

QSA Response to the Public Consultation on Australia's Drone Security

The Queensland Sports Aviators (QSA) recognise that drone technology has the potential to deliver significant benefits to Australia, including in emergency response, infrastructure monitoring, logistics, environmental management, and consumers. We are not opposed to technological progress, nor are we opposed to drones themselves. In fact, several members of our organisation actively operate drones professionally or recreationally.

However, the rapid expansion of drone operations into shared public airspace raises major safety concerns for existing airspace users, as well as broader privacy, environmental, mental health, and accessibility issues that require serious public discussion and careful regulation.

The current consultation paper acknowledges concerns relating to noise and privacy, yet explicitly excludes these matters from the scope of the consultation. We believe this is a major weakness of the consultation process.

It is difficult to ask the Australian public for their views on drone operations while excluding some of the issues that most directly affect everyday Australians. The impact of drones on people's ability to enjoy public spaces, maintain privacy, and experience peace and quiet is not a peripheral issue – it is central to public acceptance of widespread drone operations.

Protection of Existing Airspace Access for Recreational Aviation

QSA represents recreational sports aviation participants including paragliders, hang gliders, and light powered aircraft in S-QLD.

QSA is concerned that the progressive expansion of commercial and especially autonomous drone operations could, over time, lead to the gradual loss, fragmentation, or over-regulation of low-level public airspace that has historically been used by recreational and sports aviation participants.

Australia's existing recreational aviation communities should retain their established access to airspace G. Existing recreational aviation activities have safely operated within these environments for decades under established see-and-avoid (VFR) principles, and future drone integration frameworks should complement rather than undermine these operating practices.

QSA is also concerned about excessive reliance on autonomous detect-and-avoid technologies as a substitute for current see-and-avoid (VFR) principles used to achieve separation between aircraft. Recreational aircraft such as paragliders and hang gliders can be difficult to detect reliably due to their small physical profile, low speed, limited electronic conspicuity, and operations in complex terrain (including close to the ground).

The Government and CASA have also identified electronic conspicuity technologies such as ADS-B as potential tools to support separation between drones and existing airspace users. However, this ADS-B is unlikely to provide an effective solution for our airspace users: ADS-B relies on line-of-sight radio propagation and therefore depends on adequate aircraft altitude

and sufficient ground-receiver coverage to avoid terrain masking and signal loss. These limitations are particularly relevant for low-flying drones operating under current 400ft limits, as well as paragliders and hang gliders operating in close proximity to terrain.

In addition, ADS-B was primarily developed for relatively structured aviation environments involving limited numbers of cooperative aircraft, rather than dense low-altitude mixed-use environments. Issues relating to spectrum congestion and scalability, particularly on 1090 MHz, are already being discussed internationally.

Accordingly, autonomous drone systems should not be assumed to provide universally reliable separation from existing recreational airspace users, particularly within low-level Class G airspace environments where see-and-avoid principles continue to play a central role.

Safe Integration with Existing Recreational Aviation

One of the most important concerns for QSA is the growing risk of collisions between drones and existing airspace users. The sports aviation community represented by QSA (e.g., paragliders, hang gliders, and light powered aircraft) are very vulnerable in the event of a collision with a drone.

Unlike larger powered aircraft, paragliders and hang gliders:

- Operate at relatively low airspeeds;
- often fly in mountainous or coastal terrain where drones are increasingly used;
- frequently operate without electronic conspicuity and are difficult to see;
- frequently operate without the structural protection available in enclosed aircraft, and
- can suffer catastrophic structural failure even in collisions with relatively small objects.

A collision between a drone and a paraglider or hang glider could easily result in serious injury or death.

Under existing aviation regulations, drones are required to give way to crewed and unpowered aircraft, and this is also necessary because of the low speed of free-flight operations involving paragliders and hang gliders.

Accordingly, QSA strongly recommends that:

- paragliding launches, hang gliding launches, soaring sites, and commonly used free-flight routes be classified as drone no-go zones where drones cannot ensure separation according to see-and-avoid principles, with strict operational restrictions established around these areas;
- drone operators be required to maintain awareness of recreational aviation activity;
- future unmanned traffic management systems incorporate recreational aviation users rather than focusing solely on commercial drone operations.

The current consultation paper does not sufficiently address interactions between drones – commercial and recreational – and existing recreational airspace users.

Drone Identification and Public Transparency

One major security concern is that drones can currently operate anonymously and illegally with little practical ability for members of the public or other airspace users to identify operators. The regulatory measures discussed in this consultation – including operational restrictions, no-go zones, enforcement powers, and collision-avoidance obligations – will be difficult or impossible to enforce effectively if drones can continue to operate anonymously.

QSA therefore strongly supports mandatory remote identification and position broadcasting requirements for drones capable of causing serious harm to members of the public or vulnerable airspace users such as paragliders and hang gliders.

At a minimum:

- drones should be required to be registered to identifiable owners before operation;
- drones should automatically broadcast identity and position information during operation;
- the location of active drones should be visible through publicly accessible tracking systems, except where restricted for legitimate national security or law-enforcement reasons.

Importantly, such a system could largely be implemented through equipment standards and sales requirements, for example by permitting the sale only of drones equipped with mandatory registration and automatic broadcasting capability. This would help establish the framework without imposing substantial costs on Australian taxpayers (noting that current flight tracking platforms already display the live position of all aircraft equipped with ADS-B, OGN/FLARM and apps such as XCTrack, skylines via the cellular network; see e.g., www.puretrack.io).

These measures would substantially improve accountability, enforcement capability, public trust, and collision avoidance.

Geofencing and Restricted Airspace

QSA supports the use of mandatory geofencing and operational restrictions around safety-critical areas where drone operations may create unacceptable risks.

The consultation paper appropriately identifies a number of sensitive locations including airports, emergency operations, critical infrastructure, and densely populated event areas. However, it gives insufficient consideration to uncontrolled recreational aviation environments such as non-controlled airfields, paragliding and hang gliding launch sites, soaring areas, and commonly used free-flight routes.

These locations are often characterised by low-speed aircraft operations, limited electronic conspicuity, operation close to terrain, and a heavy reliance on see-and-avoid principles.

As current drone technologies are unlikely to reliably mitigate potential conflicts within these environments, QSA considers mandatory geofencing and/or strict operational restrictions necessary unless and until autonomous visual flight rule (VFR) capabilities of drones demonstrably reach a level comparable or superior to those of human pilots.

Accordingly, QSA recommends that these protections apply in particular to:

- uncontrolled airports and airfields;
- paragliding and hang gliding launch sites;
- commonly used soaring areas and free-flight routes;

Information regarding restricted areas should be:

- publicly accessible
- easy to understand;
- integrated into drone operating software; and
- distributed in formats that support timely updates to drone systems.

Changes to restricted areas should also include reasonable notice periods to allow drone operators to update systems and maintain compliance.

Concerns Regarding Drone Detection Technology

The consultation paper places significant emphasis on drone detection technologies. QSA believes expectations regarding these systems should remain realistic.

Drone detection systems may successfully detect manned drones or drones with a significant payload which may convey benefits in high-security environments such as airports, prisons, major public events, and for border protection. However, for broader public deployment, the long-term effectiveness of universal detection systems may become increasingly challenging as drone technologies continue to evolve in size, autonomy, operating profile, and resistance to detection methods.

For this reason, QSA believes resources should focus primarily on:

- accountability;
- registration;
- remote identification;
- geofencing;
- operator education;
- and enforceable operational rules.

These measures are likely to be more sustainable and cost-effective than attempting to establish universal detection systems, which may struggle to keep pace with rapidly evolving drone technologies and could impose substantial additional costs on taxpayers.

Cybersecurity and System Integrity

Drone manufacturers should be required to implement reasonable safeguards against:

- hostile takeover of drones;
- signal spoofing;
- malicious interference;
- and loss-of-control scenarios.

Where signal integrity or navigation reliability is compromised or where abnormal operating conditions are detected, drones should default to fail-safe behaviours such as controlled landing or safe return-to-home procedures (unless the latter can interfere with existing traffic).

Such safeguards would help reduce the risk of drones being hijacked or misused for malicious purposes, while also improving accountability and the enforceability of penalties for rogue operations – including operations endangering other airspace users.

Enforcement and Penalties

Regulations are only effective if they can be enforced.

QSA supports the introduction of proportionate enforcement mechanisms for unlawful or unsafe drone operations, including:

- fines;
- licence suspensions for commercial operators;
- demerit-style systems for repeated serious breaches;
- confiscation powers in cases involving reckless endangerment;
- and mandatory retraining where appropriate.

At the same time, enforcement powers should remain proportionate, transparent, and subject to appropriate safeguards and review mechanisms.

Public confidence in the regulatory framework will depend on penalties being applied fairly, consistently, and in proportion to the seriousness of the offence. This is particularly important for existing aviators, who are more likely to directly observe unsafe operations, experience the consequences of enforcement failures, or become involved in related incidents.

Government agencies should also remain accountable for errors. Where lawful drone operations are adversely affected by incorrect enforcement actions (for example, inappropriate fines, operational disruption, or the mistaken disabling or destruction of lawfully operating drones), affected operators should have access to fair review and compensation mechanisms.

Counter-Drone Capability

Appropriate government agencies – including police, airport security, and defence organisations – will probably require effective and proportionate counter-drone capability for genuinely high-risk situations.

This may include:

- interceptor drones;
- jamming capability; and
- directed-energy systems;

However, from an aviation safety perspective, the deployment of such systems also creates potential risks for existing airspace users. Particular caution is required where counter-drone systems may affect GNSS reception, radio communications, electronic conspicuity systems, or the safe operation of nearby crewed aircraft. Any deployment of active counter-drone capability should therefore include careful consideration of secondary aviation safety risks and airspace coordination requirements.

Consideration should also be given to ensuring that adopted approaches are practical, proportionate, and cost-effective, as the Australian public and aviators alike are likely to expect security solutions that provide strong security solutions without creating unnecessary financial burdens.

Conclusion

Drone technology will undoubtedly become an increasingly important part of Australia's future aviation landscape. However, the expansion of drone operations must not occur at the expense of the safe operation, established access rights, and continued viability of existing airspace users and recreational aviation activities.

QSA supports a balanced regulatory approach that enables innovation while maintaining strong protections for aviation safety, operational accountability, and the practical coexistence of drones with existing users of uncontrolled airspace.

The current consultation paper is an important first step. However, greater consideration should be given to the operational realities of recreational and sports aviation, particularly within uncontrolled and low-level shared airspace environments where see-and-avoid principles are used to ensure separation.

On this note, we would also like to express some concern regarding the relatively short duration of the consultation period. Meaningful consultation on major changes to Australia's future drone regulatory framework requires sufficient time for community organisations, recreational aviation groups, local communities, and individual members of the public to review the material, consult internally, and prepare informed submissions. We would therefore be very grateful for longer consultation periods for future consultations of this nature.

In addition, many aspects of the consultation paper were – perhaps necessarily – framed in broad or highly conceptual terms, without sufficient detail regarding how the proposed measures would operate in practice. We would like to ask that relevant stakeholders such as other recreational aviation users will be consulted on important matters that will affect us, when details about enforcement thresholds, penalties, operational definitions, accountability mechanisms, appeal rights, and proportionality safeguards are discussed.

QSA believes it would be valuable for the Australian public and affected stakeholders to be consulted again once more detailed regulatory proposals and implementation frameworks have been developed, so that feedback can be provided on concrete measures as well as broader principles.

QSA appreciates the opportunity to provide input into this important consultation and looks forward to continued engagement to support the safe integration of drones into Australia's shared airspace environment.

Kind regards,

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President

Queensland Sports Aviators (QSA)