THE ASSOCIATION OF AUSTRALIAN CERTIFIED UAV OPERATORS INC. (ACUO)

SUBMISSION TO

THE AVIATION SAFETY REGULATION REVIEW

31st JAN 2014

CONTENTS

1. EXECUTIVE SUMMARY

This submission was put together by the Executive Committee of the association of Australian Certified UAV Operators Inc. (ACUO).

Our reasons for making this submission stems from our grave concerns for the safety of aviation and public safety as the 'unmanned' sector of aviation develops in Australia. CASA has played a key role in helping this industry emerge but there are inconsistencies which have emerged in regulatory structures and policy arrangements as now exist.

The challenge of ensuring a stable and coherent policy environment in a rapidly evolving commercial environment is not a simple process and presents real challenges for both the regulator and all dimensions of industry. Technology, market potential and the pressures of time can and do result in ad-hoc and often confusing arrangements, creating real challenges for regulator and industry alike. In this common journey both parties expect and indeed, demand much of each other. We, in the professional and commercial UAV operations community, earnestly desire that this journey be efficient and cooperative, not only bringing into widespread existence a new industry but in the process serving to further ensure the safety of Australian skies for all.

In Part 2 of this submission ACUO provides an overview of our association and its objectives.

In Part 3 of this submission we provide essential background material explaining the common terminology in use in the industry and the current status of the UAV industry in Australia.

In Part 4 of this submission we aim to show that significant portions of CASA regulatory reforms to date, as specifically apply to the 'unmanned' sector of aviation, display a combination of fundamental discrepancies between current CASA priorities and an emerging market sector that is inherently dynamic.

We in the UAV industry empathise with the situation faced by CASA in addressing these issues as these challenges are not uniquely Australian but rather, global. Rapid change is a standing reality. As an industry we seek to support CASA as it works to overcome a vast array of policy and technical issues associated with UAV operations, particularly those emerging from commercial operations.

The barriers and constraints faced by CASA are acknowledged as having a significant root in the fiscal pressures faced by the national air safety regulator, in the economic environment which has evolved domestically in Australia and globally over the past five years. In turn this has limited the capacity of CASA's UAV Department to draw upon many of the necessary resources required to effectively meet the challenge of regulating not only the emergence of a new facet of aviation, but also one which contains an inherent disruptive capacity.

CASA has faced real constraints in its ability to engage nationally and globally at a vital stage of the development of the UAV industry at a fundamental level, yet it has punched far above its weight as a pioneer. CASA's leadership role in the International Civil Aviation Organisation's ongoing work to develop a coherent policy framework for global commercial UAV operations is a key example of its capacity to achieve in the face of adversity. This achievement is recognised globally and is directly indicative of Australia's national capacity to shape the future of targeted industries; It carries with it direct global opportunity for Australian industry if the domestic regulatory structures and arrangements

are optimised in the first instance. The development of an effective safety regime for UAVs by CASA is in fact the basis of national competitive advantage in the domestic UAV industry.

ACUO argues the rapid growth of the commercial UAV industry demands the Australian Federal Government and CASA appropriate greater resourcing to meeting the regulatory needs of the sector. This will greatly contribute to ensuring the safe and sustained evolution of the Australian airspace regulatory system to accommodate unmanned operations. Australia has previously seen the effects of under-resourcing of air safety facilitation structures in times of rapid development of specific aviation sub-sector capabilities; the rise of commercial air transport during the 1920s and 1930s with its accompanying high rates of aircraft loss is a direct equivalent in this regard.

Lastly, this submission identifies an unfair and biased approach to 'access to airspace' for commercial UAV operators with this issue emerging from the functional separation of regulatory policy and air safety implementation missions as respectively assigned to CASA and Air Services Australia.

This submission details the background in each case and provides a number of recommendations to try and alleviate some of the immediate issues identified.

Further recommendations are made with respect to CASA's approach to safety oversight, enforcement and continued regulatory reform of the 'unmanned' sector of aviation. Effective funding for CASA's UAV Department remains a critical challenge in this regard and while Australia faces acknowledged fiscal pressures at a whole of Federal Government level, this must be balanced against the emergence of a major new industry in not just Australia, but globally.

We are concerned CASA is at a tipping point with respect to UAV safety in all aspects.

The national regulator must ensure the establishment of a coherent regulatory regime which is enforced in a clear and coherent manner; there is a real risk of chaos as the UAV industry rapidly expands in Australia and internationally. Uncertified UAVs flying out of control at low altitude over the motor vehicle and rail lanes on the deck of the Sydney Harbour Bridge are regrettably no longer a science fiction scenario but rather an unfortunate reality.

CASA is acknowledged as having played a pioneering international role in shaping the safety regime as applies to UAVs but now needs to take the further step of working to shape the very culture of the rapidly developing commercial industry.

A very large proportion of the new commercial UAV operators now appearing in Australia do not come from an aviation background and are not familiar with aviation culture. Often, new sector entrants do not accept that UAVs are in fact aircraft in the first instance and do not appreciate why the stringencies of manned aviation regulation must apply if the skies are to remain safe for all. Again, Australia has available to it a direct experiential comparator for such a situation, the rise of commercial air transport during the 1920s and 1930s.

There is a direct need for CASA to engage more fully with the commercial UAV industry and ACUO to determine how best to protect the safety of our skies, ensuring the integrity of the manned and 'unmanned' sectors of our great national aviation sector.

It is hoped that the Aviation Safety Regulation Review will provide CASA with an opportunity to bring into being a safer, more productive system of regulatory management of this regard.

ACUO will be pleased to work alongside CASA to achieve this goal.

ACUO will likewise be pleased to provide further information to the review if requested.

Yours sincerely,

Brad Mason
Secretary
ACUO

2. ACUO THE ASSOCIATION

A. Who we are

The Association of Australian Certified UAV Operators Inc. (ACUO) is a not-for-profit association first started in 2009 by seven of the then eight CASA certified UAV operators. ACUO was formally registered as a legal entity in the State of Queensland on the 31st March 2010.

The ACUO membership has decades of experience in commercial UAV/RPAS operations and an impeccable record of safety. Since commercial UAV/UAS/RPAS operations formally began in this country in November 2002, there has not been a single accident or incident specifically resulting from ACUO member's thousands of hours of commercial UAV flight operations.

This record of achievement by ACUO members is a major source of pride, and is a status we are eager to protect by maintaining the highest standards of safety and risk management.

ACUO is bound by its Constitution to:

- Protect the interests of CASA Certified UAV Operators
- Establish the association as a responsible authority and;
- Promote the growth and expansion of the commercial UAV/UAS/RPAS industry in Australia

B. What we stand for

Specific objects of the association are:

- To improve the standards of unmanned aviation for commercial purposes whilst promoting and maintaining a sound regulatory framework in which to do so.
- To improve the safe and responsible flight activities of commercial unmanned aircraft within an easily accessible and low cost environment.
- To foster and encourage the formation and growth of development of unmanned aviation controllers, and to provide the guidance and training impetus for inexperienced controllers and new entrants to the industry.
- To revive, encourage and promote interest in Australian commercial unmanned aviation by encouraging participation in unmanned flying.
- To act as an information resource for counsel to organisations or individuals whose decisions may affect commercial unmanned aviation activities and operator rights.

C. Who we represent

The association currently has 23 Ordinary Members and one Industry member, representing approximately 33 percent of all commercially certified UAV Operators in Australia. We have recently seen a three-fold increase in association membership in a single year and expect this will continue to rise as CASA continues to certify new entities as UAV operators.

The seven founding members of ACUO were the first certified UAV Operators in Australia. This group of seven alone supports a combined experiential record of more than 100 years of commercial UAV operations involving UAVs of all types; from fixed-wing UAVs to conventional rotary UAVs and the new multicopter types, both here and overseas.

ACUO was the first commercial UAV operator's association of its type in the world and only in the last 12 months have we seen similarly focussed associations being formed in Europe and the Americas. This operator focus stands in contrast to the acknowledged existence of generic, marketing-oriented industry bodies which do not address the challenges of day to day commercial aviation activity – or "air work". In this respect, ACUO is the only UAV industry body directly representing the commercial sector of 'unmanned' aviation in Australia.

ACUO was recently invited to join the peak global UAV industry association, UVS International, as a Non-Corporate Partner Organization and with it, a position on the International RPAS Coordination Council, a prestigious industry body initiated by UVS International to coordinate RPAS standards globally. Through this association ACUO will also be represented in various international RPAS committees focusing on issues of importance to the commercial sector of unmanned aviation, including RPAS Insurance, RPAS Flight-Crew Training and RPAS Airworthiness and Maintenance.
ACUO is the only Australian industry association now participating in this important global industry and regulatory policy initiative.

ACUO is more than happy to provide advice to government, public and private enterprise, businesses and organizations on the fundamentals of UAV/RPAS operations in the Australian National Airspace, and associated issues.

Contact details for the association are:

President: Joe Urli – [for all Media Representation/Interviews/Statements etc]
PH: 0408 382 165
Email: president@acuo.org.au

Secretary: Brad Mason – [for all General Administration, Association and Membership enquiries]
PH: 0408 772 571
Email: secretary@acuo.org.au

Members: http://www.acuo.org.au/findoperator.htm [ie Commercial UAV/RPAS Services]

Website: http://www.acuo.org.au/

3. BACKGROUND MATERIAL

A. Terminology in use

The terms 'Unmanned Aerial Vehicle' (UAV); 'Unmanned Aircraft System' (UAS); 'Remotely Piloted Aircraft System' (RPAS); and 'Drone'; essentially all mean one and the same thing, that is:

> *"An aircraft [or aircraft-system] that is flown from a remote location without a pilot located in the aircraft itself."*

Normally the pilot associated with the system is located on the ground, but the remote location in question can equally be aboard a vehicle, a boat or even a manned aircraft.

'UAV' was the original term adopted by CASA in July 2002 and is still widely in use including much of CASA certification, licencing and guidance material.

'UAS' is the more up-to-date internationally accepted term in use today, including with CASA.

'RPAS' is the new ICAO adopted terminology - soon to be adopted internationally, including CASA

'Drone' is a generic term used by the media, predominantly in relation to military systems but more commonly these days referring to all 'Unmanned' or 'Remotely Piloted' aircraft.

Recreational 'remotely piloted' aircraft are termed "Model Aircraft", and are flown only for sport and recreation purposes, under the administration of the MAAA and the Civil Aviation Safety Regulations (CASR) 1998 - Part 101.G.

B. Current status of the UAV/UAS/RPAS industry in Australia

The UAV industry in Australia has had a long genesis with CASA, one of the first national regulators in the world to establish a coherent framework facilitating airspace access. The UAV industry in Australia has however been dominated by military and government requirements and applications up until comparatively recent times.

Total Australian Federal Government expenditure on UAV capabilities between FY2000-2001 and first half FY2011-2012 has been calculated by the Australian-based global UAV sector consultancy LFRG Pty Ltd to have reached $548.2 million. Australian Department of Defence requirements over the decade long period accounted for 99 percent of this expenditure. Australian military operations in the West Asian theatre have been a major influencer in this regard. Other Federal Government users of UAVs have included the Australian Federal Police and the Australian Customs Service, these entities having contracted services for demonstration and trial purposes ahead of possible future acquisitions.

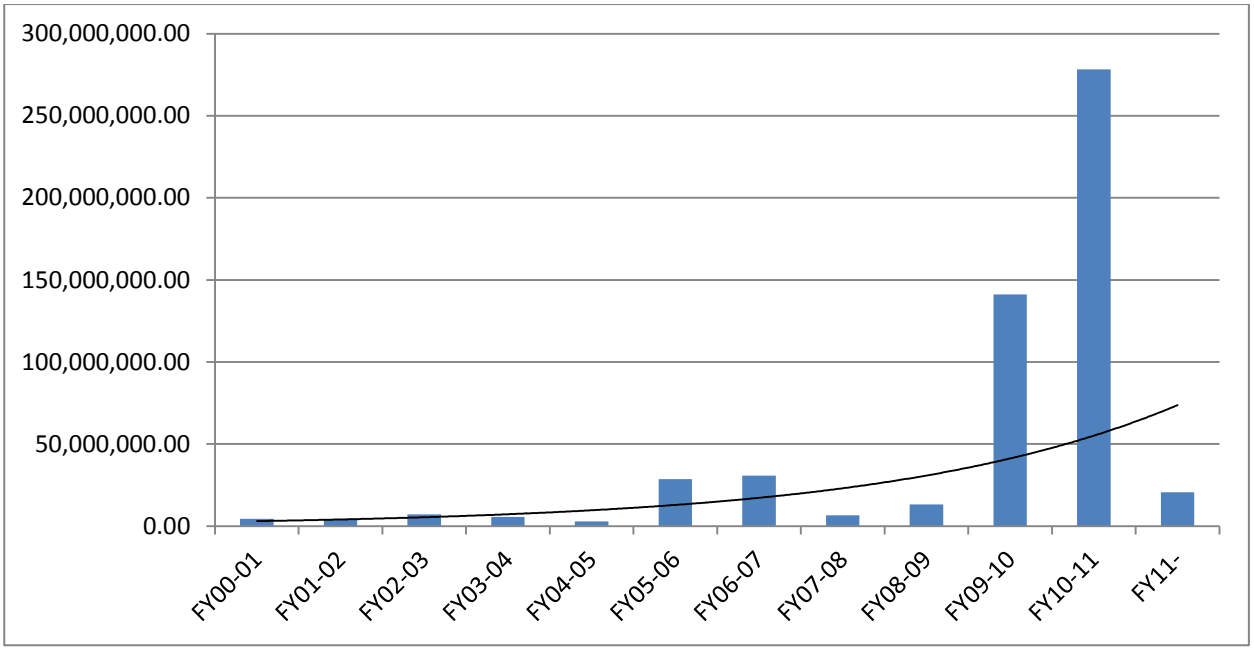

Table: Australian Federal Government UAV expenditures by fiscal year 2000-2001 to mid FY2011-2012. Trend line indicates average growth rate across this period. Currency units are Australian dollars. Table copyright belongs to LFRG Pty Ltd with data used by ACUO with permission.

LFRG analysis indicates the forward Australian Federal Government market for UAV systems between 2012 and 2022 could total between $2.38 billion and $2.4billion, Department of Defence capability requirements again predominating. The Australian Federal Government is also a prospective market for commercial UAV services, examples being the contracting of services in support of environmental monitoring, agricultural forecasting and weather observation.

Australian State and Territory Governments are emerging as both UAV buyers and customers for commercial UAV services. The primary focus for UAV acquisitions is occurring in the context of police and emergency services operations, with government entities in Victoria and Queensland both having purchased initial capability in the past three years. Forward market opportunities are seen as existing in all Australian state and territory jurisdictions as the Australian regulatory environment for UAVs evolves, with this applying not only in the context of supporting first responder organisations but also in meeting data requirements of other agencies.

The size of the Australian private-sector market for UAV systems and services is difficult to quantify in fiscal terms but is already generating sufficient revenues to sustain 60 plus CASA certified UAV operators. This portion of the market is dominated by small to very small types of UAVs, with 'Multicopters' predominating. Established portions of the market include aerial photography and aerial survey, particularly in the form of services to the real estate and mining sectors with usage now commonplace. Emergent market segments include agriculture, commercial environmental monitoring and facilities inspection and monitoring. These new segments are expected to rapidly mature over the next 12-36 months.

The typical Australian commercial UAV services entity is currently a nano to micro-sized business with this representing the bulk of new starts now pursuing CASA 'Operator Certificates'. In parallel the

Australian commercial UAV services sector supports a number of established specialist engineering and professional services providers, particularly in the surveying and geographic information systems sectors, which have raised UAV business units as an augmentation to their existing offerings. These two distinct UAV sector communities are in addition to the traditional aerospace and defence sector companies operating in the Australian marketplace, several of these also seeking to develop commercial UAV business as an augmentation to their existing military focus.

The bulk of UAVs now used for commercial operations in Australia are sourced internationally with key supplier nations including China, Germany, Canada and the United States. A typical off-the-shelf multicopter system, comprising air vehicle, sensor payloads, ground control station and datalink, can be purchased off the shelf for as low as $1000 for a very basic introductory model to around $40,000 for more sophisticated commercial types. This low cost means that one of the defining features of the commercial UAV industry is its relative ease of affordability for new entrants, marking a significant shift in the traditional financial barriers which have restricted access to aviation at large. The corollary to this low cost of entry is that many of the nano to micro entities which have held CASA UAV Operator Certificates for some time are now exploring design and manufacture of their own systems, this facilitated by the widespread availability of common components given the close associations between the UAV industry and the information technology, commercial telecommunications and consumer optics sectors. Several of these Australian firms have attained sufficient capacity and maturity as to be now selling their systems internationally.

The emergence of an Australian ‘Multicopter’ UAV industrial base is in addition to a small number of established entities providing subsystems such as sensors and engines in the global supply chain. Australia currently supports just one complete systems house manufacturing large UAVs for the global market, this being Aerosonde, a subsidiary of AAI Textron. The realities of large UAV design and manufacture, coupled with strong established international competition, strongly suggests that this specific portion of the UAV market has limited industrial potential in Australia for the foreseeable future.

4. SUBMISSION POINTS & RECOMMENDATIONS

A. Illegal UAV operations and the challenge of safety oversight and enforcement.

Background:

CASA's pioneering introduction of the Part 101 regulations for UAVs in July 2002 sparked an immediate flurry of interest in commercial UAV operations in Australia, though actual development of a corresponding business sector remained slow. Twelve Operator Certificates were issued over the next four years but of these, around 25 per cent of entities ceased trading within some two years due to limited demand for services coupled with relative infancy of the available technology. In addition the industry faced a wide range of practical challenges, ranging from availability of finance, development of appropriate business models and learning of appropriate skills. The lead times required to secure an operators certificate also acted as a disincentive, commercial operations clearly not being possible until that threshold was passed. Unsurprisingly, a small number of instances emerged during this initial period where new starts elected to offer services without possession of a UAV operators certificate. CASA's response to such illegal operations was swift, effective and appropriate, ensuring the safety and integrity of commercial UAV operations was upheld.

Around 2007 the technology of small commercial UAVs passed through a maturity threshold, resulting in systems more easily piloted and more reliable in operation. Production small UAVs became more widely available and prices began to drop. At this same time the extant certified UAV Operators began to see a steady increase in the number of illegal UAV Operators appearing around the country with CASA regularly being informed of this problem.

On its formation in 2009, ACUO made a presentation to CASA pointing to an explosion of growth in illegal UAV activity in Australian airspace. Concerned at the safety implications of this, and the inherent challenge it represented to the integrity of our industry in its early lifecycle, we sought from CASA a pro-active stand against illegal UAV operators.

CASA's considered evaluation of our concerns at that time gave rise to what is now widely regarded as a 'soft policy' approach wherein suspected illegal UAV operators, if contacted, are counselled and in extreme cases formally notified to "cease and desist". As a part of this policy arrangement illegal operators are in all cases encouraged to apply for formal certification. CASA's adoption of this policy approach can be understood as a balanced method of dealing with an unknown quantity of incidents in what was at that point in time an industry segment whose parameters were equally opaque, and where resources were not available to the regulator to provide an alternative.

ACUO acknowledges CASA's soft approach has assisted in increasing the rate of uptake of UAV operator certificates. Our conservative estimates would indicate that more than half of the currently certified UAV Operators were operating illegally prior to engagement and notification by CASA. CASA can be congratulated in this respect for acting to bring illegal operators into the overall national aviation safety net.

ACUO believes it is appropriate however, for this 'soft policy' approach to be placed under review. Commercially available UAV technology has continued its rapid pace of evolution and maturation, and the widespread availability of systems means they can be ordered over the internet on and commence flying within short days. We are concerned that this proliferation, without effective enforcement of

regulatory requirements, will give rise to a real and present danger to aviation safety in this country. It is our current estimate that the number of illegal operators in Australia now outnumbers the legitimate UAV operator certificate holders by a ratio of three to one or even higher. Since 2009 we have reported more than 60 instances of illegal operations to CASA. In such circumstances reliance on a soft policy structure, implemented by a small team of specialists, must be questioned as an appropriate response to a rapidly growing industry.

A significant portion of our concerns regarding the nature of this 'soft policy' structure is that it appears to act against providing the regulator with effective enforcement capabilities. Indeed it is difficult to identify any instance of a prosecution under Part 101.270 for operating illegally despite clear and verifiable examples of such activity. This stands in contrast with CASA's Current CASA enforcement procedures do not provide for simple 'on-the-spot' enforcement of illegal UAV activities.

Australia is not isolated in this respect, the problem of illegal operations being global. However, other jurisdictions such as the United States and United Kingdom have shown themselves to be quite proactive in taking on this challenge. The Federal Aviation Administration, for example, has a strong track record in prosecuting UAV operators who fail to comply with its regulator structures.

A failure to penalise illegal UAV operators gives rise to a series of fundamental contradictions in the Australian regulatory environment. If illegal operators are aware that the regulator does not have them under surveillance and that even if the regulator catches them, the consequences limited, the legal concept of penalty as an incentive to pursuit of compliance is directly undermined. The absence of any contemporary enforcement case law in this regard strongly suggests to illegal operators that their best course of action is in fact to adopt a low profile, continue flying and as a result avoid the financial overheads of gaining and sustaining certification. This contrasts with the situation of bona fide certificate holders who are required to accept continuous surveillance and monitoring by the regulator and must support costly operating overheads.

ACUO does not seek penalisation as the first step in taking on the challenge of reigning in illegal operations, but we do believe it is now appropriate for CASA harden its policy structures. There is a direct precedence for this in the progressive evolution of regulations as have historically applied to commercial aviation, the critical growth phase of the 1920s and 1930s and its associated high rate of incidents being a clear case in point. The commercial UAV industry has likewise now reached a threshold point which requires a corresponding set of reactions from the regulator. Such an approach would be totally consistent with the leadership role taken by CASA with respect to UAV regulations for almost two decades.

ACUO Recommendations:

1. CASA needs to rethink and rework its current enforcement procedures applying to the 'unmanned' sector of aviation, so that;
    - They are entirely workable and cost-effective to administer and deliver across the 'unmanned' sector of aviation, as well as the rest of the aviation industry.
    - They provide an immediate, positive and strong deterrent value to illegal UAV operations.

2. CASA Enforcement procedures for the 'unmanned' sector of aviation should be considered in conjunction with a nation-wide awareness campaign to inform and educate the public and industry about the do's and don'ts of RPAS operations in Australia, and the safety/regulatory/legal basis for having regulations.

    - There needs to be a re-focus of attention by CASA on the illegal UAV operators, not the certified UAV operators as is currently the case.

    - There needs to be a strong focus on 'DETERRENCE' and getting the message across: "If you breach the aviation regulations, you will pay the penalties".

    - There also needs to be a clear distinction between military and civil RPAS experience when qualifying and operating RPAS. Military experience needs to be assessed for; Category, Technical and Operational competence and relevance. Military RPAS operations do not directly correlate with commercial RPAS operations.

3. That the penalties for illegal UAV operations should include:

    - Increased fines representative of the sort of money they are earning from their illegal activities [ie thousands of dollars, not hundreds] and this should increase exponentially with subsequent prosecutions.

    - Automatic confiscation of UAV equipment and if necessary, CASA sell or auction the confiscated equipment to offset the costs of enforcement.

    - An automatic 12 month ban on applying for a UAV certificate or licence after a successful prosecution for illegal UAV operations.

4. That the revised UAV regulations include a provision that makes it illegal for an uncertified UAV operator to publicly advertise their services

    - A similar provision is written into CAR88 regulations [CAR210] making it illegal for anyone to advertise for [conventional] Aerial Work Operations without an AOC
    - The same should be true for commercial UAV Operators also.

B. CASA priorities and planning for the UAV sector.

Background:

In April 2012 CASA released importance guidance to the Australian commercial UAV operators in the form of a statement of 'Goals and Objectives for the UAV industry'. This document sets out a clear roadmap for the desired future architecture not only domestically but also in the context of how CASA saw its own role in helping shape the global regulatory environment. CASA is to be commended for both the breadth of its vision and its clear articulation of the same. Implementation of the roadmap has however proven to be a challenge for the regulator. ACUO acknowledges this to be a direct result of the wider fiscal and resourcing environment the organisation is currently required to function within. ACUO specifically notes with concern the need for CASA's UAV Department to be provided with increased resources to match the rapid evolution of the commercial industry in this country lest a lag between current regulatory arrangements and system proliferation come to pose a direct safety threat within the Australian aviation system.

CASA has direct potential to achieve not only its vision for safe and well regulated commercial UAV operations as articulated in its 2012 roadmap, but in fact far more. The resource challenges faced by the regulator do however present challenges as the UAV Department seeks to balance a significant workload on a day to day basis. This burden as stands holds potential for the introduction of errors and misunderstandings on a wide variety of fronts, whether in the day to day handling of queries and applications from industry through to more significant challenges in determining specific forward priorities.

ACUO would like to see CASA resource its UAV Department to facilitate bringing in additional expertise with real world UAV operations experience in the commercial industry, this providing a stronger level of understanding of the types of pressures and challenges experienced on a day to day basis by operating certificate holders.

ACUO believes that such additional resources would enable CASA to:

- Achieve greater coherency in its ongoing process of review, redrafting and reissuing of regulations as apply to UAV operations in all aspects.
- Achieve greater efficiency in the handling of individual applications, with this including streamlining of information requirements and data gathering overheads for both applications and CASA. ACUO notes that there are delays in the current system, particularly with respect to how CASA continues to respond to problems emerging from unannounced administrative changes to Part 101 regulations in 2011 which have affected the validity of some operating certificates issued prior to that time.
- Ensuring a substantive capacity is developed to not only to create the safe basis of UAV operations in Australia, but also establish a continuous monitoring capability which observes, learns and helps evolve the overall architecture.

ACUO Recommendations:

This submission argues CASA needs to re-evaluate the resourcing and priorities of the UAV department as follows:

- Actively enforce the current regulations;
- Facilitate the means for the UAV department to realign its work program and priorities with the rapid pace of commercial developments.
- Rationalise and harmonise the standards and conditions as apply to UAV operations and certification.
- Facilitate the streamlining of paperwork, licences and certification.
- Facilitate the development of a monitoring and surveillance regime to help deal with the problem of illegal operations.
- Initiate a Nation-wide public awareness campaign to inform and educate the public about how UAV safety is being planned for and managed to ensure the integrity of the national airspace system.
- Allow for the engagement of increased UAV sector expertise to enhance the responsiveness of CASA regulatory activities to actual industry requirements and challenges.

C. UAV operator training and certification.

Background:

UAV operator training and qualifications are a vital component in achieving the safe and effective integration of unmanned systems into the national airspace system. When the CASR Part 101 regulations were first introduced in July 2002, there was little concept of how UAVs would be operated. The regulations provided little by way of prescriptive methods, the Advisory Circular 101-1 speaking more about the broader picture and the overall safety objectives. It was up to prospective commercial operators to work out how they would actually implement UAVs commercially and to present their case to CASA. UAV operator training in this regard became subject to that case by case analysis.

Prior to 2009, CASA accepted and acknowledged that they did not have the resources or the experience to deal with the unmanned sector of aviation. Between 2002 and 2005, CASA took steps to engage industry and to collectively share the learning curve between all parties. As part of this approach CASA waived application processing-fees for the first year of the new regulations. But between 2005 and 2009, under resource pressures, CASA was unable to give the unmanned aviation sector the priority it required. In 2009 CASA sought to remedy this by engaging an aviation sector consultant adviser to assist in its "catching up" with the wider commercial industry. This provided CASA with an opportunity to address standing issues of training and qualification of UAV operators.

In 2011 CASA began working with the Training and Logistics Industry Skills Council (TLISC) and a select group from industry to develop a 'National training standard' for RPAS Operators and Pilots. The training package emerging from this development process is designated a Certificate III in Aviation (Remote Pilot) – level 1 [AVI30612].

ACUO welcomes the creation of a standardised UAV training package however there are a number of key challenges with the Certificate III as emerged. These comprised:

- It is not generic in nature but very specific to one type of RPAS, small fixed wing types, meaning it is not relevant to the most prevalent type of UAV in commercial use – the multicopters.
- It can only be delivered by a Registered Training Organization (RTO), and not an aviation training school, meaning it does not give due recognition to aviation culture as a vital element of aviation safety.
- Because it is not relevant to industry needs, the Certificate has failed to achieve industry recognition.

CASA has since gone on to 'approve' a modified version of the TLISC training package for delivery by 'CASA approved Training Organizations' and in 2013 began to assess applications from prospective training organizations with two providers approved to date. ACUO believes further evaluation of the package and its appropriateness is required.

ACUO is particularly concerned that as approved by CASA, the training package is not being applied on a standardised basis. The applicant seeking to deliver the course has to decide which parts of the 'CASA approved package' directly applies to their own UAV types, and then modify the other parts to suit. CASA then evaluates whether that is sufficient to warrant the issue of an RPL1 Licence on completion of their training package. CASA does not have a common format for evaluating individual training

packages; nor is there a Manual Of Standards (MOS) which CASA or industry can use as a gauge. This means the entire process of assessing, reviewing and tailoring the training package is at risk of subjective decision making and implementation. Of the two CASA approved providers delivering the package, one now offers a 12 day course while the second offers a five day course. Independent industry evaluations of an effective RPAS training package strongly suggests the level of knowledge and experience required to qualify for a RPL1 Licence could not be effectively delivered in less than 7 days, and depending on the level of prior knowledge, could be closer to 2 weeks of training or even more.

ACUO respectfully questions the basis upon which CASA has approved a Training Organization to deliver a National RPL1 training package in only five days (comprising 3.5 days of theory, 1.5 days practical). ACUO accepts that this might be all the basic training required to operate that particular company's own type of UAV, but questions whether this is a basis for issuing a national standard RPL1 Licence. We note in this context that the TLISC suggest their Certificate III as originally developed in cooperation with CASA was anticipated to take some 1-2 years to successfully complete.

ACUO Recommendations:

CASA needs to re-evaluate the parameters of its UAV operator training package to ensure the standardisation of:

- The conditions applying to all new UAV/RPAS Operators and Pilots, and
- Ensure the RPL1 Training Package is relevant to ALL training organizations and UAV types.

D. Planning and implementation of new aviation safety regulations

Background:

The current CASR101 regulations classify UAVs as follows:

- Micro UAV: 0-100grams – largely exempt from the regulations due their tiny size and very low potential for injury or death. [They might be a real nuisance but they won't kill you!]
- Small UAV: 100grams – 150kgs [100kgs for rotary UAVs] – must comply with CASR101 but largely exempt from the bulk of the other regulations, including airworthiness [Part 21]
- Large UAVs: Over 150kgs [Over 100kgs for Rotary UAVs] – Must comply with all the aviation regulations as they apply to conventional aircraft and operations.

In 2012-2013, following up on CASA Project OS11/20, CASA introduced a new UAV classification system under the new Part 11 administrative rules that give CASA sweeping powers to adjust, alter or modify the regulatory requirements, without actually changing the regulations.

The new classification system is already being implemented on new UAV Operator Certificates, UAV Controller Certificates and Remote Pilot Licences, even though the current regulations still detail the original classifications.

The new UAV Classification system is as follows:

- Group A – Under 2kgs MTOW – exempt from the aviation regulations if operated in accordance with default operating privileges.
- Group B – 2-7kgs MTOW – Minimal oversight from CASA and basic SMS.
- Group C – 7-20kgs MTOW – Greater oversight from CASA and more prescriptive SMS.
- Group D – 20-150kgs MTOW – Close to full regulatory compliance and conventional requirements.

ACUO agrees with this new approach to the breakdown of the small UAV Class, however we note here our concerns regarding the unusually obscure blanket exemption of UAVs used in law enforcement roles. UAVs, regardless of size, are aircraft. Similarly all existing manned law enforcement aircraft operated in Australia are required to comply with CASA regulations. An exemption of law enforcement UAVs from such requirements not only compromises air safety, it also raises significant issues with respect to allied areas of regulation such as privacy law.

ACUO is also concerned as to the safety case or clear justification for exempting the sub-2kg sector of the UAV industry from CASR101 regulations. This segment has proved to be very problematic with numerous incidents of abandoned UAVs after the operator has lost control of them, usually inside Controlled Airspace. We note the example of the illegal operator who crashed into the Sydney Harbor Bridge in late 2013 sparking a security incident and yet was handed his UAV back without penalty.

We note that the sub-2kg segment of the industry is proving the most difficult to manage effectively because of:

- The sheer numbers of units in circulation nationally, and where they proliferate, this being predominantly in populous areas and under controlled airspace.
- The lack of effective management of the recreational radio control sector by the MAAA
- The insubordinate behaviour from recreational UAV operators and illegal operators.

ACUO notes that in some international jurisdictions, including the United Kingdom, administrative authority for very small classes of UAV has been delegated to industry. ACUO has discussed this approach with CASA and remains open to further discussions regarding adoption of similar arrangements in Australia, particularly given the resource pressures which face the regulator.

ACUO Recommendations:

ACUO recommend that at the very least, CASA should impose a minimum standard for ALL UAV types and operations, regardless of size or purpose., with this including UAVs used in law enforcement and other public duties.

Until such time as CASA can set in place a formal standardized RPAS training system, ACUO recommend CASA set the following minimum standards for the sub-2kg Class of UAVs:

- Must pass a BAK theory exam (this can be obtained from a large number of flight training schools in a single day).
- Must register with CASA along with details of the UAV and the operating environments etc.
- Must log a minimum of 3 hours flight-time.

These minimum standards would ensure that all operators of sub-2kg UAVs;

- All have a common standard of aviation knowledge and experience.
- Understand how to share the airspace [Class G] safely with other aviation interests and,
- Are known to CASA so that we have some record of the number of sub-2kg UAVs operating in Australia and who is flying them.

Where CASA wants/needs to make changes to the regulations in the future, CASA has a database of people who should be notified. Without such information, CASA can only guess at the size and scope of the industry at the smallest level and who needs to be informed. Given that the size of UAVs is decreasing rapidly, it is essential that CASA fully understands the scope of the industry at this level in the near future.

E. How CASA consults and finalises changes to the aviation safety regulations

Background:

Prior to the establishment of ACUO in 2009, the unmanned sector of aviation in Australia had been represented by various different 'interest groups'.

In the 90's, K.C. Wong at the University of Sydney established the 'Australian UAV Special Interest Group', which guided much of the early work in the initial introduction of the UAV regulations in 2002.

The slow uptake of commercial UAV Operators until 2009 however stunted the industry. This reflected the small number of certified UAV operators at the time, their interests being eclipsed by the much larger representation arrangements built around the research and multinational aerospace and defence manufacturing sectors, these dominating much of CASA's discussions and engagement with industry for almost three years.

ACUO's establishment in 2009 saw an initial phase of cordial relations with CASA though without recognition of the depth of experience and knowledge the association had to offer. Our policy concerns, coming from the front line of commercial activity, have taken some time to gain appreciation from the regulator. Inversely we acknowledge that as an industry association we have a responsibility to engage effectively with CASA priorities. The development of sound functional relationships between the private and public sectors in this regard is an ongoing journey with need for constant refresh by all parties and ACUO acknowledges this reality.

In 2013 ACUO was invited by CASA to join its UAS Working Group which had hitherto been dominated by the major defence and aerospace manufacturing subsidiaries operating in Australia from home bases in the United States and Europe. We see the engagement of ACUO in this working group as a positive step forward for Australian commercial UAV operators, particularly in the context of the bulk of current and future CASA certificate holders being nano and micro sized businesses. This structural reality of the Australian industry corresponds to the types of UAVs being operated commercially in Australia, the most common being Group A and B systems. While operation of Group C systems is likely to emerge as increasingly common over the next five or so years, Group A and B types will remain dominant in fleet numbers. The challenge of engagement with small business is an enduring theme in Australian government policy making with this compounded by the increasing commonality of the nano and micro-sized business as the building block of emergent technology industries. CASA is in this context not alone in finding effective mechanisms by which to engage with the realities of an industry as developing, as opposed to an industry as government policy makers would wish it to be.

ACUO, as a significant actor in the domestic UAV industry, represents an important conduit by which CASA can meaningfully access the commercial operator community. We believe that closer engagement between the regulator and operators can only serve to the direct benefit of airspace safety in Australia. Consultation at the levels supported by our association is vital to ensuring uniformity of standards and efficient application of regulations. As is clearly recognised by CASA in its adoption of a revised classification architecture, there is no single policy and regulatory structure that applies to all types of UAVs. Aviation rule-making is a dynamic process at all times, and the balancing of sectorial needs is vital if new regulations are to prove not only functional, but also attain a coherency as part of the wider aviation safety system. We believe the rapid proliferation of Group A and B systems in Australian skies

requires stepped up engagement by the regulator as a matter of priority. ACUO stands ready to assist with this challenge.

ACUO Recommendations:

1. That the Review board look closely at the way CASA engages industry through the various CASA Working Groups; at how these Working Groups are administered, and how the information, protocols, practices and procedures as developed within these Working Groups are being transposed into workable regulation. ACUO believe there is strong merit in overhauling the Working Group process to provide a more formal means of engaging, registering and reviewing industry input.
2. That CASA develop a structured work plan for systemic engagement with the commercial sector of unmanned aviation to ensure its regulatory development efforts remains closely aligned with the realities of the Australian market.

F. Reducing the cost of regulation to business

Background:

Prior to 2013, all CASA certified UAV Operators who wished to conduct commercial UAV operations within Controlled Airspace made independent approaches to Airservices Australia (ASA) for a 'Letter of Agreement' (LOA).

The LOA laid out the conditions and requirements for UAV operations within specified Control Zones. Normally this included stipulations that the OC holder only operate within the nominated Control Zones in accordance with:

- The conditions already approved by CASA & detailed in a company Operations Manual
- Any other conditions specified by ASA in the Letter of Agreement
- A specific airways clearance from ASA on the day of proposed UAV operations

Certified UAV Operators with a signed LOA from ASA then applied to CASA for a single 'Area Approval' covering the whole LOA and frequently containing multiple Control Zones.

Subsequent 'approvals' only required the UAV Operator to contact the tower in the nominated Control Zone on the day of proposed UAV operations, requesting an airways clearance the same as any other licenced/certified aircraft operator would do. [for the same reasons in the same airspace]

To my knowledge there were around a dozen LOA's issued to Certified UAV Operators by ASA over the last 11 years and some of these are still in effect.

We are not aware of any incidents or accidents resulting from legitimate certified UAV operations conducted under these LOA's in that time.

In 2013 however, CASA announced changes to the way certified UAV Operators would be 'approved' for ALL commercial UAV operations *outside* new 'default operating privileges' of:

- Day VMC
- Below 400ft AGL
- Not in Controlled Airspace
- Not within 3nm of any aerodrome or helipad
- Not over a Populous Area

There were no reasons given by CASA or ASA for these changes, and no activity or incident we are aware of that prompted this change.

The changes now incorporate a new 'Area Approval' process through CASA for '*each and every individual flight operation*'. The new process incurs the same processing fee of $160 per hour and an estimate is provided by CASA after initial application. Both CASA & Airservices state they cannot process

an application for these new 'Area Approvals' inside of 21 days minimum. Most applications however are running into several months and hundreds of dollars.

This process for 'access to airspace' is not imposed on any other aviation activity, private or commercial.

Commercial UAV Operators are being unfairly disadvantaged by the time & cost for obtaining an 'Area Approval', where a conventional aircraft operator [commercial or private] need only 'request' an airways clearance from the tower in the nominated Control Zone.

This situation is crippling commercial UAV Operators who have invested considerable resources in their individual businesses and are trying to do the right thing. Where legitimate UAV Operators are being knocked back for approval, their customers are turning to illegal UAV operators instead, who have no qualms about operating in Controlled Airspace illegally, because the chances of being caught and prosecuted by CASA are extremely remote. [even after video evidence of the operation has often been made public] This is an unacceptable & dangerous situation.

ACUO Recommendations:

A. That CASA, Airservices Australia and ACUO form a special Working Committee to establish the baseline standards to be applied to commercial UAV operations within:

   - Controlled Airspace
   - 3nm of any aerodrome or helipad
   - Populous Areas

2. That a 'Rating' system be established by CASA for Certified UAV Operators & Remote Pilots to make one initial application for an 'Approval' to operate in Controlled Airspace & within 3nm of any aerodrome or helipad and within Populous Areas

   a. The conditions for the issue of a UAV Operator/Pilot 'Rating' be subject to discussion & agreement between CASA & ACUO

3. That a database of 'Approved Operators & Pilots' be established by CASA and shared with ASA for the purpose of confirming which OC holders have the right to 'approval'.

   a. 'Approved Operators & Pilots' can quote their ARN [or other identification] when contacting the tower for an airways clearance [to operate in a nominated Control Zone] the same as any other aviation activity will do

   b. ASA will only provide an airways clearance to 'Approved Operators & Pilots' in the database, and will report all other instances of illegal or unauthorized UAV operations to CASA for immediate Enforcement action

This concludes ACUO submission to the Aviation Safety regulation Review (ASRR).