



Australian Government

Department of Infrastructure, Transport,
Regional Development, Communications and the Arts

EMERGING AVIATION TECHNOLOGY

Uncrewed Aircraft Systems (UAS) Traffic Management (UTM)

A framework for UTM in Australia and the
actions we are taking

December 2024



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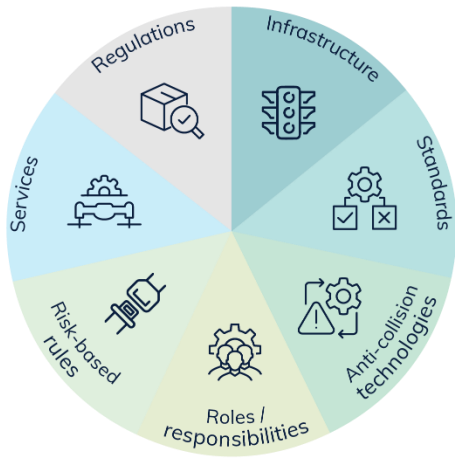
Glossary

AAA	Automated Airspace Authorisations
AAM	Advanced Air Mobility
AAPS	Australian Airspace Policy Statement
ADS-B	Automatic dependent surveillance-broadcast
AFAF	Australian Future Airspace Framework
API	Application Programming Interface
ATM	Air Traffic Management
ARMS	Airspace Risk Modelling System
BVLOS	Beyond Visual Line of Sight
CASA	Civil Aviation Safety Authority
DDRP	Drone Rule Digitisation Project
DITRDCA	Department of Infrastructure, Transport, Regional Development, Communications and the Arts (or the department)
FIMS	Flight Information Management System
ICAO	International Civil Aviation Organization
NM	Nautical Mile
NOTAMs	Notices to Airmen
Remote ID	Remote Identification
RPA	Remotely Piloted Aircraft
RPAS	Remotely Piloted Aircraft Systems
SORA	Specific Operations Risk Assessment
UAS	Uncrewed Aircraft Systems
USS	UAS Service Supplier
UTM	UAS Traffic Management

At a glance

What is UTM?

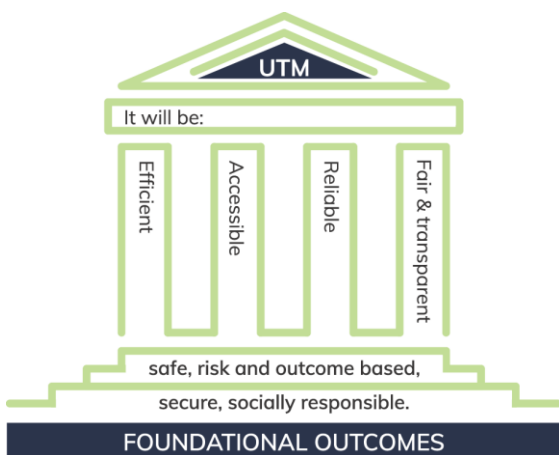
Just like road traffic management, Uncrewed Aircraft System (UAS) Traffic Management (UTM) is made up of many aspects.



Australia is in the early stages of growing its UTM Ecosystem. It won't be a 'one-size-fits all' approach.

The UAS industry is still growing and has many different uses, and some places will naturally be busier than others.

Risk-based government action will be taken where needed to make the UTM Ecosystem safe, secure and socially responsible.

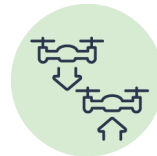


Our approach to building UTM will be:

- Modular
- User focused
- Iterative
- Market driven

What is the UTM Action Plan

The UTM Action Plan outlines government actions across 4 focus areas to help grow Australia's UTM.



Separation and airspace integration
Understanding and managing the risk of mid-air collisions.

Better regulation

Ensuring our rules are focused on real outcomes, not on ticking a box.



Fit-for-purpose regulatory approvals
Leveraging UTM to reduce red tape and approval processing times.

Improved compliance, enforcement and security

Helping users participate with confidence, while ensuring rule breakers are caught.



There are 7 key projects underway between now and 2026

- Flight Information Management System
- UAS Service Suppliers
- Airspace Risk Modelling System
- Digitising Non-Safety Drone Rules
- Drone Identification & Registration
- Coordinated Drone Detection Data Strategy
- Automatic Dependent Surveillance Broadcast (ADS-B)

This is just a first step among many. We will review progress in 2026 and use lessons learned to inform the next stage in implementing UTM in Australia.

Introduction

Why we need Uncrewed Aircraft Systems (UAS) Traffic Management (UTM)...





Drones are a rapidly growing industry

Still considered an industry in the early stages of development¹, drone and UAS-use will continue to grow rapidly in the future as more market areas open up, including:

- E-commerce and deliverables
- Government and community services
- Advanced air mobility (AAM), including airport taxi trips, other taxis and inter-city trips
- Agriculture
- Mining and resources
- Defence
- Infrastructure inspections.

However, just as more cars lead to road congestion and an increased risk of collision, the growth in drone and AAM use will lead to ‘congested airspace’ and a higher safety risk. We need a new approach to managing increased UAS use – a UAS traffic management (UTM) ecosystem – to keep our skies safe and to ensure efficient and responsible drone operations.

The emerging aviation sector is very different to conventional aviation

 Access	 Autonomy	 Maturity	 Culture
<p>Conventional High entry costs Pilots must be tested and certified</p> <p>Emerging Lower entry costs Recreational pilots can fly without certification</p>	<p>Conventional Human centric Control by air traffic personnel and pilots</p> <p>Emerging Highly digitised Control by automated systems and remote operators</p>	<p>Conventional International standards Well established suppliers and operators</p> <p>Emerging No international consensus New & developing businesses, operating models and products</p>	<p>Conventional High compliance Clear responsibilities Iterative improvements</p> <p>Emerging Unknown level of compliance Unclear responsibilities Rapid changes</p>

A traditional approach to air traffic management will be insufficient as the two sectors – conventional aviation and emerging aviation – are very different.

...while noting that the UAS industry is not ‘one size fits all’

This document applies primarily to commercial and beyond visual line of sight (BVLOS) drone use as it is this sector of the UAS industry that most needs UTM. That said, the UTM Action Plan does include some actions that will benefit recreational users as well. See *Attachment A – UTM and recreational users*.

¹ Deloitte Economics *Economic Benefit Analysis of Drones in Australia*, 2020

Context

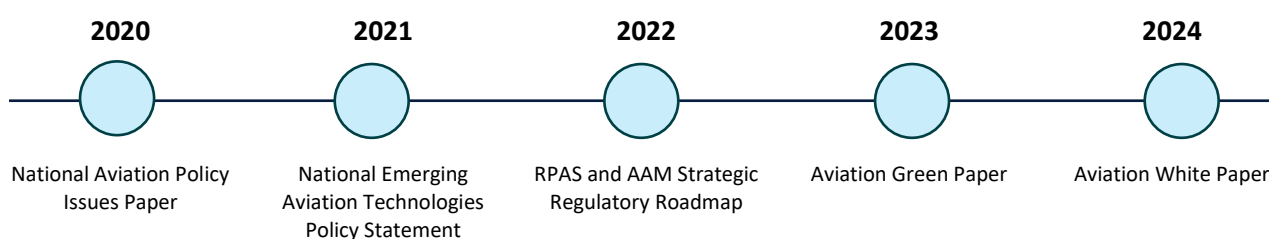
The Australian Government released the Aviation White Paper: Towards 2050 on 26 August 2024.

The Aviation White Paper presents the Australian Government's vision for the aviation industry to 2050 and is available at www.infrastructure.gov.au/infrastructure-transport-vehicles/aviation/aviation-white-paper

In the White Paper, the Australian Government committed to release a UTM Action Plan in 2024. This document fulfils this commitment.

This document presents a high-level policy framework on how we should approach UTM in Australia. It draws on a range of past consultations (see Figure 1) and was developed alongside the Aviation White Paper.

Figure 1: Past consultations



What the Aviation White Paper says about UTM

The Australian Government is committed to a safe, open, competitive and commercial market for uncrewed air traffic management.

The Australian Government will support an open market for UTM, with private providers delivering services directly to drone operators, which is expected to drive innovation in the way services are tailored and delivered to customers. This differs from Australia's approach to conventional air traffic management, where Airservices Australia is the monopoly service provider for civil aviation.

UTM ecosystem development will initially focus on services for drones, with future planning to follow for the development of UTM services for AAM to coincide with the expected launch of AAM operations from 2027 onwards.

Australia's UTM ecosystem will balance many aspects.

- Policy Outcomes: it will balance **safety, risks and outcomes, security and social responsibilities**.
- System Aspects: it will balance **efficiency, accessibility, reliability, fairness and transparency**.

UTM services will only be mandated where they are necessary to ensure safe, efficient and equitable airspace management.

Australia's UTM ecosystem will evolve as technology improves, user demand increases, and as government and industry form a better understanding of how drones and other new aviation technology are being used.

The government will take an iterative and modular approach to UTM rollout to learn lessons early without overinvesting in solutions that may not remain appropriate in the long term.

Related policies

There are many other policies relevant to UTM. These include, but are not limited to:

Advanced Air Mobility (AAM) Strategy

The Australian Government will coordinate a national strategic approach to AAM (see *Attachment B*). The AAM Strategy and associated Action Plan will outline a pathway toward the gradual adoption of AAM in Australia, providing the investment certainty to support new jobs, technology development and infrastructure planning before AAM operations commence in the coming years.

Australian Airspace Policy Statement (AAPS)

The AAPS provides guidance to the Civil Aviation Safety Authority (CASA) on the administration of Australian airspace.

Under the Airspace Act 2007, the AAPS must be reviewed every 3 years. The current AAPS came into effect on 19 November 2021. The next AAPS is expected in 2025.

Australian Future Airspace Framework (AFAF)

Due for release in 2026, the AFAF will be a transparent, consistent and scalable method to administer Australian airspace. The AFAF will use an evidence and risk-based approach combined with collision risk modelling, to develop a long-term strategic airspace implementation plan, to ensure the Australian airspace architecture is safe for all airspace users.

The AFAF will support the implementation of advanced ATM and UTM technology solutions and will take into account new technology that may be applied to achieve safety outcomes and broader government policy.

RPAS and AAM Strategic Regulatory Roadmap

The Remotely Piloted Aircraft System (RPAS) and Advanced Air Mobility (AAM) Strategic Regulatory Roadmap outlines CASA's approach for drone and AAM safety regulations over the next 10 to 15 years. CASA will update the roadmap before the end of 2024.

Roadmap activities support the provision of regulatory guidance for the implementation of the drone and AAM activity in the areas of aircraft and aircraft systems, airspace and traffic management, operations, infrastructure, people and safety.

National Air Navigation Plan

The International Civil Aviation Organization (ICAO) requires Australia to have a National Air Navigation Plan outlining the steps we are taking to evolve our air navigation system consistent with our own, global and regional planning and priorities.

Australia's National Air Navigation Plan reflects our priorities and ongoing initiatives for evolving our air navigation system, as well as its regulatory structure, governance and key stakeholders.

National Aviation Safety Plan

The National Aviation Safety Plan details Australia's commitment to continuously improve aviation safety management capabilities to reduce aviation operational safety risks. It establishes Australia's safety goals, objectives, performance indicators and enhancement initiatives to capture how we will prioritise and respond to safety activities and actions to continually improve and enhance Australia's aviation safety performance.

The UTM Ecosystem Framework

What is UTM?

UAS Traffic Management is an ecosystem for the management of UAS, commonly known as drones. UTM is distinct from, but complementary to, traditional Air Traffic Management systems².

The UTM ecosystem includes the **services, regulations, roles and responsibilities, infrastructure, information architecture** and **data exchange protocols or standards** for enabling better management of UAS operations.

Development of the UTM ecosystem is essential to support growth of the UAS industry, and effectively manage the risks and community impacts associated with drones and other UAS. It also carefully considers conventional aviation which, while not UAS, will benefit from and contribute to the UTM ecosystem for the shared objective of ensuring our skies remain safe.

The primary objective of UTM is to keep our skies safe by mitigating the risk of in-air collisions.

More than just in-flight

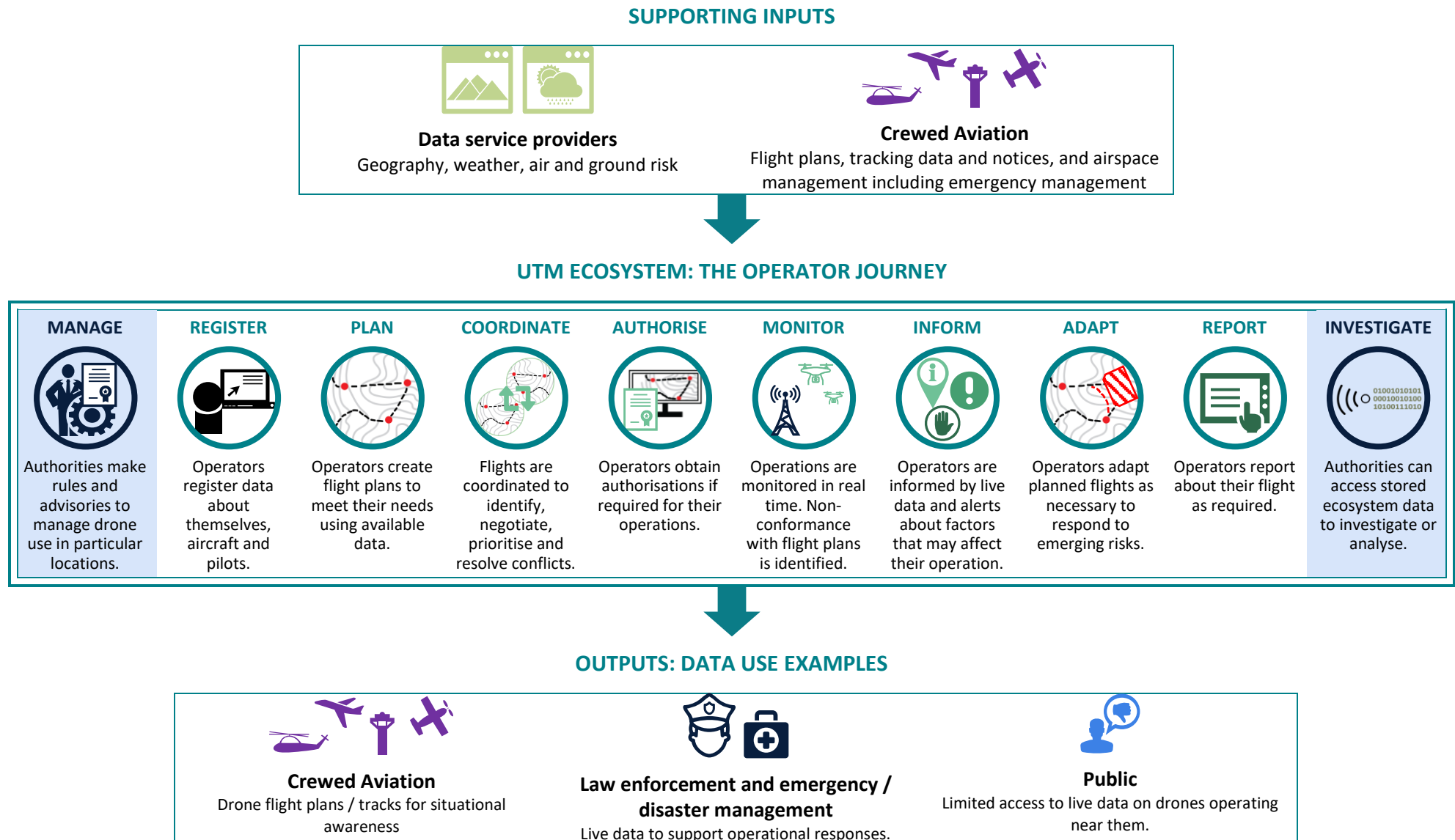
A UTM ecosystem encompasses all the rules, regulations, standards and other elements that underpin safe UAS operations across each stage of operation:

- **PRE-FLIGHT** – rule management, drone registration, flight planning, coordination, and authorisations
- **IN-FLIGHT** – monitoring, informing and adapting
- **POST-FLIGHT** – reporting and investigations.

Various inputs go in to supporting the UTM ecosystem, such as enabling data like weather, geography and population data, or flights plans and alerts from crewed aviation. Along with supporting UAS operations, the UTM ecosystem also provides information to support crewed aviation, law enforcement, the public, and emergency and disaster management.

² They are separate at this stage. As technology continues to grow, we may get to a point where we are able to fully integrate conventional air traffic management systems and UAS traffic management into one system but this is not for the immediate future. This position is consistent with the *ICAO Unmanned Aircraft Systems Traffic Management (UTM) – A Common Framework with Core Principles for Global Harmonization (Edition 4)*

Figure 2: UTM ecosystem on a page







UTM services by phase

Australia is not alone in grappling with the growth of UAS and the need to develop a UTM ecosystem.

The International Civil Aviation Organization (ICAO) has been working with Member States and the aviation industry to develop direction and guidance for harmonising UAS regulatory activities. ICAO’s *Unmanned Aircraft Systems Traffic Management (UTM) – A Common Framework with Core Principles for Global Harmonization* document lists the core capabilities and services of a ‘typical’ UTM system.

We have mapped these ICAO Services out against the Operator Journey phases from the previous section, shown below.

Operator Journey Phases		ICAO Services ³
 <h3>Manage</h3> <p>In this phase, authorities make rules and constraints that are simple and consistent that the ecosystem can efficiently comply with. Rules can be for a variety of reasons, including managing safety risks, security risks or environmental impacts.</p> <p>These rules or constraints could include limiting drone use in specific locations on a temporary or permanent basis, providing advice to operators or setting consistent data standards.</p>	Restriction management	
 <h3>Register</h3> <p>In this phase, those intending to participate in the UTM ecosystem demonstrate that they understand and will comply with all necessary rules and regulations. Potential operators register their drones, pilots are licenced, UAS service suppliers are accredited, and data suppliers or sources are certified.</p> <p>Information about operators, aircraft and pilots is registered and accessible to support UTM ecosystem services. This may include:</p> <ul style="list-style-type: none"> • Operator certification and other details (commercial, emergency services etc.) • Pilot qualifications (accreditation, licensing etc.) • Aircraft registration (linking individual aircraft to operators). • Performance characteristics of aircraft or aircraft components <p>Data can be compared and verified with trusted data sources.</p>	Registration	
 <h3>Plan</h3> <p>In this phase, operators plan flights to meet their needs – such as food delivery, infrastructure inspection or event surveillance.</p> <p>Planning tools can use a wide range of data sources to ensure effective planning. Flight plans can be a specific route or for operations in a designated area. Flight plans are coordinated with the plans of other airspace users to ensure safety.</p>	Aeronautical information Discovery Flight planning Mapping Meteorological Restriction management	
 <h3>Coordinate</h3> <p>In this phase, planned flights are compared with other flight plans in the area and both UAS operators are notified where a conflict exists. If operations are unable to</p>	Strategic deconfliction	

³ ICAO’s *Unmanned Aircraft Systems Traffic Management (UTM) – A Common Framework with Core Principles for Global Harmonization (Edition 4)*

safely integrate tactically, a negotiation and prioritisation process resolves conflicts before flight occurs.



Authorise

Operators gain approvals needed to operate in a specific area. This can include safety related approvals (such as flying within 3 nautical miles (NM) of a controlled aerodrome, or area approvals to fly BVLOS), or non-safety approvals (such as permission to fly in a national park, or fly near a secure facility).

For some approvals, this process may occur before the flight planning phase – e.g. an enduring authorisation to conduct multiple flights in an area over a specific time period. Other authorisations may require detailed flight plans to be generated and submitted prior to approval.

Airspace authorization



Monitor

UAS flights are tracked in real time. This can use data from cooperative surveillance (e.g. Remote ID), or non-cooperative drone detection systems. Flight data can be analysed to determine non-conformance with flight plans, or other potential breaches.

Activity Reporting
Conformance monitoring
Identification
Tracking and location



Inform

Operators can access data and are alerted to risks or changes that may affect their operation.

This may include data such as conventional aviation flight plans, conventional aviation surveillance (e.g. ADS-B), emergency constraints or advisories, tracking data from other UAS, potential non-conformant UAS, or significant weather changes.

Tactical information regarding manned aircraft
Conflict advisory and alert
Restriction management



Adapt

Operators are alerted to risks or changes in conditions that may affect their operation. Where necessary, operators adapt their flight plans mid-flight to account for changing conditions.

This can involve automated new flight plans, or pre-planned contingencies (e.g. emergency landings, maintaining position, return to base etc.). Changes to flight plans are coordinated tactically with other affected airspace users.

Dynamic reroute



Report

Operators fulfil the reporting obligations related to their flight.

Reports can be generated using available ecosystem data about the flight. For example, flights with safety incidents may need to be reported to the Australian Transport Safety Bureau (ATSB) or CASA.



Investigate

A range of users can access ecosystem data to support a range of purposes. This may include data about specific flights or aggregated data. Purposes include regulatory compliance; law enforcement; ecosystem performance; and research.

Conformance monitoring
Identification
Registration
Tracking

Principles underpinning Australia's UTM ecosystem framework

Australia's UTM ecosystem aims to balance many aspects.

- From a policy perspective, it will balance **safety, risks and outcomes, security** and **social responsibilities**.
- From a system perspective, it will balance **efficiency, accessibility, reliability, fairness** and **transparency**.

In Australia, safety will always remain the aviation sector's top priority, including emerging aviation technologies such as drones. However, this does not mean that UTM will place the same restrictions or limitations on all drones or that all drone users will need to meet the strictest airspace requirements.

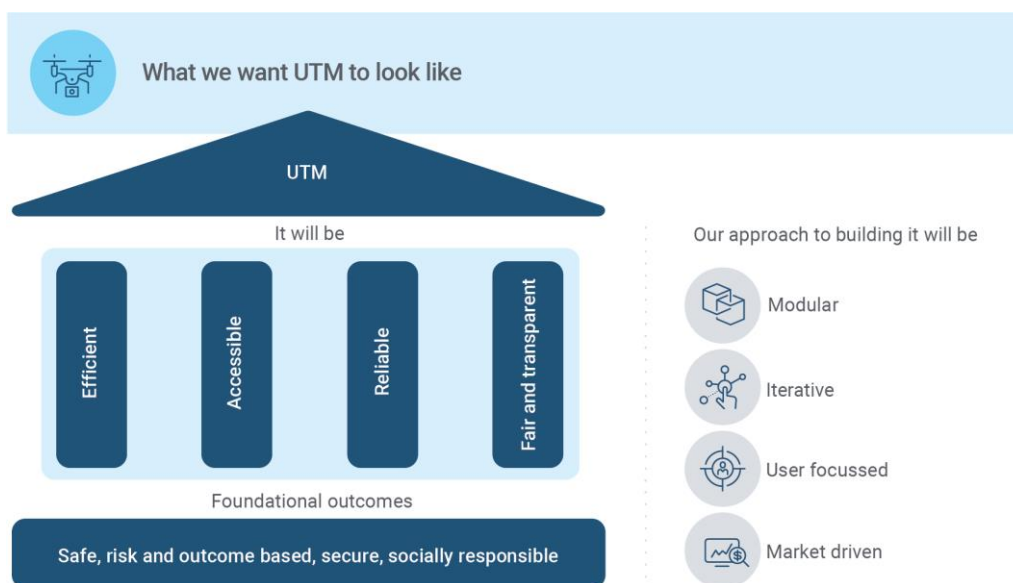
Similar to road rules, UTM will be tailored to introduce tighter controls in higher risk environments, and fewer restrictions where risks are lower.

Just as there are graded ways to manage traffic depending on risk (e.g. traffic lights for high risk intersections; roundabouts, stop signs and give way signs for lower risk intersections; and speed limits depending on road types), in a similar manner UTM's safety management will be risk-based and tailored for different locations or drone usage.

The UTM ecosystem will evolve over time in response to technology advances, increased drone use, airspace risks and other factors. This means the government's approach to UTM will need to be flexible and adaptable:

- **Modular:** Different services and data can be developed and improved independently.
- **Iterative:** Services, data, standards and regulations will be developed iteratively, allowing continuous improvement based on real world experience.
- **User focused:** Efforts will focus on developing the ecosystem to deliver increasing value for users.
- **Market driven:** The UTM ecosystem approach will provide a framework for industry to develop services and solutions that will integrate with other parts of the ecosystem.

Figure 3: Principles underpinning our UTM ecosystem



As technology and drone capabilities and challenges are developing rapidly, it is difficult to forecast too far into the future. We want to ensure our actions are informed and that there will be valuable lessons to learn in this initial tranche of actions that will allow flexibility and shape future actions.

UTM Action Plan



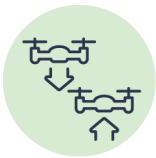
UTM Action Plan

This UTM Action Plan sits under the UTM Ecosystem Framework and details key actions to be delivered by government as we move towards establishing the UTM ecosystem in Australia.

As technology, drone capabilities and challenges are developing rapidly, the Action Plan only focuses on initiatives to be delivered from now to mid-2026. Lessons learned from delivering these initiatives will then inform further actions, regulations or policies.

Focus Areas

Drawing on previous work (see Figure 1), we have consulted industry and other stakeholders to identify focus areas for UTM implementation. Four key action areas have consistently been identified:



SEPARATION AND AIRSPACE INTEGRATION

Understanding and managing the risk of mid-air collisions.



BETTER REGULATION

Ensuring our rules are focused on real outcomes, not on ticking a box.



FIT-FOR-PURPOSE REGULATORY APPROVALS

Leveraging UTM to reduce red tape and approval processing times.



IMPROVED COMPLIANCE, ENFORCEMENT AND SECURITY

Helping UTM users know how they can participate with confidence, while ensuring rule breakers are caught and stopped before damage can be done.

Actions

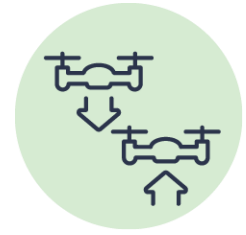
This Action Plan outlines a range of projects and workstreams planned for the next two years across government. Several touch on more than one of the four action areas, as benefits in one area often have flow on benefits in others.

For example, if a Remote Identification (ID) system was introduced, law enforcement and security agencies would better be able to identify drones that are operating illegally. Remote ID could also have a secondary benefit by enabling greater efficiency with fleet or operations management, or by generating more data about how our airspace is being used.

The cost for industry (where relevant) of accessing new government services or data products will be determined as part of the implementation of relevant actions in consultation with industry.

1. Separation and airspace integration



Understanding and managing the risk of mid-air collisions



Principles

- Safe
- Risk and outcome based
- Socially responsible

Why we need action

 <p>Challenges</p> <p>UAS operations are increasing in scale and complexity. This will lead to a greater risk of collisions between UAS and other aircraft if no action is taken. Existing regulations and technologies to minimise collision risk for UAS can often be expensive and restrictive.</p>	 <p>Opportunities</p> <p>The UTM ecosystem can help manage the risk of collision between aircraft, allowing:</p> <ul style="list-style-type: none"> • Greater scale and efficiency – more UAS operations in the same area. • Expanded airspace access – UAS can operate near crewed flights or over populated areas. • Fairness – fair and transparent processes where operations conflict.
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What will be delivered by 2026

Improved situational awareness for operations

UAS operators will be able to check their flight plans for conflicts with other planned operations by submitting their flight plan through a UAS Service Supplier (USS) to the Australian Government operated Flight Information Management System (FIMS).

Where a conflict is identified, FIMS will recommend an alternative flight path to the operator. The operator can then accept or plan their own alternative. In future FIMS updates, an operator may enter into a negotiation process with the conflicting operation to resolve the conflict. Negotiations will be consistent with prioritisation rules developed by the government in consultation with industry. However, this capability will not be available in the immediate term.

This flight plan service is being made available to operators to support their UAS operations and will help improve safety through increased situational awareness, but operators will not be required to use this service.

Table 1: Actions to deliver improved situational awareness

Type	What will be delivered	Timeframe	Responsible	Related project
Data Standard	Data specification for flight plans to support communication between USS and FIMS.	Early 2025	Airservices	FIMS/USS
Regulatory Guidance	Initial guidance on the requirements for drone-drone deconfliction. NB: This is not expected to be a regulated standard for the initial operation of the service.	Mid 2025	CASA	FIMS
ICT Capability	Implementation of FIMS-enabled UTM services to support strategic flight	End 2025	Airservices	FIMS/USS

Type	What will be delivered	Timeframe	Responsible	Related project
	coordination and situational awareness for UAS operations. Onboarding of initial USS to deliver FIMS-enabled UTM services.			
Policy	Prioritisation rules to resolve conflicts.	2024-25	DITRDCA	FIMS
Policy	Cross Agency Working Group to advise Government on implementing a universal ADS-B mandate across Australian airspace.	Report by late 2025	DITRDCA	ADS-B

A closer look: What is a USS?

A USS is a software application that provides services within the UTM ecosystem.

The specific requirements for a USS depend on the service offered. Basic services, like displaying maps for information only, may have fewer requirements than advanced services, such as Automated Airspace Authorisation.

As the UTM ecosystem evolves, new services will emerge, and USS developers can choose which services to offer, each with its own set of requirements. USSs will be oversighted to ensure that all applicable requirements are met.

Service suppliers for uncrewed aviation that do not provide UTM ecosystem services will not be considered a USS, although they may need to meet other aviation safety regulations as appropriate.

Implementing Australian airspace architecture

CASA is developing the Australian Future Airspace Framework (AFAF), which will be Australia’s primary reference source for strategic airspace principles, future operations and strategic change planning. It will include a long-term implementation plan for the deployment of solutions to address evolving user needs in airspace classes across Australian administered airspace.

Table 2: Actions to implement Australian airspace architecture

Type	What will be delivered	Timeframe	Responsible	Related project
Policy	AFAF released	2026	CASA	FIMS

Future Directions

Integration of data from conventional aviation – Government will consider how to support greater integration of flight plans and flight track data from crewed aviation into the UTM ecosystem. This is important to allow drone operators to more effectively manage airspace risks.

Data that may be integrated includes ADS-B data, flight plans submitted with Electronic Flight Bag providers or to Air Traffic Control (ATC), and flight track data from ATC.

Enhanced aviation datasets – Government will consider the aviation data needed to effectively support the UTM ecosystem. While UAS operations may require different or enhanced data compared to traditional airspace users, this must be aligned with broader aviation information and systems.

Separation/segregation standards – Government will consider regulating minimum separation standards for UAS-UAS deconfliction and UAS-crewed aircraft deconfliction.

Conformance monitoring – Government will consider services that track UAS flights and their conformance with flight plans, alerting other aircraft when a UAS is non-conformant with their intended flight plan.

Tactical deconfliction – Government will consider services to support in-flight deconfliction of UAS operations and how these services are delivered. Tactical deconfliction services will help improve safety and coordinate flight paths when unexpected circumstances require UAS to adapt their flight plans during flight.

Mandates – In the future, it may become mandatory for some or all drone operators to use separation services outside of controlled airspace. Use of these services will only be mandated when necessary to ensure the safe and efficient use of airspace.

2. Better regulation

Ensuring our rules are focused on real outcomes, not on ticking a box



Principles

- Risk and outcome based
- Secure
- Socially responsible

Why we need action



Challenges

Many Commonwealth and state/territory government agencies are responsible for regulating different aspects of UAS use.

- Issues include safety, security, privacy, noise, environmental impacts, protecting cultural sites.
- Lack of coordination makes it difficult for operators to understand and comply with rules.



Opportunities

Implementing UTM gives us the opportunity to:

- Clearly communicate all the relevant rules that are made by different agencies.
- Use data standards to allow USS to provide information about rules in the way that is most relevant to different operators.
- More effectively target rules based on the characteristics of the operator or aircraft.
- Clarify roles and responsibilities, and making non-safety rules consistent across the country.

What will be delivered by 2026

Digital-first drone regulation

By 2026, we will aim to have consolidated data of where different rules and regulations may apply to drone users. This will allow drone operators using a USS to more easily plan flights that are compliant with relevant rules and regulations in their area. Members of the public can also access this information via drones.gov.au.

Under the Government's Regulatory Policy, Practice & Performance Framework⁴, regulation should reflect the realities of the digital-era and adopt a 'digital-first' approach wherever possible. Part of this means making sure drone rules themselves are easily incorporated into systems or apps, rather than relying on individuals having to go to multiple places to read up on all the rules that may affect them.

Table 3: Actions to have digital-first drone regulation

Type	What will be delivered	Timeframe	Responsible	Related project
ICT	Drone Rule Digitisation Project (DRDP) will make a wide range of non-safety rules available and accessible in a digital format via an Application Programming Interface (API).	End 2024	DITRDCA	DRDP

⁴ <https://www.regulatoryreform.gov.au/priorities/australian-public-service-regulatory-reform>

Type	What will be delivered	Timeframe	Responsible	Related project
Policy	Drone Rule Digitisation Project (DRDP) will conduct a collaborative review of existing rules in the platform, and provide best-practice advice for states rule makers.	Early 2025	DITRDCA	DRDP

Future Directions

National consistency – Over the medium term, the Australian Government will work with state and territory governments to help move towards a consistent, fit-for-purpose and digital-first rules approach to address non-safety concerns. This may be underpinned by a formal agreement with states and territories.

As many of the relevant laws are the responsibility of state and territory governments, priorities for future work will rely on close collaboration with state and territory agencies, and may progress at different speeds across jurisdictions depending on resourcing and prioritisation.

3. Fit-for-purpose and efficient regulatory approvals



Leveraging UTM to reduce red tape and approval processing times



Principles

- Fair and transparent
- Accessible
- Reliable
- Efficient

Why we need action

 <p>Challenges</p> <p>Many approvals are expensive to prepare, and have high processing costs and long wait times.</p> <p>Data required to support approvals can be hard to access. Each operator is responsible for sourcing the data to support their approvals independently.</p> <p>Inconsistent application processes for non-safety approvals across jurisdictions.</p>	 <p>Opportunities</p> <p>The UTM ecosystem can help by:</p> <ul style="list-style-type: none"> • Making it easier for operators to access data that supports their applications for approvals. • Allowing operators to use credentialled data and services to mitigate risks, so each operator does not need to individually demonstrate the reliability of their services. • USS can standardise applications for many kinds of approvals, improving the quality of applications and allowing streamlined or automated processing by authorities.
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What will be delivered by 2026

Automated Airspace Authorisations (AAA)

Since 2020, CASA and Airservices have operated a trial program allowing operators to receive automated airspace authorisations within 3 NM of Adelaide Airport, Canberra Airport, Perth Airport and Sydney Airport. Since 2023, CASA also introduced the ability for operators to receive automated airspace authorisations to restricted airspace over Sydney Harbour. These initiatives have been successful in streamlining over 1,600 applications, significantly reducing cost and processing times for operators.

The UTM ecosystem will expand the trial into a full program available at all civil-controlled aerodromes, with the authorisation capability managed by Airservices through FIMS. This will expand access for UAS to airspace around controlled aerodromes and significantly reduce processing times for UAS operators in those areas.

Table 4: Actions to expand and improve automated airspace authorisations (AAA)

Type	What will be delivered	Timeframe	Responsible	Related project
Data	Expansion of AAA Trial to more aerodromes	End 2024	Airservices / CASA	FIMS
Data	Expanding AAA to civil controlled aerodromes through FIMS	End 2025	Airservices / CASA	FIMS/USS
Data	Credential checking service	2025-26	CASA	FIMS

Type	What will be delivered	Timeframe	Responsible	Related project
Planning	Create a CASA / Airservices FIMS transition plan to minimise disruptions to industry and provide certainty that automated authorisations will continue to be available	End 2025	Airservices / CASA	FIMS

Better and more accessible risk data to support assessments

As part of the assessment process for complex drone operations, CASA assesses both the risk of drones injuring persons on the ground (ground risk) and the risk of collision with other aircraft (air risk). One way it does this is through the Airspace Risk Modelling System (ARMS). Improving the data available to make these assessments will improve the reliability and consistency of CASA’s assessment processes. Providing data products to USS will also allow operators to better plan operations, reduce risk and gain approvals faster.

Table 5: Actions to improve data available to support regulatory assessments

Type	What will be delivered	Timeframe	Responsible	Related project
Data	Improvements in ground and air risk data quality leading to improved internal analysis capability within CASA	End 2025	CASA	ARMS
Data	Data artefacts related to ground risk and air risk will be available for USS or drone operators to support regulatory applications.	End 2025	CASA	ARMS
Data standard	Implementation of SORA3.0 risk data standards	2025-26	CASA	ARMS

Future Directions

Making risk assessment products or results more readily available – This could include looking at allowing external-facing portals to allow USS to utilise the capability of ARMS.

Automated assessments – Increasing the range of regulatory approvals that can be granted via USS using automated and quantitative risk assessments. This could include automatically triggering ARMS assessments in certain conditions (such as for trend monitoring, or assessing an application to operate an RPA in a volume).

Improving in-air risk assessments – This could include using alternative data sources to quickly conduct risk modelling for remote locations, or including an RPA-to-RPA collision risk component.

USS based applications for non-safety restrictions – Develop and encourage use of Application Programming Interfaces (APIs) to allow drone operators to apply for and receive relevant authorisations via their USS. This could apply to rules enacted by Commonwealth or state/territory agencies for security, environmental or other purposes.

4. Improved compliance, enforcement and security



UTM users know they can participate with confidence, while rule breakers are caught and stopped before damage can be done



Principles

- Secure
- Reliable
- Fair and transparent

Why we need action

 <p>Challenges</p>	<p>Enforcement of drone laws and regulation has several challenges:</p> <ul style="list-style-type: none"> • Detecting unlawful drone use • Identifying drone users acting unlawfully. • Investigating unlawful drone use after it was reported. • Members of the public do not know who is flying UAS around them, nor the intention of the operator. 	 <p>Opportunities</p>	<p>The UTM ecosystem provides a wide range of data that can support operational responses and investigation of UAS activities.</p> <p>Access to information about approved and lawful operations can support better targeting of resources and improve enforcement responses to non-compliant or unlawful operations.</p> <p>Public access to information about nearby UAS can reduce concerns about legitimate operations and support more informed complaints and reporting of potentially unlawful UAS use.</p>
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What will be delivered by 2026

Assessing the benefits of registration and identification

The biggest challenge to enforcing drone rules is detecting and identifying who is flying a drone. Registration can help to confirm the drone owner’s identity, and technologies such as Remote ID can make it easier to tell where drones are flying and who is flying them. Currently, only commercial operators are required to register drones and there are no requirements for Remote ID.

Introducing any new requirements or regulations for drone operators is a lengthy process that requires careful planning and analysis. Actions for the next two years will focus on assessing impacts and settling policy advice to government on what regulatory changes are required. See *Attachment C: Range of Government Intervention* for a list of possible options available.

Table 6: Actions related to registration and identification

Type	What will be delivered	Timeframe	Responsible	Related project
Policy	A Policy Impact Analysis will be developed in consultation with industry and the community to give the government the information needed to decide whether Remote ID should be mandated in Australia and to what extent	2025-26	DITRDCA	Drone Identification and Registration

Type	What will be delivered	Timeframe	Responsible	Related project
Policy	The government will investigate whether recreational drones should be registered in Australia and to what extent	2025-26	DITRDCA	Drone Identification and Registration
Data	An API will be developed to support access to drone registration data by authorised users where appropriate.	2025-26	CASA	Drone Identification and Registration

Protecting critical infrastructure from unauthorised drone use

Currently, Australia’s controlled aerodromes have drone detection capabilities that allow them to detect drones operating in the surrounding airspace. A range of other agencies also operate drone detection capabilities to better respond to unlawful drone use around other critical infrastructure sites. This technology is evolving rapidly, and work is underway to improve the detection capabilities and better make use of the data provided.

In the future, data from drone detection systems can support management of airspace in the UTM ecosystem, and data from the UTM ecosystem can make drone detection systems more effective in detecting and managing security and safety risks associated with unlawful drone use.

Table 7: Actions to protect our critical infrastructure from unauthorised drone use

Type	What will be delivered	Timeframe	Responsible	Related project
ICT	Airservices will iteratively upgrade drone detection capabilities at controlled aerodromes	From mid-2026	Airservices	Coordinated drone detection strategy
Policy	Develop a data strategy to support the integration of data between non-cooperative drone detection systems and the UTM ecosystem	Mid 2025	DITRDCA	Coordinated drone detection strategy

Future Directions

Implementation of Remote ID policy – Following the Policy Impact Analysis process, implementation of the agreed approach to Remote ID is expected to occur prior to 2030.

Recreational Registration – Identify ways in which a future scheme could best achieve its objectives without posing an undue burden on the sector.

Drone legislation – Fit-for-purpose legislation will be needed to manage emerging drone security risks. The Australian Government will consider options to introduce such legislation before 2030.

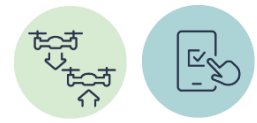
New legislation would need to ensure law enforcement and other authorities have access to appropriate technologies to effectively monitor and collect information about drone use. It would also enable sharing of data between agencies, as well as ensuring appropriate protections to guard against the inappropriate access and use of sensitive data about drone operations.

Projects



Flight Information Management System (FIMS)

Lead agency: Airservices Australia



Supporting an open market USS environment by providing back-end digital capabilities

FIMS is managed and operated by Airservices Australia (Airservices). It will allow Airservices to share flight information between uncrewed airspace users and air traffic control, and for USS to access authoritative data and UTM capabilities. In the future, FIMS will be an important digital interface to the ATM system.

With the speed of technological change and the global evolution of UTM, the allocation of some UTM services between industry and government in Australia is yet to be decided. This is why FIMS is being developed iteratively so as not to 'lock in' a UTM model that may later prove to be inefficient.

Progress already made



FIMS Prototype

In early 2021, Airservices began development of a FIMS prototype. Through this prototyping process, Airservices worked with 4 vendors through multiple development cycles to collaboratively learn about and guide the operational implementation of an Australian FIMS.

In-field trials took place at Canberra Glider Club, Bunyan, NSW, located approximately 100 km south of Canberra. During the trial, the airfield was overlaid with a simulated high-density and complex air traffic environment.

This process concluded in late 2023 and, in December 2023, Airservices signed an agreement with Frequentis Australasia for the delivery of Australia's FIMS.

Work under this Action Plan

An initial tranche of FIMS services and capabilities will come online from the end of 2025. Services will be available to operators through a USS to support their UAS operations. These services will help improve safety through increased situational awareness, but it will be optional for operators to use these services. Future mandatory adoption may be considered where necessary to ensure safe and efficient use of airspace, subject to standard regulatory impact consultation, analysis and scrutiny.

FIMS-enabled UTM services and capabilities

2025 – ongoing

From late 2025, FIMS will provide the following capabilities to enable improved flight planning and situational awareness for UAS operators:

- **Airspace authorisations at civil controlled aerodromes:** This service reduces wait times by providing digital authorisations for approved UAS operators to access airspace within the no-fly zone of Airservices' controlled aerodromes. Currently available as a trial at select airports, this capability will expand to all civil controlled aerodromes from the end of 2025, with services delivered to UAS operators through approved

USS connected to FIMS. The manual application process will still be available to operators where automated approvals are not possible.

- **Constraint management (safety rules):** This service manages and disseminates safety rules and operational and airspace restrictions relevant to UAS operators. Not all constraints will be included initially. Australia's federated government system allows state and territory governments to introduce some local laws which can impact where an RPA can operate (e.g. restrictions around corrective facilities and environmental reserves). See the project on *Digitising Non-Safety Drone Laws*.
- **Strategic flight coordination and situational awareness:** FIMS will provide capabilities to enable strategic flight coordination and situational awareness for UAS operations. This will be available for voluntary participation across Australia. The flight planning capability will include the ability for UAS operators to be alerted about overlapping flight plans, consider alternative flight plan suggestions where there is an overlap and to notify operation commencement and conclusion to the UTM ecosystem.
- **Air traffic management interface:** FIMS will provide the link between the traditional air traffic management environment and the UTM ecosystem. Initially, this interface will be human-in-the-loop (i.e. the human is involved in making decisions) and iteratively develop toward human-on-the-loop (i.e. the human monitors decisions made by computer systems) as the aviation ecosystem matures.
- **Initial conformance monitoring capabilities:** To inform the development of future UTM ecosystem capabilities, activities will be undertaken to assess and understand monitoring and alerting of non-conformance within the UTM ecosystem. This aims to assist UAS operators in adhering to approved flight plans and help build a compliance picture to support increased access to specific areas of airspace. This capability cannot be provided by FIMS alone, and Airservices will work with industry to guide and develop these capabilities.

Fit-for-purpose aviation data

2025 - ongoing

Airservices will explore ways that FIMS may provide tailored digital aviation datasets to USS to better support the UTM ecosystem. This may include more detailed data about aerodrome boundaries or digitised temporary Prohibited/Restricted/Danger areas.

This would occur iteratively and need to remain consistent with broader aviation data processes and systems.

Supporting Workstreams

Australian Future Airspace Framework – *Assessing and allocating airspace*

Lead agency: CASA

Timing: 2026

Still under development, the Australian Future Airspace Framework (AFAF) will be Australia's primary reference source for strategic airspace principles, future operations and strategic change planning. It will include a long-term implementation plan for the deployment of solutions to address evolving user needs in airspace classes across Australian administered airspace.

The AFAF will guide the approach for:

- the apportionment and balance of responsibility to meet safety objectives and accountabilities in the provision of UTM services.

- the spectrum of safety mitigations, including for example when to apply a common system-wide safety layer or instead adopt case-by-case mitigations
- a long-term plan and timetable for the transition towards a combined airspace traffic management model to enable full integration of drones, AAM and traditional airspace users where necessary.

Airspace prioritisation - Deciding who gets 'right of way'

Lead agency: Department of Infrastructure, Transport, Regional Development, Communications and the Arts

Timing: 2024-25

At present, most drones fly in uncontrolled airspace and some are operated beyond visual line of sight (BVLOS). As drone use increases, Australia will get to the stage where multiple BVLOS operators want to operate in the same location. But who will get to decide who has 'right of way'?

The Department of Infrastructure, Transport, Regional Development, Communications and the Arts (the department) is the Commonwealth department responsible for setting 'airspace prioritisation' rules.

In 2024-25, the department will work with industry through the Emerging Aviation Technologies Policy Forum⁵ to determine an initial set of airspace prioritisation rules for multiple BVLOS operations.

Automated Airspace Authorisation Trial

Lead agency: CASA and Airservices

Timing: end 2024

The current trial, which provides approved UAS operators digital authorisations to access airspace within 3 NM of certain civil controlled aerodromes, will remain in effect until FIMS and USS are implemented within the UTM ecosystem.

During this time, the trial will be expanded to include additional aerodromes, with data and lessons learned from this trial informing a fully operational capability.

Determining costs and pricing

Lead agency: Airservices and CASA

Timing: by end 2025

Airservices and CASA will work with industry during the process of setting charges for accessing UTM ecosystem services and data products. Pricing levels will be set in line with Airservices' legislative obligations overseen by the Australian Competition and Consumer Commission and CASA's obligations under the Australian Cost Recovery Guidelines.

⁵ www.drones.gov.au/policies-and-programs/consultation

Capability for UTM services to check operational credentials

Lead agency: CASA

Timing: 2025-2026

In order to service the needs coming from digital authorisation, UTM services will require the ability to check if an operator has appropriate:

- Permissions
- Approvals
- Certification
- Licencing
- RPAS Registration

CASA will undertake to provide a service to the UTM ecosystem that interfaces with its internal systems that hold information about personnel licencing, an organisation's operational privileges and the drone registration database. This capability will ensure that an entity is permitted to make requests for certain operations.

Future work

FIMS will be developed iteratively. The initial capabilities planned for 2025 will establish a foundational infrastructure that will evolve to meet changing industry needs.

The development of further FIMS' capabilities will be subject to government policy authority and potential regulatory reform, but is expected to support:

- **Increased access to controlled airspace** – Enhanced automated airspace authorisations capability, supported by conformance awareness, is expected to enable increased access to controlled airspace. This will be supported by an expanded digital authorisation process, further reducing the need for manual applications.
- **Real-time information to support UAS operations** – Access to fit-for-purpose digital data to support UAS operations, including traffic awareness and emergency constraints. This could also include provision of data to support risk assessment of complex UAS operations.
- **Enabling complex and advanced operations** – Capabilities to support tactical adjustments during flight in response to changes and alerts. This could include automatically generated new flight plans or pre-planned contingencies (e.g., emergency landings, maintaining position, return to base etc.). Changes would be coordinated with other affected airspace users to avoid conflicts.
- **Separation/segregation standards** – CASA will consider developing formal separation/segregation standards to support separation/segregation services in UTM. This is expected to be closely aligned with international standards currently under development.

CASA will work with industry to test and understand new products, services and concepts, and identify and assess new risks.

Any services that become mandated in the future will be subject to standard regulatory impact consultation, analysis and scrutiny (see *Attachment C: Range of Government Intervention*).

Will Drone Safety Apps need to connect to FIMS or meet new standards to remain operating?

Drone Safety Apps and other service providers will only need to connect to FIMS if they intend to become UAS Service Suppliers (USS) and deliver FIMS supported services. FIMS services are optional for operators and USS – but future mandatory adoption may be considered **where necessary** to ensure safe and efficient use of airspace.

Any decisions on mandates will be subject to standard regulatory impact consultation, analysis and scrutiny.

The initial tranche of FIMS services and capabilities will come online from end 2025 to help improve safety through increased situational awareness, but it will be optional for operators to use these services.

Service providers will need to meet certain standards **to the extent that they connect to the broader UTM Ecosystem** and depending on the risk associated with their UTM service.

UAS Service Suppliers (USS)

Lead agency: CASA and Airservices



USS connect UAS operators to the UTM ecosystem

USS enable UAS operators to connect with the UTM ecosystem. Developed by industry, USS interface with the UTM ecosystem and deliver data and services to UAS operators. They link operators to back-end capabilities services, and data that support the UTM ecosystem.

USS may vary widely, from a basic mobile phone app that helps drone operators manually plan and execute UAS flights, to a sophisticated software platform that supports autonomous management of entire aircraft fleets. It may be a proprietary platform used exclusively by a single operator or an open platform accessible to multiple operators and customers.

To become a USS, a supplier must meet minimum technical and assurance standards and provide at least one service that aligns with the predefined services of the UTM ecosystem. Additional services may be offered based on market demand and user requirements.

FIMS-supported services will only be available through a USS.

Work under this Action Plan

Establish minimum requirements for a USS to participate in the UTM Ecosystem

From late 2024

CASA, Airservices and the department will work with industry to test and establish minimum requirements for a USS to participate in the UTM ecosystem.

This may include requirements for:

- predefined UTM services with associated technical and assurance standards
- market regulation and ownership requirements
- overarching requirements to support effective integration into the UTM ecosystem, including issues such as reliability, privacy, data sovereignty, cyber-security etc.

These will be risk-based and aligned to international standards where appropriate to support easier integration of existing USS technology.

Requirements for USS connection to FIMS will be tested and refined in collaboration with selected industry partners. In late 2024, there will be a process to select the first participants for testing and developing the minimum eligibility, technical and assurance requirements for a USS to be approved to connect to FIMS.

Initial service providers will collaborate with CASA and Airservices to test and refine products through a cooperative and iterative approach. By late 2025, these initial participants must have met the technical and assurance standards, as well as any other requirements, to commence offering initial UTM services.

Ongoing participation in the UTM ecosystem will depend on USS maintaining compliance with these requirements.

Insights gained from this initial selection process will guide future selection rounds.

Supporting Workstreams

USS Support Initiative

Lead agency: Airservices

Timing: Late 2024

Airservices will be supporting active industry participation in the development and operationalisation of USS in Australia.

Support will be made available to assist initial industry participants to collaborate with Airservices, CASA and the department in forming requirements, development and testing procedures and related documents for USS connecting to FIMS. The support acknowledges the additional work that the first USS participants will face in addressing initial development and compliance challenges that will help lay the foundations that future participants will benefit from.

This work will facilitate a broader range of USS to connect to FIMS and support the operational launch of one or more industry-developed USS in Australia by the end of 2025. It reflects that a strong industry presence and active participation in delivering UTM services is essential to support the operationalisation of FIMS.

Future Work

The predefined UTM services and requirements, including aviation safety assurance, will be iteratively updated to reflect government policy and regulatory requirements.

A closer look: What about Drone Safety Apps?

From now to 2025

Drone Safety Apps will be able to continue delivering their existing services. This includes Airspace Awareness, CASA notifications and Automated Airspace Authorisations (AAA) at trial locations.

From late 2025

The first FIMS services, launching in late 2025, will include an airspace authorisation service for Civil Controlled Aerodromes. It is expected that FIMS will support additional airport locations than currently available through the trial.

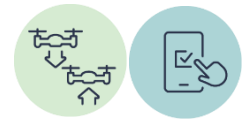
Drone Safety Apps who currently offer AAA may continue offering this service without changes as a transition period is defined. They can also transition earlier to deliver these services as a USS connected to FIMS.

In the future

Airspace authorisations for Civil Controlled Aerodromes will eventually only be available through a USS using FIMS.

CASA, Airservices and industry will work collaboratively to define UTM services and the role of application developers.

Airspace Risk Modelling System (ARMS)



Lead agency: Civil Aviation Safety Authority

Supporting CASA decision making through best practice airspace risk modelling techniques.

CASA developed an Airspace Risk Modelling System (ARMS) as an evidence- and risk-based approach to support decision making around approving airspace access. Using an ever-growing database of historical flight trajectories to model risk, ARMS enables CASA to quickly compare how changes in air traffic mix or flightpath design may affect the likelihood of a mid-air collision or risk to people on the ground. This helps to ensure airspace decision-making is **efficient, reliable, and risk- and outcomes-based**.

Risk: critical to assessing operations

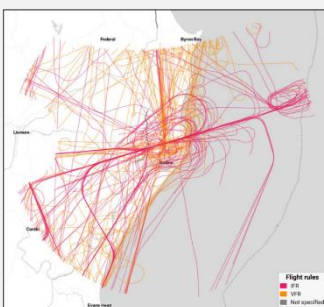
Australia uses the internationally recognised Specific Operations Risk Assessment (SORA)⁶ as a way to classify and identify mitigations for risks posed by complex UAS operations.

SORA requires certain UAS operators to provide the relevant technical, operational and system data about their proposed operations to CASA for approval. CASA can then assess the potential risk around:

- Fatal injuries to third parties on the ground (ground risk)
- Fatal injuries to third parties in the air (in-air risk).

ARMS is currently an in-house system solely for CASA's use. However, as more drone operations are planned and become increasingly complex, CASA will need to look at ways to streamline approvals without lowering risk standards. There are three ways in which ARMS can play a role in this:

1. **Making ARMS artefacts available in some degree to USS or drone operators:** This would help operators' BVLOS applications, both reducing planning uncertainty and CASA approval timeframes.
2. **Further improving ground risk assessments** by using additional data sources with higher fidelity than what is available today.
3. **Further improving in-air risk assessments** by using additional data sources which allow for more detailed assessments in regional locations.



Modelling based on real world data

When developing ARMS, CASA found that available risk modelling software either relied on artificial flightpaths instead of real-world historical flight trajectories, or did not consider flightpaths at all. These models only offered basic collision models and could not provide a sufficient level of detail to inform decision making.

CASA's ARMS goes much deeper, using an ever-growing database of actual historical flight trajectories to model risk for a range of airspace scenarios.

⁶ SORA is a methodology developed by the Joint Authorities for Rulemaking of Unmanned Systems (JARUS), a group of international regulatory authorities that work together to develop common regulations and standards for unmanned systems.

Progress already made

ARMS has a number of modules or products covering different aviation sectors. Those relevant to the UTM ecosystem are:



RPAS in-air risk

This module allows CASA to assess airborne collision risk from individual RPAS operations or the historic safety performance of RPAS in airspace volumes.



RPAS ground risk

This module allows CASA to assess risk to people on the ground from individual RPAS operations.

Behind the scenes: a look into the RPAS Ground Risk module

The RPAS Ground Risk module was the first ARMS module to specifically benefit the RPA community.

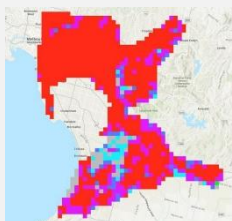
It relies on multiple data sources, including:

- RPAS characteristics
- Surveillance sites
- Airport locations
- Population density



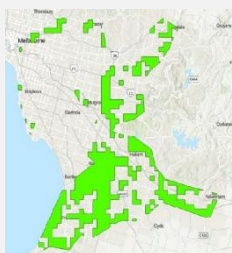
Step 1: Aircraft Parameters

CASA uploads the RPA parameters provided by an operator, including RPA capabilities and requested flight areas.



Step 2: ARMS analysis

ARMS analyses the inputs against ground data (including population density, and aerodromes locations) to determine where the RPA capabilities are insufficient to mitigate high ground risk.



Step 3: Flight area determination

CASA uses the results to assist with issuing an approval to the operator to fly their RPA in areas determined to be within the acceptable risk threshold.

Work under this Action Plan

Timeframes for specific work streams will depend on CASA funding allocations and agreement on the development path for CASA.

Making ARMS products or results available to USS

By end-2025 Publication of ARMS products: Some georeferenced results produced by ARMS can be shared with other systems utilised by USS.

Improving ground risk data

By mid-2025 Improving resolution: This project will look to improve the resolution of population density data. The current 1km² grids are already considered to be too large for this type of analysis and do not give an adequate level of accuracy for assessing ground risk. CASA has identified alternative data sources at a greater resolution but work is needed to incorporate it into ARMS.

Improving in-air risk data

By end-2025 Improving coverage in remote areas: There has been no way to validate what proportion of aircraft are captured in remote areas without surveillance coverage – up until now. This project will use new data sources to provide this validation and improve CASA’s overall understanding of traffic and risk within an airspace volume.

In 2025-26 Aligning the risk model with SORA 3.0: Further work is also required to align the In-Air RPAS Risk Model with any changes to how air risk is calculated and reported as Australia transitions from SORA 2.0 to SORA 2.5 and then to SORA 3.0.

Future Work

The above work streams will inform further work beyond the timeframe of this action plan. At this stage, some possibilities for future work include:

Making ARMS products or results available to USS

- *Greater exposure of ARMS:* External-facing portals are developed to allow USS to utilise the capability from certain outputs of ARMS.

Reporting capability

- *Automated assessments:* ARMS assessments can be triggered automatically in certain conditions (such as for trend monitoring, or assessing an application to operate an RPA in a volume).

Improving in-air risk assessments

- *Further improving risk modelling in remote areas:* Using alternative data sources, the ability to quickly conduct risk modelling for remote locations is greatly improved.
- *Modelling RPA to RPA collision risk:* SORA 3.0 is expected to also include an RPA to RPA collision risk component. This type of assessment can also be included in ARMS to assist with UTM development.

Digitising Non-Safety Drone Rules



Lead agency: DITRDCA

Bringing rules into the digital age to improve awareness

Australia’s federated government system means that, in some instances, government agencies not otherwise involved in aviation regulation are able to make rules that may impact drone use – including restrictions around things like flight, possession, take-off and landing, or filming using drones. For example, many jurisdictions in Australia have introduced restrictions on drone use around parks and corrections facilities.

Such rules differ across states and territories, and it may be difficult for drone users to understand what restrictions may apply in addition to CASA safety rules. This project aims to address this by digitising these non-safety drone rules in a geospatial map readily available to the public on drones.gov.au. The map will also be provided as open data and an Application Programming Interface (API), allowing drone software service applications to integrate the rules, providing easy access to drone pilots planning their flights. The result is greater rule awareness and a reduced burden on industry, drone users, and community to access information about rules that may affect them.

This open and collaborative approach lowers barriers to access information on rules relevant to drones, and supports **consistency and greater awareness to support compliance** across the country.

The Commonwealth Department of Infrastructure, Transport, Regional Development, Communications and the Arts is leading this project in close collaboration with relevant state and territory agencies.

Progress already made



Local drone rule map

In February 2024, the first iteration of the local drone rule map went live⁷. It shows local drone rules for parks and corrections institutions across Australia. This first release shows rules for 7,610 different areas managed by 15 different responsible authorities.

Work under this Action Plan

The next phases of this project will start to evaluate the effectiveness of existing non-safety drone rules to identify how they can be improved, simplified or made consistent across the jurisdictions.

⁷ <https://www.drones.gov.au/news-and-announcements/local-drone-rule-map-live>

Early 2025: Evaluate impacts of non-safety drone laws

The department will work with government agencies responsible for non-safety rules to evaluate the impacts of existing rules in order to identify potential areas for improvement and/or lessons learned.

End 2024: Map and data improvements (iterative)

The department will improve the underlying data for the map, and make improvements to the product in line with community and industry feedback, including towards more seamless integration of data into software services where desired.

2025+: National approach and consistency

Over the medium term, the department will work with states and territories and relevant Commonwealth agencies to outline how they will work together to build digital consistency and an open approach to developing a fit-for-purpose and digital-first framework addressing non-safety concerns.

This may be underpinned by a formal agreement with states and territories.

Future Work

As the rules are within the remit of state and territory governments, priorities for future work will rely on close collaboration with state and territory agencies, and may progress at different speeds across jurisdictions depending on resourcing and prioritisation.

Approvals and authorisations

Develop data standards and encourage uptake of digital authorisation processes, allowing drone operators to apply for and receive authorisations to operate within non-safety constraints via the UTM ecosystem.

Drone Identification and Registration



Lead agency: DITRDCA

Exploring options to know who is flying what and where.


Better information about where drones are operating and who is operating them will be fundamental to the integration of emerging technologies with conventional aircraft systems, and will support future drone traffic management systems. However, the way forward is not entirely clear. Mandates are an option, but should only be pursued where the benefit clearly outweighs the cost to industry.

For this reason, the government will be exploring options for improving drone registration and introducing drone remote identification (Remote ID), but will not introduce new mandates in this space until this exploratory work is completed.

Remote ID

When Remote ID is installed on a drone, people on the ground will be able to receive information from an operating drone and download information on the operator. This information can be used by law enforcement to determine who owns the drone. Not everyone will have access to the same information – similar to how police can call on a database to check a car’s registration, who owns the car and where they live, in the same way only authorised persons will be able to access sensitive information about the drone owner or operator. Remote ID ensures drone operators are accountable for their actions. However, exactly what type of Remote ID and what types of drones or operations it should be mandated for and by when, are all questions that need to be worked through in detail.

The department will develop a Policy Impact Analysis in 2025-26, which is a critical step before any regulation or mandates can be considered.



Remote Identification (Remote ID)
Discussion Paper for Public Consultation
June 2023

The cover features a photograph of a drone flying over a residential roof with a chimney. A blue line connects the drone to a small blue circle on the roof, representing signal reception.

2023 Discussion Paper

The department’s 2023 discussion paper sought public feedback on:

- opportunities and risks associated with this technology
- options for how Remote ID could be mandated in Australia
- other considerations that could inform detailed options for enabling legislation and/or regulation.

This was effectively the starting point for ongoing discussion and collaboration about Remote ID in Australia.

Building on feedback from the 2023 discussion paper and other industry consultation, the Policy Impact Analysis will include:

- cost and funding implications of Remote ID, including comparing multiple ID system options
- legal issues, some of which may have a critical bearing on what kind of arrangement may be progressed
- data issues including: standards (if applicable); protections; other uses the data may be put; and responsibility for data management.

Drone Registration

Mandatory registration for commercial drones has now been in place for 4 years. As the UAS industry continues to evolve and the UTM ecosystem matures, there is potential to better use the data gathered through registration.



Commercial drone registration

On 30 September 2020, CASA introduced a mandatory scheme for commercial drone registration.

Operators must register their drones if they use their drone for business or as part of their job. This applies to all drones used to provide any type of service, no matter how much the drone weighs.

The government will also consider registration of recreational drones. This was recommended in the 2018 Senate Committee Report⁸ and was originally intended to commence in July 2023. However, the government decided to pause the introduction of registration for recreational drones to allow time to better assess the costs of regulation for the sector, and how a future scheme could best achieve its objectives without posing an undue burden on the sector. This analysis will take place in 2025-26.

Supporting Workstream

Getting the most use from the Drone Registration database

Lead agency: CASA

Timing: 2025-2026

CASA will look to develop an API so that data held in the commercial registration database can be available in select users in the UTM ecosystem. This could include access by authorised law enforcement making it easier to identify drone operators.

⁸ Rural and Regional Affairs and Transport References Committee *Current and future regulatory requirements that impact on the safe commercial and recreational use of Remotely Piloted Aircraft Systems (RPAS), Unmanned Aerial Systems (UAS) and associated systems* July 2018, Recommendation 2 (...“ that the Australian Government introduce a mandatory registration regime for all remotely piloted aircraft systems (RPAS) weighing more than 250 grams”).

Coordinated Drone Detection Data Strategy



Lead agency: DITRDCA

Leveraging data to enhance UTM integration and fidelity of services

The UTM ecosystem is a data driven environment. For the system to scale effectively and work efficiently, government must understand where data interfaces, and the effects of the data exchanges.

Mapping and understanding the relationship between UTM’s cooperative data sources and data generated non-cooperative drone platforms will support and enhance security and safety outcomes and the effectiveness of both UTM and drone detection. A clear data strategy will enable the efficient flow of data through different systems, applications and services identifying areas of potential duplication and core relationships.

The purpose of the Coordinated Drone Detection Data Strategy is to set-out a process for identifying UTM data synergies, efficiencies, roles and responsibilities, to assist in achieving more efficient data management. It will also identify legislative and privacy issues to ensure effective and responsible use of personal data collected by UTM and drone detection capabilities. Importantly, it will explore the interaction between cooperative and non-cooperative data and how the crossover can inform safety and security outcomes for users. The data strategy will be completed around mid-2025.

Progress already made



Early scoping

Ensuring the compatibility and interoperability of drone detection systems deployed across Australia is a core goal for Australia. Early discussion around the role drone detection data standards have commenced, including the role they might play in the emerging aviation ecosystem.

Supporting Workstreams

Drone Detection at Aerodromes

Lead agency: Airservices

Timing: From mid-2026

Building on its existing drone detection system, Airservices is working to enhance its capabilities to detect UAS around civil controlled airports to help safely manage the airspace.

Drone detection at aerodromes will complement the Flight Information Management System (FIMS), which will be able to provide data on authorised operations.

Critical Enabler: Automatic Dependent Surveillance Broadcast (ADS-B)



Lead agencies: DITRDCA and CASA

A tool to ‘see and be seen’

In the Aviation White Paper, the Australian Government recognised ADS-B equipment will eventually be required on all conventional aircraft in all Australian airspace. The Australian Government has committed to increase the general and recreational (crewed) aviation sector’s take-up of ADS-B through extending and broadening the ADS-B Rebate Program. By late 2025, the Australian Government will also receive advice about a timetable for mandating ADS-B devices.

While technically out of scope of UTM, ADS-B is included under the UTM Action Plan as a greater take-up of ADS-B across the general aviation sector will be a critical enabler to helping drone operators detect and avoid crewed aircraft.

What is ADS-B?

Automatic Dependent Surveillance-Broadcast (ADS-B) can greatly improve and enhance safety when multiple aircraft are flying in the same airspace. It helps pilots be aware of other aircraft flying near them and, in some cases, also allows air traffic control to see you.

There are two aspects to ADS-B: OUT and IN.

- ADS-B OUT broadcasts real-time data about an aircraft's GPS location, altitude, ground speed and other data.
- ADS-B IN detects the information being broadcast by ADS-B Out on other aircraft. It enables a cockpit display of traffic information which can show other aircraft in the sky.

In short, ADS-B OUT lets other aircraft see you, and ADS-B IN lets you see other aircraft.

Progress already made



ADS-B Rebate Program

First introduced in 2022, the Australian Government announced it will extend the ADS-B Rebate Program in the 2024-25 Budget.

The program supports general and recreational aviation operators to install ADS-B devices in their aircraft by providing a rebate up to 50% of the purchase and installation cost of eligible ADS-B devices.

Round 2 will close on 31 May 2027. The program has been broadened to include equipment that offers ADS-B OUT, ADS-B IN, or both, for owners of aircraft flying under Visual flight Rules (VFR) and/or Instrument Flight Rules (IFR).

Work under this Action Plan

Late 2025: Consider advice about a timetable for mandating ADS-B devices

The Australian Government has established a cross-agency working group, involving participants from the department, CASA and Airservices, to advise on implementing a universal ADS-B mandate across all Australian airspace for both visual and instrument flight operations. Given the long lead-times of aviation investment, this will provide general aviation with certainty about the future of airspace management, and the future investments they will need to make to continue to operate safely in uncontrolled airspace.

Future Work

ADS-B - integration

Integrating available ADS-B data into the UTM ecosystem will support sharing of available ADS-B data to USS. This will make it easier for UAS operations which are not equipped with their own ADS-B IN capability to detect and avoid ADS-B equipped aircraft in their airspace.

Attachment A – UTM and recreational users

If I just want to fly my own private drone, what does UTM mean for me?

What is UTM?


UTM stands for UAS traffic management. One way to think of it is to compare it to road traffic. Road traffic management has many aspects:

- Road rules
- Traffic lights that guide the flow of traffic
- Safety features in cars such as blind-spot monitors
- Speed cameras and police to identify law breaking.

Similarly, UTM is a collection of drone rules, systems and abilities that, together, allow multiple drones to fly in an area safely.

What UTM rules do I need to follow?

The number of rules you need to follow or the type of features your drone needs will depend on *where* you are flying and *why* you are flying. Generally, recreational drone users will have fewer rules and not need as many safety features as they are flown within visual line of sight.



Basic drone rules

All drone users must follow some basic drone rules, outlined in CASA's Know Your Drone website. You can access this at:
www.casa.gov.au/knowyourdrone/drone-rules

The UTM Action Plan **has not changed any of these basic rules.**

UTM Action Plan: actions relevant to recreational users

Drone Rule Digitisation

Most people flying drones for fun do not realise that State Governments also have rules restricting the use of drones⁹.

The Digitising Drone Rules Project aims to make these drone laws available digitally in a geospatial map (available at drones.gov.au) and as an application programming interface (API). This will allow drone software service applications to integrate the rules directly into their systems, meaning that people using those apps to fly their drones will be automatically notified of any State-specific rules in their area.

⁹ The legal reasons as to why the State Governments can make such laws are complex, but if you are interested in learning more see Attachment D *State Governments and drone rules*

A first version of the map and API have already been released, and the UTM Action Plan outlines the next steps for the project.

Longer term policy thinking

The UTM Action Plan also flags that we need to start thinking about extending registration to recreational drones, and also consider introducing a Remote ID mandate.

The UTM Action Plan **does not say that these changes will definitely take place**, only that we need to understand the benefits and costs of these possibilities before we decide.

Before anything in this space is decided on, important questions will need to be asked¹⁰ including:

- What is the problem you are trying to solve and what data is available?
- What are the objectives, why is government intervention needed to achieve them, and how will success be measured?
- What policy options are you considering?
- What is the likely net benefit of each option?

The Department of Infrastructure, Transport, Regional Development, Communications and the Arts will develop a Policy Impact Analysis, which is a critical step before any regulation or mandates can be considered. This will include extensive public consultation. Please visit drones.gov.au to stay up to date with the latest developments.

¹⁰ Australian Government Guide to Policy Impact Analysis 2023

Attachment B – Advanced Air Mobility (AAM)

The Australian Government is coordinating a national strategic approach to AAM, working closely with all levels of government, industry, academia and the community to carefully manage risks regarding safety, security and public amenity to position Australia to take advantage of the transformative opportunities from AAM into the future.

Electric vertical take-off and landing (eVTOL) and electric/hydrogen small fixed-wing aircraft– collectively referred to as Advanced Air Mobility (AAM), promises the ability to leverage the transformative operating economics from renewables to provide air connectivity to previously underserved destinations.

With industry expecting the first AAM operations to gradually enter Australian skies from 2027 onwards, the Australian Government is responsible for establishing the foundational policies and regulations to support the development of a safe, secure, efficient and considerate AAM industry in Australia as it grows into the 2030s.

It is anticipated that the growth of the AAM industry will require new traffic management solutions in the future to support their safe integration into Australian airspace. There are a wide range of possible applications for AAM, including: healthcare and emergency services, disaster response, passenger transport, business and freight transport and logistics and tourism.

Each of these are expected to have different needs and priorities from the development of traffic management services in both ATM and eventually, UTM. AAM specific services are not currently planned to be delivered by 2026, however a range of services are being considered.

- **Vertiport scheduling and flow management services** – Services to help coordinate the efficient and safe use of vertiports and their surrounding airspace. These can ensure that landing space will be available before AAM aircraft depart, and help ensure the efficient utilisation of available infrastructure. These services will be valuable for AAM networks as they increase in scale.
- **Digital ATM communications** – Conventional ATM relies on human controllers issuing instructions and communicating with human pilots verbally. This is challenging for AAM operations that are autonomous and function without a human pilot on board. If ATM communications can be supplemented with digital instructions which are easily machine readable, this would allow autonomous AAM aircraft to more easily integrate into current ATM and operate similar to existing instrument flight rule aircraft.
- **Autonomous separation services** – When operating at significant scale, AAM may require both strategic and tactical deconfliction services that are able to operate with high degrees of autonomy. These are expected to function similar to UTM services planned for smaller UAS, but will require significantly higher levels of assurance and reliability due to the greater safety risk of larger and/or passenger carrying aircraft. It is anticipated that the initial rollout of UTM separation services will provide valuable insights to support the development of systems and regulations of full AAM traffic management services.

Prioritisation and delivery of these services will be determined through ongoing engagement with the AAM sector, and developed in alignment with the goals of the ICAO Global Air Navigation Plan where appropriate.

Attachment C – Range of government intervention

There are a range of actions available and it does not require a ‘one-size-fits-all’ approach.

Note: Before any intervention is decided on, important questions will be answered¹¹ including:

- What is the problem you are trying to solve and what data is available?
- What are the objectives, why is government action needed, and how will success be measured?
- What policy options are you considering?
- What is the likely net benefit of each option?

No action

Where there is no market failure, government may choose not to intervene and allow the market to self-regulate.

Standard setting

Standards may be set to ensure data is compatible across the ecosystem and communicated between systems. Industry standards may be adopted (where available).

This may include determining data storage and access requirements to ensure data is accessible when needed and sensitive data is appropriately managed. This will also consider where data is hosted.

Credentialing / Certification

The government may require certain aspects of the UTM ecosystem to meet a standard of quality or reliability. This will give assurance to the services being used, and allow drone operators to rely on the use of these services as a means of compliance with safety or other regulations.

Certification could be done either directly by the government or a delegated third party.

Mandates

The government may mandate the use of services by some or all operators in specific circumstances or volumes of airspace to ensure risks are effectively and efficiently managed. Mandates will be based on impact analysis to ensure the costs associated with compliance are proportionate to the risks being managed and benefits to operators. The mandated services can be provided either directly by government or by a certified industry provider.

Industry support

The government can support the adoption of emerging aviation technologies in more direct partnership with industry, such as through grants programs.

Provision

The government may provide a service directly in the UTM ecosystem when necessary to ensure the reliability or efficiency of the ecosystem due to market failure or where required to ensure national sovereignty.

¹¹ Australian Government Guide to Policy Impact Analysis 2023

Attachment D – State Governments and drone rules

Civil aviation regulation has traditionally been the domain of the Australian Government, particularly in relation to safety, air navigation and management of airspace.

Drones and other emerging aviation technologies are creating new challenges for governments and regulators, requiring State and Territory government to regulate some aspects of drone use.

The Constitution and Aviation

The Commonwealth of Australia came into being in 1901. Not surprisingly since the first controlled, sustained flight of an engine-powered aircraft only occurred in 1903, aviation or air navigation are not mentioned in the Constitution.

Although it has no express power to legislate in relation to aviation, the Australian Government can make laws regulating some aspects of aviation relying on various heads of Commonwealth constitutional power including the overseas and interstate trade and commerce power (section 51(i)) and the external affairs power (s 51(xxix)).

While the Australian Government can clearly regulate in relation to *aviation safety* issues, Commonwealth airports and commercial interstate or international aviation, some aspects of civil aviation are regulated by the States and Territories.

Drone rules

The ease of access to drones (when compared with access to traditional aviation), including by private individuals, has led to situations where people previously unable to access flight-technology can now do so quickly and cheaply. This is creating new challenges for governments, including in areas which are generally the responsibility of State and Territory governments to regulate.

Some examples include:

- Drones flying contraband into correction facilities / prisons.
- Drones flying over critical infrastructure sites, such as state-controlled ports.
- Drones being used to stalk individuals or interfere with peoples' privacy in places inaccessible by foot.
- Drones creating noise or other disruption in state parks and affecting endangered wildlife.

Existing civil aviation regulation is not equipped to tackle many of these problems, nor do these problems fall within the Commonwealth's areas of responsibility.

States' non-safety drone laws

To manage these issues, State Governments have already introduced laws regulating certain aspects of drone use – which, depending on the law in question, may include restrictions on flight, take-off and landing, or even 'possession'. This is leading to a situation in Australia where both Commonwealth and state laws can limit where drones can be used, depending on the particular regulated issue.

It is important to acknowledge that State and Territory Governments are making these laws to address real concerns among their communities. However, if each jurisdiction makes their own laws without regard to others, we risk having a fragmented approach to drones across Australia. This could lead to confusion among drone users, accidental breaches and increased compliance costs for drone users.

What is being done?

The Australian Government is working with State and Territory Governments to encourage consistency across these laws to support better understanding and reliability. This work will also underpin review and evaluation of the effectiveness of different laws, allowing everyone to share lessons learned across jurisdictions and cooperate in law enforcement.

Digitising Drone Rules Project

The Drone Rules Digitisation Project is digitising non-safety drone laws and publishing these in a geospatial map on drones.gov.au. Open data and an Application Programming Interface (API) of the laws will allow software services to integrate the rules into drone applications, providing easy access to drone pilots planning their flights. This will result in greater awareness and compliance, and reduce the burden on industry, drone users, and community to access information about laws that may affect them.

The Commonwealth Department of Infrastructure, Transport, Regional Development, Communications and the Arts is leading this project in close collaboration with relevant State agencies. The project has been recognised in the Australian Government's Data and Digital Government Strategy.

Cooperative review of non-safety or 'local' drone laws

Building on the rule digitisation, all levels of government have been invited to participate in a cooperative review of non-safety or 'local' drone rules. The review will explore the effectiveness of existing laws, lessons learned, and identify potential ways we can work together to improve outcomes and address any community and drone sector concerns. Such work will also assess:

- the potential for technologically neutral approaches (that is, ensuring legislation remains flexible and relevant in the event of technological change)
- impacts on the growing drone sector such as regulatory burden
- potential for longer term impacts on possible future congestion in drone operations.

The cooperative review commenced in mid-2024, with outcomes to be considered in early 2025 by stakeholder agencies and jurisdictions. This evidence-based review will help support further cooperation over the long to medium term on enforcement and strategy to support a digital, fit-for-purpose approach to drone regulation, potentially underpinned by an intergovernmental agreement.



Do you want a say on Australia's emerging aviation technology policy?

Consider joining the Emerging Aviation Technologies Policy Forum.

The Forum helps inform the development of the policy advice for emerging aviation technologies in Australia. It is a mechanism for open, non-binding discussions on policy options and associated issues.

If you are interested in joining, please visit drones.gov.au

Industry representatives, academia, state, territory and local governments and other Commonwealth agencies are particularly encouraged to apply.