



## **NSW Independent Inquiry into Bushfire Season 2019-2020**

### **Additional Requested Information**

**Submission by:**

**Australasian Fire and Emergency Service Authorities Council (AFAC)**

who are:

**The National Council for Fire and Emergency Services**

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The Australasian Fire and Emergency Service Authorities Council (AFAC) welcomes the opportunity to provide additional information as requested in the letter to AFAC CEO Stuart Ellis dated 20 April 2020 from Dave Owens, Head of Inquiry.

We ask the Inquiry to note that the supplementary submission should not be taken as the position of any single AFAC member. Also, some of our members will have contributed to the Inquiry through jurisdictional submissions, and nothing in this advice should be taken as implying that our members do not fully support their jurisdictional submissions where made.

As part of this supplementary submission, various documents produced by AFAC have been cited. These documents form the foundation of information used for this submission and are referenced in the text with hyperlinks where possible. AFAC takes a leading stance in the publication of industry doctrine which has been drawn on where relevant. This doctrine ranges from high-level, principles-based capstone material, through to technical guidance. Individual agencies make practical and realistic operational decisions on how they interpret and implement this doctrine.

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# 1 AFAC NAFC:

## 1.1 Description of how the National Aerial Fire Fighting Centre (NAFC) contracted aircraft, over the last five years, including the nature of the aircraft and length of contracts.

As described in the AFAC submission to the Inquiry, the purpose of the National Aerial Firefighting Centre (NAFC) is to deliver improved aerial support to States and Territories through national collaboration and cooperation. One of the key areas of work which enables NAFC to deliver improved aerial support is the collaborative procurement of specialised aerial services, whereby NAFC coordinates the contracting of the services of a fleet of specialised firefighting aircraft on behalf of State and Territory fire agencies.

These NAFC contract arrangements, in conjunction with a Resource Management Agreement (RMA) to which all States and Territories are signatories, allow the contracted aircraft to be easily shared between jurisdictions and moved around the country to address prevailing bushfire risk.

Contracted aircraft service providers enter into a master national contract with NAFC, under which the aircraft are then made available to State and Territory agencies.

Public tender processes are used to manage the procurement of NAFC contracted aircraft. The tender processes are independently monitored and maintain the highest standards of probity. The multi-stage tender processes ensure that synergies are realised across the country and that best value-for-money is achieved.

Aircraft selection is based on the stated service delivery requirements of State and Territory agencies. NAFC aggregates these requirements, looking for synergies where possible. NAFC then approaches the market with the aggregated requirements, aiming to leverage the market for service and pricing benefits, as well as ensuring standardisation and interoperability.

Evaluation of tenders is conducted by expert Evaluation Panels, which include State and Territory subject matter experts.

For each aircraft service contracted by NAFC, one State or Territory (known as the Liable Member in the RMA) assumes primary responsibility for the financial arrangements with the contractor and for the day-to-day operational management and deployment of that aircraft.

NAFC contracted aircraft are all engaged on a full-service basis (i.e. including pilots, maintenance, insurance and support). No aircraft are currently owned by NAFC.

Most NAFC contracts are currently for a guaranteed minimum of 3 years (i.e. 3 bushfire seasons) with options to extend by a further 2 years (a “3+1+1” model).

Most aircraft services provided through NAFC are contracted to be immediately and exclusively available for bushfire response (“Absolute Availability”) for a minimum period (known as the Service Period) during each year of the contract that covers the bushfire season at the respective location. All contracts incorporate some flexibility to adjust the timing of the minimum Service Period for each aircraft to match varying seasonal conditions. Likewise the minimum Service Period in each year can be extended if warranted by prevailing conditions.

Some aircraft Services are contracted on a Partial Availability basis, which allows the aircraft operator to conduct other work with the aircraft or crew in the local area, provided that the contracted availability for bushfire response is maintained. On days of higher bushfire risk, Partial Availability aircraft can be placed on standby for immediate response.

Most Type 4 fixed wing firebombing aircraft (also known as single-engine airtankers or SEATs) contracted for NSW are engaged on a Partial Availability basis.

NAFC also maintains a number of “reserve” contracts, known as Secondary Contracts, which provide for additional aircraft services to be engaged for a particular bushfire season, should that be requested by a State or Territory based on assessment of seasonal bushfire risk. For example, a number of the additional large airtankers sources for 2019-20 in NSW were NAFC Secondary services – i.e. the Contractor was guaranteed that a minimum Service Period for these aircraft would occur in 2019-20 only, and any future Service Periods would be considered on a season-by-season basis according to prevailing bushfire risk.

Additional aircraft Services may also be sourced on an adhoc basis through Call-When-Needed (CWN) arrangements. CWN arrangements effectively provide for casual hire of aircraft that meet required standards, at a pre-agreed price, with no guarantee of ongoing engagement. Prior to 2019-20 CWN arrangements (referred to as a “Request For Standing Offer”, or RFSO, in NSW) were managed by individual States and Territories. During 2019-20, NAFC commenced the implementation of a national CWN contracting system. CWN contracts were established for 73 aircraft, including seven Type 1 (heavy) helicopters, enabling State and Territory agencies to engage these aircraft on an adhoc, short term basis to supplement the core fleet.

NAFC Tender processes follow different cycles depending on the category of aircraft. The recent major processes of most relevance to the Inquiry are:

- NAFC Invitation To Tender for Aerial Firefighting Services 2018 onwards (**ITT AFS 2018+**) to provide a range of fixed-wing and rotary wing services (approximately 100) across Australia for 2018-19, 2019-20, 2020-21; and – if Contract Period extension options are exercised, for 2021-22 and 2022-23.
- NAFC Request For Proposals for Airborne Strategic Intelligence and Reconnaissance Services 2015 onwards (**RFP ASIR 2015+**) to provide specialised airborne strategic mapping services for 2016-17, 2017-18, 2018-19; the option for 2019-20 was exercised and NAFC is currently considering the option for 2020-21.
- NAFC Request For Proposals for Large Airtanker Services 2018 onwards (**RFP LAS 2018+**) to provide large airtanker (LAT) services for 2018-19, 2019-20, 2020-21; and – if Contract Period extension options are exercised, for 2021-22 and 2022-23.

Note that detailed documentation for each procurement process remains available on the NAFC website [www.nafc.org.au](http://www.nafc.org.au) under the “Past Tenders” section.

For the 2019-20 bushfire season, NAFC initially contracted a core fleet of 145 specialised aircraft, around Australia (excluding CWN). These aircraft services were contracted on an Absolute Availability basis or a Partial Availability basis and the majority were at some point of one of the standard “3+1+1” contract cycles described above.

At the request of States and Territories, additional Absolute Availability and Partial Availability aircraft Services were added over the course of the season, to bring the total to 166 (excluding CWN).

The list of the aircraft services contracted through NAFC as at the conclusion of the 2019-20 season is provided at APPENDIX 1. Note that for 3+1+1 Services it is possible to determine the originating procurement process for each Service from the NAFC Service Reference number (eg Service RW18xxx originated from the ITTAFS2018+ tender process). The nature of the aircraft contracted is also described at Appendix 1.

**1.2 When is the next review to be undertaken? (Dependent on answer above); and**

**1.3 What research is undertaken to assess what is on the market at the time of the commencement of a new fire season (time of contracts for aircraft)?.**

It is emphasised that the States and Territories ultimately determine the capabilities that are contracted through NAFC and accordingly undertake their own investigations and reviews as required. In terms of overall capabilities, in conjunction with State and Territory representatives NAFC is continually monitoring and reviewing the world market for aerial firefighting aircraft. This process is supported by the Fire and Emergency Aviation Technical Group, an AFAC Technical Working Group that comprises user representatives and subject matter experts from State and Territory agencies.

Every advertised NAFC Approach-to-Market (Invitation to Tender, Request For Proposals) also provides an opportunity to validate market research and to further understand the respective market segment.

For certain market segments, NAFC coordinates specific review projects – again, in collaboration with State and Territory representatives. An intensive project-based review of the large airtanker market was last undertaken in late 2016. This review was used to set specifications for the RFP LAS 2018+ procurement process for large airtanker services. The review also informed specifications for the NSW purchase of a large airtanker.

A specific review of the market for night aerial firefighting capabilities was also undertaken in late 2016. This review informed the procurement of the services of night capable helicopters for trials conducted in Victoria over 2017-18 and 2018-19 and 2019-20.

A project review of the market for Type 1 (heavy) helicopters and larger Type 2 (medium) helicopters is currently underway. This market segment is currently undergoing significant disruption due to a large amount of ex-military assets becoming available, as well as changes in the oil and gas sector affecting the second-hand market. This review is intended to inform the timing of future procurement cycles for tactical rotary-wing capabilities – i.e. to inform decisions as to whether to exercise options to extend current contracts or to approach the market with a view to attracting different solutions. The project is expected to reach conclusions by late June 2020, allowing NAFC to design and implement procurement processes to secure services for the 2021/22 season and onwards.

Similarly, a review of the market segment that provides airborne specialist intelligence gathering services will be initiated during 2020 to allow for design and implementation of procurement processes to secure services for the 2021/22 season.

In respect of technical and performance specifications, these undergo a formal major review involving State and Territory representatives at approximately two-year intervals, in order to produce updated versions of NAFC's Specimen Contracts. The most recent major review was finalised in early 2019, however NAFC continues to make minor refinements and updates as required to reflect best-practice.

Regarding the optimum length of Contract Periods, NAFC is currently undertaking a review and has commissioned a consultancy firm for underpinning research and analysis of the market. The 3+1+1 Contract Period model was originally based around the capacity of States and Territories and the Australian Government to be able to only commit to three years of funding at any given point in time.

The consultants are currently conducting analysis on spend data to determine leverages with suppliers, and will be conducting interviews with key stakeholders to understand the benefits, barriers and feasibility of alternative contracting arrangements in the future including the scope for potential investments in innovation. This review will also examine consider options for timing of procurement processes to align procurement of like categories of services.

It should be noted that all previous NAFC formal Invitation To Tender and Request For Proposal processes have invited tenderers to provide alternative tenders based on longer Contract Periods than the 3+1+1 model, and to highlight the benefits of adopting alternative models. Whilst a number of tenderers have presented alternative commercial models in various procurement processes, to date none of these have offered sufficient additional benefits to justify their adoption.

NAFC, in collaboration with all States and Territories will continue to evaluate the most appropriate and cost-effective commercial models for providing firefighting aircraft capabilities, including purchase of aircraft if appropriate.

**1.4 When was the last review undertaken of the amphibious water-scooping aircraft (CL415, Be200 or similar) and what were the outcomes?; and**

**1.5 Are there plans to conduct another review of the capability and capacity of this type of aircraft?.**

NAFC and States and Territories are aware of interest in the use of fixed-wing water scooping aircraft (“skimmers”) for firefighting. Scooping aircraft can potentially apply high volumes of water to a fire, provided that the target is within a reasonable distance of a scoopable water source, such as a large lake or a relatively sheltered ocean inlet. Examples of scooping aircraft include the Canadair (now Viking) CL415 turboprop (max. capacity 6,100 litres) and the Russian jet-engined Beriev Be200 (max. capacity 12,000 litres). The non-amphibious Martin Mars seaplane (22,000 litres) has also been used in North America. Manufacturers in Japan (Shinmaya) and China (Harbin) are currently developing large turboprop water scooping aircraft.

Smaller water scooping aircraft are also available, such as the AirTractor 802 Fireboss (3,200 litres).

Large water scooping aircraft have been used and evaluated in Australia in the past. For example, the then Australasian Fire Authorities Council (AFAC) commissioned a formal trial of a CL415 in 1996. The aircraft used for the trial also conducted demonstrations in several States, including NSW. The trial confirmed that water scoopers could be successfully used and integrated into operations in Australia. CL215s - an earlier, piston-engine version of the CL415 - were used operationally on bushfires in South Australia and Victoria in 1997.

NAFC procurement processes have allowed for water scooping aircraft to be tendered, and more recent processes have specifically defined services for “self-fill” fixed wing aircraft. Larger scooping aircraft, such as the CL415 and Beriev Be-200, have previously been tendered in NAFC processes. To date, these aircraft have not been contracted as the respective joint Evaluation Panels considered that they did not offer better value-for-money than other tendered solutions, or did not meet specifications. Smaller scooping aircraft (AT802 Fireboss) have however been contracted.

In most circumstances, although they can certainly be operationally effective, the larger water scooping aircraft have not generally proven to be cost-effective in the Australian situation. This is mainly due to the relatively high capital and operating costs of such aircraft, as well as the longer distances that are often required to be flown to access water bodies that are suitable for scooping.

Helicopters can access water in smaller dams and rivers and from portable water sources and can usually access water even during drought conditions. Overall, helicopters and smaller water scoopers have been found to be generally better suited to the delivery of large volumes of water or foam in the Australian environment.

As an illustrative example, a heavy firebombing helicopter, such as an Erickson Aircrane can access water from a water source that is 1 metre in diameter and 0.5 metre deep. During actual bushfire operations in Australia a single heavy helicopter has been able to deliver more than 160,000 litres of water per hour (with an added foaming agent) for an extended period. It is estimated that in this particular example, a CL415 would have delivered around 36,000 litres.

Much of the use of fixed-wing aircraft for firefighting in Australia involves the use of fire-retardant slurry or gel delivered from a fixed base. This is a particularly effective technique in the Australian situation, where indirect attack with fire retardant is often the preferred tactic, especially where it may take some time for ground crews to access a fire edge. Most of the larger water scooping aircraft are not well suited to delivering fire retardant slurry.

While there will certainly be situations in Australia where larger water scoopers can operate effectively efficiently, fire authorities do need to balance the relatively high costs associated with occasional use of specialist aircraft against the more frequent use of a well dispersed and more flexible aircraft fleet.

There are currently two AT802 Fireboss scooping aircraft in the nationally contracted aerial firefighting fleet, and a further four were available on a CWN basis during 2019-20. As well as being a very capable water scooper, the Fireboss is efficient as a land based airtanker delivering fire retardant slurry.

During the 2019-20 fire season, the Malaysian Maritime Safety Agency offered the use of one Canadair CL415 scooping aircraft for an initial period of fourteen days. This potentially provided an opportunity for a contemporary demonstration of the capability of this type of aircraft. By the time that financial, diplomatic and logistics considerations were resolved, the bushfire risk had waned and the offer was effectively placed on-hold.

NAFC and State and Territory agencies do remain open to considering all potentially applicable aerial firefighting capabilities, through the appropriate processes, and will continue to research and evaluate suitable aircraft.



## 2 AFAC PREDICTIVE SERVICES

### 2.1 AFAC Predictive Services Group 2016 – 2019

The Inquiry has sought information regarding the Predictive Services Plan on a Page and Achievements. These are provided in one document, *AFAC Predictive Services Group 2016 – 2019* below.

### 2.2 Additional Comments

To provide some context to the Inquiry I provide the following background.

AFAC Predictive Services Group was created as a new collaboration group within the AFAC Collaboration Model in 2015 to provide strategic direction on the development of predictive services capability for the emergency management sector. The purpose of Predictive Services Group is to provide strategic advice to the AFAC Board and Council for the ongoing development of a predictive services decision support capability for AFAC member agencies. The vision is to provide repeatable, reliable, science based, authoritative and consistent predictions that make communities and responders safer across Australia and New Zealand.

At its inception, Predictive Services Group developed a Plan on a Page to guide strategic directions and priority actions. This was reviewed in 2018. Predictive Services Group has committed itself to an ambitious, multi-faceted workplan plan focused upon improving bushfire predictive services capability at a national level. Key achievements to date include:

- supporting the evaluation of fire spread simulators
- supporting development of national grassland fuel standards for fuel amount and state
- a national investment stocktake
- compiling a research register
- leading the development of a new approach to seasonal outlooks
- nationally standardised weather forecast products
- establishment of a Fire Behaviour Practitioners network
- the creation of a Fire Behaviour Analyst webinar series,
- strategic advice to AFDRS, BNHCRC, Fire Prediction Services and BOM Hazard Services Forum.

The achievements are summarised in the *AFAC Predictive Services Group 2016 – 2019* below.

For information, Predictive Services Group is currently reviewing its key activities for the next five years based on observations from the last fire season. Key foci identified include:

- refining and augmenting the current set of fire behaviour models
- developing bushfire simulator capability
- supporting the development and implementation of the Australian Fire Danger Rating System
- developing a national spatial information viewer
- developing national data management capacity
- developing fire behaviour analyst capability
- attracting investment to support capability development
- encouraging and supporting future research.

# AFAC PREDICTIVE SERVICES GROUP 2016–2019

We are the strategic advisory group to the AFAC Council on Predictive Services. We are nationally focussed and advocate the future direction of Predictive Services through collaboration and coordination. Our initial focus will be on bushfire.



**VISION:** Taking the surprise out of bushfires for safer communities.



**3–5 year strategic outcomes**

Enhance capability and enable timely and informed decisions based on predictive services.

Provide confidence through scientifically and rigorous, reliable and specific predictive services.

Develop predictive services through a well communicated, adaptive, innovative and collaborative approach.

Facilitate national and interoperability and consistency in predictive services.



**Strategic drivers and priority actions**



**IMPROVING INTEROPERABILITY AND SHARING RESOURCES**

1. Agreed minimum training and accreditation standards
2. Establish operational protocols
3. Establish resource sharing arrangements



**LEADING INNOVATION IN SCIENCE AND TECHNOLOGY**

1. Evaluate simulators
2. Identify supporting systems and products
3. Improve Seasonal Outlook process
4. Develop future R&D priorities



**ENHANCE PREDICTIVE SERVICES CAPABILITY IN SECTOR**

1. Develop systems, products/info for both tactical and strategic decision making
2. Develop training and predictive services end users
3. Establish collaboration network for practitioners



**ENHANCE COMMUNITY UNDERSTANDING OF RISK AND MITIGATION**

1. Develop stakeholder engagement plan
2. Develop communications plan
3. Strengthen collaboration with community stakeholders
4. Identify key community needs



**DEVELOP NATIONAL BEST PRACTICE PRINCIPLES AND STANDARDS**

1. Standards for systems, processes and data
2. Develop evaluation frameworks
3. Develop a transition to operations process



**HARNESSING PROJECTS AND FUNDING AT A NATIONAL LEVEL**

1. Identify new strategic partners and funding sources
2. Invest strategy
3. Support AFDRS
4. Support BOM Hazard Services Forum
5. Support Prescribed Burning Centre of Excellence
6. Support BNHCRC
7. Support Warnings Group



**IMPROVING INTEROPERABILITY AND SHARING RESOURCES**

**ACHIEVEMENTS**

- Developed Interpret and Analyse Fire Weather Learner Resource
- Stocktake of current investment
- Grassland curing map simulator output
- Nationally standardised weather forecast products
- Established arrangements for sharing weather and atmospheric monitoring equipment nationally
- National stocktake of PS capability
- Collaboration to coordinate FBAN courses nationally
- Data sharing arrangements

**IN PROGRESS**

- Fire Behaviour Analysts Assessment Framework and tool
- Identification of investment priorities



**HARNESSING PROJECTS AND FUNDING AT A NATIONAL LEVEL**

**ACHIEVEMENTS**

- Strategic input to NFDRS project
- Highly productive fire technical working group for BOM Hazard Services Forum
- Effective end user network for BNHCRC research
- Provided technical input to Bushfire Fuel Classification
- Active support for AFDRS research prototype trial and evaluation
- Investment in next generation of fire-spread simulators

**IN PROGRESS**

- Strategic advice to Fire Predictions Services for future simulator development



**LEADING INNOVATION IN SCIENCE AND TECHNOLOGY**

**ACHIEVEMENTS**

- Simulation evaluation project
- Facilitation of a new process for seasonal outlooks
- Stocktake of current research to support gap analysis
- Supporting national rollout of AQFx smoke modelling

**IN PROGRESS**

- Research gap analysis
- Investigate national fire weather viewer
- Long-range forecasting strategy
- Supporting BNHCRC projects



**ENHANCE PREDICTIVE SERVICES CAPABILITY IN SECTOR**

**ACHIEVEMENTS**

- Practitioners network established and web-conferences held
- Simulator evaluation methodology developed
- Predictive Services training needs analysis
- Nationally coordinated training

**IN PROGRESS**

- Scoping requirements for end user training



**ENHANCING COMMUNITY UNDERSTANDING OF RISK**

**ACHIEVEMENTS**

- Supported production of seasonal outlooks

**IN PROGRESS**

- Communications plan and implementation
- Stakeholder engagement planning



**DEVELOP NATIONAL BEST PRACTICE AND STANDARDS**

**ACHIEVEMENTS**

- Standardised weather forecast products nationally to resolve eight actions from BOM Hazard Services Forum
- National approach to grassland fuel assessment
- Review of fire history data sets

**IN PROGRESS**

- National consistency for Spot Fire Weather forecasting

# APPENDIX 1

## List of Aircraft contracted through NAFC 2019-20

(overleaf)

*Note that in some circumstances one aircraft may provide multiple services in the same year– (for example where seasons are dovetailed e.g. where Qld season doesn't overlap with Tas season.)*

### Legend:

Purple text/shaded: additional resources engaged for 2019-20 only

Prim/Sec: P= Primary Contract; S= Secondary Contract or Additional Service engaged under Primary Contract

Abs/Par: A = Absolute Availability; P = Partial Availability

Prim Role: Primary Role

FB = Firebombing

AA – Air Attack Supervision or Leadplane or Air Observation

SIG = Specialist Intelligence Gathering (specialist sensor equipped)

Linescan = Strategic mapping

Service Type:

FW = Fixed Wing

RW = Rotary Wing (helicopter)

LAT = Type 1 Large Airtanker

T1 = Type 1 (Heavy); HV = High Volume (additional performance specification)

T2 = Type 2 (Medium)

T3 = Type 3 (Light)

T4 (Fixed wing only) = Single engine airtanker or SEAT

Self-fill = Scooping or skimming capable

AAS = Air Attack Supervision

Recce = Reconnaissance/Air Observation

SIG = Specialist Intelligence Gathering (specialist sensor equipped)

NVIS = equipped with Night Vision Imaging System

## **Brief description of primary roles and key characteristics:**

### **Fixed wing aircraft**

#### **Type 1 (heavy) - large airtanker (LAT) or very large airtanker (VLAT)**

- capacity (of those deployed in Australia during 2019-20): 11,000 to 35,000 litres
- fast (500-800 km/h), but require larger, suitably equipped airports to reload with suppressant or retardant
- sophisticated computer-controlled drop systems providing a range of drop options and coverage levels
- most often deployed with retardant, but capable of dropping foam or gel if required
- only used with water in very limited situations (eg. organic farms)
- used where weight of attack is required in initial attack
- often used for rapid construction or reinforcement of containment lines with retardant, for indirect attack
- have been successfully used in direct asset protection with retardant, foam and gel.

#### **Type 4 fixed wing firebombers - Single-engined airtankers ('SEATs')**

- capacity: mostly around 3,200 litres
- able to operated from smaller airports close to the fire
- drop systems providing a range of drop options and coverage levels
- deployed with retardant, gel or foam (water is only used for scooping version, where rapid turnaround can be achieved)
- very effective in rapid initial response, especially over medium distances with retardant, foam or gel
- multiple aircraft can be dispatched to provide weight of attack
- often used for construction or reinforcement of containment lines with retardant, multiple aircraft increase productivity
- used in direct asset protection, most often with foam and gel

#### **Conventional fixed wing aircraft**

- used for fire detection, reconnaissance, intelligence gathering, mapping, supervision, leading LATs and VLATs, command, aerial ignition transport.

### **Rotary wing aircraft**

#### **Type 1 (heavy)**

- capacity up to 7,500 litres (often reduced by ambient conditions and in accordance with fuel load)
- hover fill in 45 to 60 seconds, less for buckets
- computer controlled drop systems providing a range of drop options and coverage levels
- key role is rapid delivery of large quantities of water or foam, usually for direct support of ground crews or for asset protection
- used where weight of attack is required in initial attack
- have been successfully used for construction or reinforcement of containment lines with retardant

- some Type 1 helicopters can transport passengers and are useful for moving firefighters or community evacuations
- requirement for ground support and large quantities of fuel can limit mobility

### **Type 2 (medium)**

- firebombing capacity up to 2,500 litres, but mostly around 1,400 litres (often reduced by ambient conditions and in accordance with fuel load)
- hover fill in 45 to 60 seconds, less for buckets
- key role is usually direct support of ground crews or for asset protection with water or foam, sometimes gel
- aircraft of choice for rapid delivery of specialist firefighter to remote areas (e.g winching or rappel)
- effective in initial attack where close-by water sources provide for rapid turnaround

### **Type 3 (light)**

- the more capable Type 3 helicopters can be used for firebombing, with a capacity up to around 1,000 litres (again often reduced by ambient conditions and fuel load)
- if firebombing, normally used in direct support of ground crews or for asset protection with water or foam
- key roles include specialist intelligence gathering (technology aided), supervision, command, transport and aerial ignition.

**NATIONALLY CONTRACTED AIRCRAFT SERVICES 2019/20**

Liabile Member	NAFC Service Reference ID	Prim Sec	Abs Par	Prim role	Service Type	Aircraft Type	Nominated Operational Base	Minimum Service Period
ACT	FW19602	S	A	FB	FW - LAT	McDonnell Douglas DC10	Hume	50
ACT	FW19402	S	A	AA	FW - LAT AAS	Cessna Citation 525	Hume	50
ACT	RW18151	P	A	FB	RW - T2	Bell 412 SP	Hume	42
ACT	RW18153	P	A	SIG	RW - T3	Eurocopter AS350 B3	Hume	84
ACT	RW19152	P	A	FB	RW - T2	Bell 412	Hume	84
NT	FW18221	P	A	FB	FW - T4 - SEAT	Air Tractor AT-802	Batchelor	100
NT	FW18222	P	A	FB	FW - T4 - SEAT	Air Tractor AT-802	Batchelor	84
NT	FW18223	P	P	FB	FW - T4 - SEAT	Air Tractor AT-802	Batchelor	84
NT	RW19801	P	A	AA	RW - T3	Eurocopter EC130 B4	Batchelor	100
NSW	FW18601	S	A	FB	FW - LAT	McDonnell Douglas DC10	Richmond	50
NSW	FW19603	S	A	FB	FW - LAT	McDonnell Douglas DC10	Richmond	50
NSW	FW19401	S	A	AA	FW - LAT AAS	Aero Commander 690A	Richmond	50
NSW	FW18621	P	A	FB	FW - LAT	Lockheed C130Q/Boeing 737	Richmond	98
NSW	FW18623	P	A	FB	FW - LAT	BA Avro 146-RJ85	Richmond	152
NSW	FW19624	S	A	FB	FW - LAT	Lockheed C130Q	Richmond	[90]
NSW	FW18620	S	A	FB	FW - LAT	BA Avro 146-RJ85	Richmond	112
NSW	FW18650	P	A	AA	FW - LAT AAS	Gulfstream 695A	Richmond	210
NSW	FW18651	P	A	AA	FW - LAT AAS	Rockwell 690B	Richmond	98
NSW	FW19201	S	A	AA	FW - LAT AAS	Aero Commander 690A	Richmond	19
NSW	FW18916	P	A	FB	FW - T4 - SEAT Self-fill	Air Tractor AT-802 Fireboss	Grafton	84
NSW	FW18917	P	P	FB	FW - T4 - SEAT	Air Tractor AT-802A	Griffith	112
NSW	FW18918	P	P	FB	FW - T4 - SEAT	Air Tractor AT-802	Wagga Wagga	112
NSW	FW18919	P	P	FB	FW - T4 - SEAT	Air Tractor AT-802	Cowra	112
NSW	FW18920	P	P	AA	FW - Recce	Cessna 182N	Armidale	84

<b>NSW</b>	FW18922	P	P	FB	FW - T4 - SEAT	Air Tractor AT-802	Cowra	112
<b>NSW</b>	FW18923	P	P	FB	FW - T4 - SEAT	Air Tractor AT-802	Scone	112
<b>NSW</b>	FW18924	P	P	FB	FW - T4 - SEAT	Air Tractor AT-802	Moree	112
<b>NSW</b>	FW18925	P	P	FB	FW - T4 - SEAT	Air Tractor AT-802	Moree	112
<b>NSW</b>	FW18927	P	P	AA	FW - Recce	Cessna 182T	Camden	84
<b>NSW</b>	FW18928	P	P	FB	FW - T4 - SEAT	Air Tractor AT-802	Scone	112
<b>NSW</b>	RW18151	P	A	FB	RW - T2	Bell 412 SP	Hume	42
<b>NSW</b>	RW18901	P	A	FB	RW - T2	Eurocopter MBB-BK 117 C-2	Grafton	84
<b>NSW</b>	RW18902	P	A	FB	RW - T3	Eurocopter AS350 B3E	Kempsey	84
<b>NSW</b>	RW18903	P	A	FB	RW - T1 HV	Sikorsky S64E	Bankstown	84
<b>NSW</b>	RW18904	P	A	AA	RW - T3	Bell 206 L3 Longranger	Camden	84
<b>NSW</b>	RW18905	P	A	FB	RW - T1 HV	Sikorsky S64E	Bankstown	70
<b>NSW</b>	RW18906	P	A	FB	RW - T2	Bell 214B-1	Bankstown	84
<b>NSW</b>	RW18907	P	A	FB	RW - T2	Kawasaki BK117 B2	Cessnock	84
<b>NSW</b>	RW18908	P	A	FB	RW - T2	Bell 412	Camden	84
<b>NSW</b>	RW18909	P	P	FB	RW - T2	Bell 204B	Salamander Bay	84
<b>NSW</b>	RW18910	P	P	FB	RW - T2	Kawasaki BK117 B2	Camden	84
<b>NSW</b>	RW18911	P	A	FB	RW - T3	Eurocopter AS350 B3	Camden	84
<b>NSW</b>	RW18912	P	A	SIG	RW - T3	Eurocopter AS350 B2	Bankstown	84
<b>NSW</b>	RW18913	P	A	FB	RW - T2	Eurocopter MBB-BK 117 C-2	Tumut	84
<b>NSW</b>	RW18914	P	A	FB	RW - T2	Kawasaki BK117 B2	Mogo	84
<b>QLD</b>	FW18176	P	A	FB	FW - T4 - SEAT	Air Tractor AT-802	Toowoomba	84
<b>QLD</b>	FW18177	P	A	FB	FW - T4 - SEAT	Air Tractor AT-802A	Toowoomba	84
<b>QLD</b>	FW19701	S	A	FB	FW - T4 - SEAT	Air Tractor AT-802A	Toowoomba	56
<b>QLD</b>	FW19702	S	A	FB	FW - T4 - SEAT	Air Tractor AT-802A	Toowoomba	56
<b>QLD</b>	FW19703	S	A	FB	FW - T4 - SEAT	Air Tractor AT-802A	Bundaberg	56
<b>QLD</b>	FW19704	S	A	FB	FW - T4 - SEAT	Air Tractor AT-802A	Bundaberg	56
<b>QLD</b>	FW19705	S	A	FB	FW - T4 - SEAT	Air Tractor AT-802	Bundaberg	56
<b>QLD</b>	FW19706	S	A	FB	FW - T4 - SEAT	Air Tractor AT-802	Bundaberg	56
<b>QLD</b>	FW18179	P	A	AA	FW - Recce	Aero Commander 500-S	Toowoomba	84
<b>QLD</b>	RW19701	S	A	FB	RW - T1	Black Hawk UH-60	Toowoomba	45

QLD	RW18171	P	A	FB	RW - T2	Bell 214B-1	Toowoomba	84
QLD	RW18172	P	A	FB	RW - T2	Bell 214B-1	Toowoomba	84
QLD	RW18173	P	A	AA	RW - T3	Aerospatiale AS355 F1	Toowoomba	84
QLD	RW18174	P	A	FB	RW - T2	Bell 214B-1	Bundaberg	84
QLD	RW18175	P	A	AA	RW - T3	Aerospatiale AS355 F1	Bundaberg	84
SA	FW19605	S	A	FB	FW - LAT	McDonnell Douglas MD-87	RAAF Edinburgh	50
SA	FW19400	S	A	AA	FW - LAT AAS	Aero Commander 690A	RAAF Edinburgh	50
SA	FW18500	P	A	AA	FW - Recce	Cessna 208B Caravan	Claremont	84
SA	FW18555	P	A	AA	FW - Recce	Piper Meridian PA-46-500TP	Claremont	84
SA	FW18580	P	A	FB	FW - T4 - SEAT	Air Tractor AT-802A	Port Lincoln	84
SA	FW18581	P	A	FB	FW - T4 - SEAT	Air Tractor AT-802A	Port Lincoln	84
SA	FW18582	P	A	FB	FW - T4 - SEAT	Air Tractor AT-802	Mount Gambier	84
SA	FW18583	P	A	FB	FW - T4 - SEAT	Air Tractor AT-802	Mount Gambier	84
SA	FW18584	P	A	FB	FW - T4 - SEAT	Air Tractor AT-802A	Claremont	84
SA	FW18585	P	A	FB	FW - T4 - SEAT	Air Tractor AT-802A	Claremont	84
SA	FW18586	P	A	FB	FW - T4 - SEAT	Air Tractor AT-802A	Claremont	84
SA	FW18587	P	A	FB	FW - T4 - SEAT	Air Tractor AT-802A	Claremont	84
SA	FW18588	P	A	FB	FW - T4 - SEAT	Air Tractor AT-802A	Claremont	84
SA	FW18589	P	A	FB	FW - T4 - SEAT	Air Tractor AT-802A	Claremont	84
SA	FW18591	P	A	FB	FW - T4 - SEAT	Air Tractor AT-802A	Hoyleton	84
SA	FW18592	P	A	FB	FW - T4 - SEAT	Air Tractor AT-802A	Hoyleton	84
SA	FW18593	P	A	FB	FW - T4 - SEAT	Air Tractor AT-802A	Claremont	84
SA	FW18594	P	A	FB	FW - T4 - SEAT	Air Tractor AT-802	Claremont	84
SA	RW18501	P	A	AA	RW - T3	Eurocopter EC130 B4	Claremont	84
SA	RW18502	P	A	AA	RW - T3	Airbus AS350 B3	Claremont	84
SA	RW18504	P	A	AA	RW - T3	Airbus AS350 B3	Hoyleton	84
SA	RW18505	P	A	AA	RW - T3	Eurocopter AS350 BA	Mt Gambier	84
SA	RW18506	P	A	AA	RW - T3	Aerospatiale AS350 BA	Port Lincoln	84
SA	RW18508	P	A	AA	RW - T3	Eurocopter AS350 BA	Hoyleton	84
SA	RW18510	P	A	AA	RW - T3	Aerospatiale AS350 BA	Mt Gambier	84
SA	RW18512	P	A	AA	RW - T3	Aerospatiale AS350 BA	Port Lincoln	84



<b>SA</b>	RW18731	P	A	FB	RW - T1 HV	Sikorsky S64E	Claremont	84
<b>TAS</b>	FW18164	P	A	FB	FW - T4 - SEAT	Air Tractor AT-802A	Cambridge	56
<b>TAS</b>	FW18170	P	A	FB	FW - T4 - SEAT	Air Tractor AT-802A	Cambridge	56
<b>TAS</b>	RW18161	P	A	FB	RW - T2	Bell 214B-1	Hobart	70
<b>TAS</b>	RW18162	P	A	AA	RW - T3	Aerospatiale AS355 F1	Hobart	70
<b>TAS</b>	RW18163	P	A	FB	RW - T2	Bell 214B-1	Hobart	70
<b>TAS</b>	RW18165	P	A	FB	RW - T2	Bell 214B-1	Launceston	70
<b>TAS</b>	RW18166	P	A	AA	RW - T3	Aerospatiale AS355 F1	Launceston	70
<b>VIC</b>	FW18630	S	A	FB	FW - LAT	Lockheed C130Q	Avalon	84
<b>VIC</b>	FW18631	S	A	FB	FW - LAT	BA Avro 146-RJ85	Avalon	84
<b>VIC</b>	FW18635	S	A	AA	FW - LAT AAS	Aero Commander 690A	Avalon	84
<b>VIC</b>	RW15302	P	A	FB	RW - T3	Eurocopter AS350 FX2	Moorabbin	98
<b>VIC</b>	RW15303	P	A	FB	RW - T3	Eurocopter AS350 B3	Ovens	98
<b>VIC</b>	RW15304	P	A	FB	RW - T3	Eurocopter AS350 B3	Bairnsdale	98
<b>VIC</b>	RW15305	P	A	AA	RW - T3	Eurocopter EC120 B	Bendigo	98
<b>VIC</b>	RW15307 - all year	P	P	AIG	RW - T3	Eurocopter AS350 B3e	Moorabbin	n/a
<b>VIC</b>	RW15310	P	A	AA	RW - T3	Eurocopter AS350 B2	Colac	84
<b>VIC</b>	RW15311	P	A	FB	RW - T3	Eurocopter AS350 BA	Mansfield	84
<b>VIC</b>	RW15312	P	A	AA	RW - T3	Eurocopter AS350 B2	Ballarat	98
<b>VIC</b>	RW15327	P	A	FB	RW - T3	Eurocopter AS350 B3	Benalla	98
<b>VIC</b>	RW15328	P	A	FB	RW - T2	Bell 212	Shepparton	98
<b>VIC</b>	RW15329	P	A	FB	RW - T3	Eurocopter AS350 B2	Latrobe Valley	70
<b>VIC</b>	RW15330	P	A	FB	RW - T3	Bell 206 L3 Longranger	Jindera / Ovens	70
<b>VIC</b>	RW15331	P	A	FB	RW - T2	Bell 212	Olinda	98
<b>VIC</b>	RW15332	P	A	FB	RW - T2	Bell 212	Ovens	98
<b>VIC</b>	RW15333	P	A	FB	RW - T2	Bell 212	Heyfield	98
<b>VIC</b>	RW15334	P	A	FB	RW - T2	Bell 204B	Healesville	98
<b>VIC</b>	RW15335	P	A	FB	RW - T2	Bell 214B-1	Bendigo	98
<b>VIC</b>	RW15336	P	A	FB	RW - T2	Bell 212	Moorabbin	98
<b>VIC</b>	RW15337	P	A	FB	RW - T2	Bell 412 EP	Donald	98

<b>VIC</b>	RW15338	P	A	FB	RW - T2	Bell 412 EP	Sea Lake (moveable)	42
<b>VIC</b>	RW15339	P	A	FB	RW - T2	Bell 212	Latrobe Valley	98
<b>VIC</b>	RW15340 - all year	P	P	FB	RW - T2	Bell 412	Mangalore	n/a
<b>VIC</b>	RW17342	P	A	FB	RW - T2	Bell 412	Bacchus Marsh	98
<b>VIC</b>	RW18791	P	A	FB	RW - T1 HV	Sikorsky S64E	Essendon	84
<b>VIC</b>	RW18792	P	A	FB	RW - T1 HV	Sikorsky S64E	Moorabbin	70
<b>VIC</b>	RW18793	P	A	AA	RW - T3	Eurocopter EC120 B	Essendon	84
<b>VIC</b>	RW18794	P	A	AA	RW - T3	Eurocopter EC120 B	Moorabbin	70
<b>VIC</b>	RW18795	P	A	FB	RW - T1 HV	Sikorsky S61N	Colac	84
<b>VIC</b>	RW18796	P	A	FB	RW - T1 HV	Sikorsky S61N	Mansfield	84
<b>VIC</b>	RW18797 - NVIS	P	A	FB	RW - T1 HV	Sikorsky S61N	Ballarat	84
<b>VIC</b>	RW18790 - NVIS	S	A	AA	RW - T2	Sikorsky S76B	Ballarat	84
<b>VIC</b>	FW19301	P	A	FB	FW - T4 - SEAT	Air Tractor AT-802	Stawell	98
<b>VIC</b>	FW19302	P	A	FB	FW - T4 - SEAT	Air Tractor AT-802	Stawell	98
<b>VIC</b>	FW19303	P	A	FB	FW - T4 - SEAT	Air Tractor AT-802	Nhill	28
<b>VIC</b>	FW19304	P	A	FB	FW - T4 - SEAT	Air Tractor AT-802	Nhill	28
<b>VIC</b>	FW19305	P	A	FB	FW - T4 - SEAT	Air Tractor AT-802F	Ouyen	28
<b>VIC</b>	FW19306	P	A	FB	FW - T4 - SEAT	Air Tractor AT-802AF	Ouyen	28
<b>VIC</b>	FW19307	P	A	FB	FW - T4 - SEAT	Air Tractor AT-802	Casterton	98
<b>VIC</b>	FW19308	P	A	FB	FW - T4 - SEAT	Air Tractor AT-802	Casterton	98
<b>VIC</b>	FW19309	P	A	FB	FW - T4 - SEAT	Air Tractor AT-802F	Hamilton	98
<b>VIC</b>	FW19310	P	A	FB	FW - T4 - SEAT	Air Tractor AT-802AF	Hamilton	98
<b>VIC</b>	FW19311	P	A	FB	FW - T4 - SEAT	PZL Warszawa M18	Benambra	98
<b>VIC</b>	FW19312	P	A	FB	FW - T4 - SEAT	PZL Warszawa M18	Benambra	98
<b>VIC</b>	FW19313	P	A	FB	FW - T4 - SEAT	Air Tractor AT-802F	Bairnsdale	98
<b>VIC</b>	FW19314	P	A	FB	FW - T4 - SEAT	Air Tractor AT-802AF	Bairnsdale	98
<b>VIC</b>	FW19315	P	A	FB	FW - T4 - SEAT	Air Tractor AT-802A	Mansfield	98
<b>VIC</b>	FW19316	P	A	FB	FW - T4 - SEAT Self-fill	Air Tractor AT-802A Fireboss	Albury	98
<b>VIC</b>	FW19317	P	P	FB	FW - T4 - SEAT	Air Tractor AT-802A	Stawell	126
<b>VIC</b>	FW19318	P	P	FB	FW - T4 - SEAT	Air Tractor AT-802A	Stawell	126
<b>VIC</b>	FW19319	P	A	SIG	FW - SIG	Dornier	Nowra, NSW	28

<b>VIC</b>	FW19321	P	A	AA	FW - Recce	Cessna 337G	Stawell	98
<b>VIC</b>	FW19322	P	A	AA	FW - Recce	Pilatus BN2B-26 Islander	Bairnsdale	98
<b>VIC</b>	FW19324	P	A	AA	FW - Recce	Cessna 208B Caravan	Albury	98
<b>VIC</b>	FW19325	P	A	AA	FW - Recce	Cessna 208B Caravan	Hamilton	98
<b>WA</b>	FW19604	S	A	FB	FW - LAT	McDonnell Douglas MD-87	RAAF Pearce	50
<b>WA</b>	FW18179	S	A	AA	FW - LAT AAS	Aero Commander 500-S	RAAF Pearce	28
<b>WA</b>	FW19400	S	A	AA	FW - LAT AAS	Aero Commander 690A	RAAF Pearce	20
<b>WA</b>	FW18200	P	A	FB	FW - T4 - SEAT	Air Tractor AT-802A	Albany	98
<b>WA</b>	FW18201	P	A	FB	FW - T4 - SEAT	Air Tractor AT-802	Albany	98
<b>WA</b>	RW18191	P	A	FB	RW - T1 HV	Sikorsky S64E	Jandakot	105
<b>WA</b>	RW18193	P	A	FB	RW - T2	Bell 214B-1	Jandakot	166
<b>WA</b>	RW18194	P	A	FB	RW - T2	Bell 214B-1	Jandakot	166
<b>WA</b>	RW18195	P	A	FB	RW - T2	Bell 214B-1	Jandakot	136
<b>WA</b>	RW18196	P	A	FB	RW - T2	Bell 214B-1	Jandakot	136
<b>WA</b>	RW18197	P	A	FB	RW - T2	Bell 214B-1	Busselton	107
<b>WA</b>	RW18198	P	A	FB	RW - T2	Bell 214B-1	Busselton	107
<b>WA</b>	RW18199	P	A	AA	RW - T3	Aerospatiale AS355 F1	Jandakot	166
<b>WA</b>	RW18202B - all year 5D	P	A	SIG	RW - T2	Eurocopter AS365 N2	Jandakot	140
<b>WA</b>	RW18206	P	A	AA	RW - T2	Eurocopter AS365 N2	Jandakot	166
<b>NSW</b>	FWASIR16001	P	P	LS	Linescan	Gates Learjet Corp 35A/36A	Nowra, NSW	112
<b>VIC</b>	FWASIR16002	P	P	LS	Linescan	Beechcraft KingAir B200T	Essendon, Vic	112
<b>NSW/VIC</b>	FWASIR16003	P	P	LS	Linescan	Gates Learjet Corp 35A/36A	Nowra, NSW	91
<b>NSW/ VIC</b>	FWASIR16004 - all year	P	P	LS	Linescan	learjet/B200	Nowra, NSW	n/a
<b>WA</b>	FWASIR16005	S	P	LS	Linescan	Beechcraft B200T	Jandakot, WA	90