



RPAS and AAM Strategic Regulatory Roadmap – Public Consultation

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GLOSSARY

AAM	Advanced Air Mobility
ACMA	Australian Communications and Media Authority
AGL	Above ground level
AI	Artificial Intelligence
AME	Aircraft Maintenance Engineer
ATC	Air Traffic Control
ATSB	Australian Transport Safety Bureau
BVLOS	Beyond visual line of sight
CASA	Civil Aviation Safety Authority
CASR	Civil Aviation Safety Regulations
DITRDC	Department of Infrastructure, Transport, Regional Development and Communications
DRMS	Drone Rule Management System
EVLOS	Extended visual line of sight
EVTOL	Electric vertical take-off and landing
FIMS	Flight Information Management System
FPV	First-person View
GATMOC	Global Air Traffic Management Operational Concept
ICAO	International Civil Aviation Organisation
IREX	Instrument Rating Exam
JARUS	Joint Authorities for Rulemaking on Unmanned Systems
KPA	Key Performance Area
NDDN	National Drone Detection Network
NEAT	National Emerging Aviation Technologies
OEM	Original Equipment Manufacturer
RAM	Regional Air Mobility
RePL	Remote Pilot Licence
ROC	Remote Operator Centre
RPA	Remotely Piloted Aircraft
RPAS	Remotely Piloted Aircraft Systems
SAIL	Specific Assurance and Integrity Levels
SMS	Safety Management System
SOC	Standard Operating Conditions
SORA	Specific Operation Risk Assessment
TWG	Technical Working Group
UAM	Urban Air Mobility
UTM	Uncrewed Aircraft Systems Traffic Management

INTRODUCTION

The RPAS and AAM Strategic Regulatory Roadmap (the RPAS and AAM Roadmap) has been developed as an initiative under the Australian Government’s National Emerging Aviation Technology (NEAT) Policy Statement, released by the Department of Infrastructure, Transport, Regional Development and Communications in May 2021.

The NEAT Policy Statement aims to ‘position Australian businesses and industries to adopt and integrate emerging aviation technologies’ supported by regulatory frameworks that ‘enable and promote continued innovation, complexity of operations and growth’ in the RPAS and AAM sectors.

The RPAS and AAM Roadmap will provide clarity about Australia’s future approach to aviation safety regulation and safety oversight for RPAS and AAM and is intended to provide a plan for the realisation of a long-term vision for these sectors while continuing to ensure acceptable levels of safety.

Consistent with the Government’s whole-of-government policy development approach, the roadmap is distinct but complementary to the NEAT Policy Statement and other whole of government initiatives, such as the Australian Future Airspace Framework (AFAF), maturation of noise and privacy regulation, and Uncrewed Aircraft Systems Traffic Management (UTM) development.

While the NEAT Policy tasked CASA with developing a safety roadmap for future RPAS and AAM regulations, there are also aspects of these operations that will require regulatory developments falling outside of CASA’s remit.

This roadmap will not directly address these issues, but aims to acknowledge the interconnectedness of RPAS and AAM regulations across all government entities and build a foundation to support a whole-of-government regulatory framework for a safe, and prosperous RPAS and AAM industry in Australia.

The RPAS / AAM landscape is one of several significant, and often interrelated, regulatory activities that CASA will progressively address over the coming period.

What is RPAS?

Commonly referred to as drones, Remotely Piloted Aircraft Systems (RPAS) are distinguished from other aircraft by the absence of a pilot or crew onboard.

RPAS is commonly used to refer to the aircraft itself, but the term also includes all components of the system required for an operation including ground control stations, telemetry and communications, sensors and other hardware and software used to operate the aircraft.

While there is not yet a global consensus on the definitional difference between RPAS and AAM, RPAS commonly refers to operations that use smaller aircraft and that do not have passengers onboard.

What is AAM?

Advanced Air Mobility (AAM) describes a diverse array of aircraft types (such as crewed and uncrewed) for application in the transportation of passengers and larger freight.

The AAM sector is enabled by ongoing advancements particularly in the areas of hybrid and electrification of propulsion systems, energy storage, lightweight materials, digitalisation and automation.

These innovations have made possible an array of new vehicle types spanning multi-rotor, tilt wing, tilt-rotor, powered wing, offering short take-off and landing (STOL) through to vertical take-off and landing (VTOL) capabilities.

The performance and level of automation of these types varies significantly, with different AAM concepts largely falling into two operational sub-categories:

- Urban Air Mobility (UAM) – short to medium range and endurance designed for low altitude point-to-point passenger or cargo carrying operations in, and between, urban areas.
- Regional Air Mobility (RAM) – short to medium range and endurance designed for low altitude point-to-point passenger or cargo carrying operations between regional areas.

While limited crewed, passenger carrying UAM and other air taxi operations occur today, this market is likely to expand as technologies such as electric propulsion and increasing autonomy converge enabling novel aircraft with enhanced capabilities.

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CHALLENGES AND PRINCIPLES

The RPAS and AAM sectors are rapidly evolving. While the RPAS and AAM Roadmap aims to chart a clear long-term vision and plan for the safety regulation of these sectors, there remains significant uncertainty about the longer-term needs of these sectors.

CASA acknowledges that it will be necessary to revisit this roadmap periodically to ensure opportunities for safety innovation are not missed, regulation and oversight remains risk-based, and that industry and broader stakeholder needs continue to be considered.

The following have been identified as defining characteristics of the RPAS and AAM sectors:

- **Diversity** – The sector spans aircraft of unique types, of all sizes, and with varying degrees of complexity. Pilots, operators, designers, manufacturers, and maintainers of these systems are equally as diverse.
- **Pace of innovation** – RPAS and AAM are rapidly evolving sectors, and there is a high pace of innovation across technology and concepts of operation.
- **Scale** – The number of RPAS operating in Australia is greater than the number of existing airspace users combined. Similarly, there are more approved RPAS operators than conventional operators (e.g. AOC holders), and the number of licensed remote pilots is expected to surpass that of conventional pilots in the future. The size of the AAM sector is expected to follow a similar trend to RPAS.
- **Unconventionality** – Public understanding of the risks and benefits associated with the RPAS and AAM sectors is still evolving. Public acceptance of these risks is also changing and there is expected to be heightened sensitivity to accidents and incidents, at least in the early phase.
- **Autonomy** – Automation and Human Machine interactions are expected to be important in supporting sector growth, however these technologies also pose great regulatory challenges that need to be monitored and addressed in line with the development of this technology.

In developing an effective regulatory framework for RPAS and AAM, and to address these challenges while also balancing integration and the needs of other airspace users, the following principles were identified to guide the design of the roadmap:

- **Safety first** – Safety must be placed first. The roadmap has been designed to deliver acceptable levels of safety performance for all aviation operations.
- **Risk and outcomes-based** – Greater flexibility is achieved through a legislative structure that is outcomes-based. Regulations should not prescribe solutions. Regulation and oversight should also be proportionate to the safety threats and associated risks being managed.
- **Adaptive and scalable** – The legislative structure needs to be able to respond to changing risk profiles and the dynamic needs of evolving sectors. It should also account for the size of the sector and pragmatic constraints, such as available regulatory resources.
- **Progressive and internationally aligned** – The regulatory framework will be phased in its development and implementation, while remaining consistent with a longer-term vision. It should seek to align with, adopt or adapt international standards and regulations where beneficial in the Australian context.
- **Balanced and socially responsible** – The framework should achieve the required safety outcomes with consideration for the cost burden imposed on industry, while also accounting for broader community interests and expectations.

APPROACH

This draft roadmap has been co-designed with identified experts from industry through the establishment of a Technical Working Group (TWG) through the Aviation Safety Advisory Panel.

The TWG also included observers from the Department of Infrastructure, Transport, Regional Development and Communications, Airservices Australia and the Department of Defence.

The TWG met a total of 13 times from July 2021 to January 2022. The TWG consisted of 12 core members with a total of 47 industry participants, and 73 total participants, across subsequent sub-working groups (SWG).

To frame the discussion, the TWG considered the requirements of the RPAS and AAM sectors through four time-horizons:

- **Immediate Term** (0-2 years) – 2022 to 2023
- **Near Term** (2-5 years) – 2023 to 2026
- **Medium Term** (5-10 years) – 2026 to 2031
- **Long Term** (10-15 years) – 2031 to 2036

Nine primary use cases for remotely piloted aircraft systems (RPAS) and advanced air mobility (AAM) were identified and the progression of each discussed across these time horizons.

Finally, several regulatory areas were outlined to help identify regulatory and non-regulatory activities required to realise the identified use cases. Additional information on these time horizons, use cases and regulatory areas can be found in this document.

TIME HORIZONS

Australia was one of the first countries to legislate the operation of remotely piloted aircraft, and many of the operations that will become common place in the future are already occurring in Australia albeit on a limited basis.

While CASA has been pivotal in supporting the growth of the RPAS sector, and continues to engage with new AAM entrants, to keep pace with the growth forecasts of the industry CASA will require a flexible and responsive regulatory framework.

This will need to be able to efficiently scale regulatory processes to effectively respond to increasing volumes of interactions with industry.

Recognising the diversity of the sectors, the TWG and SWG members considered the likely use cases occurring within each time horizon, based on the following primary categories of RPAS and AAM operations in Australia:

- **Aerial application** – using RPAS to apply or disperse chemicals, seeds or other items including application of fertilisers, chemicals and disinfectants, seed distribution and fire management.
- **Entertainment** – drones used for entertainment, including drone formations and the use of drones to capture still and video images for film and TV production, as well as live sport and stadium operations.
- **Carriage of cargo and packages** – use of RPAS and AAM to transport cargo and package types, from small last-mile deliveries to large long-distance cargo transportation.
- **Inspections and imaging** – drones used to capture still and video images for informational, research or data-gathering purposes and which may include use of Light Detection and Ranging and other imaging equipment.
- **Passenger-carrying AAM in urban and regional environments (UAM and RAM)** – AAM aircraft (e.g. eVTOL) used to transport passengers within urban areas, from urban to regional centres, and between regional centres.
- **Sport and recreation** – model aircraft and drones operated for non-commercial purposes including for personal use, FPV racing, and use by educational institutions.
- **Surveying and/or monitoring** – using RPAS to survey and monitor specific infrastructure, assets or environments. This may also include search and rescue and shark spotting operations.
- **Training** – all activities undertaken in teaching operators how to fly and maintain RPAS and AAM.
- **Research and development** – all activities undertaken to develop or gain insight into an aircraft or operation.

Immediate Term (0-2 years) – 2022 to 2023

Over the next two years, continuing advancements in technology will improve the efficiency, affordability, and range of RPAS. This is expected to increase the adoption of RPAS, particularly in the commercial sector. The use of drones and model aircraft for sport and recreation is also expected to remain high.

There is likely to be greater demand for approvals to undertake commercial operations beyond the standard operating conditions (SOCs), as well as novel applications not previously assessed by CASA.

This includes the use of RPAS to play critical roles in firefighting, emergency services and public safety, reducing costs in mining and agriculture, and to conduct inspections in locations that would otherwise be dangerous for people to undertake.

It is likely there will be increased demand for CASA to provide approvals such as EVLOS/BVLOS operations, remote operator centres (ROC), the use of Australian-registered aircraft for international operations, increased automation, operations above 400ft and other new and novel operations.

Some of these operations will present greater challenges around safety mitigations. There may also be expanded use of micro RPA for commercial activities with increased demand driven by advances in technology, aircraft affordability and a reduction in regulatory constraints.

A review of the existing legislative framework (CASR Part 101) is expected to assist in this effort and will also address existing and anticipated pain points for the industry.

Currently, there are many companies worldwide that are developing and designing aircraft types that are equipped to carry out AAM operations. As AAM continues to evolve, the sector will expect greater clarity from CASA about the safety regulations that will apply.

This will present new challenges as the regulatory approach for RPAS operations begins to intersect with that of more traditional aircraft operations.

CASA will need to consider what this means across a range of regulatory areas including airspace design, licensing, operational certificates, maintenance, flight rules, and aircraft systems certification.

There will also be new or increased safety risks to consider in areas such as cybersecurity and use of autonomous systems.

These emerging technologies and operations will also present challenges for industry as they work to build social acceptance of these new use cases, both with local communities as well as other aviation participants.

Industry will also need to address the regulatory requirements of other government agencies, at a national, state, and local level.

Near Term (2-5 years) – 2023 to 2026

Within five years, the diversity of small to medium RPAS operations will be better understood with clearer approval pathways harmonised with national and international regulation.

Focus is expected to shift toward the implementation of systems and services needed to support more complex operations in shared airspace.

Through trials, education and demonstration activities, the AAM sector will begin to demonstrate the potential benefits it can provide to introduce new services to remote and hard-to-reach communities and enhance and extend existing transport mobility options to increase connectivity.

The industry will look to type certify piloted vehicles initially, followed by certification of large RPA and AAM. It's likely that planning and development will also begin for vertiports and other supporting infrastructure.

Medium Term (5-10 years) – 2026 to 2031

By 2030, most currently known use cases for RPAS are expected to be mature with expansive access to lower-level airspace and regulation, and technologies enabling EVLOS and BVLOS operations in shared airspace across both urban and rural environments.

There will be increased requirements for training as more complex operations and new technologies demand increased levels of competency and may require different skillsets from what has been previously learned.

Research and development activities will continue with testing of more complex operations and larger platforms, as well as higher levels of autonomy.

The AAM sector will continue to mature with the introduction of the first commercial applications, including scheduled passenger transport in urban areas.

There may also be the introduction of the first fully autonomous aircraft on a limited scale.

Quality data to support informed safety related decision making for ongoing expansion and future development in RPAS and AAM will be more readily available.

Long Term (10-15 years) – 2031 to 2036

By the mid-2030s, low level airspace is expected to be occupied by large numbers of RPAS of unique designs, purposes, and capabilities, with this technology providing a fast, cost effective execution of previously labour-intensive operations.

Advancements in technology will also drive proliferation of aircraft types, with a blurring of lines between RPAS technologies, AAM and traditional aircraft systems, as hybrid traditional designs emerge, and operators recognise the commercial benefits these new technologies can deliver.

Commercial AAM operations will expand to include multiple scheduled passenger transport applications supported by safe and efficient transport routes. As the AAM sector scales, this decade will likely see the entry into service of autonomous vehicles.

Rich sources of quality data to support informed safety related decision making for ongoing expansion and future development in the RPAS and AAM sectors will be readily available due to time in operation.

REGULATORY AREAS AND ACTIVITIES

In consultation with the TWG, CASA has identified six key regulatory areas that will need to be considered when developing Australia's future RPAS and AAM regulatory framework. These regulatory areas will be used to guide the implementation of activities identified within the roadmap.

The following section sets out each of these regulatory areas and the activities identified by the TWG and SWG members as necessary to realise the aims of the NEAT Policy Statement.

The public may have consultation opportunities on the implementation of one or more of the listed activities.

In broad terms, the activities that have been identified fall into four categories:

Demystification of current regulations

Many of the use cases discussed with the TWG are possible under the current regulations. Nevertheless, the requirements and pathways to undertake these activities can be unclear and confusing for some operators.

More guidance and better tools are necessary to help industry understand what is required by CASA to undertake complex RPAS and AAM operations under current legislation.

Digital enablement

As the industries continue to grow it is important that CASA's administrative process and approval times can keep pace with this growth.

In addition to this, digital enablement plays an important role in the operational environment and the evolution of risk-based regulation.

Therefore, technology and digital tools will be highly important in supporting faster processing times and alleviating some of the regulatory oversight burden.

Regulatory change

The new technologies and types of operations envisaged by the RPAS and AAM sectors will necessitate changes to the existing aviation safety regulations, to ensure an acceptable level of safety is maintained for all airspace users.

CASA will need to consider what impacts this may have across all CASR Parts, not just CASR Part 101, and will continue to be guided by the work of ICAO and other aviation safety regulators in determining what changes may be required.

Regulatory sandboxes

Establishing regulatory sandboxes will allow industry to work with CASA to test and innovate novel products, services, and concepts in a safe and controlled environment.

These sandboxes can aid CASA in updating and developing regulations to benefit the RPAS and AAM sectors and maintain an acceptable level of safety.

Aircraft and aircraft systems

What is it?

AAM and RPAS aircraft and aircraft systems are generally classified according to whether they are type certified or non-type certified. These categories are determined according to the level of assurance required for the AAM and RPAS aircraft and their intended operations. Aircraft and aircraft systems includes:

- Airworthiness and certification of aircraft
- Qualification of systems and equipment
- Systems and equipment
- Design, production, and maintenance organisation approvals
- Automation and autonomy
- Communications (C2L).

What do we want to achieve?

CASA intends to develop clear pathways and regulations for the certification of RPAS and AAM aircraft and aircraft systems. This should be a harmonised framework consistent with those of all major regulators internationally (ICAO, FAA, EASA etc.) and utilise outcome-based standards.

One key framework is the Specific Operation Risk Assessment (SORA), which is the Joint Authorities for Rulemaking on Unmanned Systems (JARUS) consensus vision on how to safely create, evaluate and conduct an unmanned aircraft system operation.

The SORA provides a methodology to guide both the applicant and the competent authority in determining whether an operation can be conducted in a safe manner. It sets out a risk assessment methodology that evaluates the intended concept of operation and a categorization into six different Specific Assurance and Integrity Levels (SAIL). It then recommends operational safety objectives to be met for each SAIL.

In developing these pathways, the following principles are proposed:

- Certification of AAM would be in accordance with international regulatory frameworks using industry consensus standards.
- Higher risk RPAS that are required to be type certified (generally SAIL V or VI) will be in accordance with international regulatory frameworks using industry consensus standards and will have at least comparable safety to General Aviation aircraft when operating in non-controlled airspace.
- Low risk RPAS that are required to be type certified will be in accordance with recognised methodologies (e.g. FAA, EASA)
- For non-certified RPAS (i.e. required operational approval only) CASA will maintain regulatory alignment with JARUS SORA.
- CASA will continue to contribute to the safety education of excluded category RPAS operators.

How will we do this?

Immediate Term (2022 – 2023)	Near Term (2023 – 2026)	Medium Term (2026 – 2031)	Long Term (2031 – 2036)
<ul style="list-style-type: none"> • Publish acceptable industry consensus standards for certification of AAM including consideration of cybersecurity • Review international frameworks, standards and methodologies for certification and assurance of RPAS, including consideration of adoption of FAA Durability and Reliability (D&R) methodology for low risk RPAS • Publish guidance on the evidence requirements from the OEM vs the operator for RPAS operational approvals • Review applicable maintenance policies for AAM and RPAS • Review options for using digital tools and technologies to streamline application processes 	<ul style="list-style-type: none"> • Publish acceptable industry consensus standards for remotely piloted AAM • Publish acceptable industry consensus standards for 1 to 1 and 1 to many (operator to aircraft) RPAS and AAM operations 	<ul style="list-style-type: none"> • Mature RPAS and AAM acceptable industry consensus standards for multiple aircraft with a single operator • Adopt internationally harmonised certification standards 	<ul style="list-style-type: none"> • Adopt internationally harmonised certification standards • Matured certification standards for RPAS with high levels of autonomy

Airspace and traffic management

What is it?

The policies, standards, regulations, and associated processes to support new airspace users while maintaining an airspace and traffic management environment that is safe, efficient, equitably accessible and interoperable for all airspace users. This includes:

- Airspace structure
- Rules of the air
- Separation and conflict management (such as detect and avoid technologies)
- Traffic management
- Airports, vertiports and vertipad operations
- Equipage and information exchange.

What do we want to achieve?

CASA aims to enable a fully integrated national airspace based on a risk and performance-based approach that imposes minimal constraints on user access to achieve an acceptable level of safety performance that is agnostic of the type of aircraft or pilot.

The activities identified in the RPAS and AAM Roadmap will need to be informed by other NEAT Policy Statement initiatives including AFAF, the UTM Action Plan and the Airservices Flight Information Management System.

How will we do this?

Immediate Term (2022 – 2023)	Near Term (2023 – 2026)	Medium Term (2026 – 2031)	Long Term (2031 – 2036)
<ul style="list-style-type: none"> • Through the AFAF, develop a transparent, consistent, and scalable method to administer Australian airspace that supports RPAS and AAM integration • Review existing flight rules against the future needs for RPAS and AAM • Research how existing separation standards may apply to RPAS and AAM and identify future changes required including conspicuity and 	<ul style="list-style-type: none"> • Develop an implementation plan for airspace modernization that is flexible, scalable and supports all airspace users • Begin initial implementation to alleviate identified risks and support RPAS and AAM airspace integration • Consult with all airspace users on the appropriateness of proposed rulesets for RPAS and AAM 	<ul style="list-style-type: none"> • Continue airspace modernisation to support RPAS and AAM integration into all airspace environments • Review and update rulesets with respect to integration, global approaches, and requirements for increasing levels of autonomy • Develop new separation requirements to support and utilise improving 	<ul style="list-style-type: none"> • Develop and implement airspace structures to support all airspace users in a seamless airspace environment • Cooperative participation and levels of self-separation between all airspace users

<p>equipage considerations</p> <ul style="list-style-type: none"> • Undertake an analysis to understand the crossover point from self-separation to a "managed" environment • Work collaboratively with DITRDC and Airservices Australia to develop a regulatory oversight framework for RPAS traffic management consistent with the principles of the roadmap 	<ul style="list-style-type: none"> • Consider new separation standards, that utilise new technologies, for RPAS to RPAS and RPAS to AAM • Implement low level traffic management systems for RPAS • Consider standardised requirements for RPAS in controlled airspace • Consider regulatory requirements for integrating air traffic management systems • Develop requirements for vertiport operations 	<p>technologies such as autonomy</p> <ul style="list-style-type: none"> • Develop an integrated traffic management framework to support all airspace users 	
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Operations

What is it?

The operational certification, operating conditions and operating approvals or authorisations for RPAS and AAM and related sub-elements. This includes:

- Operator (organisation) approvals
- Maintenance organisation approvals
- Operating conditions
- Operational approvals
- Regulatory interfaces (licensing, maintenance, equipage, certification, registration marks, security, etc.).

What do we want to achieve?

CASA aims to maintain an effective risk-based regulatory framework for all individuals and operational authorisations. This framework will be scalable and accessible to all entrants, supported by regulatory oversight and commensurate with the level of risk an operation may pose.

How will we do this?

Immediate Term (2022 – 2023)	Near Term (2023 – 2026)	Medium Term (2026 – 2031)	Long Term (2031 – 2036)
<ul style="list-style-type: none"> • Develop and publish further guidance material for RPAS operations already enabled within existing regulation including acceptable means of compliance • Develop and publish guidance material for approval of R&D operations • Implement regulatory changes from the PIR of CASR Part 101 • Publish additional standard scenarios and SORA guidance for low risk RPAS operations • Review and publish guidance on the carriage of dangerous goods by RPAS 	<ul style="list-style-type: none"> • Develop guidance on the operational approval requirements for AAM operations, including operations which are remotely piloted and pilot-on-board • Conduct a gap analysis of CASR Parts to identify regulatory changes required to support RPAS and AAM operations • Review existing approval and oversight processes to ensure they are proportionate to the risk and complexity of operational activities • Develop standards for international RPAS and AAM operations 	<ul style="list-style-type: none"> • Integrate RPAS operational requirements into relevant CASR Parts • Continue to mature risk calculation using data, AI and/or quantitative methods • Consider alternative methods of regulatory oversight, including possible utilisation of self-administering organisations • Implement changes required to support operational requirements for AAM 	<ul style="list-style-type: none"> • Continue to monitor full regulatory framework to ensure processes and requirements remain fit-for-purpose • Advance data-driven models of risk that use real-time and centralised data of operations to provide automated and real-time approvals



<ul style="list-style-type: none">• Continue to implement digital tools to enable more efficient approval pathways	<ul style="list-style-type: none">• Develop SMS and human factor policies that are proportionate to risk and complexity		
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Infrastructure

What is it?

The supporting structures and facilities necessary for the safe operation of RPAS and AAM. This includes:

- Airports, vertiports and vertipads
- Infrastructure related operator approvals
- Flight test ranges
- Drone detection systems and information sharing
- Spectrum and data sharing.

What do we want to achieve?

CASA aims to create clear and risk-based standards as well as simple, flexible and efficient authorisation pathways for operators of infrastructure with a focus in automating authorisations to ease operational overhead.

The activities identified in the RPAS and AAM Roadmap will be informed by other NEAT Policy Statement initiatives including the National Drone Detection Network (NDDN) and the NEAT infrastructure planning framework.

How will we do this?

Immediate Term (2022 – 2023)	Near Term (2023 – 2026)	Medium Term (2026 – 2031)	Long Term (2031 – 2036)
<ul style="list-style-type: none"> • Develop guidance material, design requirements and regulations for vertiports and other infrastructure required to support AAM operations • Develop guidance for research and development infrastructure (e.g. flight test ranges) • Work collaboratively across government to understand and establish spectrum requirements for RPAS and AAM • Work collaboratively with DITRDC to establish the NDDN and support all safety aspects of the 	<ul style="list-style-type: none"> • Implement a regulatory framework to support RPAS and AAM infrastructure (e.g. vertiports, vertipads etc.) • Develop certification standards for infrastructure and infrastructure related equipment • Develop a regulatory framework to support research and development infrastructure to operate effectively 	<ul style="list-style-type: none"> • Development of service provision model regulations • Regulate operator training and requirements for infrastructure operators • Regulate equipage requirements for infrastructure operators 	<ul style="list-style-type: none"> • Mature regulations and approval processes to support RPAS and AAM related infrastructure.



Infrastructure Planning Framework			
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People

What is it?

The training, licensing and ongoing competency requirements to ensure remote pilots, autonomous aircraft supervisors, maintainers and other operationally critical personnel can operate within a comprehensive safety framework which scales to the level of risk involved. This includes:

- Remote pilot accreditation and aircraft supervisor accreditation
- Remote pilot training and licensing
- Aircraft supervisor training and licensing
- Non-certified and certified RPA maintenance personnel training and licensing
- Cabin crew
- Training organisations
- Instructor/examiner training and licensing
- Diversity and inclusion in the talent pool.

What do we want to achieve?

CASA aims to advance the evolution of existing regulatory requirements for training, licensing and ongoing competency for all roles involved in recreational and commercial RPAS and AAM operations. Guided by the work of ICAO and other aviation safety regulators, this may include licencing and training pathways that support the transition of people between more traditional aviation roles and RPAS and AAM operations.

How will we do this?

Immediate Term (2022 – 2023)	Near Term (2023 – 2026)	Medium Term (2026 – 2031)	Long Term (2031 – 2036)
<ul style="list-style-type: none"> • Review and implement an alternative training and examination pathway for remote pilots conducting BVLOS operations • Engage with other aviation safety regulators to identify options for aligning RPAS training and licensing requirements • Review the competency and training requirements of operationally critical personnel involved in RPAS and AAM operations to identify 	<ul style="list-style-type: none"> • Implement regulatory and system changes following the review of RePL requirements • Review radio operator competency requirements for remote pilots • Align training and licensing requirements with international standards • Update regulations to support new licensing requirements 	<ul style="list-style-type: none"> • Develop a specific set of outcome-based standards for RePL training on large type RPAS • Introduce updated licensing requirements required for RPAS and AAM operations with consideration of increasing levels of automation and autonomy 	<ul style="list-style-type: none"> • Implement standard training and licensing requirements for personnel involved in passenger carrying AAM • Implement standard licensing and training requirements for autonomous AAM dispatchers



<p>future regulatory changes</p> <ul style="list-style-type: none"> Review current RePL requirements and consider renewal or currency requirements, class and type ratings, and endorsements 			
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Safety and security

What is it?

The standards, systems, guidance, and management of safety for uncrewed operations. Safety and security also consider methods of enforcement, incident and accident reporting and security elements of uncrewed operations as they relate to safety. This includes:

- Safety Management Systems (SMS)
- Safety promotion
- Safety innovation
- Accident and incident reporting, analysis and investigation
- Enforcement
- Data collection.

What do we want to achieve?

CASA will continue to work within existing security frameworks, while strengthening cooperative ties with other Australian government agencies.

Further, CASA aims to take a scaled approach to safety and security management that enables innovation through flexible and informed, risk-based solutions to ensure a high level of safety and security for RPAS and AAM.

How will we do this?

Immediate Term (2022 – 2023)	Near Term (2023 – 2026)	Medium Term (2026 – 2031)	Long Term (2031 – 2036)
<ul style="list-style-type: none"> • Publish SMS guidance materials for RPAS operations • Establish RPAS focused safety seminars and promote CASA’s ‘just culture’ philosophy • Provide guidance to law enforcement agencies and state organisations on the application of CASA regulations • Consider data collection and uses to improve safety outcomes • Engage with other government agencies 	<ul style="list-style-type: none"> • Consider a tiered requirement for SMS for RPAS operators • Continue to work with industry associations to promote key learnings • Work with DITRDC to provide transparent, reporting on RPAS enforcement actions to promote corrective actions and lessons learned • Coordinate with enforcement agencies and revise CASA’s enforcement manual 	<ul style="list-style-type: none"> • Continue to promote and understanding of ‘Just Culture’ across the RPAS and AAM sectors • Implement processes for the approval of SMS for RPAS and AAM operators • Consider options to incorporate incident and accident reporting existing systems • Coordinate a comprehensive approach to enforcement between enforcement authorities 	<ul style="list-style-type: none"> • Continue to undertake safety education and promotion activities to embed a positive safety culture • Consider automatic safety reporting



to understand and identify RPAS and AAM cybersecurity risks			
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DRAFT

Community

What is it?

This is how industry and government set the stage for widespread community acceptance and build the social licence to operate remotely piloted aircraft technologies. Without engagement and acceptance from community, it will be hard for the commercial sector to realise the benefits these technologies can deliver. This includes consideration of:

- Engagement and consultation
- Social licence
- Sustainability and environmental impact
- Noise
- Privacy.

What do we want to achieve?

In discussions with industry, it was acknowledged that RPAS and AAM must be operated in a way that is consistent with community expectations, and it may be difficult to balance this against the industry's desire to innovate and grow unless there is an appropriate level of social licence.

While CASA has a role to play through the promotion of safety education and awareness, there is a shared responsibility across industry, CASA and local, state/territory and federal governments.

How this may be achieved

It will be important for industry and governments to work together to build community understanding and promote engagement between operators and the communities in which they operate. This will be aided by clearer guidance on requirements additional to aviation safety, such as noise and privacy considerations.

The TWG identified several activities that could be undertaken to build this social licence including:

- Conduct joint industry and government baseline attitudinal research towards AAM
- Develop a social licence toolkit (e.g. best practice guidance, frameworks)
- Support educational activities that promote RPAS and AAM safety and educate a wider audience
- Support DITRDC in developing DRMS to provide operators and the wider community with a better understanding of RPAS regulations related to both safety regulations and community related regulations.

While these activities may not necessarily be led by CASA, we will continue to work with industry and other government agencies to progress and promote these activities where appropriate.