



AERIAL APPLICATION ASSOCIATION OF AUSTRALIA LTD.

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2 April 2020

AAAA Submission to the Royal Commission into National Natural Disaster Arrangements

AAAA ('four As') is the peak national industry body representing the interests of most of Australia's aerial firefighting operators and pilots including both rotary and fixed wing operators. Further information on the Association can be obtained from our website at www.aaaa.org.au

AAAA has made consistent submissions to many of the bushfire inquiries over the last 20 years, including COAG, ACT, NSW and Commonwealth parliamentary inquiries.

AAAA ran a national aerial firefighting conference in Albury in 2015 and has since incorporated fire related issues into its National Conventions.

AAAA also provides aerial firefighting aviation safety training to members covering Low Level Hazards, Crew Resource Management and Human Factors, and the systems based Aerial Improvement Management Systems (AIMS) program, both of which are recognised by NAFC and State/Territory agencies.

In 2019 AAAA, jointly with the Australian Helicopter Industry Association, developed a comprehensive policy aimed at clarifying industry's position and concerns on aerial firefighting in Australia. The 2019 document built on the long-standing policy position explained in AAAA's Aerial Firefighting Policies of 2002 and 2008. **A copy of the current 2019 Policy is attached at Appendix 1 of this submission.**

Following very positive engagement with AFAC and NAFC and State/Territory agencies in improving government/industry consultation in 2019 and in the early stages of the 2019/2020 bushfire season, AAAA established a 'Register of Ideas for Aerial Firefighting Improvements' with input received directly from operators, pilots and support staff in the field. This enabled AAAA to capture a wide range of issues for improvement for future fire seasons.

This input has now matured into the AAAA Aerial Firefighting Continuous Improvement Program (AFCIP). **A copy of the input to the program and major systemic issues identified is attached at Appendix 2 of this submission.**

An AFAC/NAFC Aerial Firefighting Forum – including industry, research and agency inputs - was originally scheduled for November of 2019 but had to be postponed due to the bushfire crisis facing a number of States/Territories. Rescheduled for early April 2020, it has been further affected by the Covid 19 response. AAAA had hoped to present the output and issues identified in the AFCIP to this Forum with a view to establishing a pathway to continuous improvement through all firefighting agencies in cooperation with industry.

The key issues AAAA has identified include:

1. A partnership approach with industry is essential to ensuring Australia has adequate aerial firefighting assets and a skilled workforce available to it. This should be based on the critical importance of using existing and future Australian companies, personnel, expertise and assets. A key outcome should be the creation and maintenance of a joint industry/government National Aerial Firefighting Strategy.
2. The development of consistent national systems to enable continuous improvement, safety management, quality assurance and improved communications.
3. Standardisation of agency approaches to a wide range of issues as identified in AAAA's AFCIP.
4. Establishment of a National Centre for Excellence for Aerial Fighting where improvements can be developed and rolled out consistently across all jurisdictions, based on cooperation between agencies, industry, peak bodies and relevant others. Such a Centre should be run jointly by NAFC and AAAA.
5. Better funding and focus of research (preferably through the Centre for Excellence identified above) to support agencies and industry in improving the effectiveness of aerial firefighting technology.

In terms of the use of aircraft in fighting fires, it is a case of ensuring 'the right tool for the job'.

Aggressive initial attack using aerial fire-bombing has been proven successful in research and in the field and can be credited with the saving of millions of dollars of assets, both in the aggressive initial attack role and in close-in asset protection work. This is on top of the usefulness of aircraft in supporting and protecting ground-based fire crews.

All States and the Federal Government should work together to ensure that every State has adequate air attack coverage provided by Australian aerial firefighting operators.

AAAA would be interested in providing a demonstration on the capability of the aircraft used and related issues if the Commissioners felt that would be useful. **Please let me know if you would be interested in such a demonstration.**

As this is a relatively brief submission, AAAA would be happy to appear before the Royal Commission to expand on the capabilities of Australia's firefighting aircraft and personnel.

For further information or to discuss any of the issues raised, please do not hesitate to contact me at the AAAA office in Canberra or by email.

Yours sincerely

A handwritten signature in black ink that reads "P. Hurst". The signature is written in a cursive, slightly stylized font.

Phil Hurst

CEO

Appendixes:

Appendix 1: AAAA/AHIA National Aerial Firefighting Policy 2019

Appendix 2: AAAA Aerial Firefighting Continuous Improvement Program Register 2020



The Australian Helicopter Industry Association & The Aerial Application Association of Australia Firefighting Policy 2019

Introduction

Australia has a significant and powerful aerial firefighting fleet available to protect Australian communities and environment.

The fleet, built on private ownership and operated by highly experienced Australian crews, is highly cost effective and very efficient in meeting bushfire and related threats as well as ensuring ground crews and volunteers are protected and have a serious capability at their disposal.

To further enhance this capability, AAAA and AHIA have joined together to propose a new way forward for governments that seeks to build on the strong record of service of the aerial firefighting sector rather than undermining it by supporting international companies that have no ongoing commitment to the Australian community.

While, from time to time in a highly mobile industry, it may be necessary to utilise international expertise and equipment, this should only ever be on the basis that the capability is not available in Australia.

All Australian governments should join in backing the Australian aerial firefighting industry to develop additional capacity to service the needs of our firefighting agencies and the communities they serve.

Strategic

- Commonwealth and States should review the current AFAC / NAFC and State / Territory arrangements to best deliver improved aerial firefighting strategy, procurement and operations.

- The Commonwealth / States / Territories should work with Australian industry leaders - being the AAAA and AHIA - to develop a national strategy to ensure supply of appropriate aircraft by Australian industry in a partnership approach. The national strategy must include a plan for the ongoing improvement of the quality and capability of the fleet and a strong role for Australian suppliers.
- An independent, research-driven approach should be used to determine the optimal mix of aircraft types – including fixed wing and rotary wing, Single Engine Air Tankers, light (air attack supervision only), medium and heavy helicopters, LATs and VLATS and drones – to be incorporated into the national aerial firefighting fleet. Consideration should also be given to issues such as reliability, redundancy, flexibility and cost-effectiveness that may arise from multiple rather than single or very limited number assets.
- However, industry believes that given Australia’s differing climate, fire type, fuel loads and topography, government should ensure it has a range of assets available in the aerial firefighting toolbox to match to the specific conditions, threats and firefighting response likely to be most effective.
- As a core commitment to the development and implementation of a national strategy in support of aerial firefighting, governments should enhance their ‘partnership’ commitment to industry by establishing and sustaining stronger consultative and decision sharing mechanisms and formalised bodies for both national and State/Territory jurisdictions. This should include a National Aerial Fire-Fighting Consultative Committee that includes both AHIA and AAAA as key members.
- In addition to fulfilling a consultative role, the National Aerial Fire-Fighting Consultative Committee should also be tasked with developing:
 - a nationally consistent aerial firefighting procurement, contracting and management strategy for all aerial firefighting assets
 - a national aerial firefighting research program
 - a national aerial firefighting quality assurance program
 - a national aerial firefighting Safety Management System

Procurement

- The industry is strongly of the view that taxpayers are ill-served by government ownership of aerial firefighting assets due to considerations of capital cost, utilisation and out-of-fire season downtime, competition impacts, and lack of expertise issues. Government and taxpayers very much benefit from a partnership approach with industry.
- Ownership of assets should be through government / private partnerships, whereby assets and services are contracted for longer periods of at least five years to give companies the confidence and financial security to invest in long term asset development.
- Government should implement a ‘buy Australian first’ policy for all fire agencies to support Australian industry and jobs.

- The Commonwealth and States/Territories should significantly increase the national annual budget available for aerial firefighting activities.
- All States / Territories should increase the number of full-availability contracts.
- All States / Territories should increase the length of contracts to better match the longer fire seasons now being experienced.
- Industry strongly supports the use of genuine local operators on local fires when all contracted aircraft have already been deployed (eg for Call When Needed availability) – being local operators who have a fixed base in the local area and who provide ongoing employment and services for the local area.
- Industry is strongly opposed to the ‘tow trucking’ practices that appear to be encouraged by NAFC/ARENA and some State agencies. This includes the speculative practice of repositioning aircraft to take advantage of possible fire activity through the Call When Needed system in some jurisdictions.
- Industry strongly supports the establishment of a national aerial fire-fighting quality assurance and continuous improvement system that will enable feedback to operators, pilots and agencies of in-field performance data that can be used to improve practices, inform procurement and potentially identify areas of future research.

Operational

- The concept of aggressive initial attack and utilising fire-fighting aircraft in this role is central to a strategic approach to fire fighting.
- Industry strongly supports the establishment of a national Safety Management System for aerial fire-fighting in accordance with well-established practice in aviation including the adoption of the principles of a safety culture within all fire agencies and ensuring that only aviation qualified personnel are put in positions of control over aviation assets. Such a system should seek to ensure that procurement and contracting requirements – for example the requirement for installing and managing up to five radios and a mobile phone in the cockpit – do not cut across aviation safety principles and potentially compromise the safety of pilots and crews.
- Industry strongly supports the improvement of a training pathway for Australian pilots to qualify for firefighting duties through a stronger focus on industry-provided training. In particular, the removal from NAFC contracts of the ‘50 hours experience on firebombing operations before being allowed on fire operations’ requirement and its replacement with a coherent and agreed methodology for training and approval of pilots is essential. The ‘50 hour experience’ requirement in contracts undermines superior alternative training systems and is readily abandoned by NAFC upon request – except at lower levels of the organisation. The removal of this requirement in contracts or the modification of it should be a matter for immediate address - using the current CASA training exemptions as a basis for an improved training system.

- Industry strongly supports the mandatory and immediate reporting of all drone incursions within or near the fireground to both ATSB and CASA, and that NAFC should strongly encourage CASA to enforce rules and mount prosecutions. In particular, industry encourages NAFC to work with State police agencies and CASA to secure equipment that will enable the identification of drone operators in real time on a fire ground.
 - All contracted aircraft should be enabled to self-launch within established parameters to rapidly attack fires.
 - Contracted aircraft should be appropriately supported by suitable ground equipment positioned at key strategic locations across the States and Territories and the identification and, where necessary, construction of suitable landing areas for aerial fire-fighting operations. Consideration should be given to working with industry on contracting ground support assets as well as aviation assets to improve efficiency and safety of aircraft replenishment tasks.
 - ARENA (the existing national aircraft selection and tasking system) information must be improved to reflect the particular aircraft capabilities when considering tasking. This information is already provided as part of the contracting information but is not considered when tasking same/similar aircraft types that may have different capabilities due to different engines, fit out or equipment.
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AAAA Aerial Firefighting Continuous Improvement Program

Last Update: 2 April 2020



Introduction

This document should be read in conjunction with the AAAA / AHIA National Aerial Firefighting Policy 2019 - See www.aaaa.org.au – resources / policy.

In aviation, a 'just culture' and a 'learning culture' are the foundation stones of continuous improvement which has enabled the industry to successfully address safety, efficacy and efficiency issues over many years.

The well accepted aviation culture is often a new concept to those not in the aviation industry who still pursue a 'blame' culture, which cripples the ability to see, investigate and correct underpinning and systemic accident causes, latent failures or potential for improvement.

A wide range of academic and industry research has verified the validity of this approach to both improve safety and productivity, ranging from the seminal works on error and human factor by James Reason – including the famous 'Swiss Cheese model', to the work on the critical importance of culture by Patrick Hudson – 'the culture ladder', to the very practical work of Tony Kern on 'Redefining Airmanship'. Other important contributions to aviation safety have been made by authors and researchers such as Eric Hollnagel (eg the ETTO Principle'), Sidney Dekker (eg 'Field Guide to Human Factors') and many others.

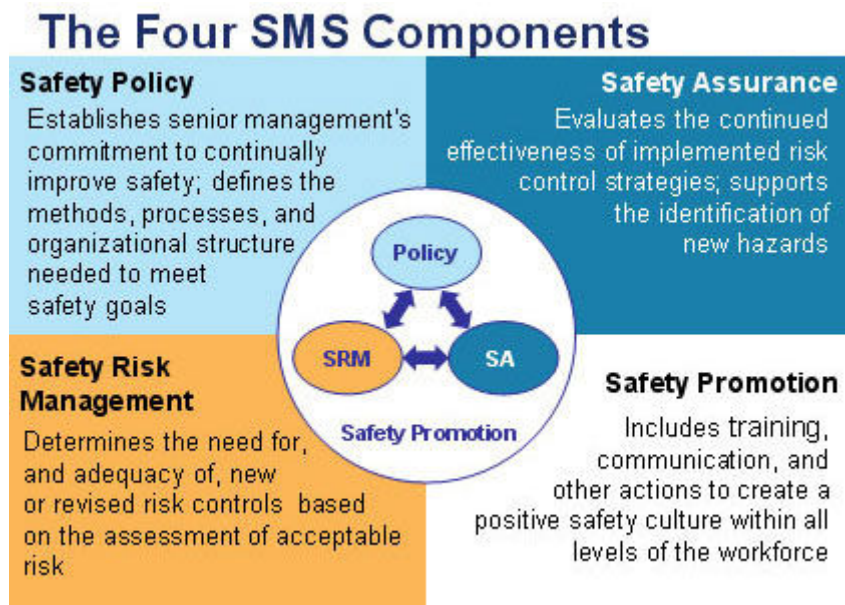
The development of the safety management system approach widely adopted in aviation systemises these approaches to improve safety, with the four foundation systems being explained in Figure 1.

The AAAA Aerial Firefighting Continuous Improvement Program is firmly based on these concepts, structures and systems.

It is critical to note in this spirit of continuous improvement, no criticism is made of existing systems, structures or agencies, and certainly not of any individuals.

AAAA's focus is always on providing a positive pathway to continuous improvement to improve aviation safety, help protect our communities better and make the best possible use of available resources, skills and people.

Figure 1: The Aviation Safety Management System (source: www.FAA.gov)



The following observations and suggestions have arisen from decades of AAAA members' experiences on the fireground, overseas experience and most recently, the performance of aircraft and supporting systems (or lack of them) during the extremely challenging fire season of the summer of 2019-2020.

AAAA hopes that by providing such a document, discussion regarding the response to the most recent fire season is informed by best aviation practice and experiences from the coal-face.

1. National Systems Required

- a) Quality Assurance System - this is required of all tendering operators for intra-company operations, but NAFC nor State agencies have a functioning QA system for their own air operations. Eg Operators and pilots get audited – where is the audit and QA of the IMT / air desks etc? There are no consistent feedback links from AAS to bombers or vice versa. There is consequently no capture of this critical information, review or analysis for trends or continuous improvement.
- b) Safety Management System – this is required of all tendering operators for intra-company operations, but this does not exist nor is there in place a National incident reporting system – in addition to ATSB reporting – to systemise continuous improvement as per the AAAA AIMS program. Similarly, the other well accepted legs of an SMS are not present at a State or national level other than AAAA efforts.
- c) Continuous Improvement System – there is no nationally consistent program to enable continuous improvement of aerial firefighting built on the capture, analysis and systematic review of reported or identified issues and follow-up by a panel of

experienced pilots, operators and others. Many suggestions for improvements (such as those offered by industry over decades) are treated by agencies as criticism and ignored – this is a major cultural challenge to all agencies and senior management and is a key indicator of the level of safety culture.

- d) Work with AAAA on the extension of the concepts embedded in the AAAA Aerial Improvement Management System (AIMS) or equivalent comprehensive systems or accreditation to all contracted operators and the linking of the systems to a national AIMS-like system delivering continuous improvement, QA and enhanced safety.
- e) Consideration of the establishment of a National Centre for Excellence for Aerial Fighting where improvements can be developed and rolled out consistently across all jurisdictions, based on cooperation between agencies, industry, peak bodies and relevant others. Such a Centre should also be used to standardise competencies for agency personnel in managing aircraft on a fire ground. Such a Centre could also play a role in addressing many of the operational SOP issues identified in this register. Any such centre should be established in cooperation with AAAA and NAFC - including potentially having AAAA run such a centre.
- f) Investigate the establishment of a national insurance scheme for aerial pilots and crew. Adequate insurance is currently difficult to secure on a commercial basis.

2. Rapid Initial Attack - Efficacy

- a) Rapid initial attack should be a key commitment by all States and Territories to keep fires small, with aircraft as first response in identified high risk areas.
- b) Strategically placed bombers on full contracts – more full availability contracts commensurate with the size of the State/Territory and risk.
- c) Use 'stand-by' mode for significantly more aircraft on days of high or extreme fire danger.
- d) Self-launching – 'Pre-Determined Dispatch' - capability for all 'full availability' contracts nationally.
- e) Task aircraft onto fires in groups – at least 2 to a fire in initial attack – see Vic, SA and WA research/experience that supports this approach.
- f) Best shot on first attack – eg phoscheck, gel – rather than foam / water only.
- g) Use dye on gel and foam etc to aid line building – do not remove colouring from retardant.
- h) Need for earlier start on multi day fires to ensure tasking of aircraft achieves a first light take-off. This may also involve agency changes to shift timing and more continuity of attack planning without going back to first principles with each shift change and starting again. Current practice and frequent outcomes are that most aircraft are not put onto the fire until after 10am and often later – into the worst possible conditions for flying, safety and efficacy.
- i) An improved understanding at the contracting and tasking stages of the capabilities of SEATs in terms of providing greater flexibility and capability in asset protection role (eg boxing in towers etc with retardant / close in support against houses).

3. Safety

- a) Too many cockpit radios to monitor safely in accordance with human factors best practice – see also requirements of CASA CAR 243 – ‘listening watch’ mandatory. Considerable aviation-specific research backs this conclusion, but the concept and importance to safety is also backed by more general work on cognitive distraction including: <https://exchange.aaa.com/safety/distracted-driving/#.XnAwfqgzZPZ>
- b) Current ‘Flight Following’ reporting is a legacy of pre-automatic tracking systems which is now posing an additional and unnecessary workload on pilots. As all contracted aircraft have automatic flight following through in-built satellite/GPS monitoring systems, the current manual/radio call reporting requirement placed on pilots should be removed to reduce the potential safety implications of cockpit overload and distraction.
- c) Pressure to fly from agency personnel – resisted by pilots on several occasions this season and previous seasons – again often linked to lack of knowledge of agency staff of aviation safety, human factors or air law.
- d) Consider a methodology of establishing - especially on campaign fires – if conditions remain VFR (Visual flight rules) for a particular fire front. While all fires involve smoke and reduced visibility and are a very dynamic environment, it is important to consider what safeguards can be put in place to bolster safe decisions regarding visibility. It is not sufficient to leave this type of operational decision to individual pilots due to the human factors around variable individual standards of risk acceptance. This may include the need for each fire base to establish a senior pilot or aviation qualified other (eg trained airbase manager) to declare whether VFR conditions exist or if conditions do not meet the minimum visual standards for operations to proceed. This will aid in defending against c) above.
- e) Immediate mandating of the requirement for all energy companies in all States to establish a system for the provision of powerline mapping to fire operators and pilots - and the provision to be in a similar manner to the Qld Ergon ‘Look Up and Live’ app. All energy companies should also be required to provide a system for the marking of powerlines using the Balmoral Engineering 3D rotating marker. ATSB Incident Report https://www.atsb.gov.au/publications/investigation_reports/2019/air/ao-2019-031/ refers.
- f) Emergency response and ‘distress messages’ – NAFC systems should be reviewed to ensure if a distress signal is sent by a pilot or by automatic triggering through impact, (as a result of NAFC contract-mandated equipment), that the distress signal is available to NAFC and fire agency monitoring staff for immediate action. Currently, distress signals are filtered out by NAFC/ARENA systems and not available for emergency response. Contract mandated systems currently feed data/events to ARENA/NAFC including engine start, fill, take-off, drop start, drop end, volume dropped, landing, shut down – plus 2 minute position reporting. However, distress signals are filtered out of the NAFC/ARENA system and consequently do not appear to be provided to fire agency staff.

4. **Airspace / situational awareness safety**

- a) Need for a national template for consistent best practice approaches to communication standards for airspace management
- b) Need for a national template for fire briefings (where they are held) to standardise the format, require the provision of clear information in either written or electronic format including relevant frequencies, fire attack strategy and objectives, mapping and other intelligence, contingencies, replenishment etc etc.
- c) Improve the provision of accurate mapping information for use in the cockpit by either paper or electronic means in terms of active fire fronts, where other aerial assets will be working, any use of LATs and VLATS.
- d) Development of a national real-time GIS system for vertical obstructions (towers) and powerlines – and integration of this data onto relevant maps or overlays through commonly used cockpit platforms such as OzRunways / AvPlan
- e) Encouragement of current EFB providers to share traffic information to boost SA
- f) Improved ease of pilot access to fire CTAFs and correct frequency confirmation / link to Ozrunways / Avplan and other platforms.
- g) Resolution of an SOP where a fire CTAF overlaps an aerodrome CTAF, and where State boundaries lead to different CTAFs on different sides of a fire.
- h) Improve situational awareness through communication to all AAS / bombers of tasking of LAT/VLAT/ birddogs.
- i) Mandatory use of Ozrunways Traffic or a similar platform/s for situational awareness with current Bomber/FA etc codes.
- j) Mandatory declarations of Temporary Restricted Areas for fire zones through CASA Airspace and link to OzRunways etc. A standardised nationally consistent trigger and rapid system to be approved and implemented between CASA and agencies.
- k) Simplification of access to all fire NOTAMS through front page of CASA home page.

5. **CASA**

- a) Work with AAAA on fire safety and a Sector Risk Profile for fire operations to complement the SRP for Aerial Application completed with AAAA - out of season.
- b) Consideration of safety oversight of all fire agency involvement in aviation safety – underpinning knowledge / competence / training / licencing etc – by CASA, given the current lack of oversight, certification, regulation or audit.
- c) Remove Part 61/141 complexity regarding fire training – see CASA Part 61 Technical Working Group 'Simplification of Specialised Training' paper from AAAA.
- d) Fix CASA Operator Proficiency Check and related issues including rotary Chief Pilot conduct, notification, recording on CASA portal etc.

6. Agency Staff

- a) Urgent need for standardisation of training of aviation-facing staff from agencies including aviation specific skills across:
 - i. Incident management teams
 - ii. Air Base Managers
 - iii. Air Attack Supervisors
 - iv. Briefing officers
 - v. Tasking officers / Ops / Aircraft capability management
 - vi. Loading and refuelling personnel
- b) The aviation services interface is not manageable into the future with volunteers – paid aviation-experienced professionals are required as a threshold issue – this also covers issues with CASA required DAMPS, training for refuelling, WHS training and supervision etc.
- c) Establish a nationally consistent system for aerial attack briefings structure and content and for the provision of briefing in the first place.
- d) All aerial attack briefings to include the opportunity for pilots and other staff to raise safety concerns or to provide feedback on FAS or bombers on performance. This information should be captured in a national QA system (see 'National Systems Required' above)
- e) Serious lack of knowledge of aviation operational issues from air desks and base staff eg crosswinds, VFR minima, water surface issues etc– sometimes leading to pressure to fly in conditions already rejected by the Pilot in Command.
- f) Standardisation of approach to guiding bombers from AAS. Currently a wide variability of expertise, competence, abilities to manage multiple aircraft, guidance to drop etc.

7. Communication systems

- a) Nationally standardise all aircraft radio hardware and frequency fit-outs and specifications
- b) Review currently required multiple radio fits to aircraft and mobile phone carriage that may pose threats to cockpit and pilot safety including incorrect frequency selection, distraction, inattentive blindness and corrosion of situational awareness.
- c) Need for a national template for consistent best practice approaches to communication standards and radio frequency management to avoid distraction, frequency clutter, switching complexity
- d) Need for a standardised training module for all Air Attack Supervisors to reduce cockpit workload for bombing pilots
- e) Need for a standardised template for the smooth integration of LATs and VLATS in a way that improves situational awareness and reduces bombing and other pilot workload. In particular, self-separation between SEATs/rotary/FAS and LATs/VLATS can require an additional frequency change, time off frequency etc.

This area of operations should be reviewed to develop better SOPs that will boost situational awareness and reduce cockpit workload.

- f) Lack of understanding of agency personnel on the safety implications of requiring monitoring of multiple frequencies across multiple bands in addition to providing flight following calls, texting for fuel provision etc. This leads to unsafe demands on pilots.
- g) Need for a nationally consistent system for the transmission of operational data from agencies to pilots including consideration of the current use of lats and longs instead of electronic identification of targets and lines.
- h) Tasking information and details should include a distance and bearing to the target in addition to lats/longs for initial mission despatch.

8. NAFC 'ARENA' SYSTEM

- a) AAAA strongly supports the ongoing development of the ARENA system to support fire operations
- b) ARENA should be improved by:
 - i. Provision to taskers of additional aircraft details (provided at contract stage already) regarding endurance, capacity, speed etc to allow a better-informed tasking approach other than headline price only.
 - ii. Additional functionality to include an expanded library, powerline mapping etc
 - iii. Exploring the potential for ARENA to have an additional module for real time, national feedback on drops (QA reporting) and incident reporting – the data should then be analysed for trends within a national aerial firefighting SMS.
 - iv. QA reporting above could be extended to include the provision of regular improvements and innovation data around the country (ie 'push' notices) to improve communications. This information could then be integrated into daily briefings etc.
 - v. Capturing distress signals and passing them on immediately to controlling agencies.

9. Supporting Infrastructure

- a) Standardised loading facilities, pumps, mixing equipment, hose couplings etc across all fire bases nationally.
- b) Development of SOPs to ensure the integration of LATs and VLATs into bombing operations does not unnecessarily tie up reloading facilities for SEATs and rotary – ie when completing checks or engine restarts for LATs and VLATs. Consideration should be given to designing and developing facilities that allow for separate replenishment points for different aircraft types – eg SEATs / MEATS/ Heli

- c) Hot refuelling permitted on all aircraft with single point refuelling to lower the risk of 'hot starts', improve subsequent aircraft availability and to lower turn-around times with trained staff.

10. Miscellaneous

- a) Consider use of the military in logistics and replenishing/support of bases during significant fire seasons such as 2019/20.

ENDS