience and our interest in innovation.

9. Airways welcomes MOT's proposed drone policy direction as set out in the Discussion Document, which in our submission will:

   a. continue to promote a risk-based approach to regulation;

b. introduce key safety benefits for the aviation sector;
c. enable issues with the current regime to be addressed and future-proofed through centralised systems and resources; and
d. establish certain foundational elements for a UTM integrating drones into the aviation system.

10. It is our view that MOT's proposed drone regulatory measures could go further in key areas such as:

a. ensuring greater safety outcomes through the introduction of audit and monitoring powers in relation to compliance with the rules; and
b. phasing policy development around geo-awareness as an enabler of safety and key step towards an integrated airspace to first develop a standardised map in the near-term and policy development around the complementary technologies to take place at the later stage currently contemplated by the Discussion Document.

11. Airways would welcome the opportunity to contribute and be involved in working groups post-consultation. We see our airspace management and systems experience as being a valuable resource we are happy to make available to MOT.

Why Airways views these new regulatory measures as important

12. Airways supports MOT's efforts to address current and emerging issues relating to the use of drones in New Zealand and the longer-term objective of safe integration of drones into the aviation system.

13. Safety is core to everything we do at Airways – and it is therefore our view that the safe integration of drones into airspace is paramount. Specifically, it is our submission that it is critical that any drone regulatory settings prioritise a centralised and integrated approach to airspace management. Measures set out in the Discussion Document represent the fundamental building blocks of the future integration of drones into New Zealand's aviation system and ultimately the wider transport system. We look forward to further steps towards a future-proofed and sustainable solution that facilitates the integration of available and reliable technologies to provide holistic airspace management solutions, such as where UTM seamlessly works together with traditional ATM.

14. The regulatory settings for a UTM system should provide assurance that management of integrated airspace puts safety first at all times and recognises the important roles of both technology and skilled human intervention in managing a safe and efficient integrated airspace for New Zealand. We consider

that regulation in this space will need a harmonised approach with demonstrable safety expertise and otherwise be carefully navigated to avoid the risk of fragmentation and commoditisation of airspace by new market entrants to the detriment of safety.

Chapter I – Rules updates

15. Airways is supportive of the rule changes proposed in Chapter I of the Discussion Document. The key rule change from our perspective is the proposed change to the four-kilometre distance restrictions around aerodromes.

16. Airways is supportive, in principle, of changes to the current distance restrictions around aerodromes provided that such changes do not compromise the safety of operations in and around aerodromes.

17. While we believe that the four-kilometre restriction is a key measure for ensuring safety in these areas, we recognise that a categorised system could be a practical approach to allowing drones to operate at certain aerodromes (having regard to the nature of operations, frequency, predictability and other safety-related inputs).

18. Airways considers that technology permitting the tracking of drones in flight is critical to the management of integrated airspace and specifically for ensuring safety within the distance restrictions around aerodromes. Airways encourages MOT to consider appropriate regulatory mechanisms to trial drone detection technologies, especially considering the challenges posed by the current provisions of the Radiocommunications Act 1989 which restrict organisations like Airways from leveraging technologies using radio frequency sensing.

Chapter II – Basic pilot qualification

19. Airways strongly supports a basic pilot qualification for drone operators in New Zealand.

20. We agree with the commentary in the Discussion Document that pilot qualifications will enhance both the actual safety of the aviation sector and, importantly, the public's perception of the safety associated with drone usage by ensuring that all drone operators have a basic level of knowledge regarding the rules, safety, operating conditions, airspace management, and privacy.

21. Airways is supportive of competency-based training and outcomes provided by way of a secure online platform that is easily accessible to the drone operator community. Airways supports an integrated approach to education, promotion

and communications across a variety of audiences to support the successful introduction of any basic pilot qualification.

22. As the policy in relation to the pilot qualification evolves, Airways encourages MOT to consider what systems and organisations (besides enforcement agencies such as police) may require or benefit from access to any database for pilot qualifications for the purposes of ensuring the safe management and integration of drones into the aviation system (while taking appropriate privacy protections).

Chapter III – Drone registration

23. Airways strongly supports the implementation of a mandatory drone registration system in New Zealand.

24. Our view is that registration is a crucial component of the safety of the aviation sector. Drones are presently difficult to track and it is hard for the regulator and other enforcement agencies to identify who is responsible for unsafe and other non-compliant conduct.

25. For an effective registration regime to operate, Airways considers that centralised registration comprising a streamlined, secure, digital platform is required. The information captured via the platform as part of registration should include information such as name and address of drone operator; identification document; make and model, certificate number (where applicable) or drone ID number.

26. Registration will form an important part of any future UTM system and accordingly, the registration system should be designed with that objective in mind and be interoperable with other systems, technologies (such as remote ID) and overseas registers.

27. As the policy in relation to drone registration evolves, Airways encourages MOT to consider what systems and organisations (besides enforcement agencies such as police) may require or benefit from access to any database for registration for the purposes of ensuring the safe management and integration of drones into the aviation system (while taking appropriate privacy protections).

Chapter IV – Remote Identification

28. We strongly endorse the introduction of remote identification requirements for drone operators. Further, we support mandating this requirement in certain

circumstances such as controlled airspace, where remote identification technology and regulation is essential to safety.

29. Air traffic controllers being able to identify drone operators will help ensure the safety of the aviation sector and enable the successful enforcement of the rules. A number of benefits will be provided by introducing remote identification requirements:

a. enabling enforcement agencies to see where all drones are (as well as other airspace participants);
b. help ensuring a drone operator is complying with a flight plan;
c. improved situational awareness, including identifying when a drone and manned aircraft are at risk of collision; and
d. contacting drone operators where safety is at risk.

Conversely, without remote identification, air traffic controllers will be "blind" to drone operators which runs the risk of compromising public safety.

30. Remote identification technologies are critical for enabling safe outcomes and will be a key element of any future UTM system and integration with ATM systems. Airways considers the introduction of mandatory remote identification requirements in certain circumstances would provide significant safety enhancements for the aviation system, as well as mitigate the risk of unnecessary and costly disruption for other airspace users.

31. We have experienced first-hand the challenges of airspace management where there is limited ability to track and communicate with drone operators. By way of example, the 2020 Queenstown forest fire emergency required exclusion zones to be set up in uncontrolled airspace to enable emergency helicopters to access the relevant area; these sorts of operations need to remain free from unauthorised drone incursions into that airspace (through such mechanisms as the issuing of NOTAMs regarding temporarily restricted airspace and tracking of flights). Technologies such as remote identification are vital safeguards in such challenging circumstances and in generally facilitating a safer integrated airspace where every user's location is able to be known.

Chapter V – Geo-awareness

32. We strongly support the introduction of geo-awareness requirements for drone operators. Geo-awareness, and the complementary technologies of geo-fencing and geo-caging, are an important regulatory tool to manage safety and sensitivity concerns.

33. Given the present need for a standardised map and single source of truth for where drone operators can and cannot fly, Airways encourages MOT to consider whether it may be possible to start the policy development and industry consultation around the map component of geo-awareness in the near-term or in parallel with the policy development around pilot qualification and registration. Policy development around the complementary technologies available in the context of geo-awareness could then follow later once those technologies are more established.

Recommendations

The regulatory settings should include audit and monitoring powers

34. In addition to the introduction of penalties for non-compliance, we encourage MOT to consider audit, monitoring and additional early-intervention mechanisms to further enhance safety outcomes of the proposed regulatory measures. We would welcome opportunities to further engage with MOT as the regime continues to progress in its development in order to support safety by design.

Consider phasing stages of the geo-awareness requirement

35. Given the present need for a standardised map and single source of truth for where drone operators can and cannot fly, we encourage MOT to consider whether it may be possible to start the policy development and industry consultation around the map component of geo-awareness sooner than the timeframes contemplated in the Discussion Document.

Working groups and further engagement

36. Airways would welcome the opportunity to contribute and be involved in working groups forming part of the post-consultation policy development stage and ongoing consultation on the rule development. We see our airspace management and systems experience as being a valuable resource in terms of helping to ensure the rules and technologies provide a world-class risk-based regulatory regime for the New Zealand aviation industry.

Appendix 1

37. Appendix 1 of this submission sets out Airways' response to the questions posed by MOT in the Discussion Document.

Conclusion

38. Thank you for the opportunity to participate in this stage of the policy development process. We look forward to ongoing engagement on the further development of drone regulatory policy and rules.

Yours faithfully,

[redacted]
[redacted]
Airways New Zealand

[redacted]
Address: [redacted]
Airways
Level 2
6 Leonard Isitt Drive
Auckland Airport
Auckland 2022

Appendix 1: Discussion Document questions and Airways' response

QUESTION	AIRWAYS' RESPONSE
Drones in the civil aviation system today	
1. What is your view on the proposed series of measures? Are there any other alternatives you suggest we consider?	Please see our main submissions above.
2. Would the proposed approach help achieve the desired objectives?	Please see our main submissions above.
3. Would the proposed approach help address the problems and opportunities identified?	Please see our main submissions above. Additionally, Airways believes scalability of the aviation system remains an issue that needs to be addressed from a regulatory perspective. In our view, systems will be needed to manage increased drone traffic, deconflict that traffic, implement route designs and otherwise safely move the drone sector towards the objective of integration.
4. Are there any other problems and opportunities you can think of?	Please see our main submissions above. Additionally, in terms of the problem around alignment of the regulatory regime with integration of drones into the aviation system, Airways would further add that the current ATM systems alone are not sustainable in terms of enabling the volume and complexity of drones entering the aviation system, with air traffic controllers covering a significant workload in relation to managing the integration of drones into controlled airspace. Airways suggests there is the opportunity to consider in uncontrolled airspace a possible airspace facilitation role across drones, manned traffic and urban mobility requests as part of a UTM ecosystem (such as the Flight Information Management System concept in USA model, or State Authority Drone Traffic Management system in U-space model).
5. Do you agree with the proposed order of implementation of the measures?	Airways broadly agrees with the proposed phased approach. Although Airways would welcome priority given to remote identification functionality and requirements, a phased approach allows for some faster wins such as the registration system and pilot qualifications changes while

	standards, infrastructure and operator tools are further developed to better inform implementation of those more complex measures. Airways recommends MOT consider whether any phasing of the map and technology components of any geo-awareness requirement is possible.
Rule updates	
1. Should drones have their own standalone Rule Part?	Airways believes drones may benefit from having their own separate rule part because the current rules are obscured by the rules applicable to other airspace user types (rockets, balloons etc) and this can risk making them inaccessible for the general public. We also believe that having rules that are written for the general public (not aviation professionals) will aid awareness, understanding and compliance. We note other airspace users covered under the existing Part 101 rules may also benefit from the proposals around remote identification and registrations.
2. Should we review the four-kilometre minimum flight distance from aerodromes?	Airways' position is that a categorised system may be appropriate in certain circumstances and always with regard to ensuring safe outcomes. A categorised system is a practical approach based on nature of operations (frequency, type, predictability) at each aerodrome. Airways views controlled airports as still requiring the 4km protection as per the current rules so that existing safety levels to manned traffic are maintained. Any change to the standard distance rules must ensure that safe outcomes are the key focus. Airways notes that a categorised system is already effectively being used. No operations zones permit operations below 100ft, 150 ft, 200ft and 400ft within 4km of controlled aerodromes, subject to air traffic control at all times. Airways notes that air traffic controller staff spend significant time managing and integrating drone flights at controlled aerodromes using a categorised system. In principle, we believe a similar approach could be introduced at unattended aerodromes, subject to the safety-related points above. A clear and accessible single source of information (specifically, geo-

	awareness tools) is needed to ensure drone operators understand the rules and restrictions at each aerodrome.
3. Should we change the requirement to gain consent to fly above property by: a. Using 'safe distances' as an alternative? b. Relaxing the requirement in another way? c. Removing the requirement completely?	As an enabler of industry, Airways would be supportive in principle of relaxing the consent rules. However, our view is that appropriate protections (distance/height) for operations above people and property will be necessary for safety and privacy reasons.
4. Should we change the requirement to gain consent to fly above people by: a. Using 'safe distances' as an alternative? b. Relaxing the requirement in another way? c. Removing the requirement completely?	As an enabler of industry, Airways would be supportive in principle of relaxing the consent rules. However, our view is that appropriate protections (distance/height) for operations above people and property will be necessary for safety and privacy reasons.
5. If we use 'safe distances' as an appropriate alternative to the consent provision, what distance(s) would you consider is appropriate? a. 10 metres b. 30 metres c. 50 metres d. other	Airways' preliminary view is that safety considerations should be the key determinant of what distance(s) might be appropriate. We would welcome the opportunity to provide further input as the consultation on this question progresses.
6. Are there any other major Rules changes we should consider?	• The shielded ops rule is a practical measure to avoid drones having to get airspace/aerodrome authorisations for flights that are low risk. Airways suggests that this could be reviewed so that it is applicable in more circumstances, where safety permits. • Airways suggests reviewing potential opportunities around how drones may efficiently operate in controlled airspace in low risk areas of the control zone (for example, outer areas of the control zone). Airways can foresee that there may be opportunities in the future to enable drone operators (and other rule part 101/102 users) to access agreed areas/levels (by utilising an automatic approval process or as may be published by CAA) outside the 'no ops' zone. This type of opportunity would reduce the current air traffic controller workload and be seen as a positive by drone operators. Once remote identification is in place there will be more opportunities to safely integrate traffic.

	• Airways suggests reviewing requirements for drones to fully integrate into controlled airspace. Currently, a TSO certified transponder is required which is not workable for many drone operations given the practical barriers around cost, power requirements, and the size of such transponders. • When remote identification is introduced as a regulatory requirement, Airways submits that it should be mandatory for use in controlled airspace, or above 400ft, or within 4km of an aerodrome. This has both safety benefits and also enables the drone industry while supporting their safe integration into the airspace.
7. Are there any minor changes to the Rules that would make them easier to understand?	Airways is supportive of the minor changes set out in the Discussion Document.
8. What do you think of the proposed minor Rules changes?	Airways is supportive of the minor changes set out in the Discussion Document.
9. Are there any other changes we should consider?	Airways welcomes the opportunity to consider any further changes as necessary during the post-consultation policy development phase.
Basic pilot qualification	
1. Should we introduce basic pilot qualification for Part 101 drone pilots?	Airways supports a competency-based approach as an initiative to increase safety and awareness of the rules.
2. What impact would basic pilot qualification have on you?	Airways anticipates that safety outcomes would improve with a drone community that is better versed in the applicable rules.
3. What format should this test take? a. Electronic/online theory test b. Paper based written theory test (at a provider) c. A practical examination of skill and a paper based written theory test (at a provider) d. Other	Airways supports a theory test. In the future it may be worthwhile considering a practical or simulated test where a pilot can do that remotely through completing a series of exercises (gamification) with a drone that is remote identification enabled, for example.
4. Should there be a minimum age for basic pilot qualification?	Airways supports the position set out in the Discussion Document.
5. Do you agree with the proposed special authorisations given to Part 141 and Part 101.202 approved training organisations?	Airways' position is that consistency in applying regulatory measures is desirable. To the extent that the proposed special authorisations can deliver a consistent outcome around pilot competency, then Airways would be supportive in principle.

6. Is there any other special authorisations you would like to see? Why?	No additional special authorisations recommended at this stage.
Drone registration	
1. Should we introduce the proposed drone registration system? Why?	Airways supports the introduction of a mandatory registration system for the reasons set out in the Discussion Document and because of the safety benefits that come from being able to identify drones and their operators.
2. What impact would drone registration likely have on you?	Airways anticipates that safety outcomes would improve with an effective registration system, which would form an important part of any future UTM system.
3. What do you think of the proposed system design (eg digital platform) and requirements (eg identity authentication)?	In principle Airways is comfortable with the contemporary solution design proposed for a registration system. Airways supports a registration process that is online, simple and instantaneous. Operator ID should be verified through a solution like RealMe, Drivers' licence # etc. It should also be easy to register multiple drones in the same transaction. Airways recommends that a registration cancellation process (once drone is no longer owned/in use) should be considered as part of the measures
4. Should there be a minimum weight threshold for registering a drone? If so, is 250 grams appropriate? If not, what would be an appropriate weight threshold and why?	Airways believes 250g aligns with other jurisdictions and is a reasonable threshold from a practicality perspective. Airways notes its view that small drones (under 250g) can still represent a safety risk to other aircraft.
5. Should certain drones not need to be registered (such as drones flown solely indoors or within specific designated areas (eg Model Flying New Zealand sites)) from registration? What other drones should not need to be registered and why?	Airways agrees with the proposed exclusions along with having designated areas where drones can operate where they are exempt from registration and remote identification requirements. From a safety perspective, Airways considers that a drone operator should be registered for flying at events such as indoor racing to ensure safety requirements are met.
Remote identification	
1. Should we consider introducing Remote ID? Why?	Airways strongly believes that remote identification is a key enabler of situational awareness of drones for all airspace users. Remote identification requirements bring significant safety improvements and provide industry with methods to deconflict drone operations. In our view it is an important building block for a future UTM system that successfully integrates with ATM.

2. What impact would Remote ID likely have on you?	Airways considers that it is important for the safety of all airspace users to have access to the real time positions of drones. This also supports their integration into controlled airspace.
Geo-awareness	
1. Should we consider introducing geo-awareness? Why?	Airways supports the introduction of geo-awareness requirements based on safety reasons and because it will better support the drone industry as certain drone operations (eg urban air mobility drones or emergency operation drones) can be protected from other drones encroaching on specific routes. Our view is that geo-awareness requirements will also provide an additional level of awareness for drone operators and should be designed in a way that protects low level military, agricultural and helicopter operations. Airways envisages being heavily involved in this element of the regulatory regime as a Part 175 organisation providing Aeronautical Information Services for the purposes of creating an official map specifically designed for drone usage.
2. What impact would geo-awareness likely have on you?	Drone operators must have a single source of the truth and the information they need to safely manage their operation. This includes integrating with other data sources where drone flights may be restricted such as emergency response areas, public events and other no fly zones.

[redacted]

From: A Hamilton [redacted]
Sent: Friday, 4 June 2021 4:18 PM
To: Enabling Drone Integration
Subject: Enabling Drone Integration - consultation
Attachments: Ash CL MoT Drones.pdf

Good afternoon,

Please find attached my submission to the consultation on Enabling Drone Integration

Thank you,

Adrian Hamilton
[redacted]

Enabling Drone Integration - Consultation
Ministry of Transport
PO Box 3175
WELLINGTON 6140

[redacted]
4 June 2021

Dear Sir or Madam,

I am writing to submit my comments on the Enabling Drone Integration consultation documents and wish to make some specific points to avoid what may be unconsidered consequences of the proposed changes. Thank you for the opportunity to submit on this matter. The need to update regulations to accommodate changing technologies is clear and I support the work being done to achieve this.

My main interest with regard to this consultation is in the realm of model aircraft, and in particular control-line model aircraft. I have been involved in this recreational activity since 1987 as a member of several MFNZ affiliated clubs and have served on MFNZ's Control Line Special Interest Group.

Having read the documents and some of the draft submissions made by several organisations, I would like to firstly endorse the points made in submissions by:

- Model Flying New Zealand (MFNZ)
- MFNZ's Control Line Special Interest Group
- MFNZ's Free Flight Special Interest Group

With specific reference to control-line model aircraft in particular I would like to add or reiterate several points.

Control-Line model aircraft are characterised by being physically constrained by steel wires (occasionally other high-strength materials) that provide stability, directional control, and restrict flight to a hemisphere of 12-20m radius. These wires are made to the specifications laid out by MFNZ and FAI rules and are typically tested before each day's use, or in competition before each flight. The

wires link the model itself with a control handle, which remains in the grip of the pilot, typically with a wrist strap to restrain the model in the rare event of an accidental release. This system is the product of over 70 years use and refinement world wide, with an exemplary safety record.

On the basis of these physical constraints I suggest that Control-Line models fall well outside the definitions of a drone, unmanned aircraft or remotely piloted aircraft as described. They are somewhat closer to a powered kite, albeit with substantially greater control and more restricted operational space than a kite.

Regarding identification of the operator, it is obvious that a model that is physically attached to its pilot leaves no doubt as to the identity of the operator. I feel that Control-Line models and operators should be exempt from additional identifying requirements, registration, Remote ID, or geo-awareness.

I would like to request that any future regulations related to the development of tethered drones be drafted in such a way as not to inadvertently or unduly restrict operation of traditional model aircraft, notably Control-Line model aircraft.

The suggestion of a 250g cut-off for exemption from regulation on the basis of the kinetic energy of a falling object is perhaps unduly punitive on heavier model aircraft. While a quadcopter rotary wing type of craft will drop like a stone on loss of power, traditional model aircraft will glide under full control. With full loss of control and even loss of structural integrity, fluttering to the ground like a sycamore seed is the likely outcome, not a vertical freefall of a point mass.

I am aware that MoT and CAA have a long and productive relationship with MFNZ/NZMAA and would like to encourage ongoing and detailed collaboration with regard to the future of both Drone Integration and model aircraft use.

My preferred outcome of this consultation is that regardless of the solutions determined for emerging technologies, that traditional model flying activities are not curbed, and in facilitating that, Control-Line model aircraft complying with MFNZ and FAI rules are, as much as possible, exempted from drone and UAV regulations.

Thank you for your time and diligence.

Yours faithfully,

Adrian Hamilton.

Garrick Wood

From: [redacted]
Sent: Friday, 4 June 2021 4:23 PM
To: Enabling Drone Integration
Cc: [redacted]
Subject: Submission RE UAV integration.
Attachments: 20210601_Scion_response_CAA_UAV_regulatory_changes_final.pdf

Good afternoon,

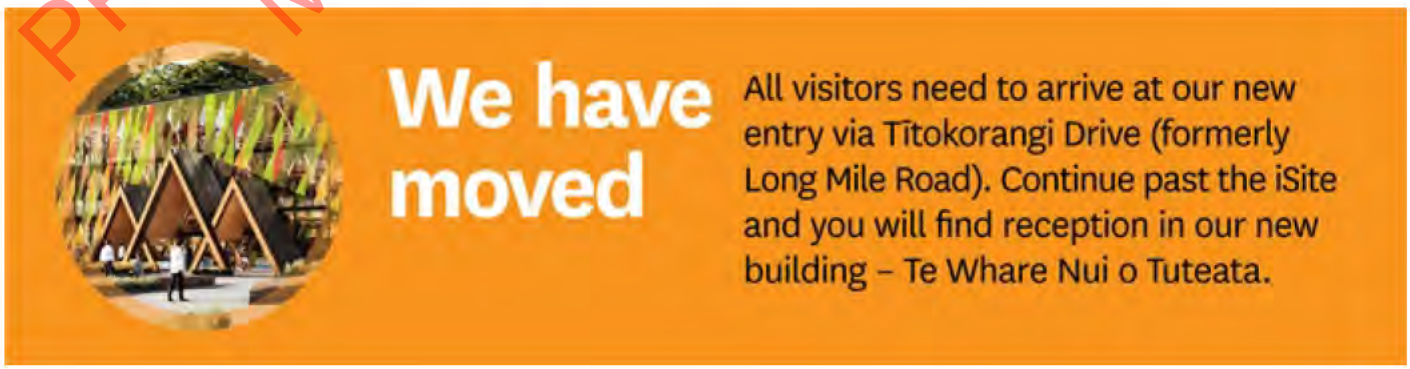
Please find attached Scion's submission RE the proposed changes to UAV legislation and integration within the NZ civil aviation system.

Please feel free to contact me if you require any further information from Scion for this.

Thank you for the opportunity to participate, and please keep us informed of the progress.

Best regards,

[redacted]
Scion
Titokorangi Drive (formerly Long Mile Road), Rotorua
Private Bag 3020, Rotorua 3046, New Zealand
Deliveries: 49 Sala Street, Rotorua 3010
[redacted]



Feedback on proposed approach to enhance the NZ drone regulatory regime to enable the integration of UAVs into the civil aviation system.

Robin Hartley – UAV Operations Manager, Geospatial Scientist, Scion
Contributions from: David Pont, Peter Massam

Scion, 49 Sala Street, Private Bag 3020, Rotorua 3046, New Zealand

About Scion

Scion is the Crown research institute for forestry, wood products, wood-derived materials and other bio-materials sectors. We also carry out research for the rural firefighting community. As such, we are addressing the public consultation through the lenses of research, forest management, and rural firefighting. Scion has been operating a UAV research programme since early 2015 and have been very active in working towards uptake of UAV technology within the forestry sector.
We would like to thank the CAA for the opportunity to participate in the discussion around the proposed enhancements to NZ's UAV regulations and moving towards integration of UAVs into the civilian aviation system.

Opening Questions

Q.1 What is your view on the proposed series of measures? Are there any other alternatives you suggest we consider?

- The idea of having a register, having enforceable compliance measures, geo-awareness etc are all very much in line with our vision for future use.
- As with chainsaws, forest machines, guns (for pest control or foliage sampling), the forestry sector is used to ensuring that all operators have the required qualifications and experience before being allowed to operate in the forest estate.
- As an industry, forestry is already trying to ensure compliance with CAA regulations
    - Forest companies restrict UAV use to those who have their CAA part 101 training from a part 141 provider
    - UAV operators must have adequate insurance
    - Some forest companies are already implementing user databases, or requiring users to apply for a UAV-specific permit before operating on their estates

Q.2 Would the proposed approach help achieve the desired objectives?

- enabling innovation and development in the drone sector, while supporting the interests of the wider aviation sector
    - Within the forest industry, innovation within the drone sector has come from mixed angles. On the one hand, organisations like Scion and Interpine have sought out part 102 certification and have built a framework for UAV operation within forestry that is compliant with CAA regulation and has a large amount of rigour and guidelines.
    - On the other hand, a lot of our innovation has come from the traditional kiwi ingenuity that has seen people go out and buy a drone to carry some fishing wire across a gully to be used to seed a pully to tow across harvesting lines, or a company has bought a UAV and started doing their own research into new ways to carry out quality control on forestry operations.
    - Most forestry companies are now asking all UAV operators on their estates to comply with CAA regulations, hold a UAV operators certificate, be insured, and even apply for a UAV permit, so these changes are probably coming at the right time where most UAV operators in our industry have moved beyond the initial innovative sparks and are now operating at a much higher level of professionalism.

- appropriate standards of safety and security by deterring and identifying drone pilots operating illegally

- There is a good level of knowledge within the forest industry around the CAA legislation thanks to the efforts of some of our early adopters who went out of their way to ensure that as an industry, we progressed the use of these tools safely.
- The idea of basic pilot qualifications and mandatory drone registration would be extremely useful to forestry and rural fire fighting:
- Within forestry, and rural firefighting, we are seeing drone incursions in our forest estates, and also within our active fire sights. This can endanger people, property and assets, and as such is seen as a huge problem by industry – for example, if a "rogue drone" crashes in a forest stand during the dry season and causes a fire, there is currently no way of identifying the UAV's owner/operator, unless they identify themselves. For active fire sights, the big fear is that a "rogue drone" operator could fly their UAV into the airspace to be nosey and cause a mid-air collision with air attack, trying to suppress wildfires.
- Both are currently situations which can and do occur, but the current legislation is not robust enough to prevent or minimise these occurrences.

- laying the early groundwork for future integration of drones into the transport system
  - This is going to be essential to UAV adoption in the forest industry. As an industry, forestry has been a relatively early adopter of UAV technology. UAVs have been operating in forests in various capacities for as long as a decade, and Scion's UAV programme has been running for more than 6 years. Wider industry has been investing in UAV infrastructure increasingly for the past 3-5 years due largely to the efforts of organisations like Interpine who normalised the use of the pro-sumer grade DJI craft, and set up a forestry-specific UAV training course with Massey University School of Aviation.
  - A recent study by Scion found that a typical forest estate with steep terrain in the South Island of approximately ca. 62km² was only accessible to UAVs on between 72-84% of its area(Hartley, Massam et al. 2019). These figures depended on whether take off locations were restricted to timber landings alone (72%) or including timber landings and forest roads (84%). These figures of coverage include compartments where the operator would have to take off and land from multiple locations in order to maintain VLOS with the craft and its C2 system, so in actuality the area that could practically be covered by UAVs would likely be much less than this.
  - Further research is required in this area, but if we go by these figures, we can safely say that UAVs cannot fully replace traditional ground-based methods of surveillance or mensuration until that number reaches 100%. In order to do this, UAV flight Beyond Visual Line of Sight (BVLOS) must be attainable for forestry UAV operators.
  - An internal report written by Scion on BVLOS for forestry found that BVLOS was critical for UAV operations to replace traditional forest inventory activities, however, due to the restriction of BVLOS requiring part 102 certification we found this to be a big roadblock for full-scale adoption. This report can be made available to the CAA on request.
  - Some forestry companies are starting to set up their own systems for contacting local pilots to inform them of UAV operations. One of NZ's largest plantation forest managers have set up their own email and text chain to inform any UAV or manned aircraft operators in the area of any impending flights – this reduces the chances of any mid-air collisions. This is not a fool-proof system but could be considered far ahead of the curve for an unmanned aviation system in NZ.
  - An integrated transport system is definitely the direction that UAV operations need to go, and Scion greatly welcome the changes that will lead there. The Geo-awareness idea would be fantastic – something along the lines of Airshare, but in which you could see the location of all operations in an area, and even see the crafts in real time so that you were aware of their exact location. This could really help to keep everyone safe and reduce the amount of admin required to ensure safety.

- fostering social licence as there are a growing number of public concerns about drones' use, including safety and security as well as privacy and nuisance.
  - On a personal note, even as a long-time commercial drone operator, I find it very annoying when UAVs are illegally buzzing over the campsite when my family are on our summer camping trip. However, as a photographer, it is equally frustrating that it is not possible to put your drone up in the air to take some beautiful aerial photos of a wilderness landscape or capture a sunset over the sea etc without breaking aviation laws.
  - There is a definite conundrum here, and currently the system is stifling creativity for some users and pushing others further into committing infringements. There seems to be a sense

currently that “if I don’t know about the rules, they don’t affect me” because there is no accountability for breaking them.
    - One particular example would be on the DOC estate. The restrictions for UAV operation on the DOC estate are currently so strict that it can act as a deterrent for legitimate research, due to the amount of admin and time that it takes to acquire a UAV permit to work on the DOC estate. On the other hand, very often when on a DOC estate, members of the public can be seen flying a personal UAV, disturbing wildlife or taking photos, blissfully unaware of the months of paperwork and consultation that they should have gone through to attain their right to fly there.
    - With this in mind, it is easy to see where there is public concern over UAV use, as it is most likely the “rogue drone” operators that people will come into contact with, and these operators do not generally adhere to the same standards and behaviours that commercial operators (both part 101 and part 102) do. This has the unfortunate effect of giving the general public a false view of the professionalism that exists within the UAV industry.
    - This social license is extremely important, which is something that foresters strive to achieve in their everyday forestry operations. If there is a negative public opinion of your work, it becomes extremely hard to continue to do it, even if there is nothing wrong with the work itself.
    - The proposed changes appear to make it harder for people to operate a UAV in ignorance of relevant legislation, which in turn should make it easier for infringements to be properly policed.
    - Scion are very supportive of anything that will reduce the mal effects of “rogue drone” operators, and to give a more professional approach to UAV operation.
    - One point, however, should be noted. How will the cheap UAVs sold at markets, purchased online or from toy shops, which are over 250g, will be policed? The rules seem like they will be great in theory, however, if there will be an increase in cost (the proposed levy on p.23 pt. 82) and admin in the purchase and ownership of a commercial UAV, but “rogue operators” are still able to get away with flying a UAV that can be purchased “under the radar”, will this just be an exercise of increasing the taxes on those who already pay them?

Q.3 Would the proposed approach help address the problems and opportunities identified?

- A more centralised and coordinated approach to attaining BVLOS would be welcome
    - Currently Scion have been seeking funding for our BVLOS research programme. Forestry has a very specific BVLOS issue due to occlusion of the craft, rather than the distance it must travel. If there were clearer guidelines on how to achieve this, this would be a huge benefit to industry.
    - Shelley and Andrews (2015) identified an increase of $72-95 million per year for the forest industry through enabling BVLOS for UAV operations in forestry. As stated earlier, a Scion report identified BVLOS as crucial for UAV operation to replace traditional forest inventory activities, however, due to the restriction of BVLOS requiring part 102 certification this could be a roadblock for full-scale adoption.
    - If the proposed measures meant that BVLOS could be more easily attainable for commercial operators, then it would be a huge benefit to Forestry.
    - Scion also strongly feel that the government should be aligning more funding to research and development in areas such as BVLOS and UTM design, geo-awareness platform design. Scion are very much aligned to the Governments plans for UAV integration and would like to play a greater part in the research going forwards.

- The idea of basic pilot qualifications and mandatory drone registration would be extremely useful to forestry and rural fire fighting:
    - Within forestry, and rural fire fighting, we are seeing drone incursions in forest estates, and within active fire sights. This can endanger people, property and assets, and as such is seen as a huge problem by industry. As an example, if a “rogue drone” crashes in a forest stand during the dry season and causes a fire, there is currently no way of identifying the UAV’s owner/operator, unless they identify themselves. For active fire sights, the big fear is that a “rogue drone” operator could encroach on closed airspace and cause a mid-air collision with air attack trying to suppress wildfires.
    - Both are currently situations which can and do occur, but the current legislation is not adequate enough to prevent or minimise these occurrences.

- Remote identification and Geo-awareness
    - The Current system of submitting NOTAMs to advise of any operations outside of CAA CAR part 101 is not very effective at all.
    - An example for consideration would be flying above 400' AGL, a part 102 operator can submit a NOTAM warning air traffic of their operation and its location.
    - Scion's pilots have personally experienced multiple incursions into the airspace they have submitted NOTAMs for, including over active fire sites for fire research. The upshot of this is, there are a number of pilots who simply do not read their NOTAMs, it is a system that relies on good faith.
    - Furthermore, the system also relies on the operator complying with the request of the UAV operator to not fly through their airspace – there is no compulsion to adhere to that request, it is simple a warning that states "if you fly at this location, at this altitude at this time, you put yourself in danger of a mid-air collision". The onus is then on the UAV pilot to abandon their operations in the case of an incursion to ensure the safety of the manned aircraft, complying with CAA CAR Part 101.213 which states all UAVs must give way to manned aircraft.
    - Moving forwards, if UAVs are to have integration, a commercial operator who is using airspace needs to have the right and the ability to not jeopardise their operation because a manned aircraft wants to take a pleasure flight through an area. We need proper systems in place so that both can operate in the same area at the same time, but both be safe, undisturbed and be able to know where each other are in order to maintain a safe working distance. This is something that the current rulings do not allow for. Geo Awareness and Remote ID would be a big step towards achieving this.
    - Scion have found, through experience, that it is much more effective to set up a contact list for areas in which you are flying regularly so that you can inform all of the key operators in that area of your UAV operations. This would include aviation clubs, commercial crop spraying operators or tourist operators.
    - The combination of the NOTAM and the mailout increases awareness, but it still only takes one operator to have missed the mailout and not read their NOTAMs for this system to fall over.
    - There is also a lot of time involved in contacting people to ensure the message gets across. Aviators can be a mixed bag here too – some manned aircraft operators are really receptive to being contacted about UAV operations and are very grateful. Other operators see this an annoyance and would rather not be disturbed. A system that would put everyone on the same page and reduce the "admin" of contacting other operators or being contacted by UAV operators would be a massive improvement here.

Q.4 Are there any other problems and opportunities you can think of?

- How do the CAA intend to police the purchase of cheap UAVs ($1-500) from markets, toy shops, or online, which could come into the country under the radar, and would be the most likely option for rogue drone operators? These would not have Remote ID, Detect And Avoid (DAA) sensors, or registration, but could cause just as much harm to other airspace users, privacy issues and social license to operate.
- Critical steps that we see are the research and development on geo-awareness / BVLOS / traffic management systems, in a 3-5+ year horizon. Scion have the capability to assist with some of these areas and are in fact actively working on BVLOS research.
- Forestry can be an ideal safe proving ground for these functionalities – difficult terrain, large, generally unpopulated areas with a single landowner, and physical barriers for testing equipment to circumvent occlusion and signal attenuation issues. Industry is also aligned with achieving BVLOS and greater adoption of UAV technology.

Q.5 Do you agree with the proposed order of implementation of the measures?

- The proposed implementation pathway makes sense.
- Scion would very much like to be involved where we can help in advising on the best interest of the forestry and firefighting UAV operations.

Chapter 1 part i: Questions – Rules updates - Major changes to the Rules

Q.1 Should drones have their own standalone Rule Part?

- This would make sense in terms of being able to make changes to the regulations in the future and for making it easier for somebody not familiar with aviation legislation to find the rules.
- In principle Scion agree with this, however, seeing as the majority of non-commercial UAV users in NZ do not currently read the regulations anyway, or don't think that they apply to them, will this really be that effective?
- The rule parts are already being broken down into easy to understand sentences in locations such as these:
    - https://www.airshare.co.nz/rules
    - https://www.aviation.govt.nz/drones/
    - https://www.aviation.govt.nz/drones/rules-and-regulations-for-drones-in-new-zealand/part-101-rules-for-drones/

    … and people are still not aware of these regulations. Will changing the format of them really make much difference? Perhaps not in the short term. But coupled with the registration and a basic pilot certification, perhaps this will help.

Q.2 Should we review the four-kilometre minimum flight distance from aerodromes?

- There are a number of aerodromes around NZ that have forestry compartments within 4km (Dunedin, Napier, Rotorua and Nelson to name a few).
- Currently we have a system whereby we are able to contact ATC to apply for permission to fly within 4km of an aerodrome, providing the pilot has their CAA CAR part 101 pilot certification and has an observer in attendance (as per CAA CAR 101.205-a-1-iii-A and B)
    - Interestingly, neither of these points were mentioned in your public consultation document?
- The main benefit to forestry operators would be to enable flying within 4km of an aerodrome without having a spotter in attendance. Scion are certainly happy to continue to coordinate with ATC through the tower, but for the average forestry operator, having a spotter present is not generally an option, rendering these forest compartments un-attainable for UAV operation, or requiring additional expense to attain compliant flight.
- Additionally, as a Part 102 operator, we have experienced difficulty in getting permission to fly >400' AGL within the control zone and within 4km of an aerodrome in the past. This was generally due to confusion within between the ATC in question and Airways as to how this could be done within the regulations and safely. It is hoped that the provision of the Remote ID and Geo-Awareness would aid this going forwards.

Q.3 Should we change the requirement to gain consent to fly above property by:

a. Using 'safe distances' as an alternative?
b. Relaxing the requirement in another way?
c. Removing the requirement completely?

- There could be some confusion cause by removing this rule. If people see the CAA rules as the only rules for UAV operation, and flying over property (consent to fly) is not one of them, then would this make infringements occur more frequently? Would this mean that more people see this as permission to go and fly their UAV within a forest estate as it is a "large and empty space"?
- This would require solid education to go with the changes, clearly highlighting the privacy laws, as otherwise it seems like this is just an exercise of passing the buck to a different government department, without resolving the issue.
- I see the benefits to a commercial UAV contractor in being able to fly over property without their prior consent - as an example, surveying a river running through multiple properties would be very problematic as a Part 101 organisation. However, the removal or relaxing of this rule must be done in a way that doesn't impact on the rights of property owners.
- Easing of these rules to bring them more in line with the rules governing manned pilots should be done in such a way as to ensure the safety of people, property and assets. The current system where you can apply for an exemption under rule part 102 works very well. If the ruling can be relaxed in a clear manner (set a reasonable yet practical safe horizontal distance, clearly express the privacy laws governing UAVs on other people's property, etc), and tied in with the basic pilot qualification, drone registration, remote ID and geo-awareness, this would likely be beneficial to all.

- Without knowing the extent of current consultation with Iwi, Scion feel that any changes to this regulation should also be discussed with Iwi as these changes to legislation could affect the frequency of people operating UAVs over land that is Iwi owned or considered culturally significant. Though traditionally manned aircraft have the right to fly in the airspace over most of NZ (as governed by CAA legislation), Iwi consultation on these matters would certainly help to give a greater understanding of the proposed new legislation, how legislation differs between UAVs and manned aircraft and foster greater feeling of having input into the legislation.

Q.4 Should we change the requirement to gain consent to fly above people by:

a. Using 'safe distances' as an alternative?
b. Relaxing the requirement in another way?
c. Removing the requirement completely?

- The term "fly above people" needs to be clarified:
- Any direct overflight of a person should not be considered as "safe" – please refer to Shelley (2016), in which the author found that a craft as small as 3kg falling on a person from as little as 20m would be fatal. With this in mind, people might misconstrue this as "so long as I am flying above the person by (insert "safe flying distance" here), I am being safe", when in actual fact they are putting people at more risk by flying higher.
- The only safe way to fly above people is with a craft specifically designed for the purpose, for example one with an adequate parachute system, or it is light enough to not cause any harm.
- For forestry and firefighting purposes specifically, this could potentially be useful for instances such as flying planting boxes to tree planters, tree felling audits, or a UAV working with firefighters to find hotspots. These operations, however, would generally be done currently by informing the ground workers of the UAV operations, and working with their consent, so this would not be a big change for forestry.

Q.5 If we use 'safe distances' as an appropriate alternative to the consent provision, what distance(s) would you consider is appropriate?

a. 10 metres
b. 30 metres
c. 50 metres
d. Other.

- This depends on the size of the craft. For some forestry part 102 certified companies, there is a policy of standing a minimum of 10m away from a craft on take-off, 20m away if it is a larger craft (for example a DJI M600), or 30m away if you are on the site but not actively watching the craft during take-off. These distances are commonly enforced during demo flights, e.g. at a conference.
- 30m or 50m seems like a safe distance, however, this would be horizontal, and it would be difficult to police this rule.

Q.6 Are there any other major Rules changes we should consider?

- At this stage possibly not. Going forwards, the forest industry would benefit from making BVLOS attainable under CAA CAR part 101. It is appreciated that there is a lot of groundwork to do for this to happen, but this should be addressed after the last stage (Geo-awareness) of the proposed changes are implemented.

Chapter 1 part ii: Questions – Rules updates - Minor changes to the Rules

Q.7 Are there any minor changes to the Rules that would make them easier to understand?

- Rule part 101.207-c-2
    - This rule around being able to fly above 400' AGL through the use of a NOTAM needs further. Technically, somebody operating under rule part 101 can utilise this system for flying above 400' (something very useful for photogrammetry in mature forestry plantations). In practice, Scion's pilots have been denied this by the NOTAM Office in the past when awaiting a decision on our 102 renewal. As the request came from an Approved Person, this should

have been accepted. This is something that generates a lot of confusion across the aviation industry, not just with UAV operators.

Q.8 What do you think of the proposed minor Rules changes?

- The key change here is the relaxing of the FPV system rules. In aviation, to maintain separation, a pilot must perform cross-checking between the instrumentation and the view around them. This is a lot more lenient than the current rules for UAVs which provide that a pilot must be monitoring the airspace surrounding the UAV the whole time. Perhaps these restrictions could be lessened in combination with the Remote ID and Geo-Awareness? It would be possible to monitor the craft's progress through the FPV system and then utilise the onboard DAA system to ensure safe separation from other airspace users.
- Scion would be very interested to hear more about potential changes to the FPV legislation and would welcome clarification on this.

- Separating out Danger Areas from RAs and MOAs seems like a good idea and would make finding their location on VNCs easier for less experienced UAV operators.

- The tethered UAV rule is a solid addition. This is something that has been discussed for both forestry and firefighting applications, and something that Scion have been starting to research in recent years.

- Proposed changes to Aircraft mass could reduce confusion. The weight boundaries are definitely confusing, particularly to operators using mid-sized crafts such as the DJI Matrice 600, which come in at about 16kg when operating with a maximum payload. This is not something that would occur to most UAV operators, particularly those operating under CAA CAR part 101.

- Clarification over VLOS would be beneficial. One area that has caused some confusion to UAV operators within forest environments is part 101.209-a-1:
    - A person must not operate an aircraft to which this rule applies in—
        (1) any area in which the person's view of the surrounding airspace in which the aircraft will operate is obstructed; or users
- In this scenario, an operator could be justified in thinking that if they fly a UAV above a forest canopy, and they are within the forest, but have VLOS to the craft, they are legally flying within VLOS rules. However, this view thought technically within VLOS, does not give a good view of the overall airspace, and it could easily be imagined that if a low flying helicopter was approaching on a collision course, it would not be appear in the operators view until it was too late to avoid.

Q.9 Are there any other changes we should consider?

- Following on from my answer to Question 7 RE Rule part 101.207-c-2
    - It would be good to amend this rule so that people flying under rule part 101 can effectively perform these flight operations above 400' AGL. As much as I think there are issues with the NOTAM system, if the NOTAMs office were able to activate a NOTAM on behalf of a 101 operator, who had their pilot qualification, and perhaps some other qualification (e.g. create a UAV NOTAM Originator qualification), then this would open up the doorway for more innovation and utilisation of this operation.
    - As long as the pilots are aware of what they are asking for (permission to fly above 400' AGL), they are briefed on how to do this effectively (using a NOTAM template, or an online form), and they can prove that they are suitably knowledgeable and qualified to do this, there does not appear to be any reason why this should not become an operation that is more accessible to part 101 operators.

- Night operations 101.211
    - This is increasingly useful for people operating with thermal cameras (e.g. for pest control or firefighting purposes)
    - As the firefighting community looks to adopt this technology more, is there potential for reducing this from a part 102 to a part 101 operation? Again, with a suitable qualification (e.g. UAV operation at night-time). If there was a stipulation that only a craft with a thermal FPV system was used, and again in combination with Remote ID and Geo-Awareness so that any infringements could easily be tracked and policed, could this be one that is relaxed?

- There is obviously much less manned air traffic at night-time and flying a UAV at night is almost safer as the crafts lights are much more visible at a greater distance, and with the thermal camera, the FPV is very effective.

Chapter 2 Questions - Basic pilot qualification

Q.1 Should we introduce basic pilot qualification for Part 101 drone pilots?

- Forestry UAV operators are, on the whole, required to complete their CAA CAR part 101 UAV pilot certification through a Part 141 training organisation. The introduction of this would likely not change the way that we operate in forestry (as an industry, forestry generally like to do things to a very high standard). However, it would be good to raise general awareness so that UAV enthusiasts who work for forestry companies or contractors have a higher level of awareness of aviation rules.
- This basic qualification could be useful for recruitment, so that for example a forestry graduate can attain this qualification to stand out on their CV. In a recent, unpublished survey of industry, results showed that having UAV skills was seen as highly desirable for recruiters, and 27% of applicants listed holding a CAA CAR part 101 qualification as being crucial.
- This could be a useful means for people managing UAV operations within forestry companies (forest managers managing contractors or pilots within the company) to do a course to learn about the relevant legislation, without having to pay the full price of the CAA CAR part 101 course from a part 141 provider.

Q.2 What impact would a basic pilot qualification likely have on you?

- For Scion, this would not have a huge impact, other than to hopefully legitimise UAV operation, raise the standard of UAV operation and aviation knowledge amongst the general population.
- For the majority of forestry companies, likewise, this would not have a great impact for their own staff as most are opting to complete the CAA CAR part 101 training course from a part 141 provider to ensure a high level of professionalism from their staff.
- For other companies, or for smaller woodlot owners or farm foresters, this might provide a means of ensuring that their staff could become more "compliant" with UAV operation, without the need to take the CAA CAR part 101 training course from a part 141 provider.
- This could give forest owners and managers a recognisable minimum standard for what they would require a UAV operator to hold before working on their estate. As previously stated though, the majority of forest managers want to see third party insurance policies that specifically cover UAV operation and a UAV pilot qualification to ensure their competency.
- For firefighting, the basic pilot qualification system would hopefully increase awareness of the aviation regulations and reduce the number of incursions by "rogue drones" onto active fire sites, making air attack operations safer.

Q.3 What format should this test take?

a. Electronic/online theory test
b. Paper based written theory test (at a provider)
c. A practical examination of skill and a paper based written theory test (at a provider)
d. Other

- If this is the basic test, and is meant as a means to try and widen spread the required aviation knowledge to more operators, create a framework for being able to regulate unlawful UAV use, whilst not detracting from the current CAA CAR part 101 training qualifications from part 141 providers, then it should be an electronic/online theory test (a).

Q.4 Should there be a minimum age for basic pilot qualification?

- Possibly not to start with – if in a few years' time it becomes apparent that the majority of airspace infringements are caused by 5-year olds, then perhaps this should be addressed.
- People wanting to do a more in-depth qualification can do their CAA CAR part 101 training qualification.

Q.5 Do you agree with the proposed special authorisations given to Part 141 and Part 101.202 approved training organisations?

- Question is unclear. If you are referring to p.38 pt.147 which proposes that holders of a qualification obtained through Part 141 and Part 101.202 CAA approved training organisations do not need to

undertake this test, then Scion fully agree on this point. The part 141 administered courses are designed to be of a much higher standard, and it would seem unfair to make a holder of one of these qualifications sit a much more basic exam.

- A similar system should be adopted to the current practice of allowing a holder of a PPL to not have to sit their CAA CAR part 101 qualification to be able to fly within 4km of an aerodrome.
- The only potential reason for getting all CAA CAR Part 101 qualification holders to sit the basic test would be if there are rule changes that have been enacted since the operator took their initial course. Most part 101 qualification holders, especially those operating within a Part 102 organisation would be up to date with the rules though.

Q.6 Is there any other special authorisations you would like to see? Why?

- In forestry we have previously discussed creating a set of forestry-specific unit standards to govern the use of UAV operations (basic maintenance and use, mapping, 3D modelling, hotspot detection etc)
- If we were to create these, would the CAA allow holders of these qualifications to carry out these operations under part 101? And would holding these unit standards negate needing to carry out the basic pilot qualification?

Chapter 3 Questions - Drone registration

Q.1 Should we introduce the proposed drone registration system? Why?

- Scion endorse the idea of a drone register. If properly administered and applied, this will give the CAA what it has always lacked in this case – the ability to hold an individual accountable for infringements of the legislation.

Q.2 What impact would drone registration likely have on you?

- This would not have a major impact on Scion. As a CAA CAR part 102 organisation, Scion keep a register of our fleet of craft, this is updated to the CAA regularly, and we already display an individual identifier on each craft.
- For the forest industry, this will not likely be a major change either. Some additional admin will be required, and closer communication with the CAA. A lot of forestry companies have a designated person to manage UAV operations within their organisation or their estate, and so they would just be required to keep a more official database of their craft and communicate this to the CAA.

Q.3 What do you think of the proposed system design (e.g. digital platform) and requirements (e.g. identity authentication)?

- The system design seems to make sense. An online register would be a much more user-friendly platform than having to write letters to the CAA, and would most likely receive more buy-in.
- The terminology keeps referring to the fact that the owner would need to register their craft "before first flight". What about the 156,610 recreational and 15,322 commercial crafts (Colmar Brunton 2020) that we already have in this country?
- With regards to the fee, this would be a critical factor, as a company or indeed an individual may have multiple UAVs, and if the fee was too restrictive, people may start to think about down-grading their fleet, or be more inclined to not register all of their craft. Perhaps supplying the owner or organisation with a unique identifier to cover all of their craft?
- P.166 on p.42 is something that must be considered. There will be a lot of UAVs being bought and sold second hand, and so ensuring that people update their information with the CAA would be crucial so that the wrong person doesn't end up being responsible/contacted in the event of an infringement by the new owner (much the same as vehicle registration).
- Pt.186 on p.46 is very valid which stated that the system would need to be integrated with the likes of RealMe to deter people registering with false details.
- When considering the amount for the license, this should be balanced with the impact that this may have on innovation and the uptake by the general public – it needs to be enough to make it serious, but not too much to deter users.
- NZ's very open and accommodating UAV regulations have made us the envy of many of our global partners and has led to the huge leaps in innovation that we are seeing in our burgeoning UAV industry. The CAA need to ensure a balance between the need for regulation and integration against the risk of stifling this innovation.

Q.4 Should there be a minimum weight threshold for registering a drone? If so, is 250 grams appropriate? If not, what would be an appropriate weight threshold and why?

- If this weight is based on research for what is considered to be the minimum size that is safe to be registered, then that is a reasonable request. The weight must be based on the science.
- With regards the weight, a lot of the high-end personal consumer grade craft are already over this limit (DJI Spark: 300g, Parrot Anafi: 320g DJI Mavic Air: 430g, Mavic air 2: 570g, Skydio2: 775g), however, once the regulations are confirmed, manufacturers will start to build to these specifications, for example the DJI Mini (249g), the Ryze Tello (80g).
- Some of these personal, consumer grade craft are so well equipped and have such a long range, that registration would make sense.

Q.5 Should certain drones not need to be registered (such as drones flown solely indoors or within specific designated areas (e.g. Model Flying New Zealand sites) from registration? What other drones should not need to be registered and why?

- No comment

Chapter 4 Questions - Remote ID

Q.1 Should we consider introducing Remote ID? Why?

- Scion fully endorse the adoption of a remote ID system. As NZ has recently mandated the ADS-B system under the New Southern Sky programme as a means of replacing the traditional radar-based transponder system, this would make absolute sense to have a system in which pilots could also see any potential UAV activity within their airspace.
- In a report on the current state of BVLOS for forestry applications, Scion identified ADS-B as a potential option for a GNSS-based DAA system. The ability for aircraft to be able to track each other in real time, with small, effective and inexpensive transceivers seems to be a no-brainer, and would massively reduce the "unseen" danger that is posed by UAVs flying in what has traditionally been "manned" airspace. Report available to the CAA on request.
- Other people have identified the potential benefits of Remote ID for enabling BVLOS too. From a report written by Scion on the current state of BVLOS:
    - A universal mandate for all craft (including UAVs) that operate above 500' AGL was highlighted by Pointon (2018) as a real opportunity for NZ to harness to the benefits of BVLOS for UAVs, as it will allow for safer integration of UAVs, due to the fact that all manned aircraft would then be visible to the ADS-B surveillance network. Pointon does, however, note that some thought would have to be given to other airspace users, such as parachutists, microlights and hang gliders, who would not come under this mandate, but would need to be included in any effective surveillance system.
- Thought should be given though as to how the Remote ID system would talk to the ADS-B system used in manned aircraft. One could imagine the "noise" created on the ADS-B IN of an Air NZ jet as it came in to land in Auckland or Christchurch if every single UAV within that area was transmitting its information. A suggestion could be some kind of filtering within the system to only highlight UAVs that are within a certain geo-cage set around the ADS-B unit of a manned-aircraft, that way only alerting the pilot to potential threats to its progress.
- The accountability that this could create would also be very beneficial to legitimising UAV use. If "rogue drones" could be identified by, for example a mobile phone app, then it would be easy for people to identify the particular craft and track down the person who created the infringement (providing it wasn't a stolen craft etc). This could be very useful in a situation such as a wildfire, when a rogue drone is encroaching on an active fire sight where air attack is trying to suppress the fire front. FENZ or enforcement personnel could use this potential app to identify the infringer and track them down, reducing the amount of time spent grounding helicopters and trying to find the culprit.

Q.2 What impact would Remote ID likely have on you?

Improved Safety

- Remote ID would have a positive impact on Scion and the forestry sector too as it would in theory reduce the risk of a mid-air collision caused by flying UAVs. Manned aircraft often fly low over forests and there have been several incidences where UAV pilots have had to take evasive action to get our craft out of the path of a low-flying helicopter that is traversing across a fire site, or a forest. Areas with notable corridors, such as long, straight forest roads or powerlines, are particularly bad which provides a strong visual reference for pilots traversing the area.
- By having remote ID, the manned aircraft would have much greater visibility of where UAV operations were happening in the forest, and this could even be an eye opener for a lot of manned aircraft pilots to realise how many UAVs there are operating in areas that they traditionally fly low over.
- Scion pilots have personally spoken to helicopter pilots in the past who were outraged to see them flying at more than 400' above a forest stand. When it was explained that the correct procedures had been followed and NOTAM issued etc, and the pilot responded "yeh, but who reads NOTAMs? I often fly over this forest low as I don't need to turn my radio on and there is generally nobody here so it's a fast route to get to where I need to go". Unfortunately, pilots like this are probably in denial about the amount of unmanned traffic there is in these previously "empty" patches of the sky.
- Forests will only get busier with UAV traffic as the industry continue to develop methods for monitoring, measuring and characterising our forests.

BVLOS

- As stated previously, there is a potential an increase in revenue of $72-95million per year for the forest industry through enabling BVLOS for UAV operations in forestry (Shelley and Andrews 2015). The introduction of mandatory Remote ID would be an excellent step towards making BVLOS operational for forestry UAV operators. If a system was designed properly, this could also enable CAA CAR part operators to operate BVLOS, which would be a huge benefit to Forestry. Scion would greatly like to work with the CAA, MOT, MBIE and Airways on designing and building this pathway.

Other

- One point of concern is that in the introduction to Chapter IV it states that "(The CAA) are proposing to introduce Remote ID requirements for *certain drones*". Could you please clarify what is meant by "certain drones"? As with manned aircraft, the implementation of a system such as ADS-B to only certain aircraft leaves enough gaps for the system to be ineffective, i.e. you are only sure that you have visibility of 80% of the air traffic that you could potential collide with. There needs to be a balance between getting every 8-year-old with a Ryze Tello to operate an ADS-B system when flying in their back garden, and only having selected commercial UAVs operate with a Remote ID system. Clarification of this point would be useful so that the effectiveness of the system can be fully assessed.

Chapter 5 Questions - Geo-awareness

Q.3 Should we consider introducing geo-awareness? Why?

- This sounds like an excellent means of preventing UAV infringements. The idea of having a mixture of geo-awareness and geo-fencing is an excellent way of trying to increase compliance.
- It is possible to imagine, for example in the DOC estate, that there is a geo-awareness boundary put on the entire estate, so that if somebody takes off there to get a picture then they are presented with a warning "this is an infringement… conservation area… have you sought permission…" and then there could be an option to include a unique code that would be obtained by DOC, for example if you were working on the site and had their permission. Anyone who was infringing could then have the choice to land and know for next time that they shouldn't be flying there, or alternatively continue flying and risk receiving a fine. Furthermore, areas of specific conservation or heritage importance on the DOC estate could have a Geofence imposed, where UAVs simply are prevented from taking off, ensuring compliance.
- This idea of a single Geo-awareness application would be excellent for firefighting too. During an active fire, FENZ have the power to shut down the airspace over the fire in order to allow un-disturbed access for air attack to suppress the fire. If there was a central application which then showed that this airspace was closed, and posted a warning for any inquisitive members of the public who wanted to fly their UAV to get some photographs of the fire, then this would hopefully reduce incidences of "rogue drones" causing the air attack to be grounded due to a lack of knowledge. Combined with the Remote ID, this could be a very powerful tool.
- This could be taken a step further and be used to replace the NOTAM system. The NOTAM system is outdated and apparently seldom used by some of pilots, who are often pilots that would be flying in airspace that is regularly utilised by UAV operators. By upgrading the Airshare system so that it displays in real time the location of UAV operations, manned aircraft flight paths, closed airspace, geo-fenced areas etc, one could imagine a system where a pilot checks the map in this app prior to their operation, located any potential conflicts with their intended flight path, and can then safely navigate through or around these other airspace users.

Q.4 What impact would geo-awareness likely have on you?

- Scion fully endorse this system and would be happy to provide any input into its design that would be useful to the CAA with regards to the desired requirements of the forest industry.
- Geo awareness could really streamline flight planning operations. Currently Scion have a multi-page flight planning document which directs us to a number of sources, including NOTAMS, VNCs, Google maps, forestry maps etc, and finally results in submitting an Airshare, emailing multiple aircraft operators, aerospace clubs, forest owners etc to schedule our flights an warn operators of our intended operations. With the use of a single integrated system of Geo-awareness, this could all be done in a single location, and notification could be made a lot simpler.
- For the forestry sector this would present an excellent location to be able to access information about who is flying over their forests and to post information about their proposed UAV or manned aircraft spraying operations.
- For the firefighting sector this would provide a lot of benefit it was able to provide a location to highlight any air attack operations or closed airspace over active fire sites in the hope of deterring "rogue drone" occurrences.
- Scion have found Airshare to be an excellent start on this journey, and the improvement to the system have been well received. However, it is becoming dated and still has limited functionality. By expanding this into the proposed Geo-awareness system, and allowing some kind of API to enable organisations to customise the airspace over their estate (geo-fencing, geo-caging, geo-awareness), along with real time implementation of a NOTAM-like system, this system could become extremely useful.

Additional Comments

- We would like to close with the following additional points which we feel are important for the proposed amendments:

1. Government need to better fund the CAA for their RPAS department. The current waiting times for any kind of inspection or assessment work are far too long and this is through no fault of the department. They appear to be understaffed and this is a massively growing area in aviation and for NZs economy and should be rightly recognised as such.
2. An industry steering committee for UAV users would be very useful to the CAA for consultation like this. Scion have not been contacted or advised about any of the changes being made by the CAA for this area, and yet Scion are one of the major driving forces for UAV adoption, research and development for the forestry sector. There are key players within other industries who the CAA could benefit from working more closely with too. This committee could really help to give more visibility on where each sector is currently sitting, the roadblocks, and potential solutions being worked on that could benefit NZ as a whole.
3. There is a potential lack of digital comms in remote forest areas. The proposed systems for UTM, BVLOS etc might presume live access to mobile (and even GNSS) networks. For example, the proposed Remote ID on P.51 seems to presume live digital comms. This may work if the link is craft to craft, but not craft to App as indicated for an “interested observer” on a phone, even if they are nearby. To expand on this, in a scenario where there was a “rogue drone” operating in a remote forest or fire site, for the app to work, some king of cellular communication would be required for somebody to be able to use such an app for identifying the operator of the craft.
4. A lot of research is required before we can solve the issues of BVLOS flight in forested areas (both native and plantation). NZ is a heavily forested nation, and the combination of complex terrain, plus up to 60 m vegetation on top, with associated flight planning and operation challenges, particularly the need for safe ‘terrain following’ flight planning, and difficulty of maintaining VLOS and C2 links due to signal attenuation. This is definitely an area requiring substantial research funding before it can become a reality.
5. The “comms” and complex environment issues noted above are actually paralleled in so-called “urban canyons” ie high-rise or even just multi-story urban areas. With this in mind, forestry could provide a potential test case that is relatively safe for developing BVLOS etc. Pt. 76 on P. 23 highlights the idea of standard scenarios, of which forestry should definitely be considered:

   > “BVLOS operations could also be facilitated through the development of standard scenarios, such as those developed by JARUS.17 A standard scenario would cover specific types of drone operations with attributes like flying BVLOS with visual air risk mitigation, over sparely populated areas, and in uncontrolled airspace.”

6. Furthermore, Scion are ideally placed to develop and de-risking a lot of the new markets for UAV operation within the forest industry and learnings could easily be extended to other industries, or for use in more populated areas.

References

Colmar Brunton (2020). New Zealand drone research. https://www.aviation.govt.nz/assets/about-us/news/New-Zealand-drone-research2020.pdf.

Hartley, R. J. L., et al. (2019). BVLOS for UAVs: Unlocking the next frontier of Forestry Remote Sensing. Forest Tech 2019. Rotorua, NZ.

Pointon, J. M. (2018). Integration of NZDF Remotely Piloted Aircraft Systems (RPAS) into New Zealand Civil Airspace, Defence Technology Agency.

Shelley, A. (2016). "A Model of Human Harm from a Falling UAV: Implications for UAV Regulation." Available at SSRN 2763899.

Shelley, A. and H. Andrews (2015). "Economic benefits to New Zealand from beyond-line-of-sight operation of UAVs." Available at SSRN 2708317.

[redacted]

From: [redacted]
Sent: Friday, 4 June 2021 4:34 PM
To: Enabling Drone Integration
Cc: Marion Hiriart
Subject: Enabling Drone Integration Submission - FLYUAV
Attachments: Response to MoT questions_FLYUAV.pdf

Hello,

Please find attached our submission.

We look foreward to developing this rule set with MOT in the coming months.

Warm Regards

--
[redacted]
FlyUAV | [redacted]
Flight Examiner P141 | Flight Ops Director P102
[redacted]

Introduction:

FLYUAV has been a market leader in the training, consultancy and operating sectors of the RPAS industry since 2016 and operated as Vertical HD in Australia since 2013. In the 8 years of operations FLYUAV has been involved in a range of operations from traffic management, surveillance, TV/Film and Industrial inspection activities and has trained in excess of 300 pilots and assisted to certificate over 80 organisations (some have moved on to other things in that time) From private companies to Government agencies FLYUAV has a broad market share in RPAS in NZ.

FlyUAV also conducts consultancy and Flight oversight for several companies in NZ such as Open2view.com. In total FlyUAV has over 50 pilots operating in a range of capacities making it one of the largest – if not the largest operator of RPAS in NZ.

[redacted] the CEO, Training Manager and Chief Pilot is a Commercial Helicopter Pilot and instructor in both NZ and Australia as well as a RePL holder and instructor for an Australian RPAS school. He brings his aviation experience to the RPAS sector and sits on both sides of the equation and firmly believes on integration of RPAS and manned.

[redacted] also flies for other organisations such as The Reel Factory and consults to other aviation participants around the pacific.

[redacted] also sits on the UAVNZ committee and while some of the answers below may reflect some joint positions FLYUAV also sits apart in places. Where FLYUAV sits clearly apart it will be referenced in RED.

Ultimately these changes are necessary however there are more than just flying cars at stake. As a company we have created full time jobs that would otherwise not exist and some caution for ourselves and our customers whom are in similar positions must be carefully considered.

Questions – High Level

Q.1 What is your view on the proposed series of measures? Are there any other alternatives you suggest we consider?

We agree that the measures have merit. We would like to emphasis that as Part 102 Operators we are also operating with parts of the 101 Rules and where sometimes vague we have had a good run with the pragmatic sides of these rules – Making them clearer and explained to the layman will help but we must not loose sight of the aviation aspect either.

Q.2 Would the proposed approach help achieve the desired objectives?

Yes and no. It is evident that CAA needs more bite and have greater powers to educate and enfoce the rules where needed. Registration for data analysis we support providing it is cost effective for all parties but we also see how it doesn't work in other countiries and hope some careful consideration be given between burden to companies vs data collection.

Q.3 Would the proposed approach help address the problems and opportunities identified?

Yes it certainly would providing continued engagement with industry is at the centre of the efforts. Previously it has been felt by industry that its all about smoke and mirrors. While the reader will shake their head at this – it is the feeling of industry that this is a fore gone conclusion.

Q.4 Are there any other problems and opportunities you can think of?

Yes we have 9000 odd reports of a drone doing illegal stuff but we need to be very careful that those reports are genuine and factual before we drop a brick on what is an emerging technology.

Each year more and more reports are occurring – but the number of RPAS are increasing also so some consideration of an upwards trend in reports should be factored. Yet it seems that the upward trend is all framed around more people are not following the rules.

With CAA powerless to issue real consequences to rule breakers this will continue. Registration will not address this, neither will remote ID – rule breakers will still break rules and cause the lions share of the problems.

Q.5 Do you agree with the proposed order of implementation of the measures?

Yes

Questions – Rules Changes

Q.1 Should drones have their own standalone Rule Part?

We think that unmanned aircraft should have their own rule part – that means aircraft without any humans on board, thus more inclusive than the term "drone", e.g., including rockets, aerostats, etc. Gyrogliders and parasails should not be in the same rule part. Autonomous or remotely piloted aircraft that carry passengers should be regulated in the same way as the equivalent operation done by manned aircraft.

Q.2 Should we review the four-kilometre minimum flight distance from aerodromes?

No. But there should be clarity inserted into the rules to make it clear this distance is from the aerodrome boundary. Standardisation of the water aerodromes should be sorted out as some have a radius around the whole lake – others it's a circle around a datum.

Q.3 Should we change the requirement to gain consent to fly above property by:
a. Using 'safe distances' as an alternative?
b. Relaxing the requirement in another way?
c. Removing the requirement completely?

We do not support removing this requirement for persons who do not have licenses or are operating under an operator's certificate. There is no guarantee that the person has competency in piloting the aircraft nor maintaining it.

Using a safe distance rule like Australia doesn't work – it will be broken just as much as the current rule if not more. Almost all certificate holders in Australia struggle with the 30/15m rule. In city or urban operational environments its impractical.

If you were to change it im very set that persons flying their drone as a hobby should do so at am approved flying area – parks designated for that purpose. Commercially a 101 (for lack of a better term currently) should still need consent and a 102 provided they meet CAA requirements should be able to operate as they are certificated.

It needs to be clearer in the rules that consent is not implied. Ie no one is home so that means I can. Consent rule was put in place for safety not privacy thus if you are unaware of any potential hazards on that site as a 101 you need consent – same as landing a manned aircraft on a property.

Q.4 Should we change the requirement to gain consent to fly above people by:
a. Using 'safe distances' as an alternative?
b. Relaxing the requirement in another way?
c. Removing the requirement completely?

We do not support removing this requirement for persons who do not have licenses or are operating under an operator's certificate. There is no guarantee that the person has competency in piloting the aircraft nor maintaining it.

Q.5 If we use 'safe distances' as an appropriate alternative to the consent provision, what distance(s) would you consider is appropriate?
a. 10 metres
b. 30 metres
c. 50 metres
d. Other.

You should not be considering the use of safe distances because these go against the nature of human visual perception. Humans are better at estimating relative distance for nearby objects, not those further away. When an object is further away, people use past experience to create expectations about what they *should* be seeing. When this mental model is different to reality, then that is what we call an illusion.

To create standards based upon safe distances that cannot be readily established by human vision alone is dangerous because responsible operators suffering from visual illusions may be prosecuted for genuine errors. Parallax error is another relevant consideration.

As previously stated this doesn't work in Australia and for the above reasons and for the density of housing it wont work well here either. We don't support it

Q.6 Are there any other major Rules changes we should consider?

Yes,
Now this is similar to UAVNZ but also different and Ill explain why. I do not support UAVNZ with this tier approach.

FLYUAV believes a three-tiered approach to the regulation of unmanned aircraft operations, alongside supporting rule parts that are consistent with current approaches within the aviation industry.

The three tiers of this system are:
1. General operating rules (more restrictive that the current Part 101) – these allow for anyone to fly an unmanned aircraft within certain parameters – Private Operators that do not belong to a club or organisation. Similar to Part 101 now.

2. A Basic Part 102 Certification. This allows greater permissions in terms of the operations that can be undertaken. Many current operations occurring under Part 102 would move into this category. Ratings would also be a feature, allowing for qualifications to match more specific operating settings (e.g., night ratings, FRTO ratings, type ratings for large aircraft, etc.).

3. An Advanced Part 102 certification process (similar to the current Part 102, but only for Part 101 variances that cannot be achieved with standardised licensing proposed under tier 2) – this will allow for more nuanced risk-based approaches for organisations undertaking higher risk operations (e.g., BVLOS, autonomous operations, urban air mobility, etc.)

I stand apart from UAVNZ on item 2 and 3. It shouldn't be a licence – the existing Part 141 schools do a good job of training industry ready pilots. Taking the existing basic Part 102 variations away and creating a license removes people from the industry as operators. CAA has less control and oversight at this point and that's not a positive. I understand that UAVNZ saw it as an opportunity to reduce the burden on CAA for certification, but the 141 schools could be given a mandate to assist in this area and a streamlined or generic Part 102 application process (similar to Australia) could be adopted. Keeping the operators in the system is vital.

For Part 102 operations the variations are living and breathing as a rule based approach and as understanding and changing technology occurs they need to be flexible enough to change. Licensing moves backwards to rule based approaches not forward with certification and risk based approaches. I feel a RPAS license in Tier 2 such as UAVNZ promotes is a mistake.

We support UAVNZ in the following change:

1. An equivalent (or adaptation) of Part 149 for recreational organisations operating unmanned aircraft, such as Model Flying New Zealand. This would allow such organisations to establish their own licensing systems for their own members.

2. A manual of standards that is standardised across the board for Part 141 RPAS training organsiations. There is far to much variation in the teaching of RPAS across NZ.. This will ensure that the organisations conducting pilot training apply consistent standards, supported by syllabi that would be advisory circulars to the Part 61 equivalent for unmanned aircraft.

We support UAVNZ in the following change:

3. An equivalent (or adaptation) of Part 66 for unmanned aircraft. This will ensure that persons who conduct maintenance on unmanned aircraft above a certain weight threshold have appropriate qualifications and experience. This would also allow for persons to obtain certificates of maintenance approval and certificates of inspection authorisation for aircraft above a certain weight threshold.

We support UAVNZ in the following change:

4. An equivalent (or adaptation) of Part 147 for unmanned aircraft. This will ensure that organisations conducting maintenance training apply consistent standards, supported by syllabi that would be advisory circulars to the Part 66 equivalent for unmanned aircraft.

We support UAVNZ in the following change:

5. Equivalents of Part 145, 146 and 148 for organisations that maintain, design and/or manufacture unmanned aircraft above a certain weight threshold.

This proposed system would be highly beneficial to the unmanned aerospace industry in New Zealand, providing far greater airspace integration by having commonality between manned and unmanned aircraft operations. Contrary to the assertions presented by the Ministry of Transport, our organisation does not believe that unmanned aircraft operations require a fundamental re-design of airspace or operating requirements. Rather, our organisation believes that a translation of existing standards to unmanned aerospace will serve the New Zealand aviation system better in the long-term.

Q.7 Are there any minor changes to the Rules that would make them easier to understand?

Yes:

1. Defining shields and barriers and placing this interpretation in one place
2. Defining what trained and competent means for visual observers
3. Clarification of visual line of sight statements
4. A formal legal definition of what "active runway or movement area" means.
5. Where is 4km measured from for aerodromes? We believe it should be the boundary, but this is currently ambiguous.
6. Clarification about rules relating to non-designated and special use airspace.

Q.8 What do you think of the proposed minor Rules changes?

We do not consider 101.202 deletion to be a minor rule change. This will have major implications for the unmanned aerospace sector and the proposal needs to be fleshed out in more detail. The most pertinent question is what will replace 101.202?

We support UAVNZ in the following change:
115-116 – We believe Subpart B already covers tethered unmanned aircraft. 101.51 should be extended to all unmanned aircraft that can be tethered, not just moored balloons and kites.

We support UAVNZ in the following change:
117 – 120 – We agree about relaxing the requirement for an observer when using FPV, but this must strictly be in shielded areas.

Q.9 Are there any other changes we should consider?

Allowing a Trained Radio operator to use a VHF while flying their RPAS – Australia has this system and it would be beneficial in many areas for RPAS as well in NZ

Removal of Part 61/149 and MFNZ from the acceptable Pilot qualifications. These are not relevant to the operations of RPAS.

Many Part 61 pilots require more training that someone that is new to the system as they have preconceived ideas of safety and standards. Piltos operating in the airlines have not been in GA for years and have forgotten all basic skills

MFNZ does not support RPAS and their testing does not fit into any real work operations of RPAS. Their training is about flying where as the holistic training of RPAS from the Part 141 schools is more involved around the entire operation.

Questions – Basic Pilot Qualification

Q.1 Should we introduce basic pilot qualification for Part 101 drone pilots?

We could support the idea of a basic pilot qualification so long as the following criteria are met:

1. It should be communicated that it does not allow you to do anything in particular with the unmanned aircraft. This is in order to differentiate it from training provided by P141 organisations and under CAR101.202. The term "qualification" is unhelpful in this regard.
2. It should be very basic and not go into the nuance that is in the present rules. Our alternative rules changes would help in this regard as the qualification could apply to only tier 1 operations (unlicensed and uncertificated), which would be more restrictive than the present P101 rules.
3. It needs to be cheap enough to encourage compliance.
4. The information needs to be factually correct and written in simple English. This contrasts to similar past efforts such as the Airshare course that is wholly inadequate and is erroneous in many instances.
5. Providing that operators that undertake higher levels of training would be exempt from this qualification.

Q.2 What impact would a basic pilot qualification likely have on you?

NONE.

Q.3 What format should this test take?

a. Electronic/online theory test

b. Paper based written theory test (at a provider)

c. A practical examination of skill and a paper based written theory test (at a provider)

d. Other

We think an online theory course would be most appropriate as this qualification should not be in lieu of more substantial courses that do involve more thorough and sophisticated assessments (e.g., exams and practical assessments).

Q.4 Should there be a minimum age for basic pilot qualification?

It should not be attainable for those under 16 years of age, consistent with the standard applied to manned aircraft operations. Pilots need to have a certain level of situatinal awareness and maturity to operate machinery that has the ability to harm people. RPAS are getting faster, larger and smaller and more integrated.

Q.5 Do you agree with the proposed special authorisations given to Part 141 and Part 101.202 approved training organisations?

These are not special authorisations. Part 141 organisations are responsible for flight training within aviation, it would be very peculiar for training to be conducted outside of Part 141s in any other area of aerospace. Part 101.202 is one example of an anomaly, which we note is proposed for deletion. We do not support deleting 101.202, but do not feel that training should be provided outside of Part 141 organisations.

Q.6 Is there any other special authorisations you would like to see? Why?

We are unsure as to what this question is intended on capturing.

Questions – Drone Registration

Q.1 Should we introduce the proposed drone registration system? Why?

Yes but with careful consideration for the following points. It should be understood as a Part 102 we are already registered so it makes little difference to us.

Please consider:

1. Registration does not enhance situational awareness;
2. It has not assisted in the prosecution of rogue operators in countries where it has been introduced;
3. Only already compliant operators will be registering their aircraft, placing an unfair financial burden upon responsible people.

Q.2 What impact would drone registration likely have on you?

None as it stands we are registered as a Part 102 – However if its separate the cost factor of registering all our aircraft when we can only fly one at a time – I would prefer the pilots need to be registered. This could then list the number, types of RPAS etc.

Q.3 What do you think of the proposed system design (e.g. digital platform) and requirements (e.g. identity authentication)?

Fit it into an existing system such as with NZTA and Car Regos etc. Don't re invent the wheel at xxxx millions of dollars

Q.4 Should there be a minimum weight threshold for registering a drone? If so, is 250 grams appropriate? If not, what would be an appropriate weight threshold and why?

NO. A Racing Drone or a DJI Mavic Mini could then fly without any knowledge of it or the operator. Arguably these are two of the most dangerous types of RPAS – Racing drone is fast and high inertia and kinetic energy to cause harm and the Mavic Mini is easily affordable and flown by novice users.

If Registration is being used as a data tool you miss out on a large portion of data. Make it cheap enough to register or provide value in registration such as an approved ID card stating the pilots RPAS qualifications – 101, 102 etc then it will be an easier sell.

Q.5 Should certain drones not need to be registered (such as drones flown solely indoors or within specific designated areas (e.g. Model Flying New Zealand sites) from registration? What other drones should not need to be registered and why?

As stated, above MFNZ should govern its own membership and their aircraft providing they fly at approved MFNZ flying sites and are financial members of the organisation and covered by their insurances.

RPAS indoors – if it can still harm people then it should have registration.

Questions – Remote ID

Q.1 Should we consider introducing Remote ID? Why?

YES if it improves access to controlled airspace and potentially for integration with ADSB in/out.

Q.2 What impact would Remote ID likely have on you?

Provided we could buy the units for the pilots so that they can be attached to the machines they fly eg – 1 per flying pilot instead of 1 per machine - I have 13 machines but can only fly one at a time. A Bluetooth link could change the RPAS type and rego and then be used on multiple aircraft.

If I must buy 13 at $1000 each – it will not be cost effective and we wont take part entirely.

Questions – Geo-Awareness

Q.3 Should we consider introducing geo-awareness? Why?

We support UAVNZ in the following:
The complexity involved with promulgating aeronautical information should not be underestimated. The user interface would need to change on innumerable unmanned aircraft to facilitate geo-awareness.

Alternatively, Visual Navigation Charts (VNCs) already contain all the aeronautical information relevant to unmanned aircraft pilots. These are available in print and electronic forms, can be purchased for specific areas and at different scales. These are of course complemented by the AIP Supplements that come out for temporary airspace designations. It would be difficult to create a system that can keep up with these and is unnecessary if pilots are taught to read VNCs and check AIP Supplements and NOTAMs. Who would be liable if a new system was created and there was missing critical information contained within these documents.

While we believe that the VNCs provide sufficient information, if the government would like to invest in creating a parallel system, there could be some benefit, provided that:

1. It provided the 4km boundaries from designated aerodromes
2. Is tiered in a similar way to the tiers in our alternative rules changes so that basic operators only see relevant aeronautical information (e.g., control zones, low fly zones, etc.), while licensed and certificated operators see the full set of aeronautical information
3. There would be an API for third parties to incorporate this information into their own systems. This would allow manufacturers to adopt this into their own apps, as well as commercial applications (e.g., FlyFreely) to incorporate it into their systems.

Q.4 What impact would geo-awareness likely have on you?

None.

Additional Comments - Rules Development

- We would like to express concern about the potential for the commercial interests of proven and established operators to be undermined by start-ups and companies engaged in research and conceptual development. While there is potential for applications such as urban air mobility and parcel delivery in the future, this is not a certainty and may take many years to develop. Conversely, New Zealand already has a number of established operators of unmanned aircraft who have been contributing towards the economic development of many sectors (e.g., aerospace, agriculture, construction, etc.). Rules development should not be done in such a way that unproven applications from start-up companies override the interests of proven applications from existing companies. We have already observed from MBIE that the AITP has been primarily focussed on start-up ventures and there has been little recognition of the economic contributions of the existing operators. We hope that FLYUAV can work with MoT collaboratively to ensure that the interests of established operators can be taken into account.

- Certification and Training is key in the development of the RPAS sector. We see quite a lot of push to create harsher rules to reduce the complaints and potential occurrences but we aren't seeing as much emphasis on training, education of the public and ultimately enforcement. The public know they can get away with it so they do. A cleaner, safer industry starts with everyone knowing the rules, being certificated to operate as a person or through a club and a clear path to enforcement if they fail to meet the requirements.

  There will always be those that break the rules – make it harder or to hard for people to operate and they will either leave the sector or break the rules. So please be mindful here for the small operators when changing these rules.

FLYUAV is committed to heling MOT and CAA in this process and please reach out for any assistance you want or need.

[redacted]

From: [redacted]
Sent: Friday, 4 June 2021 4:35 PM
To: Enabling Drone Integration
Subject: Consulatation response (RPAS)
Attachments: motResponse.pdf

Please find attached my submission to the MoT discussion paper "Integrating Drones"

Regards
[redacted]
RCModelReviews
XJet

From: [redacted]
To: **NZ Ministry of Transport**
Re: **"Enabling Drone Integration" consultation**
Date: **4 June, 2021**

Please find below my submission in response to the MoT's "Enabling Drone Integration" discussion paper.

Who am I?

[redacted] have been flying model aircraft recreationally since the age of seven or eight. During that time I have built and flown many hundreds of models and become intimately acquainted with virtually all aspects of the hobby.

Since 2009 I have been a full time influencer, promoter, safety advocate and educator within the hobby of RC model aircraft and multirotor craft. I operate two RPAS-focused YouTube channels that have a combined subscriber-base of over 400,000 and my videos have been watched more than 130 million times. Through the feedback and engagement with the hobby community that this presence on social media has created, I represent the opinions and perspectives many of the participants who are not members of formal organisations such as Model Flying New Zealand.

As the person who, in 2003, also pointed out the security risks associated with "off the shelf" technologies that could be used to build RPAS capable of causing harm (search for Simpson DIY Cruise Missile), I believe I have already researched and assessed many of the issues the MoT is presently considering today.

Rather than address the proposals and ideas raised in the discussion paper, I will present a higher-level response that considers the rule-changes the paper proposes and what I believe to be the most practical, fair and effective way to achieve the best outcome for stakeholders and the public.

Goal:

Clearly the goal of the paper was to assist in the development of a regulatory framework that would provide an environment where the essentials of safety and security are balanced against the need to allow drones to be used for both commercial and recreational purposes. This is indeed a worthy and necessary goal.

Insufficient regulation of these craft would obviously create the potential for unacceptable levels of risk to existing airspace users (namely manned aviation), the general public and other "property" in the form of assets on the ground. Over-regulation however, unreasonably burdens owners and operators with additional expenses and loss of freedoms for little or no improvement in safety. It is essential therefore that a suitable balance is achieved and I believe that many of the proposals in the discussion paper would create exactly the opposite.

Flaws in the discussion paper:

1. RPAS definitions, a lack of granularity

The discussion paper makes little distinction between the hobby of flying traditional model aircraft, the flying of modern "consumer-grade" multirotor craft with cameras plus computer/GPS assisted operating modes, and the operation of larger commercial RPAS.

This lack of granularity leads to proposals that are unnecessarily restrictive and onerous from the perspective of traditional model aircraft enthusiasts.

Looking at the goal, it is hard to understand why present regulations would need to be increased in any way. When was the last time you heard of a scale model of a Piper Cub or Spitfire menacing an international airport or trying to peek into someone's bedroom window without permission?

Indeed, one need only check the **FACTS** that are well documented and CAA's own incident records to see that the traditional model aircraft hobby has been astoundingly low-risk and its members a very responsible element of the aviation community. To burden this group with increased costs, obligations, rules, restrictions and regulation would seem to be purely punitive and does not represent a fair and reasonable recognition of their near-impeccable safety record.

I would suggest therefore that a separate category of RPAS be created which recognises these facts and exempts the traditional hobbyist and their traditional craft from things such as registration, pilot exams, etc. Such a category should not be contingent on membership of any governing body (such as Model Flying New Zealand) since they represent only a part of the community involved. The current system works near-perfectly, why would you try to fix that which is not broken and why would you not expect significant push-back if this was indeed attempted. I note that one of the "problems we are trying to solve" is a lack of compliance – I can guarantee that imposing huge over-regulation on the proven-safe traditional hobbyist will act counter to that and produce a negative rather than a positive outcome.

A quick inspection of my hangar shows over 80 models that would have to be registered under the proposed regulations – for no improvement in safety whatsoever. Many of the people I fly with have similar numbers of models.

If the MoT is incapable of drawing a distinction between traditional model aircraft and the newer GPS/computer-assisted "camera drones" that are perhaps the real problem then I would, with respect, suggest that they are incapable of producing any sensible regulation in this area. It is not a difficult task to make the distinction. Indeed, in a quick survey I conducted myself, every member of the general public asked, was able to correctly distinguish a "drone" from a "model aircraft" when shown one of each. Honestly… it's not that hard but it is a very important distinction.

I accept that store-bought consumer-grade GPS/computer-assisted camera-drones should perhaps be subjected to a higher level of regulation and control than traditional RC flying models built and operated by hobbyists. This is primarily because these craft are usually seen by their owners and operators as "flying cameras" rather than aircraft. They are also far less likely to be familiar with the existing regulations (part 101/102) and therefore are less likely to be compliant with same.

As for commercial drones, these tend to be larger, heavier and therefore also have a higher risk profile so it is only natural that they carry a higher degree of regulation and restriction.

2. Flawed perceptions

a) Gatwick
I was shocked to see the MoT citing the Gatwick Airport incident of 2018 in the discussion paper. This so-called drone incident has been almost totally debunked now, with few experts believing that there was in fact any drone (other than those flown by police) at the airport. The claims made for the drone's performance (ie: flight times, operation in rain and strong wind) were immediate clues as to the lack of credibility and subsequent official information requests to the UK police have shown that even the police themselves now disbelieve that drones were present.

If the MoT is going to accept what now amounts to hearsay as the basis for forming new regulation that speaks poorly to the processes involved and has significant negative impact on their credibility.

b) Existing science
Further to this I notice that much of the science that has already been performed in to the risks associated with drone use has been ignored.

A good example of this is the George Mason University study into the probability and risk of drones striking aircraft. They concluded that "the probability of any collision with any UAS is around 3.06×10^{-5} per 100,000 flight hours", something that has gone wholly ignored, perhaps because it does not fit the narrative that MoT and other regulators are trying to generate with their disingenuous reliance on unproven media reports?

These figures are further born out by data supplied by DJI, the world's leading multirotor drone company. They claim that over around 27 million drone flights were conducted in the USA with their craft alone in 2019 and extrapolating that data out to the entire number of drones in the USA indicates that over 80 million flights took place with a total flight time of 10.3 million hours. Yet, not a single fatality. Compare these figures to the fatality rate for manned aircraft operations which (in the USA) amounts to 1.029 fatalities per 100,000 hours flown (or 10 deaths for the same 10.3 million hours).

This is data that ought not and can not be ignored if rules created by MoT are to have any credibility and be accepted by those who they most affect.

c) Historical data
As someone who has been flying multirotor drones for over a decade I am pleased to be able to report that there has never been a single death attributed to the recreational use of multirotor drones, ever, anywhere in the entire world. That makes this the safest branch of aviation there is or has ever been – yet MoT seems to be hell-bent on increasing the level of regulation and restriction despite this inconvenient truth.

To expand on this, you may also be surprised to learn that you are at greater risk of being severely injured or killed as the result of rocks falling from space than you are from a recreational multirotor drone operation. The proof: In 2013, falling space rock exploded over the town of Chelyabinsk in Russia resulting in over 1,000 injuries, hundreds of which were severe enough to require hospital treatment. In the same period there has been not one fatality and only a small number of serious injuries attributed to recreational multirotor drone use around the world.

Also note that every year in New Zealand several people (or more) die in what are often preventable manned-aviation incidents yet, I repeat, NOBODY has ever died, ever, anywhere in the world as the result of recreational multirotor drone use.

Perhaps it would be better to address the real dangers (falling space rocks and manned aviation) before burdening the safest branch of aviation with more unreasonable and unjustified regulation that would serve little purpose.

Further documented reports show that even in the very rare situations when a drone and manned aircraft have collided, the damage is far less than many have predicted. Both fixed wing and helicopter collisions have produced no fatalities or serious injury, despite countless predictions of both by those who ignore the science. I would expect MoT to take strong note of the data that has been gathered from **actual** incidents when considering the claims of rigged "studies" that suggest otherwise (Dayton University, BBC Panorama, etc) It is also worth nothing that the worst incident involving drone/helicopter was that involving the RCMP in Canada who flew one of their own drones into one of their own helicopters. No recreational craft were involved and no injuries resulted.

d) RPAS growth forecasts

Another flawed perception is that the skies will soon be filled with fleets of commercial drones delivering every-day items to a widely distributed group of customers. This is not going to happen.

One only has to examine the economics of delivering Pizza or Amazon products by drone to see that it can not represent a profitable operation. A minimum-wage worker on a moped can produce the same results at significantly lower capital and operating cost. Whilst there are some very specific use-cases for "drone delivery", the reality is that this will not become the norm any time soon and therefore regulations based on such a scenario will be flawed and excessively restrictive.

From the perspective of recreational drones, sales figures around the world indicate that we have already passed "peak drone" and that sales are now in decline.

To regulate too early risks forcing the adoption of technologies and solutions that will be woefully outdated by the time they are actually needed. I cite ADSB as a perfect example of this, being a technology that was introduced so long ago that it now has significant limitations compared to that which could be provided by more modern technology. Indeed, one suggestion has been that all drones be fitted with ADSB as a method of tracking and collision avoidance but unfortunately the ADSB standard, created back near the turn of the century, now has insufficient capacity to allow that.

If we act too quickly in demanding technological solutions to the drone "problem" then we run the risk that by the time the solution is truly necessary it will already be outdated. Far better to leave the definition and implementation of such systems until they **are** necessary and therefore the technology is far more capable.

3. That word “integration”

Using the word “integration” in relation to recreational RPAS activities shows a worrying lack of awareness of the problems, risks and realities of the situation.

The single largest factor in reducing the risk that RPAS pose to manned aviation is not “integration” but **SEGREGATION**.

This is already acknowledged by the provisions of CAR101.207(a)(3) which restrict the operation of recreational RPAS to no more than 400ft AGL. Restrictions on manned aircraft prohibit their operation below 500ft AGL except under specified circumstances. It is this vertical segregation that provides a 100ft safety layer. The concept of “integrating” rather than “segregating” would seem to be a highly flawed one.

To draw an analogy… we do not seek to integrate pedestrian traffic onto our motorways because that would be very high risk. Instead, we confine pedestrians to footpaths and cars to roadways. Similarly it would be folly to integrate drones into the airspace used by manned aircraft and segregation remains the key to preserving safety at this time.

If/when drone operations become more commonplace then it may even be necessary to raise the lower-floor for manned operations to a higher level, so as to allow more space for RPAS to operate below them. However, this is not likely to become necessary for a very, very long time because, as stated previously, the forecasts for drone use are (in my view) massively overstated.

4. Learning from other countries

Clearly there is much to be learned by examining the experiences of other countries in respect to regulation.

To this end, there has been zero evidence that things such as the registration of recreational drones or their operators in any way prevents bad things from happening, nor has it been particularly successful in tracking bad actors who may have engaged in such deeds.

Whilst there may be some merit in the registration of those operating consumer-grade GPS/computer-assisted store-bought drones and commercial craft, overseas experience clearly indicates a very low return on investment when this burden is applied to the traditional hobby and indeed, feedback received by myself indicates that compliance with this demand is nowhere near as high as authorities might believe it to be within the hobby community.

If we are to learn from other countries then I think New Zealand should look to Canada, where Transport Canada has declared that there are no prescriptive rules/regulations for RPAS that have a mass of less than 250g. The acknowledgement here is that the risk associated with the recreational use of such lightweight craft is so low as to not be worth prescriptive regulation – the only requirement being not to endanger person or property.

This situation has been in effect for over a year now and, to the best of my knowledge, there has not been a single injury or incident of property damage from such craft, despite the “no rules” approach to their regulation. Unless the MoT wish to be seen as attempting to regulate children’s toys, something that will undoubtedly produce significant bad press and push-back along with poor levels of compliance, I believe they should adopt this 100% effective solution for low-risk craft. I would also argue, based on the historical data, that traditional recreational RC model aircraft be included in this “low risk” category.

How ironic is it that, under MoT’s proposed regulations, a 30g child’s toy or a 250g foam model of a tiger-moth aircraft would be subject to the same restrictions and regulations as a 14Kg commercial multirotor drone. This is not risk based regulation.

It is always important to remember that for regulations to get buy-in (compliance) from those they apply to, they must be seen as fair and reasonable. Regulations that are not complied with are as ineffective as no regulation at all and that would represent a huge failure on the part of MoT.

5. Risk assessment – where is it?

The bottom line is that regulation should be proportionate to risk.

Every day we engage in low-risk activities that, due to that low risk, are unregulated.

We can walk the streets without a license, without registering ourselves or our shoes and without the need to carry anti-collision beacons because this is a low-risk activity that produces little danger to others.

The current regulations applying to recreational RPAS claim to be risk-based but are in fact far from it. To suggest that all craft from 1 gram to 14.999Kg represent the same risk is not a credible and any regulator that claims it is not fit for purpose – however, CAR101 makes no distinction between a harmless 30g child's toy that, at best represents a choking hazard, and a 14.9Kg heavy-lift octocopter with large lithium batteries that present a very real fire danger and propellers that could easily inflict life-changing injuries or even death.

All regulation must be based on a comprehensive, independently peer-reviewed risk assessment.

I have asked CAA for a copy of the risk assessment that was used in the establishment of CAR101 and they have said no such document exists.

If the MoT introduce further restrictions and regulations without having first done such an assessment to properly identify and accurately quantify the nature of risks associated with RPAS use then the resulting rules are unlikely to be fit for purpose. Without such a risk assessment MoT will simply be "guessing" or basing its assumptions on media hype (such as the Gatwick incident) when it should be using a scientific approach based on analysis of all the factors and data.

Rules based on hype and assumption are unlikely to get a strong buy-in from those who would be adversely affected by them – and MoT has already acknowledged a lack of compliance as being one of the issues they seek to address with these changes. Not to be able to provide evidenced justification for tougher regulation will be considered a failure on MoT's part.

This becomes even more ironic when CAA make "risk assessment and management" a core component of their safety message. We are constantly being told that we must always assess and manage risk – yet MoT appears to think that a true fact-based risk assessment for something as crucial as creating new regulations is unimportant.

Hypocrisy is not an option here.

As the figures quoted earlier from DJI attest, RPAS operation is safer than manned aviation by several orders of magnitude at least. Why burden it with unnecessary additional regulation just because you can? Supporting evidence in the form of a risk assessment must be provided to back up any further restrictions, regulations or rules.

6. Registration and Remote ID

There is a proposal in the discussion paper that all craft weighing more than 250g be registered.

This is totally unacceptable from the perspective of traditional RC model fliers. We, as stated previously, are not the problem you are trying to deal with. We have an almost unblemished record of safety and responsibility. Do not attempt to penalise us for the sins of others or unsubstantiated allegations of risk. I know that I personally will not accept a demand such registration and I will, in my position as an influencer, actively incite others to do likewise, should this ridiculous imposition be mandated by regulation. If you want to put a 68 year old man in jail for safely flying his toys on his own property without having first registered them then go for it, the media will have a field-day.

I am all in favour of regulations, restrictions or rules that will tangibly improve safety but there is zero evidence from anywhere in the world that the proposed registration system will reduce the risk from an already very low-risk group within the aviation community.

If MoT can cite evidence to the contrary I would love to hear it.

It is worth noting that as I write this, even individual firearms do not require registration in this country. Are MoT suggesting that a foam model of a Piper Cub is more dangerous than a shotgun? This speaks to the credibility of MoT's position and the lack of buy-in this will produce from those affected by such ludicrous regulation.

Also, MoT's suggestion that each individual craft be registered has been roundly rejected by other regulators around the world who have instead opted to register the owners and/or operators of such craft. I should point out that even this is totally unacceptable and constitutes a slur on the good reputation of the traditional hobby community. We will take offence at this if MoT attempts to force it upon us without compelling evidence to show that it will in any way increase safety.

I should again mention that I do not speak for MFNZ members but for many of the much larger number of RC fliers in New Zealand who operate safely and responsibly, without any affiliation to any formal representative or controlling body.

Similarly, we will not accept a requirement to have our models burdened with any kind of electronic conspicuity or remoteID systems. Traditional hobbyists have flown for decades without the need of such technology and have done so without causing problems. By all means make this a requirement for "store bought" GPS/computer assisted "camera drones" but not for traditional RC fliers using models without such sophisticated technology already installed.

7. More pragmatic ways of improving safety

As someone who is a strong advocate for and proponent of safety with in the RC model and drone-flying communities, I believe that highly restrictive and prescriptive regulation is not a particularly effective way to achieve the goal.

The ineffectiveness of laws, rules and regulations as a way of preventing bad things from happening can be seen every day. Our press is replete with reports of murders, robberies, assaults and most Kiwis accept getting a speeding ticket as "just one of those things". Indeed, although drink-driving has always been illegal, we did not see significant reductions in road-deaths from this cause until we **educated** people and created a culture where drink-driving is no longer acceptable.

I believe that if we are to further reduce the already very, very low risk associated with recreational RPAS use then the answer is not to treat the innocent as if they were already offenders (forcing them to sign up to an offenders-list… aka "registration") but to educate the problem element and create a culture where endangering others is "not cool".

You may be surprised to know that the culture of safety is already widespread within the hobby (both inside and outside of MFNZ), which goes a long way to accounting for the lack of fatalities and extremely low rates of injury and property damage associated with it. MoT should, in my opinion, be treating this issue just as they did with drink-driving one and relying on education to reach the "problem element" – if there is one.

As a member of the hobby community I, like almost all the rest, can proudly claim that throughout my flying activities, I have never killed, injured or endangered anyone and never damaged any third-party property. Why do you need to further regulate a hobby when this is the norm?

To make further this point, I have designed and built an ADSB-based alarm for RC model and drone fliers. This device alerts the hobbyist to any approaching ADSB-equipped aircraft, allowing them to ensure they are not going to represent any risk, long before that aircraft becomes visible or audible. This is a very pragmatic step to ensuring safety is maintained and the demand for this unit is exceptionally high, both here in New Zealand and from other countries. Hobbyists choose to spend their own money to improve safety – that speaks to the culture that already prevails.

If MoT wishes to improve safety, how about they mandate that **ALL** manned aircraft must have ADSB fitted and operational, even when flying in class G airspace. This will enable hobbyists to detect their approach well ahead of time, even if they are flying below their legally mandated minimum altitude as is far too often the case. Indeed, CAA's own crash investigations strongly highlight that low-flying (below 500ftAGL) is a factor in far to many fatal crashes.

As a social media influencer with significant reach in to the communities MoT is attempting to regulate, I would be more than happy to work with the Ministry to help create rules that are both effective and balanced then promote those rules to those affected.

If MoT is unwilling to acknowledge the follies contained in their discussion paper and attempt to needlessly over-regulate the safest branch of aviation and a hobby that has been a lifelong passion, I will advocate for widespread non-compliance until such time as concrete evidence is provided to backup the need for such regulation.

I trust that the Ministry will be goal-oriented and work with me to ensure that the skies above us remain safe for everyone whilst also preserving the rights and freedoms of all New Zealanders.

The MoT should also be aware that RPAS-specific regulations are in many ways a double-up of existing laws already passed by parliament. It is a crime to endanger persons or their property and all the MoT's proposals appear to do is define ways in which such endangerment might be achieved.

Compliance relies on awareness and comprehension of the rules. The more rules you have, the less likely it is that you will get compliance because people will not remember them or understand them. Again I cite the highly effective Transport Canada strategy of using non-prescriptive regulations that simply define the goals : do not endanger people, do not endanger property (for craft under 250g). Rules that are so simply **anyone** can remember then and comply with them.

Do not try to solve problems that do not (yet) exist and do not attempt to create regulations based on hyperbole, misinformation, ignorance and commercial rather than safety imperatives as would seem to be the case with much of the discussion paper.

Please feel free to contact me directly if you wish to discuss further any of the comments I have made or to avail yourself of the offer I have made in respect to working with MoT to help construct effective frameworks to maintain and improve the impeccable safety record of hobby RPAS operations.

[redacted]

[redacted]

[redacted]

From: Kate Madden [redacted]
Sent: Friday, 4 June 2021 5:09 PM
To: Enabling Drone Integration
Subject: Enabling Drone Integration Feedback
Attachments: Feedback on Enabling Drone Integration - KMadden 4Jun2021.pdf

Hi,
Please find attached feedback on the Enabling Drone Integration proposals. It is in summary form and more information can be provided if required, and any questions answered.

Thanks and regards,
Kate Madden
[redacted]

Feedback on Enabling Drone Integration

Prepared by Kate Madden. [redacted] Dated 4 June 2021

Executive Summary

This report provides feedback to the Ministry of Transport Enabling Drone Integration Consultation that closes on Friday 4 June 2021. It is in summary form and does not contain all of the technical and safety rationale for the feedback.

This document is written with the assumption that the reader has a strong technical understanding of the rules and the aviation sector.

For ease of reading, and given the different terminology in use, Remoted Piloted Aircraft (RPA) and Remotely Piloted Aircraft Systems (RPAS) has been used in this document.

1. Rules Updates

1.1 – Standalone rule

The creation of a standalone rule for remotely piloted aircraft (RPA) is supported.

The subparts within a rule allow for varying applications of RPA and users, and the associated requirements.

To enable effective integration of RPA within the aviation system, requires a systemic approach to regulations, including when rules across different aircraft operations require alignment for improved safety of the aviation system.

The applicability of 91.1(c)(2) & (2A) needs to be considered. When considering RPA over a certain size in either weight or dimensions, or for various use cases, Part 91 may be appropriate with additional criteria when remotely piloted operations are in place. This includes, for example, right of way rules, transponder and ADS-B requirements, other equipment requirements, aircraft speed (91.237), altimeter requirements (91.239) and so forth.

This would also provide some initial future proofing for the use of RPAS in Part 119, 121, 125, 129 and 135 operations, although as these operations commence there will be a requirement for future review.

1.2 – Consent provision

The removal of the consent provision is supported as it has created unreasonable challenges for RPA operations that are inconsistent with other aircraft operations.

There remains airspace where it may be inappropriate for RPA to operate in, where it would be inappropriate to exclude other aircraft. Reasons include safety or security, national security, or in the public interest. Examples include, but are not limited to, RPAS operating near prisons, military operations not covered by MOAs, sensitive property, or conservation reasons.

Section 29A of the Civil Aviation Act 1990 allows for ordinary rules for the classification, designation, special use, prohibition and restriction of airspace. Airspace is designated under CAR Part 71. An amendment to this rule part could include RPA restricted airspace, or a similar concept. The use of such airspace could be specific to operations under a certain altitude (e.g. below 500 ft) as operations above this would potentially be subject to normal restricted airspace that manned operations are restricted by. Alternatively such airspace may apply only to certain types or sizes of RPA operations.

Additionally, section 29A allows for rules for prohibited airspace, however CAR Part 71 currently does not provide for the designation of prohibited airspace.

It may be inappropriate to chart any airspace specific to RPA using the traditional, paper-based format, because of the size or vertical limits of that airspace, therefore alternative provision of information (such as use of approved apps or other such methods) may be required with applicable rule amendments to support this. This would also ensure that charts applicable to manned aviation are not unnecessarily cluttered.

1.3 – Minimum safe distance from aerodromes

The removal of the standard 4km safe distance from aerodromes is supported. This rule is onerous and for RPA operating below 400ft, there are many locations within that area that an RPA could operate safely. Similarly, within a control zone, there are many locations within that airspace that an RPA could operate safely and the requirement for an ATC approval is onerous for the RPA operator as well as an unnecessary distraction for ATC.

RPA are required to give way to, and remain clear of, all manned aircraft on the ground and in the air under CAR 101.213.

This could be managed through airspace designations, again where the charting for these areas allowing small RPA operations below 400 ft using alternative provision of information similar to 1.2 above, in place of the traditional paper-based methods.

An alternative around controlled aerodromes is to consider a concept such as LAANZ implemented by the FAA in the US.

The concept of where RPA may and may not fly also needs to consider the size of the RPA, the type of operation, and altitude and area it intends to operate. For example, it would be more appropriate for an air-taxi to follow similar requirements to manned aircraft in Part 91, than RPA under 25kg under Part 101. These differences will need to be considered in the rule making process to remove ambiguity not only for the RPA operators, but also for the pilots in manned aircraft operating in the same airspace as RPA.

1.3.1 – Operating near controlled aerodromes and in controlled airspace

CAR 91.241 requires manned aircraft operating in a control area or control zone designated under Part 71 comply with ATC clearances and instructions.

Part 101.205 (2) requires RPA within 4km of a controlled aerodrome to operate in accordance with an authorisation from the relevant ATC unit.

Part 101.11 requires that a person must not operate an RPA in controlled airspace without an authorisation from the ATC unit responsible, but does not obligate them to operate in accordance with that authorisation. Whilst this is a technicality in the wording, it can limit the regulatory response to operators not complying with the authorisation.

Additional consideration needs to be made to differentiate those RPA that it is intended operate in accordance with an authorisation or approval from ATC, such as those under 25kg and operating under 400 ft, and those that operate similar to manned aviation and subject to clearances and instructions of ATC. This has an implication for ATC.

1.4 – Section 112 of Enabling Drone Integration – CAR 101.7

This rule could be aligned with 91.129.

On page 30 of the document it comments on 'subpart C', it is assumed this refers to 101.7(c), and not Subpart C – Balloons. Rule 101.7(c) refers to operating in danger areas and the proposed change comments that there 'are some problems with subpart (c), and the requirement for permission and that intersects with the other rule parts.

Danger areas do not require permission to enter, they are designated to notify operators that there is a potential danger to aircraft flying in the area (refer CAR 71.161(a)).

1.5 – Section 113 Definitions

It is recommended that the definitions are contained in CAR Part 1.

2. Basic pilot qualification

The proposed basic pilot qualification is to be issued by CAA but is outside the licencing criteria.

Some considerations in implementing a basic RPA pilot qualification:

- The pilot is not a certificate holder consistent with the Act, this means that they also sit outside the regulatory operating model (ROM). Consideration will need to be given as to how such participants are to be managed, and regulatory tools available. Will a change to the Act be appropriate?
- Where can the basic pilot qualification be used, and for what type of aircraft, and what type of aircraft operation?
- It could be considered appropriate that such operations remain outside controlled airspace, only for operations below 400 ft, and for small RPA.
- What operations require licencing? Will the licence be a subset of Part 61 or a separate RPAS licence? There is an opportunity to provide minimum standards and requirements, supporting safe integration in the wider aviation system. Standardised licencing requirements also reduces the burden on Part 102 operators to determine the requirements themselves as part of their exposition.
- Note that in 2019 ICAO included RPAS licencing under Annex 1, and medical requirements as Class 3 equivalent to ATC.
- How will tourists be able to obtain the qualification?
- When is a RPAS pilot required to transmit on the airspace frequency, and what qualification do they need to do so? How will they obtain a Radiotelephony qualification/licence/rating (FRTO)? Currently, ATC obtain this as a rating on their licence. Pilots do not hold a FRTO rating. Other users, such as vehicles and personnel operating on an aerodrome do not meet national standard. This is an area that has wider implications, but also has significant safety impacts given that

the majority of communication between aviators is over the radio using standard international phraseology.

The ability for a licenced RPA pilot to supervise someone operating the RPA who is not licenced is supported. However this should be limited to CAR Part 101 type operations.

3. Drone registration

Registration is supported.

A separate registration system is proposed, that sits outside the regulatory operating model. This may pose future challenges.

Tourists will bring their RPA into New Zealand for a short period and operate it here. Some of these tourists will have their aircraft registered overseas. How will such aircraft be considered in relation to registration requirements?

The rule will need to consider at which point a RPAS is included on the New Zealand aircraft register with a 'ZK' registration, ensuring standardisation and transparency for both the operators and the regulator. Currently this is not defined.

4. Remote ID

It is recommended that identification requirements are separated as they have different purposes and needs within the aviation system.

Remote ID was introduced overseas as a regulatory tool for law enforcement. \

Requirements for air traffic management purposes are different from law enforcement, which will differ from 'see and be seen' considerations, and will require different equipment. The equipment requirements will also differ depending on the size of the RPA, the operation, and the location of the operation. It is important that the rule consider the intent and use of each system, to ensure that rule and the notices outlining the equipment standards are specific and appropriate.

Whilst some aircraft operators believe that all RPA be equipped with ADS-B to enable them to see them on the ADS_B-In, as those Part 101 operations required to give way to and remain clear of manned aviation, it would seem inappropriate to do so.

Further, it would not be appropriate to equip all RPA with ADS-B given the limitations on the spectrum and 24-bit addresses. It would also potentially create issues with the air traffic management system. Challenges with the use of ADS-B for only manned aviation has caused some challenges overseas.

To enable full integration of RPA BVLOS operations into the aviation system, electronic conspicuity of all aircraft, manned and unmanned, and including those that sit outside Part 91, is likely to become a future requirement for the ongoing safety of all participants.

My understanding is that Airways currently requires RPA operating above 400 ft in controlled airspace to be equipped with a Mode-C transponder. This differs from remote ID requirements.

There are some implications on TCAS equipped aircraft if small RPA have this requirement that may not have been fully explored yet.

Other aircraft, who operate outside transponder mandatory airspace are not required to have a remote ID capability, including balloons, paragliders, etc. What consideration has been to equity within the aviation system, including the safety and security risk?

5. Geo-awareness

Just as pilots are required to have the appropriate aviation charts, there is a need for RPA operators to be appropriately equipped. This will look different from the traditional paper charts, and already there are apps available.

It does not make financial sense, nor would it be efficient, to run two different systems for what is essentially basic airspace information.

Contrary to the comment in section 219, the existing aviation information management system does provide an official map for RPAs. The challenge is that they not digitally based, and there is a cost involved in obtaining the information. This means that potentially manned aviation is subsiding RPAS operators. Aeropath (Airways subsidiary) are the Part 175 Certificated provider of aeronautical information. They are also in the process of digitalising this information. This forms part of the global ICAO SWIM programme and can be scaled to support RPAS operations as well as manned operations.

Amendments to Part 175 will be required.

Geo-fencing, is a separate issue from geo-awareness, and may require separate consideration in the updating of the rules. This would also potentially align with comments above on RPA restricted airspace.

6. Other rules

As RPA operate in the wider aviation system, amendments to rules related to RPA will also require amendments to other rules to ensure a whole of system approach.

The document does not outline proposed associated changes to other rules.

As there are a large number of considerations for each rule part it would be inappropriate to detail all suggestions within this document at this time, a list of considerations for some rules have been briefly summarised below. This is not an exclusive list, merely an opportunity to provide areas for consideration.

- Part 1 – Definitions to be updated
- Part 12 – accident, incident and statistics – when are RPA required to report, what RPA are required to report
- Part 47 – which RPA will be ‘ZK’ registered
- Part 61 (or equivalent) – consistent with ICAO Annex 1 changes
- Part 65 – changes to ATS licencing to include information on RPAS operations
- Part 67 – ICAO medical requirements include Class 3 medical for RPAS licences
- Part 71 – what airspace rule changes are required
- Part 91 – which Part 91 rules apply to which RPA operations for consistency within the aviation system
- Part 92 – RPA, including cargo operations, are likely to be impacted by Part 92
- Part 139 and Part 157 – Consideration on the impact to aerodrome requirements, including when notification is required for changes related to RPAS operations.

- Part 172 – what are the requirements for ATS to provide separation, traffic information, and other air traffic service requirements for RPA
- Part 174 – Meteorological requirements in relation to RPA
- Part 175 – provision of aeronautical information for RPA

7. Civil Aviation Act 1990 and CAR Part 1 definitions

Section 2 of the Act provides the following definition of controlled flight:

> **controlled flight** means any flight that is provided with or required by rules made under this Act to make use of an air traffic control service

CAR Part 1 has the following definition of controlled flight:

> **Controlled flight** means any flight that is subject to an ATC clearance

When considering the definition of a clearance and the requirements on ATS, this has an impact on ATC control and clearance requirements.

The definition of 'controlled flight' is in ICAO Annex 2 Rules of the Air, and aligns with that in the rules rather than that of the Act. A review of this and amendment to the definition in the Act is recommended to be consistent with operations and to remove unnecessary obligations on ATC that do not provide additional safety benefit.

An extensive review of definitions between the Act and the Rules has not been undertaken, there may be others that require consideration.

[redacted]

From: [redacted]
Sent: Friday, 4 June 2021 8:17 PM
To: Enabling Drone Integration
Subject: Submission - Enabling Drone Integration
Attachments: DT submission pdf.pdf

Sir,
Attached is a submission on the above.

I have no issues with being identified as the submitter.

Regards
[redacted]

Submission relating to:

Discussion Document Enabling Drone Integration.

The consultation document for Enabling Drone Integration lists control line model aircraft as an Unmanned Aircraft.

This is indeed correct, but the document then proceeds to categorise both remotely piloted aircraft (RPA) and unmanned aircraft (UA) as drones. The document further states "*Drones are aircraft that can be remotely piloted or flown autonomously."*

Control line model aircraft, invented about 1945 (hardly "Rapidly emerging technology" Pg 6), fly around the pilot on two wires no longer that 25m long, and are held by the hand at the centre of the rotation. The model is thus confined to a ground hemisphere of radius 25m with the pilot at the centre.

By virtue of the restraining wire tension, the flying model exerts a centripetal pull on the pilot's hand. The models must be small because the pilot simply can not resist the pull from a large model, he would be dragged over. The maximum model size is normally about 2.5kg. The specialised sport of speed control line models uses a centre rotating pylon to both support the handle and prevent "whipping" to artificially increase its speed, however models are still less than 2kg.

Flying control line model aircraft is a minority sport limited to precision aerobatics, combat, scale, speed or team racing. None of these disciplines have models over 2.5kg mass. Light models also fly better, it is a simple as that.

From the above it can be seen that control line model aircraft are in no way comparable to the legislators' current definition of a drone and should be exempted as being of no risk.

It beggar's belief that the MOT consider a device weighing probably less than 2.5kg and constrained to circulate in a hemisphere on the ground of radius 25m, presents a risk to full size aviation. Kites and kite surfing represent a much greater hazard.

It could be argued that if the restraint wires break, the model could fly away and be a hazard. This is an impossibility because the model is then unstable and would immediately crash. Furthermore, for a fly away both wires would have to fail simultaneously. If one wire fails, even marginally before the second wire, the pull on the remaining wire slams the elevator control into full down or full up and the model crashes within the hemisphere boundary

To absolutely minimise the risk of a flyaway, and also avoid damaging one's own model, pilots wear safety straps between the handle and their wrist and perform regular pull tests on the wires usually equal to 5 x the model weight. These requirements are clearly specified in MFNZ safety rules for control line flying.

In conclusion, the inclusion of control line models as a drone is ludicrous, and the sport should be exempted as is the case in the UK, where common sense has prevailed on this long-established method of flying a model.

[redacted]

Rotorua Model Aircraft Club.

[redacted]

From: [redacted]
Sent: Saturday, 5 June 2021 7:51 PM
To: Enabling Drone Integration
Subject: Apologies, late response.
Attachments: Response to The Enabling Drone Integration Discussion.pdf

Please find attached my response to the Enabling Drone Integration Discussion.

Apologies for the late filing, while I would have liked to include more in my response conditions beyond my control this last week have caused several delays in getting anything at all done.

Thank you,
Chris Robertson

[redacted]

Response to The Enabling Drone Integration Discussion

I would like to thank the Ministry of Transport and the Civil Aviation Authority for their time and effort put towards the proposals within the Enabling Drone Integration Discussion Document[1] (hereinafter referred to as 'the document'). I believe that changes to regulations should be made. However, I personally do not believe proposals within the document provide satisfactory or realistically achievable outcomes for the majority of RPAS users.

Further to this I do not believe the proposals within the document have been given nearly enough thought. Many appear to be supported only by hearsay and media hype, few with actual evidence or fact.

The document makes reference to ideas of solution, speculating on technologies and concepts that do not yet exist. This leaves too many questions unanswered and too many variables unknown to be able to implement these ideas. You simply cannot explain how to comply with something that is not yet known. The proposal to set rules in place that include these unknowns or reference to these unknowns goes against the basic principles of the Government Expectations for Good Regulatory Practice[2] and would increase the amount of confusion already caused by sub-optimally defined terminology and phrasing within the existing ruleset.

The document itself contains content and concepts that do not appear to be based upon fact or any real evidence. It brings up situations and their outcomes, and seems to only consider that RPAS could be the cause seemingly neglecting other sources such as natural disasters, terrorism, equipment malfunction or emergency situations.

The document continually refers to RPAS and UAS as 'drones' with no clear definition of what a 'drone' is. The word 'drone' doesn't even appear within the glossary. The introduction informs us that,

"Drones are aircraft that can be remotely piloted or flown autonomously."

The problem with that statement is it's quite open to interpretation. As without a clear definition of autonomy; the kite being flown by children at the beach, a Boeing 747-200, a folded paper-dart, a control-line model and SpaceX's Falcon 9 just became drones.

An effort needs to be made to better identify the subject and make a departure from 'drone' being the common nomenclature. The document later raises a goal of the Ministry of Transport is to enable greater public acceptance of the technology. A great start would be to align with international standards and refer to 'drones' as "RPAS/UAV/UAS" etc. Referring to RPAS as 'drones' does little for public acceptance as the word is tightly bound to negative media and connotations.

Any future use of 'drone' in this response will be solely to quote the document, and serve as a reminder to its readers that the Ministry of Transport couldn't even accurately construct a title page.

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[1] https://www.transport.govt.nz//assets/Uploads/Discussion/EnablingDroneIntegration.pdf
[2] https://www.treasury.govt.nz/sites/default/files/2015-09/good-reg-practice.pdf

The introduction continues to contort things suggesting that 'drones' are rapidly emerging technologies. When you consider that RPAS and model aircraft have been apparent for over 100 years, and that 'drones' were used during the first world war[3] the emerging statement comes across rather imperiously. It's truer that the user base has increased and use cases have changed.

Point 20 of the document provides estimates of 'drone' use as of Feb 2019. This information seems somewhat flawed as a method to procure the actual number of RPAS in use, rather than the number of RPAS users. As an RPAS is not soul-bound to any one operator and often users will share, loan or teach others with their RPAS. I can count in excess of a dozen people with whom I have shared my model aircraft with, many hobbyists will be the same.

I believe this data has led to an exaggerated estimate of how many RPAS are being utilised within New Zealand. I cannot with any faith believe the conclusions drawn nor support the methodology used and would encourage the Ministry of Transport to focus on increased levels of engagement with the community and gathering more accurate data before undertaking any regulatory changes.

Point 22 of the document confirms there's a growing trend of 'drone' use in New Zealand. However, it is unclear if the data gathered takes into account the amount of RPAS taken out of use. RPAS have a finite lifespan, while you can incrementally count the number sold or used within New Zealand past surveys don't seem to have taken into the account those removed from service, be they damaged, retired, stolen, or simply left on a shelf in the garage to rest.

Further to this, information based on statistics within New Zealand showed peak multirotor sales occurred in December, 2018. This is on par with data published from other countries. If the trend were growing, it would've been expected to see an increase in Dec, 2019. Instead, we saw a decline in multirotor sales.

Point 24 describes working towards the best outcomes for all airspace users. Suggesting that further integration will allow both manned and unmanned aircraft to operate safely and seamlessly in the same airspace. RPAS have been available and in use within New Zealand airspace for some years now. And judging by figures from ACC and report information released by CAA RPAS have been operating quite safely. Considerably safer for example than eScooters, bicycles and horses. And much safer than motorists.

There is certainly a point to be made that we have perhaps already achieved safe and seamless integration.

Point 35, while I agree alignment with international standards is a good idea many other regulators around the world have rushed into introducing regulation that many would argue has not been well considered.

CAR101 and CAR102 are currently fairly well aligned with the ICAO Model UAS Regulations[4]. CAA appears to have already adopted (and been a part of creating) standards developed by Joint Authorities for Rulemaking on Unmanned Systems (JARUS).

[3] https://en.wikipedia.org/wiki/History_of_unmanned_aerial_vehicles
[4] https://www.icao.int/safety/UA/Pages/ICAO-Model-UAS-Regulations.aspx

Point 39 refers to effectiveness and ease of implementation. Rules will be effective when followed by those who are compliant, however rules have proven to be and will continue to be fragmented by those who due to ignorance, arrogance or otherwise are not compliant.

I also feel the ease of implementation has been grossly underestimated, there are going to be times where for example the implementation of a geo-fencing device is going to be prohibitive.

Many RPAS do not have the ability to discern their location, much less the ability to (without input from the operator) avoid a fence or region and navigate away. The cost of such systems[5] can often exceed the value of the RPAS[6] to which it would be fitted. The previous statement applies also to remote identification.

Some RPAS simply would not have the room to fit these systems. I cannot imagine how this scenario would play out. If I had RPAS to which remote identification or geo-fencing could not be fitted would there be a government fronted RPAS Buyback scheme?

I don't believe the effectiveness and ease of implementation of proposed systems has been well enough considered. These systems are yet to be developed, and while being developed the multitude of differing technologies that exist across all RPAS needs to be taken into account and built into a defined standard package that can be applied to any and all.

Implementation, ensuring compatibility of such a system across the range of RPAS in use today would be nigh impossible. And it relies on those that are non-compliant becoming compliant.

Point 44 states,

"There is currently a lack of compliance from drone pilots"

This is likely the truest statement in the entire document, and one that should demand the most attention from the Ministry of Transport. Without compliance everything proposed within the document becomes an exercise in futility[7].

Instead of proposing changes that would seem to become a burden to compliant RPAS operators, it would have been nice to see more effort made towards an initiative to better educate the uninformed or ignorant operators, and to penalise the blatant arrogant non-compliant operators.

Also noting the document later refers to the Gatwick incident, which appears to be included to add weight by the means of media hysteria. Gatwick was not caused by a non-compliant RPAS user, though an innocent RPAS enthusiast was arrested he was later awarded compensation for wrongful arrest.

I am aware that there are a number of complaints made about RPAS operations and/or users, it would be very short-sighted of anyone to consider each of those complaints to indicate a non-compliant RPAS operator. It better indicates a concerned party, whether that party is wholly informed of the operation or the RPAS or not is a different story. In most cases you cannot tell by simply observing an operation if the operator is being compliant or not.

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[5] http://www.proficnc.com/all-products/191-cube-orange-standard-set.html combined with http://www.proficnc.com/all-products/152-here2.html is a basic example of a geofencing capable system. Combined RRP: USD$375.00

[6] https://www.horizonhobby.com/product/carbon-cub-s-2-1.3m-rtf-with-safe/HBZ32000.html a basic example of an RPAS to which a geofencing capable system could be fitted. RRP: USD$299.99

[7] Definition of exercise in futility: "an activity that is not successful or worthwhile"

Point 45 seems to disregard the Colmar Brunton New Zealand Drone Research survey[8] completely and tell us that a large number of CAR101 operators have limited knowledge of the rules and aviation system. The aforementioned survey found that 2.5 out of every 10 operators had little or no idea of the rules, that is the minority and would suggest that 'most' may well know the rules.

It's a little concerning to see the Ministry of Transport distort these results. The statement made in this point seems completely erroneous.

Point 46 makes very short mention of the CAA-led initiatives to boost education and promote "drone" safety. It really is a shame that someone, somewhere considers that their limit had been reached. In a document that makes mention of a goal to increase public engagement, it seems the best weapon has been retired instead of revisited and reinvigorated.

If the CAA was resourced adequately enough, it is perceivable that this initiative and further engagement with the public through events such as demonstration and information days where people could attend to see RPAS in-use and learn more about their potential and the legislation around them. Well, let's just say I don't believe this initiative reached its limit of effectiveness at all, it feels more like it was shelved due to lack of resources.

Point 47 shows a table with reports by type, provided by CAA. It fails however to mention how many of these reports were investigated and found to hold ground. As mentioned previously, I think it would be very short-sighted of anyone to consider each of those complaints to indicate a non-compliant RPAS operator.

Point 49 draws to this more, due to the lack of education and the misrepresentation of the rules by poorly constructed media articles, many reports could just as easily indicate an uninformed or uneducated complainant. Having previously been referred to an OIA request response around some of these reports. Some were absolutely ridiculous stating that drones had made houses and fences vibrate, or had been seen operating at 'a distance from' the complainants property. Many didn't point to a breach of the CAR, nor a hazard or safety issue. For these reasons the numbers in the tables provided within the document are nonsensical.

With such an easily identified or assumed lack of compliance (Part 44) perhaps better resourcing another CAA-led education program with more effort in community engagement would be the best first step that the Ministry of Transport could take before changing or introducing new rules. You cannot let the non compliant condemn the rest.

Point 64 mentioned the recorded 247 ACC claims for drone-related injury, 247 claims over a five year period, 224 of those resulted in a payment. That equates to a basic annual cost of $17,783.60. In comparison:

- Horses cost an average $35,000,000 per year, $175,000,000 over the same five year period[9]
- Electric scooters are hitting $500,000 per month[10]
- Even the simple act of running is costing the NZ taxpayer more than RPAS claims[11]

[8] https://www.aviation.govt.nz/assets/about-us/news/New-Zealand-drone-research-2020.pdf
[9] https://catalogue.data.govt.nz/dataset/23559842-6f97-4a0e-ba55-92ffb762091d/resource/cca76899-41f8-4eca-88d5-f98f6c591968/download/ar-1146-horse-related-injuries.xlsx
[10] https://catalogue.data.govt.nz/dataset/c303e9d5-7dae-40e7-a42e-c40d76bfd33a/resource/aa5837a6-b743-499f-8e2e-ca1e0f3bbc1c/download/52231-response.xlsm
[11] https://catalogue.data.govt.nz/dataset/916651bf-4753-472d-8c9c-1645e6fcee9e/resource/fe9f507d-5aa6-4880-962b-18f379d067c4/download/ar-285-running-injuries-response.xlsx

These numbers are suggestive in the amount of risk found per activity. Considering that we aren't seeing a proposal for remote identification of horses, or a call to register running shoes. RPAS operations seem quite safe by a comparison of ACC claims and taxpayer costs.

Point 82 is something that I feel would require a lot more discussion and answers before such things as registration,remote identification or geo-fencing are even considered to put into legislation. These systems and concepts are currently hard to define and near impossible to implement or deliver. Instead of planning a cost recovery, perhaps a better thought might be towards mitigating costs by simply avoiding them altogether.

I don't believe a good enough case has been made to warrant a rule that requires mandatory registration, remote identification, etc. I have not seen MOT or CAA publish any white papers, estimated availability, standards, protocols, risk analysis.. Anything.

Point 84 appears to miss the point that not all RPAS are off the shelf, turnkey systems. A lot of model aircraft are built by the operator, many without a flight control system, GNSS or the ability to comply without a stand-alone system being integrated.

Point 85 tells us that complying will be at the cost to ourselves. Recreational and commercial operators who currently comply with the existing CAR have done so either by their own volition or through third party training. Imposing regulation such as registration on them achieves nothing but more cost.

Point 86, I would like to introduce you to CAR102[12].

Point 87, it sounds like the main reason it's not sustainable is due to anticipated growth. If it is that the CAA would not be able to handle an increase of workload then that's quite different than than the methodology not working and better resourcing the CAA would, yet again, be a solution.

Point 88 suggests an erosion of the current ruleset and makes the assumption that aviation is drifting away from the scope of the existing framework. I don't recall there being statistics released or referenced by the document that would serve to back these statements.

While the unmanned sector could benefit from a refresh of the current rules, paying attention to concerns raised by various participants since the last changes in August 2015 would surely be preferable to a hasty implementation of undefinable, unobtainable standards.

Questions

Q. 1 What is your view on the proposed series of measures? Are there any other alternatives you suggest we consider?

A. 1 While I appreciate the Ministry of Transport has taken time to address a number of concerns, it would appear several were not at all based on factual evidence. And some of the real issues within the unmanned sector have been ignored completely. Proposals within the document place extra regulatory requirements onto those who are already compliant and presenting little risk.

Not only does this place burdens upon the compliant, it increases workload for a regulator who is already under-resourced. The proposals lack credible enough data to model cost estimations on,

[12] https://www.aviation.govt.nz/rules/rule-part/show/102

which could further decrease sustainability of the existing or future systems. LIkely passing unreasonable costs on to end users, many of which are already compliant with existing rules, would more likely lead to greater levels of non-compliance.

Much of the technology and systems that would be required to implement the proposals do not currently exist. Basing regulation around ideas and concepts that are not yet developed, or not yet proven would create a flawed set of rules.

When the rules were changed in August 2015, New Zealand had possibly the most progressive legislation around. You can find proof of this in the fact that ICAO incorporated a large number of our rules within their model regulation. Now the Ministry of Transport want to take two steps backwards and align with unreferenced international standards which have already proven themselves to be lacking or without justification.

Better approaches would include options or combinations of:

- Addressing and implementing minor changes that have been submitted over the last few years. Adding clarification and clear definitions to the existing ruleset and addressing property consents and weight limits.
- Actively engaging with the community, sector participants and those that have chosen to make this sector their professional passtime.
- Putting some of the proposed changes on hold until technologies allowing remote identification and/or geo-fencing have been established and proven.

Q. 2 Would the proposed approach help achieve the desired objectives?

A. 2 I think the objectives of the proposal require much more clarification. It hasn't really been explained how some of the benefits will actually be achieved. I'm not sold on the idea that these proposals would increase situational awareness or reducing the environmental impact of lost drones. Several changes are proposed, but they're really not described or detailed enough to draw any conclusion.

I think identifying the source of key problems and developing solutions to those may be more beneficial than just suggesting registration and remote identification. Those who do not wish to comply with the current rules are unlikely to comply with new rules.

I cannot see how registration or remote identification would reduce airspace incursions, these concepts seem designed to only have a use after the fact. Whereas better education efforts would happen before. Seems logical to me that remote identification and registration are not great solutions in terms of preventing misuse.

Q. 3 Would the proposed approach help address the problems and opportunities identified?

A. 3 I don't believe so, see A. 2.

Q. 4 Are there any other problems and opportunities you can think of?

A. 4 I have mentioned it several times in this response. CAAs RPAS team is under-resourced, they could benefit from more staff. Staff that have great understanding of the technologies used within the sector and the concepts mentioned throughout the document. Staff that are able and allowed to engage with the community, who make appearances at local flying fields, club meetings, etc.

Q. 5 Do you agree with the proposed order of implementation of the measures?

A. 5 I think updating or refreshing the current rules require the most attention, followed by re-establishing an engaging education program. I think the implementation of other concepts is misguided, the measures too restrictive and technology unproven. I couldn't consider those concepts to be justified, there has been little-to-no cost/benefit analysis nor has there been a case made in which implementing these concepts across the wider range of RPAS currently in use would even be possible.

Rules updates

Point 91, of the 12 prescriptive rules approximately half of them have exceptions. This does little to help people understand the rules. These rules could be better worded, offering more clarification. Example situations could be used to better explain these rules, similar to the "fly your drone" campaign, which was really good.

Point 94, mentions a follow-on for some other measures into CAR102, including drone registration, Remote ID and geo-awareness. It would seem to me that these might be better suited to be established within expositions or opspecs on a case-by-case basis based upon the considered risk of desired operations. For example, in the case of BVLOS above 400ft then remote identification of some description would be extremely advantageous and allow other airspaces (provided they're using capable equipment) to identify, locate and maintain separation. Registration for CAR102 operators doesn't deserve a mention, it's basically a current requirement.

Point 95, as mentioned earlier in this response there has been no evidence provided that the proposal is proportionate to risk. And may not conform to New Zealand Governments regulatory guidelines.

Point 97, removing the manned flight parapplications from CAR101 would make sense.

Point 103, I remember August 2015. Introduction of the consent rule was a huge shake-up, people and councils were stunned and confused by this rule that seemed to be created on a whim with no thought given to risk assessment or general safety. Approaching property owners to get an understanding of hazards that may exist on the property. Flying over an empty paddock doesn't become safer just because you have consent. Nor are flights over people safer if they've given their consent. Safety comes from flight planning, risk assessments and procedures put in place to assure safety via risk mitigation.

Points 117 through 120, I support relaxing the requirements for an observer for FPV operations. Removal of the requirement when operating in a shielded environment fits well with the current shielded rules intentions and mitigates the risks involved.

Questions

Q. 1 Should drones have their own standalone Rule Part?

A. 1 Yes, it's be nice if CAR101 was solely orientated towards RPAS and model aircraft, not gyrogliders or parasails which are manned and should be aligned with manned aircraft rule parts.

Q. 2 Should we review the four-kilometre minimum flight distance from aerodromes?

A. 2 It needs better clarification. Airshare for example indicates these areas from the middle of an aerodrome, while the rules state it's 4km from the boundary. It could be more clear.

Q. 3 Should we change the requirement to gain consent to fly above property by:
a. Using 'safe distances' as an alternative?
b. Relaxing the requirement in another way?
c. Removing the requirement completely?

A. 3 C. Complete removal, it's unnecessary and realistically unenforceable. If property owners are concerned for their privacy, which is one of the main pieces of feedback that came from this rule. They're covered by the Privacy Act.

Q. 4 Should we change the requirement to gain consent to fly above people by:
a. Using 'safe distances' as an alternative?
b. Relaxing the requirement in another way?
c. Removing the requirement completel

A. 4 A. This seems like the most practical, reasonable and achievable solution.

Q. 5 If we use 'safe distances' as an appropriate alternative to the consent provision, what distance(s) would you consider is appropriate?
a. 10 metres
b. 30 metres
c. 50 metres
d. Other.

A. 5 B. 30 metres sounds reasonable.

Q. 6 Are there any other major Rules changes we should consider?

A. 6 None that I can think of at the time of writing this response.

Q. 7 Are there any minor changes to the Rules that would make them easier to understand?

A. 7 Clarification to the 4km from aerodrome boundaries as mentioned previously in this response.

Q. 8 What do you think of the proposed minor Rules changes?

A. 8 I think the proposed changes present a poor understanding on how they would affect many RPAS users. That they haven't been fully considered, not discussed with participants.

Q. 9 Are there any other changes we should consider?

A. 9 Adding definitions of model aircraft, shield, barrier, active aerodrome, aerodrome boundaries.

I have unfortunately run out of time to pen all my thoughts to paper. From here on I will skip to answering the remaining questions from the document.

Basic Pilot Qualification - Questions

Q. 1 Should we introduce basic pilot qualification for Part 101 drone pilots?

A. 1 It already exists. MFNZ has Wings Badges and many other providers have been allowed by the CAA to issue 101 equivalent certifications.

Q. 2 What impact would a basic pilot qualification likely have on you?

A. 1 Very little considering I have already achieved MFNZ Wings Badge and multiple Certificates and OCAs conducted by CAR141 providers.

Q. 3 What format should this test take?

A. 3 That depends on the requirements of the test. As an example MFNZ and current 101 equivalents require a practical flight portion. This cannot be easily completed online, by fax, or by post.

Q. 4 Should there be a minimum age for basic pilot qualification?

A. 4 I have seen children as young as six or seven years old fly model aircraft. Age does not determine ability. So no, there should be no minimum age requirement.

Q. 5 Do you agree with the proposed special authorisations given to Part 141 and Part 101.202 approved training organisations?

A. 5 These seem to relate to a higher level of training. This doesn't really conform to the heading for this chapter.

Q. 6 Is there any other special authorisations you would like to see? Why?

A. 6 Perhaps something more focused around education. Participation in STEM programs in schools, etc.

Questions - Drone Registration

Q. 1 Should we introduce the proposed drone registration system? Why?

A. 1 No. Such schemes are a burden on participants and do little to actually promote safe operations. Closer examination of registration efforts in other parts of the world should be undertaken. For these reasons and those given earlier within response... I do not support registration at all.

Q. 2 What impact would drone registration likely have on you?

A. 2 I can see it going two ways. Either I would depart from the hobby and likely the entire industry, or become non-compliant and continue to enjoy the hobby as I have done so safely for the last twenty-five years that I have been a part of it.

Q. 3, 4, 5 What do you think of the proposed system design (e.g. digital platform) and requirements (e.g. identity authentication)?

A. 3, 4, 5 I do not support registration.

Questions - Remote ID

Q. 1 Should we consider introducing Remote ID? Why?

A. 1 No. For the reasons mentioned previously in this response.

Q. 2 What impact would Remote ID likely have on you?

A. 2 See A. 2 from “Questions - Drone Registration” above.

Questions - Geo-awareness

Q. 3 Should we consider introducing geo-awareness? Why?

A. 3 No. For reasons mentioned previously in this response. Implementation could not be clearly defined, therefore it’s unlikely to be achieved.

Q. 4 What impact would geo-awareness likely have on you?

A. 4 See A. 2 from “Questions - Drone Registration” above.

Conclusion

The document doesn't clearly define many things. Nor does it seem to understand or properly address the challenges involved. It however does address that one of the primary issues is the lack of education. It would seem logical then that the most logical path going forward is one where instead of further rules and regulations being introduced, more effort should be made to educate RPAS users.

I also support the responses and comments made by UAVNZ in their joint statement, and MFNZ in their submission.

Regards,

Chris Robertson

[redacted]

From: Dragonfly Aerial Imaging [redacted]
Sent: Tuesday, 8 June 2021 8:33 AM
To: Enabling Drone Integration
Subject: Submission
Attachments: Enabling Drone Integration.pdf

Good morning,

Please find attached submission.

I am aware that this ought to have been submitted by 5pm on Friday, we had it ready to go but we were out of town and had no computer access to get it to you on time.

Hoping that you will be able to accept it.

Regards,

Nikki.

[redacted]
Dragonfly Aerial Imaging
PO Box 621 GISBORNE 4040
[redacted]

Ministry of Transport / Civil Aviation Authority

Enabling Drone Integration

Introduction - We are a small family business operating in the Gisborne/East Coast Region. As CAA Rule Part 102 certificated drone operators, any changes to the industry are likely to have an impact on us in one way or another. We have chosen to submit our feedback on the proposed approach to enhance the New Zealand regulatory regime and enable the integration of drones into the civil aviation system, because to date, we do not feel that enough has been done here in New Zealand, other countries seem to have effective systems in place, yet New Zealand has been dragging its heels. We also appreciate the opportunity to express our concerns on some of the proposed changes. Giving consideration to this submission has led to a lot of discussion between our team members and a lot of questions and concerns have been raised.

Rules Updates

- The removal or relaxation of the requirement for consent to fly over private property and people.
    - As a property owner this concerns us, we do not want drone operators flying over our property without our consent. Would you, without knowing why?
    - We feel that this sends rather an arrogant message to property owners and would have a negative influence on public opinion on drones and use of.
    - Having experienced one of our drones fail in mid flight due to battery failure, we do not fly over people, with or without their consent.
    - Consideration ought to be given to the social cost of serious damage/injury/death caused by a drone falling on property/livestock/person.
- Review of minimum flight distance from aerodromes.
    - We are assuming that the review of this is giving consideration to drone flights being permitted closer to an aerodrome? In which case, would this be with a reduced maximum flight AGL? Even as Rule Part 102 operators we are often limited to maximum flight AGL of 200ft, sometimes less, as we operate closer to the aerodrome.

Basic Pilot Qualification

- Fly a drone weighing up to 25kg under Part 101 of the Rules.
    - We would like to see all drone operators requiring to provide evidence of their knowledge and skill before flying, regardless of size and weight of the drone.
- Supervise an unqualified operator.
    - If the test is simple and there is no minimum age for the test, we assume that this supervision is only required until an operator becomes qualified? Or to give someone an opportunity to “have a go”. Would systems be required to be in place to record this? Who would be held accountable in the event of something going wrong in this instance?
- The test would be simple and online, with no minimum age.
    - Is it a good idea to have online testing? Anyone could be assisting the operator to get through the test, this surely does not show real evidence of someone’s knowledge and skill.
    - No minimum age? Again, is this a good idea? Perhaps, like driving a vehicle, there should be a minimum age of 16?

Registration

- If your drone weighs 250g and over
    - Has enough research been conducted into the level of damage a drone weighing less than 250g can cause?
    - Has consideration been given to privacy? As even smaller drones can be fitted with cameras, and with no registration requirements plus permission to transit private property without owner consent, why wouldn't all drones require registration and remote ID?
- You are an individual aged 14 and over or a business/organisation.
    - What if you are a 10-year-old that has successfully completed the online training (remember, there is no minimum age to take the test) and you have your own drone (because anyone can buy one, be bought one or be given one) why would you not need to register it? Again, consideration into this age being 16.

Remote Identification

- Real time information about the flight that third parties can receive.
    - I believe this may not apply to all drones as they may not be compatible.
    - How will this be enforced/monitored, in particular on home-built drones?

Geo-awareness

- Digital map providing all necessary aeronautical information for drone operations.
    - We assume this is an updated Airshare platform or similar?
    - Good idea, the easier you can make it for operators to gain information about the airspace they are using, the less likely the rules will be broken. That being said, there will always be rule breakers.

Do you think we should introduce the proposed basic pilot qualification for Part 101 drone pilots?

Yes, we feel that all recreational and commercial drone pilots should have the basic pilot qualification as a bare minimum, as evidence that they know the rules and understand the consequences of not following them. Perhaps the wording could be revised for clarity, as all drone pilots ought to be following the 101 rules anyway, surely the proposed basic pilot qualification would apply to ALL drone pilots.

Should we introduce the proposed drone registration system?

Yes, we believe that all drones ought to be registered and for commercial operators, absolutely. The basic pilot qualification should be a pre-requisite to then enable the drone/s to be registered by that owner/user, with 16 being the minimum age.

In addition to these points, we also feel that commercial operators ought to provide evidence that they have the correct insurance in place for their operations.

In summary, we welcome the introduction of requirements for training and registration but feel further discussion/consideration is required around the finer points regarding relaxation of rules.

[redacted]

Dragonfly Aerial Imaging

PO Box 621 GISBORNE 4040

[redacted]

[redacted]

From: [redacted]
Sent: Tuesday, 8 June 2021 3:13 PM
To: Enabling Drone Integration
Cc: [redacted]

Subject: UAVNZ Submission on Enabling Drone Integration
Attachments: Joint-statement.docx; Response to MoT questions.docx

Hi there,

Please find attached UAVNZ's submission on the *Enabling Drone Integration* discussion document. We have submitted two files, the first is our joint-statement, which details a high-level response to the proposed regulatory measures and offers an alternative regulatory system that we argue should be adopted. The second contains our answers to the specific responses to the questions within the document.

If you have any questions regarding our submission, then please do not hesitate to get in touch.

Kind Regards,

[redacted]
Te Kura Rererangi – School of Aviation | Private Bag 11 222 | Palmerston North 4442 | New Zealand |
[redacted]
MASSEY UNIVERSITY
TE KUNENGA KI PŪREHUROA
UNIVERSITY OF NEW ZEALAND
SCHOOL OF AVIATION
TE KURA RERERANGI

General Response to Proposed Regulatory Measures

We thank the Ministry of Transport for releasing the discussion document entitled *Enabling Drone Integration* and inviting submissions from industry and the public. Our organisation generally does not support the proposed regulatory measures documented in the discussion document. This submission outlines why we do not support most of the measures, but also provides clear alternatives that we believe achieve the same intentions. The two biggest areas for improvement should be the areas of safety promotion and enforcement, tied in with rule changes that are consistent with our existing aviation system and do not unfairly stigmatise unmanned aircraft operations.

Our organisation agrees that the Civil Aviation Authority should support safety promotion efforts of the current rules, and eventually the proposed framework presented below. Our organisation also supports legislative changes that would provide Police with the necessary powers to (1) require an unmanned aircraft to land, and (2) require the operator of an unmanned aircraft to provide their details to an enforcement officer. Where appropriate, legislative change should also allow utilisation tools that allow for tracking of rogue operations (e.g., frequency trackers and radio frequency spectrum analysers). These are consistent with evidence that suggests the two most effective strategies for preventing rule violations are better safety promotion (to prevent violations caused by ignorance) and better enforcement (to punish deliberate violations). Funding for these initiatives can be obtained by re-allocating funding for other proposed regulatory measures such as registration.

Our organisation supports updating the rules applied to unmanned aircraft, however, we provide an alternative solution under the section entitled *Alternative Rules Changes.*

The proposed basic pilot qualification will not be sufficient for many unmanned aircraft operations and may detract from the higher level of training that many Part 101 operators already undertake through Part 141 organisations. It does nothing to stop rogue operators from operating their aircraft unsafely, whilst providing little benefit to those undertaking low-risk operations.

Drone registration and remote identification do not prevent rogue operators from operating their aircraft unsafely, however, they do increase the regulatory burden for compliant operators. The assertion that these will improve situation awareness is specious. One does not need to

know the registration of an unmanned aircraft to know where it is located in airspace (when radio calls are made for current unmanned aircraft operations, typically these will be in the form of "[Organisation's Name] Unmanned"). Remote identification is also not necessary as separation from manned aircraft can already be achieved through operating within visual line of sight (below 400ft and outside 4km of published aerodromes), using air band radio to give position reports (when above 400ft or within 4km of an uncontrolled aerodrome), or flying within controlled airspace under the instruction of air traffic control. There are also other forms of electronic conspicuity that may be more appropriate (e.g., ADS-B/FLARM), but these should only be applied using a risk-based approach rather than being a blanket requirement under Part 101 or Part 102. Such an approach is consistent with operations that currently occur in manned aerospace and within some Part 102 organisations.

New Zealand already has a single standardised map that provides all necessary aeronautical information, it is called a visual navigation chart (VNC). These can be purchased as a physical map or can be purchased through apps on tablets and smart phones. They have been used for decades within manned aerospace. The AIMS CONOPS programme undertaken by CAA is currently dealing with what will comprise a future higher level of digitisation for all aeronautical navigation documentation. The proposal to examine geo-awareness appears to be duplicating this work. Evidence suggests that current unmanned aircraft operators are already more likely to use VNCs than Airshare and are also more likely to be able to correctly read VNCs than maps on Airshare. An Official Information Act request to Airways New Zealand also shows that during the period 1 January to 22 November 2019, there were only 2,894 unique unmanned aircraft operators who used Airshare. This suggests that the proposed geo-awareness approach will be less effective than simply mandating the use of VNCs prior to unshielded operations.

Alternative Rules Changes

Our organisation supports a three-tiered approach to the regulation of unmanned aircraft operations, alongside supporting rule parts that are consistent with current approaches within the aviation industry. The three tiers of this system are:

1. General operating rules (more restrictive that the current Part 101) – these allow for anyone to fly an unmanned aircraft within certain parameters
2. A licensing regime (create an equivalent to Part 61 for unmanned aircraft) – this will allow for tighter standards around theory requirements and flight testing, accompanied

with greater permissions in terms of the operations that can be undertaken. Many current operations occurring under Part 102 would move into this category. Ratings would also be a feature, allowing for qualifications to match more specific operating settings (e.g., night ratings, FRTO ratings, type ratings for large aircraft, etc.).

3. A certification process (similar to the current Part 102, but only for Part 101 variances that cannot be achieved with standardised licensing proposed under tier 2) – this will allow for more nuanced risk-based approaches for organisations undertaking higher risk operations (e.g., BVLOS, autonomous operations, urban air mobility, etc.)

Our organisation also supports the introduction or adaptation of the following supporting rule parts:

1. An equivalent (or adaptation) of Part 149 for recreational organisations operating unmanned aircraft, such as Model Flying New Zealand. This would allow such organisations to establish their own licensing systems for their own members.
2. An equivalent (or adaptation) of Part 141 for unmanned aircraft. This will ensure that the organisations conducting pilot training apply consistent standards, supported by syllabi that would be advisory circulars to the Part 61 equivalent for unmanned aircraft.
3. An equivalent (or adaptation) of Part 66 for unmanned aircraft. This will ensure that persons who conduct maintenance on unmanned aircraft above a certain weight threshold have appropriate qualifications and experience. This would also allow for persons to obtain certificates of maintenance approval and certificates of inspection authorisation for aircraft above a certain weight threshold.
4. An equivalent (or adaptation) of Part 147 for unmanned aircraft. This will ensure that organisations conducting maintenance training apply consistent standards, supported by syllabi that would be advisory circulars to the Part 66 equivalent for unmanned aircraft.
5. Equivalents of Part 145, 146 and 148 for organisations that maintain, design and/or manufacture unmanned aircraft above a certain weight threshold.

This proposed system would be highly beneficial to the unmanned aerospace industry in New Zealand, providing far greater airspace integration by having commonality between manned and unmanned aircraft operations. Contrary to the assertions presented by the Ministry of Transport, our organisation does not believe that unmanned aircraft operations require a fundamental re-design of airspace or operating requirements. Rather, our organisation believes

that a translation of existing standards to unmanned aerospace will serve the New Zealand aviation system better in the long-term. A tiered system allows for a risk-based approach to regulation, where the inherent air-based and ground-based risk of different operations require different standards to be met.

While the specifics of the three-tiered approach and supporting rules changes would need to be discussed in detail, the diagram below presents a high-level picture of how a risk-based approach could be taken to apply the correct regulatory measures to the correct operations.

Lower Risk (general operating rules)	**Moderate Risk** (licensing)	**Higher Risk** (certification)
Visual Line of Sight (VLOS)	Extended VLOS (EVLOS)	Beyond VLOS (BVLOS)
Under 5kg	5 – 25 kg	Over 25 kg
No flight over people or other people's property without consent	Above people and property	Above crowds or sensitive infrastructure (e.g., major airports)
Photography, remote sensing, etc.	Dropping of articles, agricultural spraying, etc.	Passenger carrying operations, fully autonomous operations, etc.
Shielded areas and below 400ft in uncontrolled airspace	Class G airspace (above 400ft), controlled airspace, special use airspace, and unshielded operations within 4km of a published aerodrome	
Day flying and shielded night operations	Night flying (outside shielded areas)	

Disclaimer

This document contains the answers to the questions in the *Enabling Drone Integration* document from a UAVNZ perspective. UAVNZ represents over 50 companies that operate within the unmanned aerospace sector within New Zealand. UAVNZ is itself a division of Aviation New Zealand, which represents the wider commercial aerospace sector. The positions made in this document represent the majority views across the UAVNZ division, noting that individual member organisations may have different views. UAVNZ has encouraged its members to make their own submissions, which will capture any differences of opinion.

Questions – High Level

Q.1 What is your view on the proposed series of measures? Are there any other alternatives you suggest we consider?

Q.2 Would the proposed approach help achieve the desired objectives?

Q.3 Would the proposed approach help address the problems and opportunities identified?

Q.4 Are there any other problems and opportunities you can think of?

Q.5 Do you agree with the proposed order of implementation of the measures?

We believe our high-level joint statement addresses these questions.

Questions – Rules Changes

Q.1 Should drones have their own standalone Rule Part?

We think that unmanned aircraft should have their own rule part – that means aircraft without any humans on board, thus more inclusive than the term "drone", e.g., including rockets, aerostats, etc. Gyrogliders and parasails should not be in the same rule part. Autonomous or remotely piloted aircraft that carry passengers should be regulated in the same way as the equivalent operation done by manned aircraft.

Q.2 Should we review the four-kilometre minimum flight distance from aerodromes?

No. But there should be clarity inserted into the rules to make it clear this distance is from the aerodrome boundary. Water aerodromes also need to be reviewed. For example, 4km around the entirety of Lake Taupō is excessive considering operations tend to only take place near the marina.

Q.3 Should we change the requirement to gain consent to fly above property by:
a. Using 'safe distances' as an alternative?
b. Relaxing the requirement in another way?
c. Removing the requirement completely?

We do not support removing this requirement for persons who do not have licenses or are operating under an operator's certificate (Tier 2 or 3 in our model). There is no guarantee that the person has competency in piloting the aircraft nor maintaining it.

Q.4 Should we change the requirement to gain consent to fly above people by:
a. Using 'safe distances' as an alternative?
b. Relaxing the requirement in another way?
c. Removing the requirement completely?

We do not support removing this requirement for persons who do not have licenses or are operating under an operator's certificate (Tier 2 or 3 in our model). There is no guarantee that the person has competency in piloting the aircraft nor maintaining it.

Q.5 If we use 'safe distances' as an appropriate alternative to the consent provision, what distance(s) would you consider is appropriate?

a. 10 metres

b. 30 metres

c. 50 metres

d. Other.

You should not be considering the use of safe distances because these go against the nature of human visual perception. Humans are better at estimating relative distance for nearby objects, not those further away. When an object is further away, people use past experience to create expectations about what they *should* be seeing. When this mental model is different to reality, then that is what we call an illusion. To create standards based upon safe distances that cannot be readily established by human vision alone is dangerous because responsible operators suffering from visual illusions may be prosecuted for genuine errors. Parallax error is another relevant consideration.

Q.6 Are there any other major Rules changes we should consider?

Yes, please adopt our proposed alternative instead of what is being proposed. It achieves the stated intentions without reinventing the system.

Q.7 Are there any minor changes to the Rules that would make them easier to understand?

Yes:

1. Defining shields and barriers and placing this interpretation in one place
2. Defining what trained and competent means for visual observers
3. Clarification of visual line of sight statements
4. A formal legal definition of what "active runway or movement area" means.
5. Where is 4km measured from for aerodromes? We believe it should be the boundary, but this is currently ambiguous.
6. Clarification about rules relating to non-designated and special use airspace.
7. Clarification on who can issue a NOTAM.

Q.8 What do you think of the proposed minor Rules changes?

We do not consider 101.202 deletion to be a minor rule change. This will have major implications for the unmanned aerospace sector and the proposal needs to be fleshed out in more detail. The most pertinent question is what will replace 101.202?

115-116 – We believe Subpart B already covers tethered unmanned aircraft. 101.51 should be extended to all unmanned aircraft that can be tethered, not just moored balloons and kites.

117 – 120 – We agree about relaxing the requirement for an observer when using FPV, but this must strictly be in shielded areas.

Q.9 Are there any other changes we should consider?

See UAVNZ Joint Statement, specifically the alternative rules changes and the three-tiered system of regulation.

Questions – Basic Pilot Qualification

Q.1 Should we introduce basic pilot qualification for Part 101 drone pilots?

We could support the idea of a basic pilot qualification so long as the following criteria are met:

1. It should be communicated that it does not allow you to do anything in particular with the unmanned aircraft. This is in order to differentiate it from training provided by P141 organisations and under CAR101.202. The term "qualification" is unhelpful in this regard.
2. It should be very basic and not go into the nuance that is in the present rules. Our alternative rules changes would help in this regard as the qualification could apply to only tier 1 operations (unlicensed and uncertificated), which would be more restrictive than the present P101 rules.
3. It needs to be cheap enough to encourage compliance.
4. The information needs to be factually correct and written in simple English. This contrasts to similar past efforts such as the Airshare course that is wholly inadequate and is erroneous in many instances.

Q.2 What impact would a basic pilot qualification likely have on you?

None specifically on UAVNZ. Our members will have the extra burden of doing a basic qualification when they already have attended much more comprehensive courses and completed operational competency assessments. In this respect, an exemption for those with higher level qualifications may be helpful.

Q.3 What format should this test take?

a. Electronic/online theory test

b. Paper based written theory test (at a provider)

c. A practical examination of skill and a paper based written theory test (at a provider)

d. Other

We think an online theory course would be most appropriate as this qualification should not be in lieu of more substantial courses that do involve more thorough and sophisticated assessments (e.g., exams and practical assessments).

Q.4 Should there be a minimum age for basic pilot qualification?

We are advocating for licenses and ratings – these should not be attainable for those under 16 years of age, consistent with the standard applied to manned aircraft operations.

Q.5 Do you agree with the proposed special authorisations given to Part 141 and Part 101.202 approved training organisations?

These are not special authorisations. Part 141 organisations are responsible for flight training within aviation, it would be very peculiar for training to be conducted outside of Part 141s in any other area of aerospace. Part 101.202 is one example of an anomaly, which we note is proposed for deletion. We do not support deleting 101.202, but do not feel that training should be provided outside of Part 141 organisations.

Q.6 Is there any other special authorisations you would like to see? Why?

We are unsure as to what this question is intended on capturing.

Questions – Drone Registration

Q.1 Should we introduce the proposed drone registration system? Why?

No. We outline the broad reasons why in our joint statement, primarily:

1. Registration does not enhance situational awareness;
2. It has not assisted in the prosecution of rogue operators in countries where it has been introduced;
3. Only already compliant operators will be registering their aircraft, placing an unfair financial burden upon responsible people.

Q.2 What impact would drone registration likely have on you?

It would impose additional bureaucracy and costs upon our membership. Many do not see any benefit to their operation.

Q.3 What do you think of the proposed system design (e.g. digital platform) and requirements (e.g. identity authentication)?

No comment as we are opposed to the idea of registration in general.

Q.4 Should there be a minimum weight threshold for registering a drone? If so, is 250 grams appropriate? If not, what would be an appropriate weight threshold and why?

Currently, all aircraft operated under Part 102 are registered. Larger unmanned aircraft (25kg+) should continue to be registered under expositions, but also a register kept by the CAA so that information relating to those aircraft can be tracked (e.g., maintenance concerns, airworthiness concerns, etc.).

Q.5 Should certain drones not need to be registered (such as drones flown solely indoors or within specific designated areas (e.g. Model Flying New Zealand sites) from registration? What other drones should not need to be registered and why?

All unmanned aircraft below 25kg that are being operated outside Part 102 should be exempt.

Questions – Remote ID

Q.1 Should we consider introducing Remote ID? Why?

Not in the form proposed. ADS-B and FLARM should be under consideration for *some* operations. One example might be operations in controlled airspace, but even that has some nuance around whether electronic conspicuity is necessary or not.

Q.2 What impact would Remote ID likely have on you?

Added costs for our members. As proposed, there would also be privacy concerns (such as disclosing the contact number for unmanned aircraft operators).

Questions – Geo-Awareness

Q.3 Should we consider introducing geo-awareness? Why?

The complexity involved with promulgating aeronautical information should not be underestimated. The user interface would need to change on innumerable unmanned aircraft to facilitate geo-awareness.

Alternatively, Visual Navigation Charts (VNCs) already contain all the aeronautical information relevant to unmanned aircraft pilots. These are available in print and electronic forms, can be purchased for specific areas and at different scales. These are of course complemented by the AIP Supplements that come out for temporary airspace designations. It would be difficult to create a system that can keep up with these and is unnecessary if pilots are taught to read VNCs and check AIP Supplements and NOTAMs. Who would be liable if a new system was created and there was missing critical information contained within these documents.

While we believe that the VNCs provide sufficient information, if the government would like to invest in creating a parallel system, there could be some benefit, provided that:

1. It provided the 4km boundaries from designated aerodromes
2. Is tiered in a similar way to the tiers in our alternative rules changes so that basic operators only see relevant aeronautical information (e.g., control zones, low fly zones, etc.), while licensed and certificated operators see the full set of aeronautical information
3. There would be an API for third parties to incorporate this information into their own systems. This would allow manufacturers to adopt this into their own apps, as well as commercial applications (e.g., FlyFreely) to incorporate it into their systems.

Q.4 What impact would geo-awareness likely have on you?

None.

Additional Comments - Rules Development

There is a need to balance current established operations against the potential for new and different applications of unmanned aircraft in the future. Currently, much of the content in the *Enabling Drone Integration* document appears targeted at more futuristic applications such as urban air mobility, which may or may not end up being a successful commercial venture. Conversely, there are already many commercial operations that use unmanned aircraft for more conventional means. It is important not to show favouritism to either established operators nor start-ups, especially considering that certain regulatory approaches may present commercial advantages to either group. Regardless of the directions that are taken, it is critical that all airspace users will have equal right to conduct their operations without undue regulatory burden. It has been expressed by some of our members that the regulatory approaches being taken might be construed as advantageous for futuristic applications and make it more difficult for conventional operations.

Additional Comments – Licensing

To highlight the practicability of licensing, we would like to highlight that the existing syllabi for a Commercial Pilots License could be edited and then applied to unmanned aircraft for tier 2 operations. This would involve removing irrelevant materials and inserting some that are unique to unmanned aircraft. Such an approach integrates with existing systems and processes and ensures a high level of oversight for medium and higher risk operations. As an example, Massey University School of Aviation have adapted a CPL level human factors course for RPAS professionals. UAVNZ are happy to work with MoT to translate other syllabi.

[redacted]

From: [redacted]
Sent: Tuesday, 8 June 2021 3:49 PM
To: Enabling Drone Integration
Cc: [redacted]
Subject: Re: Consultation Document

Good afternoon.

We are familiar with the UAVNZ submission, the overviewand answers to specific questions. The overview has been discussed at length by our affected divisions (NZAAA, NZHA and Training & Development), which are generally supportive of the line being taken.

We support the high level position taken by UAVNZ, in the knowledge that individual UAVNZ and Aviation NZ members may be making specific points or providing more detail in some areas, especially in response to the individual questions.

We are keen to remain engaged in this process as you develop your reaction to what has come through in submissions.

Best wishes

On Fri, 4 Jun 2021 at 12:06, Enabling Drone Integration <enablingdroneintegration@transport.govt.nz> wrote:

> Hi [redacted]
>
> Thanks for getting in touch. We value AviationNZ's and UAVNZ's perspectives.
>
> The team looks forward to your comments and ongoing engagement as we develop the policy further.
>
> Enjoy the long weekend.
>
> Kind regards,
>
> [redacted]
>
> [redacted]
> **Ministry of Transport – Te Manatū Waka**
>
> [redacted] | www.transport.govt.nz

From: [redacted]
Sent: Friday, 4 June 2021 10:28 AM
To: Enabling Drone Integration <enablingdroneintegration@transport.govt.nz>
Subject: Consultation Document

Good morning.

I'm aware that submissions are due today.

UAVNZ has taken the lead in discussing its developing submission with our divisions and we have had many internal discussions.

Divisional chairs strongly support the submission.

I am aware that UAVNZ has obtained agreement to lodge its submission on Tuesday.

I am alerting you now to our support of the submission. It may be, depending on the final wording from UAVNZ, that we seek to change a small number of words (about 12) but they won't impact on the thrust and direction of the UAVNZ submission.

I will comment further on Tuesday. Please forgive us for being a few days late.

Best wishes

[redacted]

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[redacted]

From: [redacted]
Sent: Tuesday, 8 June 2021 4:46 PM
To: Enabling Drone Integration
Cc: [redacted]
Subject: Massey University School of Aviation Submission
Attachments: Response to MoT questions_Massey.docx

Hi there,

Please find attached the Massey University School of Aviation submission on the *Enabling Drone Integration* discussion document.
I have not had the time to update it since our meeting in April [redacted] however, the positions remain broadly the same.

In addition to what is in the submission, we think it would be valuable to have a meeting to discuss the idea of licensing further. We are happy to share our process for translating the CPL-level human factors syllabus into a course for RPAS professionals. We believe such a process of translating existing standards from manned aviation to unmanned aviation is a good way forward and would involve considerably less work that implementing a new system.

We are also happy to share our data collected from the Drone Users Study with 919 participants. In some places it has quite different findings to the Colmar Brunton one, in some places they align. It also asks a number of questions that were not addressed in the Colmar Brunton study. As a preliminary option given how long it will take to write the full academic paper, a presentation via Zoom may be helpful.

Kind Regards,

[redacted]
Te Kura Rererangi – School of Aviation | Private Bag 11 222 | Palmerston North 4442 | New Zealand |
[redacted]

MASSEY UNIVERSITY
TE KUNENGA KI PŪREHUROA
UNIVERSITY OF NEW ZEALAND

SCHOOL OF AVIATION
TE KURA RERERANGI

Questions – High Level

Q.1 What is your view on the proposed series of measures? Are there any other alternatives you suggest we consider?
Q.2 Would the proposed approach help achieve the desired objectives?
Q.3 Would the proposed approach help address the problems and opportunities identified?
Q.4 Are there any other problems and opportunities you can think of?
Q.5 Do you agree with the proposed order of implementation of the measures?

We believe these high level questions are addressed in UAVNZ's joint statement, which we endorse.

Questions – Rules Changes

Q.1 Should drones have their own standalone Rule Part?
We think that unmanned aircraft should have their own rule part – that means aircraft without any humans on board, thus more inclusive than the term "drone", e.g., including rockets, aerostats, etc. Gyrogliders and parasails should not be in the same rule part. Autonomous or remotely piloted aircraft that carry passengers should be regulated in the same way as the equivalent operation done by manned aircraft.

Q.2 Should we review the four-kilometre minimum flight distance from aerodromes?
No. But there should be clarity inserted into the rules to make it clear this distance is from the aerodrome boundary. Water aerodromes also need to be reviewed. For example, 4km around the entirety of Lake Taupō is excessive considering operations tend to only take place near the marina.

Q.3 Should we change the requirement to gain consent to fly above property by:
a. Using 'safe distances' as an alternative?
b. Relaxing the requirement in another way?
c. Removing the requirement completely?

We do not support removing this requirement for persons who do not have licenses or are operating under an operator's certificate (Tier 2 or 3 in the UAVNZ model). There is no guarantee that the person has competency in piloting the aircraft nor maintaining it.

Q.4 Should we change the requirement to gain consent to fly above people by:
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Q.5 If we use 'safe distances' as an appropriate alternative to the consent provision, what distance(s) would you consider is appropriate?
a. 10 metres
b. 30 metres

c. 50 metres
d. Other.

You should not be considering the use of safe distances because these go against the nature of human visual perception. Humans are better at estimating relative distance for nearby objects, not those further away. When an object is further away, people use past experience to create expectations about what they *should* be seeing (e.g., using known sizes of objects, contrast in colour brilliance, atmospheric perspective, etc.). When this mental model is different to reality, then that is what we call an illusion. To create standards based upon safe distances that cannot be readily established by human vision alone is dangerous because responsible operators suffering from visual illusions may be prosecuted for genuine errors.

We are happy to share teaching materials related to vision and visual illusions if this would be helpful for evaluating this proposed regulatory measure.

Q.6 Are there any other major Rules changes we should consider?

Yes, please adopt UAVNZ's proposed alternative instead of what is being proposed. It achieves the stated intentions without reinventing the entire aviation system. We particularly like the idea of licensing because this will give us the ability to create syllabi and also to attach ratings to licenses, allowing things like FRTO ratings for unmanned aircraft pilots to be able to broadcast their location and intentions on frequencies used by manned aircraft. This would greatly enhance situational awareness for all airspace users.

Q.7 Are there any minor changes to the Rules that would make them easier to understand?

Yes:

1. Defining shields and barriers and placing this interpretation in one place
2. Defining what trained and competent means for visual observers
3. Clarification of visual line of sight statements
4. A formal legal definition of what "active runway or movement area" means.
5. Where is 4km measured from for aerodromes? We believe it should be the boundary, but this is currently ambiguous.
6. Clarification about rules relating to non-designated and special use airspace.
7. Clarification on who can issue a NOTAM.
8. Clarification on why 400ft AGL is used as the measure instead of the height of the highest obstacle in the operating area.

Q.8 What do you think of the proposed minor Rules changes?

We do not consider 101.202 deletion to be a minor rule change. This will have major implications for the unmanned aerospace sector and the proposal needs to be fleshed out in more detail. The most pertinent question is what will replace 101.202?

115-116 – We believe Subpart B already covers tethered unmanned aircraft. 101.51 should be extended to all unmanned aircraft that can be tethered, not just moored balloons and kites.

117 – 120 – We agree about relaxing the requirement for an observer when using FPV, but this must strictly be in shielded areas.

Q.9 Are there any other changes we should consider?

See UAVNZ Joint Statement

Questions – Basic Pilot Qualification

Q.1 Should we introduce basic pilot qualification for Part 101 drone pilots?

No. Not a basic qualification. There should be a higher threshold to require a qualification and this should be issued as a license by Part 141 organisations. We propose using the thresholds in UAVNZ's joint statement. Increasing funding for safety promotion should mitigate the need for universal licensing.

There is also potential to devalue the existing training programmes developed by P141s. Currently there is also confusion around "basic" qualifications like the Airshare 101 course that costs $25USD and is wholly inadequate for most operators.

Q.2 What impact would a basic pilot qualification likely have on you?

All of our pilots already have higher level qualifications, so the introduction of this measure will not impact their operations.

However, we consider it unwise to introduce such a basic qualification as it will devalue the training provided by Massey University School of Aviation and other Part 141 organisations. The basic pilot qualification will be inadequate for most operators because it will not cover essential skills such as risk analysis, understanding air band radio, reading VNCs, identifying airspace requirements and so on. It will be more effective to lower the threshold of what can be done under Part 101 now, and introduce licensing with ratings for those that cross the threshold.

Q.3 What format should this test take?
a. Electronic/online theory test
b. Paper based written theory test (at a provider)
c. A practical examination of skill and a paper based written theory test (at a provider)
d. Other

While we do not support this as a valid regulatory measure, if it were to be implemented anyway, then it must be done by Part 141 organisations and must include practical as well as theory assessment.

Q.4 Should there be a minimum age for basic pilot qualification?

We do not support the *basic* pilot qualification. However, we are advocating for licenses and ratings – these should not be attainable for those under 16 years of age, consistent with the standard applied to manned aircraft operations.

Q.5 Do you agree with the proposed special authorisations given to Part 141 and Part 101.202 approved training organisations?

These are not special authorisations. Part 141 organisations like ours are responsible for flight training within aviation, it would be very peculiar for training to be conducted outside of Part 141s in any other area of aerospace. Part 101.202 is one example of an anomaly, which we note is proposed for deletion. We do not support deleting 101.202, but do not feel that training should be provided outside of Part 141 organisations.

Q.6 Is there any other special authorisations you would like to see? Why?

Not sure what this question is intended on capturing.

Questions – Drone Registration

Q.1 Should we introduce the proposed drone registration system? Why?

No. The reasons why are broadly outlined in UAVNZ's joint statement, primarily:

1. Registration does not enhance situational awareness
2. Has not assisted in the prosecution of rogue operators in countries where it has been introduced
3. Only already compliant operators will be registering their aircraft, placing an unfair financial burden upon responsible people

Q.2 What impact would drone registration likely have on you?

Little impact upon our operations because we only own four unmanned aircraft. However, our clients will likely be impacted, particularly those that operate large numbers of unmanned aircraft.

Q.3 What do you think of the proposed system design (e.g. digital platform) and requirements (e.g. identity authentication)?

No comment as we are opposed to the idea of registration in general.

Q.4 Should there be a minimum weight threshold for registering a drone? If so, is 250 grams appropriate? If not, what would be an appropriate weight threshold and why?

Currently, all aircraft operated under Part 102 are registered. Larger unmanned aircraft (25kg+) should continue to be registered under expositions, but also a register kept by the CAA so that information relating to those aircraft can be tracked (e.g., maintenance concerns, airworthiness concerns, etc.).

Q.5 Should certain drones not need to be registered (such as drones flown solely indoors or within specific designated areas (e.g. Model Flying New Zealand sites) from registration? What other drones should not need to be registered and why?

All unmanned aircraft below 25kg that are being operated outside Part 102 should be exempt.

Questions – Remote ID

Q.1 Should we consider introducing Remote ID? Why?

Not in the form proposed. ADS-B and FLARM should be under consideration for *some* operations. One example might be operations in controlled airspace, but even that has some nuance around whether electronic conspicuity is necessary or not.

Q.2 What impact would Remote ID likely have on you?

We are concerned about the privacy of our pilots given that there contact numbers and location will be made available. This makes it easier for criminals to steal such aircraft or conduct other criminal activity while the pilot is otherwise engaged.

The cost of implementing Remote ID will be negligible for us. However, we do have one ADS-B equipped aircraft already.

Questions – Geo-Awareness

Q.3 Should we consider introducing geo-awareness? Why?

The complexity involved with promulgating aeronautical information should not be underestimated. The user interface would need to change on innumerable unmanned aircraft to facilitate geo-awareness.

Alternatively, Visual Navigation Charts (VNCs) already contain all the aeronautical information relevant to unmanned aircraft pilots. These are available in print and electronic forms, can be purchased for specific areas and at different scales. These are of course complemented by the AIP Supplements that come out for temporary airspace designations. It would be difficult to create a system that can keep up with these and is unnecessary if pilots are taught to read VNCs and check AIP Supplements and NOTAMs. Who would be liable if a new system was created and there was missing critical information contained within these documents?

Q.4 What impact would geo-awareness likely have on you?

None. This is why it is arbitrary, no particular benefit or detriment (outside of unnecessary overlap).

[redacted]

From: John Farmer [redacted]
Sent: Thursday, 10 June 2021 12:47 PM
To: Enabling Drone Integration
Subject: Drone enabling submission

Stage one
Pilot qualifications ,and registration
We would welcome the introduction of a online theory test for part 101 drone Pilots, as we feel this would provide a means of informing the general public of their obligations when flying remote control aircraft in nz. As MFNZ members already are required to have a wings badge to fly , which includes our regulatory requirements and a physical flying test to ensure that our members can control their aircraft (something not required under your new requirements) we feel that MFNZ members should be exempt from this requirement if they hold a wings badge.

Drone registration over 250 g
As the vast majority of MFNZ members will fall into this requirement, this is a major concern for us. We would prefer a registration of the pilot, with a common registration number , that can be issued to our model aircraft, as many members of MFNZ have multiple models , the cost and complexity of a separate id for each model would be prohibitive, we also feel that there should be little or no cost involved in this requirement as if the cost is excessive there will be a reluctance by the general public to comply.
As for designated flying areas we feel more discussion is required as MFNZ members may fly from lifestyle blocks, sites that are used for limited times of the year, flying demonstrations for the public and flying for schools in the STEMS program.

Stage two and three
Remote ID and GEO Awareness

This is probably of the most concern to our clubs members
We feel the the assumption that that most of our aircraft already have this facility and that the lifespan of our models is 2_3 years to be completely false, many MFNZ members in our club(Wairarapa model areo club WMAC based at Hood areodrome in masterton) have aircraft that are hand built or kit built that are older than 3 years and no foam built , hand built models or any aircraft in our club process remote Id and geo awareness built in , only the higher end drones available today process these features
.As the problem seems to us to stem from the abundance of very cheap drones imported via the internet flown by people with no training and no knowledge of any regulatory requirements .we feel that to include MFNZ members with this group to be unfair
The cost involved in retrofitting remote id and geo awareness to our models would be too expensive as many of our members have a large number of models . The result would be the collapse of our hobby and the closing of many, many clubs around NZ.
As MFNZ members and WMAC members we feel that the high standards that we hold ourselves too as required by both our national body and our own club that MFNZ members should be exempt from this requirement .
We belive the idea of a single standardized map to be of great value and it would be appreciated by our members as a valuable reference tool

Stage four
Part 149
We feel that bringing MFNZ into part 149 needs further discussion, as a voluntary organization, that are flying model aircraft we feel that some sort of lite 149 could apply to MFNZ . If we are required to comply to the same rules as full size aircraft that the amount of paperwork involved and the subsequent costs involved in both money and time would be too much for a voluntary organization to cope with

John Farmer [redacted]