



# AERIAL APPLICATION ASSOCIATION OF AUSTRALIA LTD.

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## **AAAA Comments on Draft Propositions from Counsel Assisting**

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**Proposition:** *G21 - The Australian, state and territory governments should ensure (through the most appropriate contracting mechanism) an Australian sovereign aerial firefighting capability of sufficient size and versatility to meet national needs.*

**Comment:** Strongly supported, but this must be informed by:

- a) knowledge of the existing fleet capability
- b) an understanding of the current underutilisation of the available Australian fleet
- c) the inherent inefficiencies in the current system and
- d) the potential for growth through a partnership approach across fleet, operators and pilots available.

Please revisit the AAAA/AHIA National Aerial Firefighting Strategy 2019 - <https://aaaa.org.au/policies/> .

The current fleet is underutilised (see below) and any unilateral move by government to change the size or the mix of the fleet may have significant negative impacts on those already providing services who have the key capability for growth if properly engaged by government in a broader sense than a simple tender offer. See also later comments.

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**Proposition:** *G22 - The capability could include line scanning, live feed video imagery, aerial tankers, and support for the provision of critical supplies. The Australian-based capability should be informed by:*

**Comment:** Supported in general terms, noting concerns for specific subsections as below:

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**Proposition:** G22.1 - consideration of reliance on overseas-based aircraft and the advantages of a modest Australian-based Large Air Tanker (LAT) or Very Large Air Tanker (VLAT) capability, including its supporting infrastructure;

**Comment:** The sovereign risk to Australia's firefighting capability is now a proven fact due to competing northern and southern fire seasons and the impacts of the COVID19 pandemic.

However, any move to change the mix of the fleet should be made with the backing of sound research (currently not available for Australia) on the most effective mix of aircraft for Australia. Consideration must be given to a range of issues, not just the acquisition of more LATs or even a VLAT.

Most importantly, due consideration and open and honest consultation with the providers of the current fleet should be made a priority to establish the potential for expansion of the Australian owned aerial firefighting capacity and the advantages that are likely to flow from an Australian owned and based fleet – including cross-utilisation on other tasks (eg agriculture, flood relief and other natural disaster support), local employment, establishment of better career pathways and flow-on economic benefits for local communities.

Underutilisation of the current available fleet is extensive in some jurisdictions and made worse by various agency initiatives to establish a race-to-the-bottom on price alone (eg 'call when needed' and 'partial availability' contracts) – rather than considering effectiveness, better practice and developing a more trusting relationship with providers.

For example, the primary type of Single Engine Air Tanker in Australia is the Air Tractor AT-802. There are currently 79 of these aircraft on the Australian register. It appears that approximately 46 are on contract to NAFC through full availability contracts. The balance either rely on 'call when needed' (eg 'casual' use) or do not participate in firebombing activities and instead focus on other operations.

Consequently, a discussion with operators of these and other suitable aircraft types (eg Thrush 710 with fire doors etc) would significantly expand the available firefighting fleet in the most cost-effective and almost immediate manner.

Similar analysis can be mounted for the helicopter fleet, although it would require much greater liaison with operators to assess the potential availability and capacity of suitable helicopters that are not currently on contract.

A recent US Report – <https://www.fs.usda.gov/managing-land/fire/aviation/afue> – summarised years of research into the most effective mix of aerial firefighting fleets.

In terms of immediate relevance to Australia, it makes the point that aerial firefighting is highly effective in most cases.

However, it must be noted that this report is based firmly on trying to measure current and past performance using current and past practices – rather than attempting to establish a meaningful approach to either identifying or measuring best practice.

The key new metrics developed for the report – ‘interaction percentage’ and ‘probability of success’ – while a useful start to assessing aerial firefighting, also raise a number of concerns in that they are at best secondary measures of aerial firefighting impacts on fire behaviour, and in the case of ‘interaction percentage’ actually exclude uses where the fire has not interacted with the dropped load despite the intent of the dispatch – for example when increasing the width of breaks as an ‘insurance’.

Better metrics should be developed that seek to measure if the load dropped was ‘fit for purpose’.

However, without any formal feedback or quality assurance or even incident reporting systems currently active in aerial firefighting throughout Australia, the development of metrics is surely a slightly lower level priority than establishing the national systems AAAA has identified in its submission to the Royal Commission, notably a:

- **Safety Management System** (including incident reporting, deidentified analysis and education pushing)
- **Quality Assurance System** (including formalised but simple and robust feedback to pilots, contracted operators, Air Attack Supervisors and others in the quality chain)
- **Continuous Improvement** (essentially a subset of the QA system, but worthy of note as it goes to the heart of the current culture issues within agencies that are not receptive to practical improvements)
- **Communication** (relevant to all of the above, but not evident or clear across any agencies)

AAAA suggests that if *industry* was engaged and funded by a lead agency (such as NAFC) to develop best practice techniques for aerial firefighting – and especially aggressive initial attack – then Australia would have a world-leading capability to reduce the impacts of bushfires.

In terms of any move to acquiring a VLAT, AAAA refers the Royal Commission to the findings of the previous Victorian review -

[https://www.bushfirecrc.com/sites/default/files/managed/resource/dc-10\\_evaluation\\_final\\_report.pdf](https://www.bushfirecrc.com/sites/default/files/managed/resource/dc-10_evaluation_final_report.pdf) .

For the money required to be invested and the limited available assessment of the efficacy of VLATs in the Australia context, considerable attention should be paid by the Royal Commission on the best use of such significant investment into other proven effective aerial assets.

As a means of providing some insights into a potential approach to comparing the different type of aerial firebombers, AAAA has developed the initial approach below.

While by no means definitive, the table below should assist non-technically qualified readers understand the different issues at play to ensure the composition of the Australian fleet is based on the interacting principles of:

- a) best tool for the job
- b) best value for money (including considerations of ownership, the local economy and jobs)
- c) best impact on the fire in an Australian context

The ability to have a significant number of assets available in Australia across the fire season is an important consideration. This will not occur if the SEAT and helicopter fleet is downsized in favour of larger but significantly fewer assets.

This becomes even more critical considering capital / leasing / operational costs for larger aircraft (LATs and VLATS) against the greater flexibility, contingency planning (in the event of any single unit breakdown) and potential geographic spread of less expensive but more plentiful assets.

In other words, SEATs and medium/heavy helicopters must not be left out of the mix because of their inherent advantages – and certainly not at the expense of securing LATS or VLATS.

It appears the Counsel's proposition for increased use of LATs has jumped the critical evaluation phase of comparing different fleet mixes and the obvious advantages of SEATs and helicopters including:

- a) Value for money
- b) Locally-owned operations that retain and circulate government expenditure in Australian communities and create jobs
- c) Flexibility in dispatching different assets to different fires (not possible with single large assets)
- d) Redundancy if any single asset becomes inoperable
- e) Geographic and strategic spread of assets close to high fire risk zones
- f) Nil requirement for large airports and infrastructure
- g) Ability to switch quickly between different roles eg direct attack, line building, asset protection

The following table allows these comparisons to be made relatively simply.

<b>FIREBOMBING AIRCRAFT COMPARISONS</b>	<b>SEAT - 802</b>	<b>SEAT - FIREBOSS</b>	<b>HELI - TYPE 3</b>	<b>HELI - TYPE 2</b>	<b>HELI - TYPE 1</b>	<b>LAT</b>	<b>VLAT</b>
<b>CAPITAL COST</b>	\$2.5 MILLION (NEW)	\$4.4 MILLION (NEW)	\$0.5-3.5m	\$3-10m	\$8-40m	\$US10-20 m	\$US20 M +
<b>STANDING COST / DAY</b>	DEIDENTIFIED INFO- NAFC	DEIDENTIFIED INFO- NAFC	DEIDENTIFIED INFO- NAFC	DEIDENTIFIED INFO- NAFC	DEIDENTIFIED INFO- NAFC	\$US 28,000	\$US 50,000 (2012)
<b>OPERATING COST / HOUR</b>	DEIDENTIFIED INFO- NAFC	DEIDENTIFIED INFO- NAFC	DEIDENTIFIED INFO- NAFC	DEIDENTIFIED INFO- NAFC	DEIDENTIFIED INFO- NAFC	\$US 9,500 + FUEL	\$US 22,000 (2012)
<b>MAX CAPACITY / LOAD</b>	3,000L	3,000L	1,000L	1,200-2,700L	3,000-7,500L	10-15,000L	35,000L
<b>TURNAROUND TIME (WHEELS ON/OFF OR SCOOP/SNORKEL)</b>	8 MINS	3 MINS	3 MINS	3 MINS	3 MINS	20 - 30 mins	45 mins
<b>FERRY SPEED LOADED</b>	140 KNTS	130 KNTS	90-130KNTS	100-120kts	100-130kts	300 KTS	370 KTS
<b>DROP SPEED</b>	110 KNTS	110 KNTS		40-60kts	40-60kts	120-150 KTS	?
<b>COVERAGE LEVEL RANGE</b>	1.0 - 6.0	1.0 - 6.0		1.0-8.0	1.0-8.0	1.0 - 8.0	1.0 - 8.0
<b>ENDURANCE</b>	3 hours	2.5 hours	2.5-3.5hrs	2-3hrs	2-2.5hrs	3-4 hrs	?
<b>BEST USE</b>	TEAMS OF AT LEAST 2 / PDD/ ATTACK/LINE BUILDING	TEAMS OF AT LEAST 2 / CLOSE OPEN WATER SOURCE/ PDD / ATTACK/LINE BUILDING	NOT ADEQUATE CAPACITY FOR BOMBING - OTHER DUTIES AAS/OBS	CLOSE OPEN WATER SOURCE /PDD/ SHORT FERRY	CLOSE OPEN WATER SOURCE /PDD/ SHORT FERRY	INTEGRATED WITH OTHER A/C	SEE VICTORIAN REPORT ON ASSESSMENT

**Proposition:** *G22.2 - continued research and evaluation of the optimum future aerial firefighting capability and tactics;*

**Comment:** Strongly supported, with the caveat that industry – in particular AAAA – should be funded to establish a National Centre for Excellence for Aerial Firebombing.

An appropriate investment annually would have significant potential for:

- a) Establishing, with scientific rigour and evidence, aerial firefighting best practice
- b) Improve safety, efficiency and effectiveness
- c) Enable the assessment of aircraft and techniques best suited to the Australian bushfire context, challenges and opportunities and assess new technologies as they become available
- d) Bringing together recognised experts in the field to focus on particular issues in a teams management approach (eg bombing, air attack)
- e) Encourage and facilitate innovation
- f) Identify current rub points, inefficiencies and inexcusable non-compatibility across State/Territory borders
- g) cut across current jurisdictional reluctance and resistance to adopt best practice by taking an educational approach – who doesn't want best practice?
- h) assist in the establishment of the critical national systems identified above and in the AAAA submission to the Royal Commission. Continuous improvement in particular is a program already run by AAAA for the 2019/20 fire season (see AAAA Submission) which would lead to an ongoing positive cultural shift.

This model has been proven to work through AAAA's existing programs on chemical application best practice for agriculture and has significantly lifted the industry's performance in the field over the last 20 years through a combination of research (eg University of Queensland wind tunnel, aircraft pattern testing program), innovation (eg cooperative work with manufacturers) and delivery of relevant and context-rich extension and training programs to pilots in the field.

AAAA is uniquely placed to undertake this role due to its trusted position with both members, regulators and fire agencies.

For example, key initial focus areas for establishing best practice recommendations would include:

- a) Best tool for the job – a program to develop metrics, data and best practice to support dispatch decisions based on the most effective and efficient aircraft for the job given the context

- b) Dispatch in pairs of aircraft or preferably more
- c) National adoption of pre-determined dispatch – not used in NSW, Qld, Tas
- d) Impediment identification and removal for improved aggressive initial attack
- e) National adoption of hot refuelling for single point refuellable aircraft thereby significantly reducing turn-around times and improving engine reliability by avoiding the need for 'hot starts' which can lead to exceedances on turbine engines. This practice, already in widespread, safe use in other sectors, would also improve load sizes by permitting more regular refuelling without causing significant turn-around delays and also improve safety
- f) Use of specialist company-trained ground crews for replenishment to improve safety and reduce turnaround times on the ground, a practice in universal use on agricultural operations
- g) Establishing best practice for Air Attack Supervision – identifying and building on current best practice
- h) Establishing a network of bushfire researchers and projects and communicating results to those in the field (the communication aspects are currently completely missing in terms of research extension activities that provide useful and implementable research to pilots, dispatchers, AAS, Incident Managers and others in the field)

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**Proposition:** *G22.3 - best practice procurement strategies;*

**Comment:** Strongly supported, as long as 'best practice procurement strategies' includes input from those making the investments to make aircraft available to agencies.

It is worth noting that no agencies – including NAFC until recently - have a formalised, regular consultation mechanism with industry leaders such as AAAA or AHIA. It did exist for some time with RFS NSW following the Conroy Report but seems to have ceased in more recent times. However, it is very encouraging the AFAC / NAFC and the Strategic Committee have taken considerable steps forward in this space since the fourth quarter of 2019. While the extreme fire season interrupted plans for increasing consultation, these recent efforts to engage with industry have been extremely welcome and a credit to all of the agencies involved.

Nonetheless, the significant lack of a 'teamwork' ethos between some agencies and the providers of services is a significant impediment to achieving best practice – something that is a two way street when there does not appear to be any logic in dispatch or use of aircraft.

While the ongoing move to national contracting and NAFC essentially playing a 'brokering' role is a positive direction, a fundamental change in the culture of 'us versus them' is still required in some jurisdictions.

The AAAA policy recommendation for a national 'partnership' approach is aimed at addressing this issue and empowering the Australian investors who are already taking significant capital risk and commitments to provide an aerial firefighting capability to invest even more.

If the cooperative, win-win nature of the procurement system can be improved – within normal fiduciary requirements - to provide a better basis for growth of the Australian capacity for aerial firefighting, the current vulnerability from relying on international operators will be addressed.

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**Proposition:** *G22.4 - the most effective deployment of aerial assets according to the greatest need between jurisdictions.*

**Comment:** AAAA has been consistent in its calls for a nationally strategic approach to aerial firefighting since 2003, when it gave evidence to the Commonwealth 'Nairn' Inquiry into Bushfires.

AAAA believes the move to NAFC brokering of contracts on behalf of agencies has gone some way to achieving this goal. However, more can be done and this is another area that would benefit from an improved, independent research capability as outlined above and in the AAAA submission for a National Centre of Excellence for Aerial Firefighting.

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**Proposition:** *G23 - The Australian, State and Territory governments should consider contracting arrangements that encourage the Australian-based aerial firefighting industry to develop capability.*

**Comment:** Strongly supported. See potential improvements above and suggestions in AAAA submission and evidence regarding the importance of longer-term contracts. For example, guaranteed contract over only 3 years is not conducive to building investment and is out of step with international practice.

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**Proposition:** *G24 - For nationally shared aerial assets, specifically designed governance arrangements, operational arrangements, and protocols for prioritisation should be developed and communications interoperability issues considered.*

**Comment:** Strongly supported. See potential improvements above including the need for engagement with current operators to ensure any proposed changes are appropriately addressing real interoperability issues including:

- a) dispatch protocols across borders
- b) sharing of aircraft across borders
- c) aircraft replenishment fittings
- d) radio frequencies – across common areas, across aircraft types



- e) radio fitout requirements
  - f) airspace management arrangements
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**Proposition:** G25. Aerial and ground-based firefighting capacity should be supported by a web-based service using real time earth observation capability, including satellite-based and near-earth airborne platforms (drones) high definition remote sensing data to provide fire-front monitoring capacity.

**Comment:** Supported. Safety, situational awareness and planning capacity would also be greatly improved through a recommendation for all State and Territory electrical safety regulators to make it an urgent legal requirement for all electrical companies to place their network maps onto a national GIS database – preferably the new Queensland / Ergon Energy / Energy Queensland mapping app – Look Up and Live – for an online version of the app that is now available from the App Store see: <https://www.arcgis.com/apps/webappviewer/index.html?id=5a53f6f37db84158930f9909e4d30286>.

AAAA strongly believes that Airservices Australia should also be required to develop a real-time app/readily-available GIS website that would make the national Tall Structures database available to all *bona fide* low level pilots, including firefighting pilots.

This would markedly improve safety during the flight planning phase and support any operational changes or redirections to new areas during a flight – ie ‘on-the-go’ planning.

Currently, the Tall Structures Database is not immediately available to pilots and instead is only used to identify those mandatorily reported tall structures (including radio masts, windfarms, wind monitoring towers, electricity infrastructure etc) that may be included on mapping – many months after it may have been reported.

This is a significant gap in the safety of firefighting pilots.

In addition, consideration must be given to working with all current providers of Electronic Flight Bags and agencies / operators / pilots to ensure they are using the available technology to improve their situational awareness of other aircraft while in flight and improve the low visibility capability for self-separation during fire operations.

If all aircraft on the fireground were using this technology (as was witnessed by many operators and pilots last season), safety would be enhanced.

### **Further Information**

If you require any further information or explanation of the issues raised in this submission, please do not hesitate to contact Phil Hurst, CEO of AAAA.

ENDS