

Drone Policy



Responsibility for policy: Chief Pilot

Approving authority: Vice-Chancellor

Last reviewed: September 2018

Next review: September 2023

Application

1. This policy applies to all staff, students and visitors to the University of Waikato.

Scope

2. This policy applies to:
 - a. all drone operations undertaken by University staff or students for research or teaching purposes at any location, and
 - b. all drone operations undertaken by any person (including for recreational purposes) at the University's Hillcrest, Hamilton campus.
3. This policy applies to drones with a maximum weight not exceeding 15 kilograms; drones with a maximum weight exceeding 15 kilograms must not be operated without the explicit prior approval of the University's Chief Pilot.

Purpose

4. The purpose of this policy is to:
 - a. provide guidance to staff and students on the operation of drones for research or teaching purposes, and
 - b. provide guidance to staff, students and visitors to the University on the operation of drones on the University's Hillcrest, Hamilton campus.

Related documents

5. The following documents set out further information relevant to this policy:
 - [Civil Aviation Act 1990](#)
 - [Civil Aviation Authority of New Zealand: RPAS, UAV, UAS, Drones and Model Aircraft](#)
 - [Civil Aviation Rules](#) Parts [12](#), [101](#), [102](#) and [141](#)
 - [Code of Student Conduct](#)
 - [Health and Safety Policy](#)
 - [Privacy Act 1993](#)
 - [Reporting of Accidents and Incidents Policy](#)
 - [Staff Code of Conduct](#)

Definitions

6. In this policy:

Chief Pilot means a senior member of staff nominated by the Vice-Chancellor as the person who oversees drone operations on behalf of the University; the Chief Pilot must be approved by the Civil Aviation Authority of New Zealand to act as the University's designated "Prime Person"; the University's Chief Pilot is [Dr Charles Lee](#) of the Faculty of Science and Engineering

drone means an unmanned aircraft that is piloted from a remote station, also known as a Remotely Piloted Aircraft System (RPAS), Unmanned Aerial System (UAS), or Unmanned Aerial Vehicle (UAV); model aircrafts are considered drones by the Civil Aviation Authority of New Zealand

maximum weight means the total take-off weight of the aircraft, which includes its batteries or power systems and all payload

Operational Competency Assessment (OCA) means an assessment of a pilot's operational competency performed by a flight examiner from a [Part 141](#)-certified training organisation

Part 102 operations means flights that cannot be conducted under Civil Aviation Rules [Part 101](#) and are specifically approved by the Civil Aviation Authority of New Zealand as part of the University's Part 102 Unmanned Aircraft Operator Certificate schedule of conditions

Pilot in Command means the individual responsible for the control and safe operation of a drone and who holds an appropriate qualification or equivalent as specified below:

- RPAS Pilot Certificate P101 for operations under Civil Aviation Rules [Part 101](#)
- RPAS Pilot Certificate P102 for operations under Civil Aviation Rules [Part 101](#) or within privileges granted under a [Part 102](#) Unmanned Aircraft Operator Certificate (a current OCA is required for P102 operations)
- New Zealand Commercial, Private, Recreational, or Gliding Pilots License (a current OCA is required for P102 operations)
- Foreign RPAS license issued by a competent agency (e.g. FAA Part 107 Remote Pilot Certificate) (only for operations under Civil Aviation Rules [Part 101](#))
- Model Flying New Zealand Wings Badge relevant to the type of drone being operated (only for operations under Civil Aviation Rules [Part 101](#))

RPAS Pilot Certificate P101 means a qualification issued by Flight Test NZ Ltd to individuals who meet the Civil Aviation Authority of New Zealand knowledge requirements for operating drones under Civil Aviation Rules [Part 101](#); this qualification is issued by a Part 141-certified training organisation and may be known by other names (e.g., "Part 101 Pilot Certificate" issued by Aviation Safety Management Systems Ltd)

RPAS Pilot Certificate P102 means a qualification issued by Flight Test NZ Ltd to individuals who meet the Civil Aviation Authority of New Zealand knowledge and competency requirements and are deemed competent to operate drones under [Part 102](#) privileges issued by the Civil Aviation Authority of New Zealand; this qualification is issued by a [Part 141](#)-certified training organisation and may be known by other names (e.g., "UAV Pilot Certificate" issued by Aviation Safety Management Systems Ltd)

shielded operation means the restriction of a drone's flight path to the maximum height of the highest obstacle within 100 metres of the flight zone; an illustration of the requirements of a shielded operation is provided in Appendix 1 of this policy.

General drone operating procedures

7. All drone operations must follow the general and location-specific procedures described in this policy unless specifically authorised by the Chief Pilot.
8. All drone operations conducted by University staff or students for research and teaching purposes (including training) must be in compliance with Civil Aviation Authority of New Zealand Rules [Part 101](#) unless the operation has been specifically authorised by the Civil Aviation Authority of New Zealand in accordance with the University's Part 102 Unmanned Aircraft Operator Certificate.
9. All drone operations must be carried out or directly supervised by a qualified Pilot in Command, as defined under clause 6 of this policy.
10. Pilots training toward RPAS Pilot Certificate P101 or RPAS Pilot Certificate P102 may only carry out training operations under Civil Aviation Rules [Part 101](#) (including in the flight area on the Hillcrest, Hamilton campus defined in Appendix 2 of this policy) after completing the *Remotely Piloted Aircraft System: Pilot in Command Basic Training* Health and Safety Moodle course and following flight plans pre-approved by an individual with RPAS Pilot Certificate P102.
11. The Pilot in Command must:
 - a. ensure that the drone is in airworthy condition and has a maximum weight not exceeding 15 kilograms

- b. register the intention for each drone operation using an appropriate online service ([Airshare](#) or [AirMap](#)) and ensure that the operation is not in controlled or special use airspace
 - c. maintain constant unaided visual line of sight with the drone unless an observer in constant communication with the Pilot in Command is used to monitor the drone
 - d. ensure a minimum distance of 5 metres between persons or property and the drone while in flight
 - e. be able to determine and keep aware of the drone's altitude at all times during flight. In an unshielded operation, a maximum elevation of 120 metres (400 feet) above ground level must be adhered to. In a shielded operation, the maximum elevation must not exceed the height of the physical barrier, such as a row of trees or a building that can arrest or halt an uncontrolled aircraft from entering a controlled airspace
 - f. ensure that drone operations comply with the requirements of the [Privacy Act 1993](#), under which drones fitted with cameras are subject to the same requirements as CCTV.
12. The Pilot in Command must not:
- a. operate over an area without consent from the person or organisation responsible for the property unless the person or organisation explicitly allows drone operations (e.g. certain sites in [Hamilton City](#))
 - b. operate the drone directly over any person whose consent has not been obtained
 - c. operate the drone near a property and/or take visual recordings of said property where the owner or occupier does not give consent since such an intrusion may be considered to occur to an 'unreasonable extent'; this may include places where people aggregate depending on the level of intrusion
 - d. intentionally release any objects or substances from the drone while in flight without explicit prior approval from the Chief Pilot.
13. All practicable steps must be taken to minimise hazards to persons, property and other aircraft caused by drone operations at all times.
14. Drone operations must only take place between sunrise and sunset (as listed in the [Aviation Information Publication Daylight Tables](#)) with visibility greater than 500 metres.
15. The drone must give way to all manned aircraft without exception; if a manned aircraft approaches the operational area, the drone must be landed immediately and remain on the ground until the manned aircraft has exited the operation area.
16. Where possible, the consent of all individuals who may be impacted by the drone's operation should be sought; if consent cannot be obtained practically, then the Pilot in Command shall use caution and consider whether the intrusion could be considered unreasonable.
17. Individuals who were in the operational area at the time images or video recordings were made from a drone may have a right to obtain confirmation of whether they were recorded and to have access to the images or video recording under the [Privacy Act 1993](#); consent for use of recorded material can be implied when the individuals are involved in the operation.
18. If any doubt over the inadvertent inclusion of an individual exists in a recording taken from a drone, that individual should be made unidentifiable in the recording.
19. Any images or video recordings taken from a drone must be readily retrievable and must be stored in a secure manner to prevent against loss, unauthorised access and misuse.

Operating procedures for drone use on the Hillcrest, Hamilton campus

- 20. All drone operations conducted at the University's Hillcrest, Hamilton campus, including those by non-University personnel, are subject to all general operating procedures set out in clauses 7 to 19 of this policy and the following specific operating procedures.
- 21. All drone operations at the Hillcrest, Hamilton campus require prior approval by the University's Security Manager; applications for permission can be made by contacting Security Services at security@waikato.ac.nz or 07 838 4444; a list of individuals and/or organisations who have been

granted pre-approval to conduct drone operations at the Hillcrest, Hamilton campus may be obtained from the Chief Pilot.

22. Unless explicitly authorised by the Chief Pilot, only rotary-wing drones (e.g. single-rotor helicopters and quadcopter) operations are allowed at the Hillcrest, Hamilton campus.
23. All drone operations at the Hillcrest, Hamilton campus are restricted to within the boundaries of the area illustrated in Appendix 2 of this policy as the campus is within controlled airspace (GIS shapefiles for the area are available from the Chief Pilot on request).
24. All drone operations at the Hillcrest, Hamilton campus must meet the requirements of a shielded operation (see Appendix 1 of this policy) and be programmed to not exceed an elevation ceiling of 15 metres (45 feet) above ground level; drone operations required to exceed 15 metres (45 feet) above ground level must be approved by Airways New Zealand prior to operation; the procedure for obtaining approval is available from the Chief Pilot on request.
25. The Pilot in Command must nominate an observer to continuously monitor the flight path of the drone and warn of any aircraft and/or persons approaching the operational area.
26. Due to the proximity of the Hillcrest, Hamilton campus to the Waikato Hospital Heliport there must be a physical barrier such as a row of trees or a building capable of arresting the flight of the drone between the drone and the Waikato Hospital at all times in case of a control malfunction and fly-away.
27. The Security Manager (or delegated authority) has authority to, at his or her discretion, prohibit or cancel drone operations on the Hillcrest, Hamilton campus where:
 - a. the safety or security of people or property is at risk, or
 - b. this policy has been breached.

Operating procedures for drone use by staff or students at other locations within New Zealand

28. Drone operations are prohibited at the University's Tauranga city campus and the Coastal Marine Station at Sulphur Point due to their proximity to Tauranga Airport and flight paths for commercial traffic.
29. The operation of a drone by staff or students for teaching or research purposes at locations outside the Hillcrest, Hamilton campus must meet the requirements of the general operating procedures set out in clauses 7 to 19 of this policy and Civil Aviation Rules Part [101](#), unless approved in accordance with the University's Part 102 Unmanned Aircraft Operator Certificate.
30. Drone operations are prohibited:
 - a. inside Low Flying Zones
 - b. in Class A airspace
 - c. on or over any aerodrome active movement area, and
 - d. on or over any aerodrome active runway.
31. The Pilot in Command must:
 - a. identify and observe all airspace restrictions for the operation area
 - b. maintain airspace awareness and compliance and ensure that the operational airspace has been fully deconflicted
 - c. have and consult current Visual Navigation Charts (available from [Aeropath](#)) as the primary reference for assessing airspace requirements
 - d. be capable of interpreting Visual Navigation Charts to determine airspace requirements and any restrictions applicable to the operational area
 - e. review NOTAMs (notices issued to airspace users to alert of temporary condition or change in any aeronautical facility, service, procedures, or temporary hazards) available from the [Airways Internet Flight Information Service](#) and the IFISMobile app for [Android](#) and [iOS](#)) and the [Aviation Information Publication Supplements](#) for any applicable items relating to the operational area
 - f. log flight operations in accordance with clauses 34 to 36 of this policy.

- g. obtain permission from the controlling authority when operating in restricted areas (permanent or temporary) and military operating areas as specified in Visual Navigation Charts as well as NOTAM and [Aviation Information Publication Supplements](#)
 - h. contact the agency responsible to ascertain the likely risks to drone operation and comply with the horizontal and vertical boundaries when operating in danger areas as specified in Visual Navigation Charts as well as NOTAM and [Aviation Information Publication Supplements](#); a risk assessment must be conducted prior to the operation
 - i. consult the appropriate aerodrome or heliport authority for unshielded operations within 4 kilometres of an aerodrome or heliport in uncontrolled airspace (Class G); an RPAS Pilot Certificate P102 is required for such operations and an observer is mandatory
 - j. for operations inside controlled airspace (Class C or D), obtain an Air Traffic Control clearance using the process outlined by [Airshare](#) or similar resource.
32. If the planned drone operation does not clearly and unambiguously meet the requirements of Civil Aviation Rules [Part 101](#), the Pilot in Command must not operate without prior approval by the Chief Pilot.

Operating procedures for drone use by staff or students outside New Zealand

33. Drone operations outside the jurisdiction of the Civil Aviation Authority of New Zealand must comply with this policy as well as the relevant and applicable rules and regulations of local authorities.

Logging flight operations

34. The Pilot in Command is responsible for logging flight operations accurately, preferably incorporating flight data recorded by the drone flight controller or telemetry data recorded by the drone ground control station.
35. The log may be in either paper or electronic form, must be updated within 48 hours of each drone operation and must be kept for at least seven years.
36. As a minimum, the log must record the following information:
- the names of the Pilot in Command, observers (if used) and ground support crew (if used)
 - a description of the drone, including its type, model and serial (or other identifying) number
 - a description of the drone's payload, including battery serial (or other identifying) number/s
 - the location and nature of the drone's operation
 - the flight time and any deviation from normal operational parameters
 - details regarding training and OCA-related activities.

Contracted services

37. In circumstances where the University engages an external organisation to provide services involving drone operations, the following requirements must be met:
- a. the external organisation must hold a Part 102 Unmanned Aircraft Operator Certificate issued by the Civil Aviation Authority of New Zealand; if the service provider is a sole trader, they must hold a RPAS Pilot Certificate P102 or equivalent
 - b. the drone operator must provide the Chief Pilot with a documented risk assessment including a hazard register, risk mitigation strategies and emergency response plans
 - c. the drone operator must provide the Chief Pilot with evidence of drone airworthiness, either via flight logs or maintenance records
 - d. the drone operator must have and provide evidence of at least \$2M public liability insurance that includes UAV cover.

Drone specifications

38. All drones purchased by or on behalf of the University for teaching or research purposes must meet the following criteria:
- a. meet initial airworthiness standards

- b. have the ability to reliably and accurately determine and report the drone's height above ground level in real time
 - c. have the ability to programme a maximum height above ground (i.e. elevation ceiling)
 - d. have the ability to return to the launch site (i.e. RTL) automatically when the connection with the controller or ground control station is lost
 - e. have the ability to record (onboard or transmitted to a ground control station) and retrieve flight data
 - f. have the ability to exit programmed mode mid-flight and be manually flown without GPS assistance (e.g. Altitude Hold or ATTI mode)
 - g. have a detailed and logical Standard Operating Procedure (SOP) that conforms with the requirements prescribed in this policy
 - h. come with all technical specifications as detailed in the *University of Waikato RPAS Technical Specifications Survey* (available from the Chief Pilot).
39. The Chief Pilot is responsible for determining whether or not a drone meets the criteria set out in clause 38 of this policy and must be consulted prior to the purchase of any drone (i.e. prior to submission of the capital expenditure application or requisition request).
40. If a drone has been modified, designed or assembled by an individual who does not meet the requirements of Civil Aviation Rules Part [101.202](#), the drone must undergo inspection by an appropriate person approved by the Chief Pilot before its use.

Responsibilities

41. Deans and Directors must:
- a. ensure that all staff and students within their areas of responsibility conducting drone operations have received appropriate training and are suitably qualified, in consultation with the Chief Pilot
 - b. ensure that all drone operations within their areas of responsibility are conducted in accordance with this policy
 - c. provide a report of drone usage by staff and students within their areas of responsibility to the Chief Pilot on a quarterly basis
 - d. advise the Chief Pilot of any new Pilots in Command or new drones or modifications to existing drones prior to commencement of their operations
 - e. ensure that recurring drone operations are identified as such when reported to the Chief Pilot.
42. Pilots in Command must:
- a. complete the *Remotely Piloted Aircraft System: Pilot in Command Basic Training* and *Remotely Piloted Aircraft System: Pilot in Command Certification Health and Safety Moodle* courses prior to any drone operations; the *Remotely Piloted Aircraft System: Pilot in Command Basic Training Health and Safety Moodle* course must be repeated annually
 - b. upload the relevant certification or licence to the *Remotely Piloted Aircraft System: Pilot in Command Certificate Drop Box Health and Safety Moodle* module prior to any drone operations
 - c. design and keep written records of a training programme for all drones that he or she is responsible for and administer the training programme to any users of the drones; any change to a drone that results in a significant change in capability or risk will require a revision of the training programme which must be provided to users of the drone prior to operation; significant changes include but are not limited to:
 - the introduction of a new drone type, model, variant or major software/firmware update
 - a change to established areas of operation
 - new staff assignments, functions or responsibilities
 - significant changes to the relevant emergency response plan

- significant changes to this policy, the University's Part 102 Unmanned Aircraft Operator Certificate or relevant legislation
- d. obtain approval of any new or revised training programme from the Chief Pilot and provide the Chief Pilot with a report of training programme delivery on a quarterly basis
 - e. ensure that the drone is airworthy and maintained in accordance with the applicable manufacturer's guidelines; maintenance records must be kept for the lifetime of the drone.
 - f. comply with the requirements of Civil Aviation Rules [Part 101](#), unless they hold an RPAS Pilot Certificate P102 and operate in accordance with the University P102 Unmanned Aircraft Operator Certificate
 - g. understand the University's current insurance coverage for drone assets and public liability (available from the Chief Pilot) and ensure that all drone operations are in compliance with the conditions of relevant insurance policies
 - h. report all drone incidents that meet the mandatory reporting requirements as set out in clauses 49 to 53 of this policy.
43. The Chief Pilot is responsible for the content of the *Remotely Piloted Aircraft System: Pilot in Command Basic Training* and *Remotely Piloted Aircraft System: Pilot in Command Certification* Health and Safety Moodle courses and for ensuring that they remain relevant for the University's drone operations; the minimum content for the *Remotely Piloted Aircraft System: Pilot in Command Certification* course is set out in Appendix 3 of this policy.
 44. The Health and Safety Manager is responsible for ensuring that appropriate health and safety training is provided to staff and students operating drones for research or teaching purposes.

Complaints

45. Any person may lodge a formal complaint in relation to an alleged breach of this policy.
46. Before making a formal complaint under this policy, people are encouraged to deal with the matter in an open and professional manner and to try to resolve it informally.
47. A formal complaint must be lodged with the Chief Pilot who will arrange for it to be addressed by an appropriate authority.
48. Any person may refer a complaint to the Civil Aviation Authority of New Zealand if it appears that a breach of Civil Aviation Rules may have been committed.

Civil Aviation Authority Reporting

49. Civil Aviation Authority of New Zealand Rules [Part 12](#) contain strict rules regarding the reporting of drone-related occurrences; Appendix 4 of this policy outlines the types of Accidents, Serious Incidents and Other Occurrences that must be reported to the Civil Aviation Authority of New Zealand
50. Accidents and Serious Incidents must be reported to the Civil Aviation Authority of New Zealand as soon as practicable using the free phone number 0508 ACCIDENT (0508 222 433) which is staffed 24 hours a day, seven days a week; this means using a mobile phone immediately or the first landline telephone available
51. Following the immediate report of an Accident or Serious Incident, the Pilot in Command, or the Chief Pilot on behalf of the Pilot in Command, must submit full details of the Accident or Serious Incident to the Civil Aviation Authority of New Zealand using the [online form](#) within 10 days of the occurrence; alternatively a [CA005](#) Occurrence Report form can be downloaded from the Civil Aviation Authority of New Zealand website, completed and emailed or faxed.
52. Other Occurrences (e.g. bird strike) that concern the safety of drone operations should be reported to the Civil Aviation Authority of New Zealand in order to facilitate data gathering and analysis.
53. All drone-related accidents or incidents, even those that do not meet the Civil Aviation Authority of New Zealand's minimum mandatory reporting requirements, must be reported in accordance

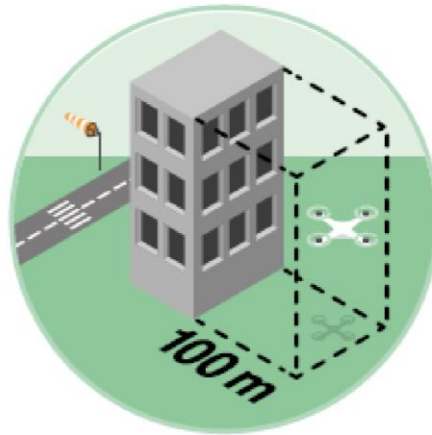
with the University's [Reporting of Accidents and Incidents Policy](#) and be notified to the Chief Pilot as soon as practicable.

Responsibility for monitoring compliance

54. The Chief Pilot is responsible for monitoring compliance with this policy and reporting any breaches to the Vice-Chancellor.
55. Breaches of this policy by staff may result in disciplinary action under the [Staff Code of Conduct](#).
56. Breaches of this policy by students may result in disciplinary action under the [Code of Student Conduct](#).
57. Breaches of this policy by members of the public may be reported to the [Civil Aviation Authority of New Zealand](#).

Appendix 1

An illustration of requirements for a shielded operation.



Appendix 2

Area (highlighted) of the Hillcrest campus available for drone operations up to 15 metres (45 feet) above ground level.



Appendix 3

Remotely Piloted Aircraft System: Pilot in Command Certification Health and Safety course content:

- a. Inter-crew communications, including:
 - i. correct terminology, phrasing, and techniques
 - ii. actions in the event of communication disruption or failure
- b. Observation skills, including:
 - i. correct searching techniques
 - ii. methods for dividing the sky into sectors so any intruder's position is easily referenced (e.g. clock code)
- c. Operational safety, including:
 - i. use of appropriate PPE and high visibility clothing
 - ii. positioning of barriers and warning signs
 - iii. emergency response plan and execution
 - iv. risk identification and use of the [University Hazard Register](#)
 - v. occurrence reporting
- d. Documentation and records, including:
 - i. familiarity with the University Drones Policy and Part 102 Exposition (where necessary)
 - ii. requirements and methods for recording individual flight experience
 - iii. correct use of flight logs
- e. Maintenance tasks, including:
 - i. completion of required maintenance tasks
 - ii. correct use of maintenance logs (if applicable)
- f. Drone equipment, including:
 - i. importance of familiarity and compliance with manufacturer manuals and updates
 - ii. potential impacts of unapproved modifications
 - iii. best practice for relevant drone class
- g. Human factors, including:
 - i. effects of physiological factors and environmental conditions on performance
 - ii. effects of fatigue on performance
 - iii. effects of alcohol and drugs on performance.

Appendix 4

The following drone-related occurrences meet the Civil Aviation Authority of New Zealand mandatory reporting requirements and must be reported to the Civil Aviation Authority of New Zealand in accordance with clauses 49 to 53 of this policy:

- A. An **Accident** is defined as an occurrence that causes significant damage or injuries while the aircraft is in operation. It takes place between the time the aircraft begins to move with the intention of flight and such time as the power plant or any propellers or rotors come to rest. The occurrence is one in which:
 - a. a person is fatally or seriously injured as a result of
 - i. direct contact with any part of the aircraft, including any part that has become detached from the aircraft; or
 - ii. direct exposure to jet blast, prop blast, or downwash, except when the injuries are self-inflicted or inflicted by other persons; or
 - b. the aircraft sustains damage or structural failure that
 - i. adversely affects the structural strength, performance, or flight characteristics of the aircraft; or

- ii. would normally require major repair or replacement of the affected component, except damage limited to propellers, wing tips, rotors, antennas, tyres, brakes, fairings, small dents, or puncture holes in the aircraft skin; or
 - c. the aircraft is missing or is completely inaccessible.
- B. **Serious Incidents** include any occurrence in which an Accident was only narrowly avoided. This includes a near-miss with other airspace users, people, or property.
- C. **Other Occurrences** that do not meet the accident or serious incident criteria, include:
 - a. any injury to persons as a result of drone operations or maintenance;
 - b. momentary or permanent loss of control of the drone;
 - c. uncommanded fly-away;
 - d. any drone motor or structural failure;
 - e. any incidents involving manned aircraft, including incursion into any controlled or special use airspace without an authorisation;
 - f. incursion into RPAS-designated airspace by another airspace user;
 - g. damage to any third-party property;
 - h. bird strikes.