The sky’s the limit...

Using drones in the grazing industry

Josh Keegan
The drones
The drones
The drones
The other “drones”
The other “drones”
The other “drones”
The anti-drone movement
The anti-drone movement
Drones and agriculture
Drones and agriculture
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The Legislation – Privacy Act

*Privacy Act 1988* does not apply to persons acting in an individual capacity, and therefore does not regulate the use of surveillance drones by individuals, the use of drones is regulated in a number of other ways (Timothy Pilgrim: Australian Privacy Commissioner)

Office of the Information Commissioner Queensland

- Personal information collected or generated using a drone is subject to the obligations in the IP Act relating to the collection, storage, use and disclosure of personal information generally.
- There are also a number of other laws which could potentially apply to the use of drones
As part of the amendments to Part 101 that came into effect on 29 September 2016, CASA created an excluded category of remotely piloted aircraft, allowing private landowners to carry out some commercial-like operations on their own land with:

- Small RPA (2-25kg), without needing a RPA operator's certificate (ReOC) or a remote pilot licence (RePL)

- Medium RPA (25-150kg) provided they, or the remote pilot, hold an RePL.

This is provided they only operate over the landholder/leaseholder's land, follow the standard operating conditions and none of the parties involved receive remuneration for that work.
WHAT YOU NEED TO DO BEFORE FLYING A SMALL RPA (2-25KG)

1. Go to the CASA website and notify us **five business days before** flying.
   - To notify CASA, you will need an aviation reference number (ARN). If you do not already have an ARN, you will need to apply for one.
   - Your notification is only valid for 24 months, so you will need to re-notify CASA every two years.

2. Operate within the **standard operating conditions**:
   - You must only fly during the day and keep your RPA **within visual line-of-sight**. This means being able to see the aircraft with your own eyes (rather than through first-person-view [FPV]) all times.
   - You must not fly your RPA higher than **120 metres (400ft) AGL**.
   - You must keep your RPA at least **30 metres away from other people**.
   - You must keep your RPA **at least 5.5km away from controlled aerodromes**.
   - You must not fly over **populous areas** where—if your drone was to fail—it could hit someone. This could include beaches, parks, or sport ovals where there is a game in progress.
   - You must not fly your RPA over or near an area affecting public safety or where emergency operations are underway (without prior approval). This could include situations such as a car crash, police operations, a fire and associated firefighting efforts, and search and rescue.
   - You must only fly **one RPA at a time**.

Remember, you must not operate your RPA in a way that creates a hazard to another aircraft, person or property.

Respect personal privacy
Don’t record or photograph people without their consent—this may breach state laws.
The Legislation - CASA
The Legislation - CASA

Fixed Wing vs Rotary

Prices start at $500

Generally, the higher the payload or the longer the distance, the higher the price
# Fixed Wing vs Rotary

## Fixed Wing

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Disadvantages</th>
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<tbody>
<tr>
<td>Longer flight time/larger areas can be covered</td>
<td>Launching/Landing</td>
</tr>
<tr>
<td>Simple mechanics making them easier to repair</td>
<td>Unable to hover to provide closer examination of areas of interest</td>
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<tr>
<td>without significant knowledge</td>
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<tr>
<td>Heavier payloads using less power</td>
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<tr>
<td>More operational time</td>
<td></td>
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<tr>
<td>Not suited to inspection work</td>
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![Fixed Wing Drone](image1.png) ![Rotary Drone](image2.png)
## Fixed Wing vs Rotary

### Rotary

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ability to take-off and land vertically: no runway required</td>
<td>Lighter payloads requiring more power</td>
</tr>
<tr>
<td>Suited to inspection work due to ability to hover (auto-hover)</td>
<td>Less operational time</td>
</tr>
<tr>
<td>High manoeuvrability</td>
<td>Mechanically complex</td>
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<tr>
<td></td>
<td>Increase in operational costs</td>
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<tr>
<td></td>
<td>Increased safety risk from unprotected blades</td>
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[Image of Rotary Wing]
The Limitations

Airborne menace that can hit 60mph

- The drone that injured Oscar was a Class 250 quadcopter (pictured).
- 250 refers to the length in millimetres of each of the machine's four motors.
- They can fly up to two-thirds of a mile from the transmitter/controller.
- Built from lightweight materials such as carbon fibre or fibreglass, they reach top speeds of 60mph.
- A basic drone, receiver and transmitter setup is around £500, double if using top-quality components.
- Powered by a rechargeable lithium polymer battery with four rotors and four motors, they can fly for around six minutes at a time.
- Can be bought ready-assembled or as individual self-build components.
- Last year TV repair shop owner Robert Knowles from Barrow-in-Furness became the first person convicted in the UK for 'dangerously' flying a drone. He was fined £300 with £500 costs.
- More than 10,000 drones are estimated to have been sold in the UK.
- Often used as a 'racing' drone - pilots compete in a league organised by newly formed governing body the British FPV (First Person View Racing Association).
The Limitations
The Limitations

Australian Association of Unmanned Systems

Airborn Insight
Drone + Data Specialists

EXAMPLE
Other Considerations
Drones lack capacity and endurance

For the world to truly benefit from Drones and their capability, an opportunity exists to increase their capacity to carry and overall endurance to deliver the next class of payload (50kg+).
World Drone Challenge
World Drone Challenge
Calling all sponsors!

The World Drone Challenge is looking to attract teams from around the globe to challenge and change existing technology. To do this we are aiming to provide class-leading prizes to attract and retain talent within Queensland.

- **Major prize** - $100,000 in cash or research grants
- **Amateur class** - $25,000
- **High school class** - $10,000
- **New Technology class** - $15,000

Friends of the Challenge
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