Legal and Risk Branch – Education and Awareness

Drones and the Civil Aviation Safety Regulations 1998

- updated April 2018

What is a Drone?

A drone is a remotely piloted aircraft (RPA).

RPAs range in size from 1g to 150kg.

Drones can be used for a variety of purposes and are relatively cheap to purchase. **However**, meeting regulatory requirements can add to the overall cost of any University project using this technology.

It is important that you understand the requirements and rules before engaging in any activities involving drones.

This summary will guide you through the basic requirements.

Why are RPAs regulated?

The *Civil Aviation Safety Regulations 1998* (CASR) are made under the *Civil Aviation Act 1988* and are administered by the Civil Aviation Safety Authority (CASA).

CASA is responsible for ensuring the safety of all users of airspace as well as people on the ground. The Regulations set controls on the operators and activities of RPAs to minimise any foreseeable risks to the public and other aircraft.

Because of the potential risks from inappropriate use of drones, fines apply to people and organisations that do not comply with the CASR.

How are RPAs regulated?

The CASR define what types of flight activities can be conducted, who can conduct them and where and how they can occur.

Part 101 of the CASR governs the use of RPAs. The regulations are complex and technical and vary according to specific circumstances. CASA has produced *Advisory Circular 101-10* to assist users to interpret the regulatory requirements. A Manual of Standards will also be published.

Any University related operations are subject to a specific approval issued by CASA. Details about the University's approved operating conditions can be obtained from the University's Chief Remote Pilot via the URAF.

Contact details are listed at the end of this summary.

Do you need a Remote Pilot Licence (RePL)?

Yes - All University drone pilots need to be licensed.

All University operations are considered commercial by CASA.

All University-based pilots need to be trained to meet CASA licensing requirements.

The licensing process assures CASA (and the University) that pilots have technical capabilities and awareness of the risks and responsibilities that go with using drones in shared airspace.

Appropriate licensing is also a condition for coverage under the University's insurance program.

All approved RePLs are listed on the University's RPA Operator's Certificate (ReOC).

The University has a ReOC

The University has a RPA Operator's Certificate (ReOC).

Our ReOC represents CASA's permission to conduct **agreed** types of activities using **approved** RPAs.

CASA only issues ReOCs to organisations that have systems that meet the highest technical and safety standards.

The URAF has developed an in-house compliance system to approve, monitor and record drone operations.

The ReOC and the University's compliance system also means that our insurance program will cover approved activities and pilots should an injury or damage to property occur.

The University has a ReOC (cont.)

The University's RPA Operator's Certificate (ReOC):

- ✓ Approves the University staff member appointed to the position of Chief Remote Pilot.
- ✓ Stipulates the types of RPA operations that can be performed and any particular limitations considered necessary.

  The University is licensed to conduct -

  aerial surveying, aerial spotting and aerial photography.
- ✓ Lists the approved models of RPAs for approved University RPAS activities. If the RPA model is not already listed, then the University must seek an update^.

  If you intend to purchase a RPAS, contact -

  URAF - uraf@adelaide.edu.au

^Changes to the ReOC must be approval by CASA. The approval process can take up to one month and may be subject to an assessment fee, so this should be factored into all project planning and the budgets for research grant applications.

Talk with the Chief Remote Pilot early in your planning phase.

Why does the University need a ReOC?

Following amendments to CASR in September 2016, not all commercial operations need a ReOC. Exclusions apply to:

- Very small RPAs (under 2kg)
- Some small-scale commercial operations (e.g. real estate photography)
- Some farm-owner managed agricultural operations.

When conducted within restricted operating conditions and 5 days after on-line notification to CASA has been given.

These exemptions do not apply to operations conducted by the University. All operations regardless of drone type or activity must be approved by the Chief Remote Pilot.

The University's ReOC allows a broader range of RPAs types to be used and more complex operations to be conducted.

NOTE: Non-compliance by any University staff or students could lead to the cancellation of our ReOC which would impact on all University pilots and mean that all University drones would be grounded. No insurance cover will apply.

Standard Operating Conditions

Licensed RePLs operating under a ReOC are approved to operate under Standard Operating Conditions (SOCs).

Generally, a RPA **can only** be operated:

- In visual line of sight (without binoculars or telescope)
- Below 400 feet above ground level
- In visual meteorological conditions
- During the day

Generally a RPA **cannot** be operated:

- Over populous areas, or
- Within 3 nautical miles - about 5km - of an aerodrome (i.e. City Campus)
- In controlled airspace or prohibited areas (i.e. Roseworthy Campus)
- Within 30 meters of a person not directly associated with the RPAS operating team.

As the University has a ReOC, variation to these conditions can be negotiated with CASA where it can be demonstrated that public safety can be properly managed.

Check with the University's Chief Remote Pilot for details.

Approved operating systems

The ReOC is issued on the basis that we maintain appropriate systems to ensure the safe operation of all RPA activity.

This includes systems to ensure:

- All pilots are appropriately licensed
- Effective management of all operations
- Suitably trained personnel are appointed to the positions of Chief Remote Pilot and Maintenance Controller
- Maintenance of all equipment is regularly conducted - RPAs, ground systems and payloads
- Flight activity is conducted according to an operations manual approved by CASA
- Records are maintained in a form approved by CASA and available for review or audit

Our ReOC provides assurance to the University community, to our research partners and to the public that our activity is conducted with the safety of the general public, and other users of airspace, in mind.

Our insurance coverage also requires us to meet requirements under the regulations and adopt safety management measures.

Role of the Chief Remote Pilot

The Chief Remote Pilot has the necessary experience and qualifications to oversee all RPA operations.

The Chief Remote Pilot has autonomy to perform the role as required by CASA and is directly answerable to CASA for the University's management of its drone fleet.

The Chief Remote Pilot has full authority and can and will refuse permission to any operation that does not meet CASA requirements, industry best practice or risk and insurance requirements of the University.

The Chief Remote Pilot is responsible for:

- Ensuring the University RPA operations comply with legislation and regulations
- Maintaining records of the qualifications of all RPA pilots, drones and operations
- Monitoring operational standards and training
- Ensuring access to a reference library supporting approved operations.

CASA must be advised and approve any changes to the appointment of the Chief Remote Pilot and the Maintenance Controller.

What type of drone can I use?

There are many types and sizes of RPAs available and their cost varies significantly.

Subject to your project objectives or operational need, choosing a model already listed on the Operator's Certificate will save you time.

If you need a drone that is not already listed, it will have to be approved by CASA before you can fly.

Depending on the type and model, this could take weeks or months as additional flight testing may be required by CASA to ensure that the drone pilots and the Chief Remote Pilot are appropriately trained.

Once approved, a regular maintenance scheduled for your drone should be established in consultation with the University's *Maintenance Controller*.

Remotely Piloted Aircraft Systems

The operation of all RPAs must be supported by an effective RPAS (Remotely Piloted Aircraft System).

This System will comprise both airborne and ground-based equipment.

The purpose of the RPAS is to support continued safe flights and recovery of RPAs by ensuring that pilots have full control and real time awareness of the flight status of their aircraft.

A well-integrated RPAS will minimise the potential for human error and help prevent any possible failure of an operation by incorporating fail-safe design features.

A more complex RPAS should be put in place as risk to the safety of others, or technical difficulty of the operation, increases.

Getting Approvals

When operational requirements differ from those listed on the ReOC, an approval from CASA can be sought through the University's Chief Remote Pilot.

Approvals may be needed for:

- Special types activities - one-off or a regular activity in a particular location.
- Permission to work in special conditions – such as night-flying or in a populous area.
- Approval to use a particular or specialist type of aircraft.

Additional safety measures and/or controls may be put in place by the Chief Remote Pilot and/or CASA before the flights proceed.

Depending on the nature and complexity of the request, approval may take days or months. Early notice to CASA is recommended.

Experimental drones

While there may be some restrictions on use, the experimental use or adaptation of drones and RPAS may be negotiated with CASA where it can be shown that any potential risk can be controlled and reduced.

Researchers adapting RPAS for a specific research purpose should develop a clear project plan and consult the University's Chief Remote Pilot to discuss options.

Operating a Drone - 6 easy steps

Thinking about operating a drone?

Now that you know about the legal requirements, this simple 6-step checklist will help you to meet the necessary requirements as you plan your operation.

***Note:** The University's Chief Remote Pilot **must** approve all operations, even if conducted by an external operator.
Contractors must provide copies of:
- RPA Pilot Licence
- Operator's Certificate
- Certificates of Insurance for pilot and operator
- Job Safety Assessment
- CASA Approval
- Operations Manual & associated documents

Step 1
Check with URAF about
1. The drone (or RPA) you want to use; or
2. Requirements for any Contractors* operating on University Campuses

No → Do not purchase or use your drone until you have discussed this with the Chief Remote Pilot and arranged for the drone type to be listed on the ReOC (this may take time if the drone is more technically complex or larger than existing drones as additional testing of all personnel by CASA may be required). **Once completed, Go to Step 2**

Step 2
Ensure that all pilots who will operate your drone are licenced by CASA

No → Do not use your drone until you have:
- Completed RPAS training and been issued a licence by CASA,
- Undertaken the University's pilot induction program administered by the URAF
- Engaged a licenced RPA pilot to conduct the operation.*
- **Once complete, go to Step 3**

Step 3
Confirm that University pilots and RPAs are noted on the University's Insurance Policy by contacting the Insurance Office

No → **Once confirmed, go to Step 4**

Step 4
Conduct a risk assessment for all aspects of your proposed operation

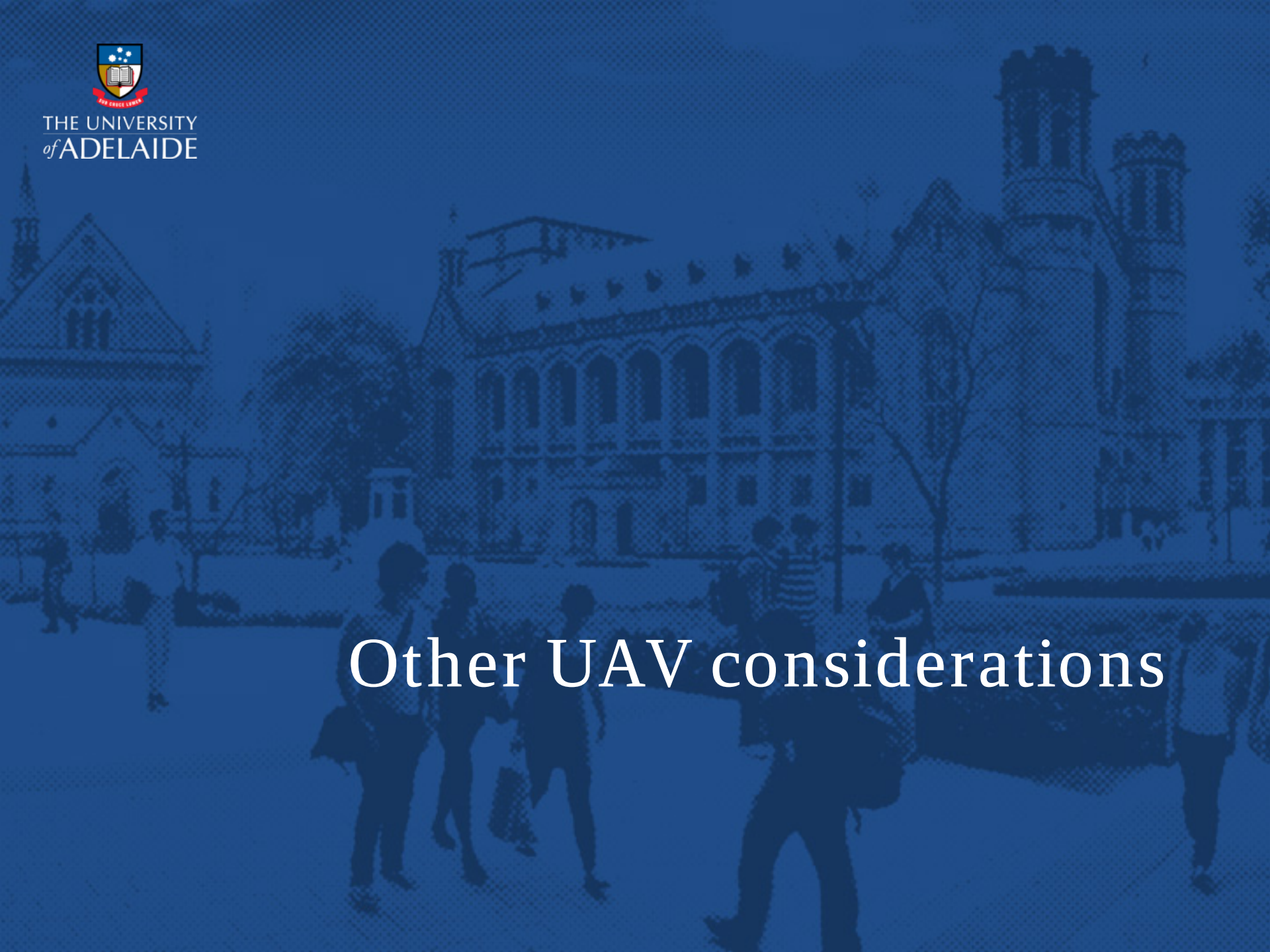
No → Refer to the *University's UAV Operations Manual* for details. **Once completed, go to Step 5**

Step 5
Ensure your operation is within operating conditions. All operations which meet operating conditions set out in the University's ReOC must be formally approved by the Chief Remote Pilot, so contact the URAF before going to Step 6

No → Specialist operations require CASA approval. Contact the Chief Remote Pilot for assistance with the CASA approval process. Specialist operations must also be notified to the Insurance Office. **Once your operation is approved by the URAF, go to Step 6**

Step 6
Complete your operation safely - then plan future operations
Return to Step 1

No → Report any flight incidents to the Chief Remote Pilot as soon as possible – CASA may need to be advised. Contact the Insurance Office if any injury to people or damage to property. WHS team may also need to be advised. Review operational risk assessment for improvements **before returning to Step 1**



Other UAV considerations

Privacy Matters

Anyone using a drone should consider privacy issues.

The same features that makes drones potentially useful in conducting a range of activities also makes them potentially intrusive when they are used without consideration of other people.

The University has a Privacy Policy which requires that activities involving the collection of any photographic or video data should not be intrusive of people's privacy.

Any proposed projects using drones must also meet any research ethics requirements if applicable. Contact Research Services for more information.

Health Safety and Wellbeing

Like other equipment that is used in the University, drones are useful tools for furthering our knowledge in many fields.

Possible risks to safety during drone operations should be assessed as required under the University's Health Safety and Wellbeing Policy.

The safety of personnel should always be considered in the use and storage of all equipment.

Potential hazards related to drone batteries (Lithium-ion Polymer) should be considered during storage and transport.

Standard procedures related to the assessment of off-site activities and general field work should also to be adhered to.

A HSW officer can assist.

Insurance cover

The University provides insurance cover for approved activities.

This means drones which are operated in any Australian jurisdiction and in accordance with CASA requirements and University Policies and procedures.

For full details about insurance coverage you should refer to the Drones Insurance Guide or contact the Legal and Risk Branch.

Managing risk

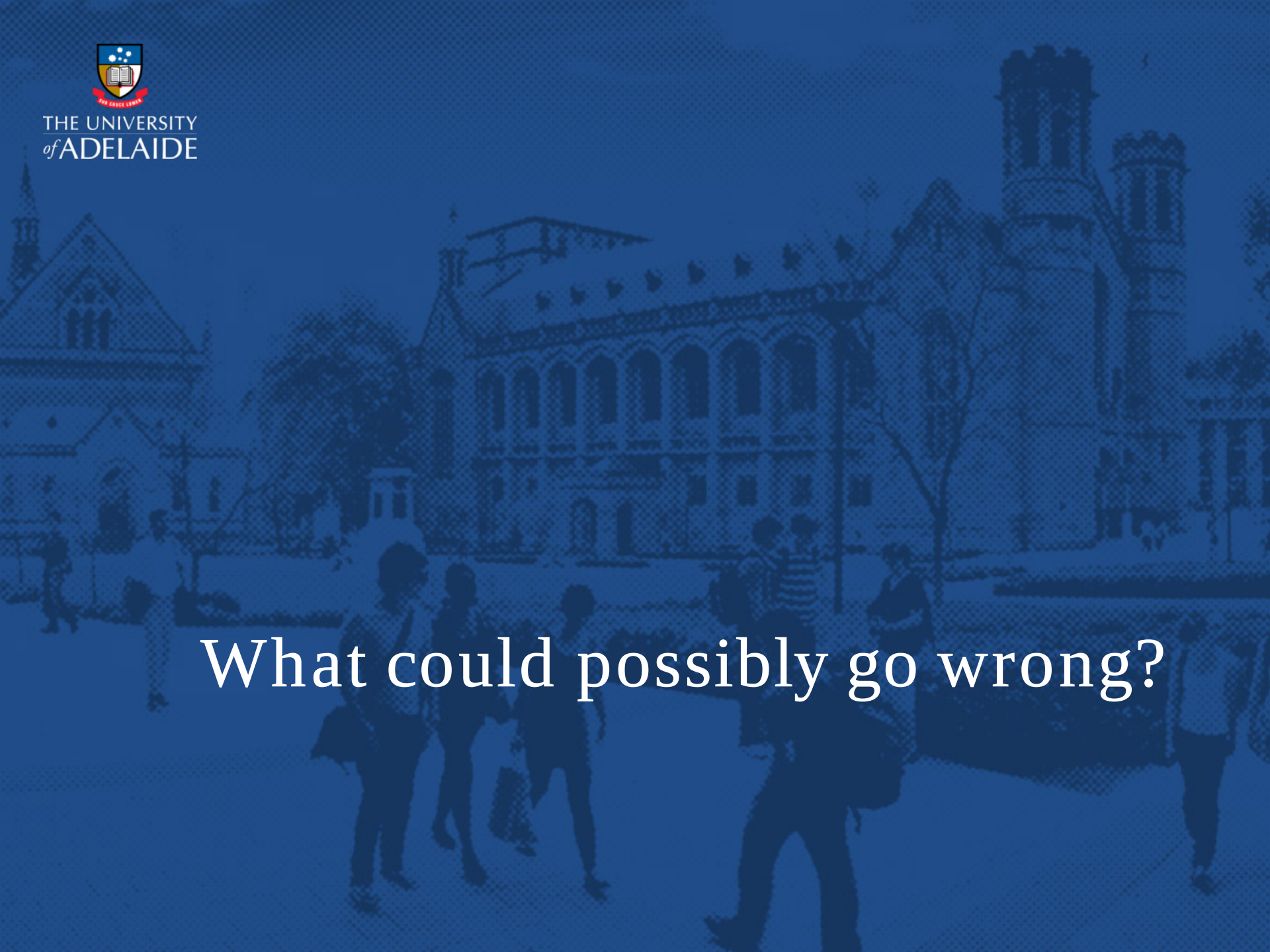
The regulations governing the use of drones are intended to support the safe operations of all aircraft being used in airspace. The regulations provide a framework where the rules are well understood and information about known risks is shared.

The objective is similar to the systems developed to regulate road traffic.

The success of the framework relies on the operators of drones understanding the rules that apply to airspace, anticipating and reducing any potential risks and having the skills and awareness to determine the best response to a range of possible incidents.

The regulations are complex because the potential risks are complex and potentially disastrous when it does go wrong.

More information about risk assessments can be obtained from the Chief Remote Pilot.



What could possibly go wrong?

Near miss

In March 2014, a rescue helicopter pilot in Newcastle was forced to take evasive action to avoid a collision with a drone.

The helicopter was returning to base after a late night delivery of a patient to hospital.

The helicopter crew saw lights which they thought belonged to a larger aircraft in the distance. They soon realised that the lights were from a drone and much closer. The crew were able to avoid a collision, but the consequences of such an incident over a residential area could have been disastrous.

The drone pilot was not flying according to Standard Operating Conditions.

Not so near miss

During a triathlon event a competitor was struck by a RPA as she neared the finish line. The licensed pilot was using the drone to take aerial photographs of the event.

The pilot experienced an unexplained loss of control and the drone dropped dramatically towards the athlete who had to be treated for head injuries.

The pilot was not complying with the Standard Operating Conditions which restrict the use of a RPA within 30 metres of any person not directly involved with the RPA flight operation.

Equipment Failure

In March 2015, a RPA operating crew supporting media coverage of the Cricket World Cup Final lost control of the drone. The drone continued to fly until it crash-landed outside the cricket grounds. Fortunately no passers-by were injured nor property damaged.

The crew had conducted a risk assessment and had practised the flight on numerous occasions. There was no evident problem with the hardware or the control system.

The most likely cause of the accident was radio frequency inference due to a high volume of radio traffic at the time of the event.

The reality is that no one knows the actual cause. However, the investigation report highlighted the need for all RPAS crews to consider '**what might be different this time**' during every pre-operation risk assessment.

THE UNIVERSITY of ADELAIDE

Contacts

For information about the University's RPAS operations :

Unmanned Research Aircraft Facility (URAF)

Web: http://www.adelaide.edu.au/environment/uraf

University's Chief Remote Pilot: Mitch Bannink

Email: uraf@adelaide.edu.au

Director, URAF: Dr. Ramesh Raja Segaran

Email: uraf@adelaide.edu.au

Regulatory compliance advice can be provided by Legal & Risk Branch

Email: helpdesklegal@adelaide.edu.au

Advice about insurance coverage for drones can be provided by Legal & Risk Branch

Email: helpdesklegal@adelaide.edu.au

Commercialisation issues are managed by Research & Business Partnerships

Email: rbpenquiries@adelaide.edu.au