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### Your Submission

In your experience, what areas of the bushfire emergency response worked well?

Addressed in attached Air Affairs Australia submission.

In your experience, what areas of the bushfire emergency response didn't work well?

Addressed in attached Air Affairs Australia submission.

In your experience, what needs to change to improve arrangements for preparation, mitigation, response and recovery coordination for national natural disaster arrangements in Australia?

Addressed in attached Air Affairs Australia submission.

Is there anything else you would like to tell the Royal Commission?

Addressed in attached Air Affairs Australia submission.

Do you agree to your submission being published? Yes I agree to my submission being published in my name

Supporting material provided:

200428\_AAA - National Royal Commission into National Natural Disaster Arrangements.pdf

# ROYAL COMMISSION INTO NATIONAL NATURAL DISASTER ARRANGEMENTS

## AIR AFFAIRS AUSTRALIA SUBMISSION

28 April 2020



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## Executive Summary

Air Affairs Australia welcomes the opportunity to share its experiences from the 2019-20 bushfire season with the Royal Commission into National Natural Disaster Arrangements.

Throughout this last bushfire season, Air Affairs Australia flew fire scanning missions across every Australian state from its base at Nowra, New South Wales. We provided urgent intelligence on the unfolding bushfire crisis to firefighting agency customers, including the New South Wales Rural Fire Service, Victoria's Country Fire Authority and agencies in Queensland, South Australia and Western Australia.

Air Affairs Australia has spent the past 20 years investing in both capability and resources to develop a totally Australian fire scanning capability, working as best we could to dovetail it into each state's unique fire management systems. We continue to invest in new airborne fire intelligence capability, as we are committed to improving our fire services into the future.

Our experience in the 2019-20 bushfire crisis revealed systemic barriers to developing an effective Australian aerial firefighting capability. These barriers have a profound and negative impact on the ability of firefighting authorities across the nation to respond quickly and appropriately to address the threat of bushfires.

Noting the complexity of some of these issues, a concerted national approach led by the Commonwealth Government is required to provide an effective and sustainable solution, and one that leverages efficiencies and cost savings of different jurisdictions working collaboratively together.

First, Australia lacks a unified, national bushfire response regime, with a common set of standards and a realistic process for sharing information and providing access to critical assets between states. The absence of a single, integrated intelligence management and governance system produces avoidable delays in addressing the threat of bushfires and means that existing assets are not used to their full potential. This undoubtedly puts lives and properties at greater risk.

Second, state government and firefighting agency approaches to their commercial arrangements with industry partners are unsustainable, especially as they do not recognise the contemporary operating environment and the commercial realities for private operators. This prevents industry — particularly local companies — from appropriately provisioning services and engaging in long-term planning, stifling a potential world-leading sovereign capability. In their dedication to protecting local communities, Australian businesses involved in firefighting are taking on significant commercial risk in order to provide essential assets and services, at a higher tempo and for far longer periods than expected. These experiences are in stark contrast to Australia's strategic and coordinated approach in other critical areas such as Defence, border security and search and rescue (SAR), all of which provide lessons for those involved in bushfire response.

These concerns speak directly to the issues the Royal Commission will consider with respect to the responsibilities of federal, state and territory governments, and the coordination between them, to prepare for and respond to natural disasters like bushfires. Air Affairs Australia is pleased to share its experiences from the 2019-20 bushfire crisis and offer insight on how arrangements between governments can be improved to better manage this threat in the future.

Air Affairs Australia welcomes the opportunity to provide the Royal Commission with further detail on any of the points raised in this submission.



## Recommendations

- Recognise the critical importance that accurate and timely integrated intelligence and attack systems play in effective fire suppression and personnel safety and explore opportunities for a unified integrated intelligence and command and control system for Australia.
- Draw upon experiences from the current Dornier 328 trial under way in Victoria for consideration in the development of a national approach to an integrated intelligence and command and control system.
- Improve mutual aid arrangements for interstate opportunities on a proactive and predictive basis to share aircraft based on risk, using likelihood and consequence models.
- Explore the creation of a national firefighting capability that can rapidly share intelligence and assets to better coordinate responses in order to increase effectiveness and safety and reduce costs– potentially through the restructuring of the National Aerial Firefighting Centre (NAFC).
- Consider the role that water scoopers can provide as an alternative or complementary capability for air tankers in the development of the most effective national fire response capability.
- Strongly pursue and support the development of a commonality of standards (ie policy, standard operating procedures, contracts, call-when-needed arrangements, resource sharing) and aviation training across all member agencies nationally.
- Further investigate and develop sophisticated contract management practices better tailored to contemporary operating environments – based on the collaborative models observed such as SAR – in order to enhance efficiency, effectiveness and safety.
- Investigate experiences from overseas jurisdictions – for instance, California– on sustainable industry approaches, and leverage Australia’s respected position as a global leader in firefighting to develop international standards for the industry.
- Develop mechanisms for the independent formulation of strategic policy, developed in consultation with firefighting agencies, governments and industry.
- Require firefighting agencies to justify why they have not adopted the policy direction produced through this process.

## Introduction to Air Affairs Australia

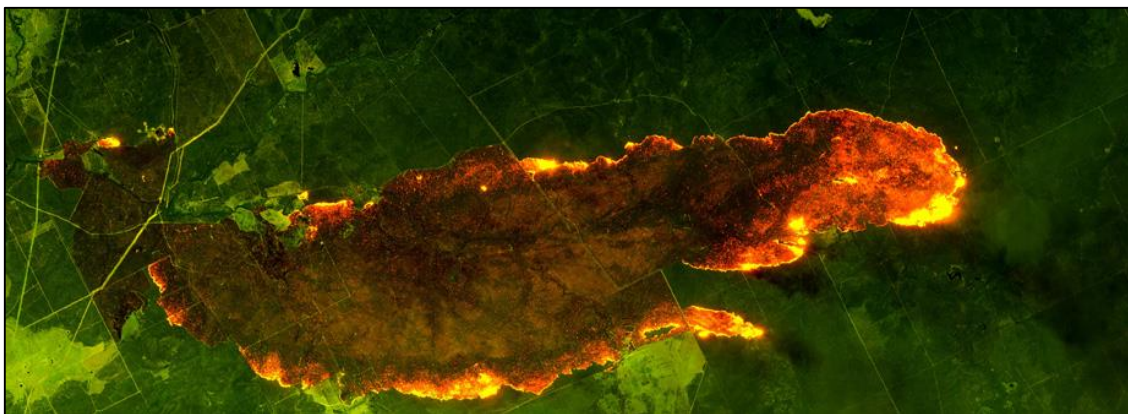
Air Affairs Australia is based in Nowra, New South Wales, and provides specialised airborne services, aviation training and engineering services. It owns and operates a fleet of Learjet 30 and 60 series and King Air B200 aircraft that conduct special missions on behalf of customers, including state fire agencies and federal government agencies. Air Affairs Australia maintains a satellite base and aircraft at Essendon Airport in Victoria and at Jandakot Airport in Western Australia.

From its main facilities next to HMAS Albatross, Air Affairs Australia conducts airborne missions in support of fire scanning; Australian Defence Force (ADF) training; search and rescue; medical evacuation; and a range of intelligence, surveillance and reconnaissance (ISR) operations. The company operates across Australia and can rapidly mobilise its services as required by the customer. It also designs and manufactures critical components, integrates complex special mission systems and designs and implements software solutions.

### Fire intelligence capabilities

The company has been engaged in high-altitude bushfire mapping throughout Australia for over 20 years. It provides an 'eye in the sky' capability to capture critical fire intelligence imagery and mapping data for fire agencies, 24 hours a day. This data is essential to assist incident management teams to plan and deploy firefighting assets.

Air Affairs Australia's fire scanning capability is a crucial contributor to bushfire intelligence-gathering across Australia, including in remote areas. It captures line scan imagery of bushfire activity from up to 40,000 feet, day and night. It provides ground imaging that clearly defines active fires and burnt terrain through dense smoke, transmitting this from the aircraft, via satellite, to state operation centres for near real-time utilisation. With fast-moving bushfires occurring across Australia, the need for rapid, wide-area fire intelligence is critical in supporting ground firefighting crews.



*Example of Air Affairs Australia line scanner imagery over an active bushfire using Learjet and Airpod system combination, captured at an altitude of 22,000ft at a speed near 750 km/h. Image displaying a true colour combination, along with the enhanced visible and infrared combination. Source: Air Affairs Australia.<sup>1</sup>*

<sup>1</sup> [http://www.airaffairs.com.au/bushfire\\_ISR/](http://www.airaffairs.com.au/bushfire_ISR/)

## 2019-20 bushfire crisis

### Overview of Air Affairs Australia's activity

During the 2019-20 fire season, every aspect of the bushfire industry in Australia was challenged by the rate of effort required which was far beyond any reasonably informed prediction. Air Affairs Australia was no exception to this, and this past fire season was the busiest in its history. From the early start to the season in mid-August 2019, Air Affairs Australia flew 2,432 hours on fire scanning missions, covering the equivalent of around 70 per cent of Australia. This included 608 sorties flown by five aircraft and 76 personnel across all states and territories, excluding the Northern Territory.

This contribution was part of a broader response effort which saw nearly 40,000 flights by firefighting aircraft over southeast Australia between July 2019 and February 2020.

In addition to its fire scanning activity, Air Affairs Australia also provided additional and after-hours maintenance support to R+M Aircraft firefighting Air Tractors at its facilities in Nowra. This helped ensure these essential firefighting aircraft were able to return to the air as quickly as possible to address urgent bushfire threats, including to areas immediately surrounding Air Affairs Australia's own centre for operations at HMAS Albatross.



*National Aerial Firefighting Centre flight data on aircraft regularly involved in firefighting and emergency support, providing a visual indication of activity across the bushfire season.*

Source: Bloomberg.<sup>2</sup>

<sup>2</sup> <https://www.bloomberg.com/graphics/2020-us-australia-firefighting-aircraft-climate-change/>



## Observations on preparedness and response in 2019-20

This recent fire season has shown that the current set of arrangements cannot be described as fit for purpose. What should be a national, coordinated response to bushfires is instead a disjointed set of duplicated efforts that not only undermine efforts to fight fires, but in many cases can make it harder to control a blaze. Of particular concern is that what is in theory a shared national capability is in reality anything but.

Flaws in the design of the system also put lives and property at risk. The inefficiencies in the system create a situation where personnel and assets are placed under extreme pressure, resulting in almost inevitable incidents, which have the potential to be fatal. In the 2019-20 season alone, there were 18 aerial firefighting accidents, including one that was fatal. The crash of the large air tanker in the Snowy Monaro area in January, and the deeply regrettable loss of three American firefighters, calls for our collective and urgent action to improve the safety outcomes for firefighters, including through access to accurate and timely information.

Throughout the recent fire season, it became increasingly clear to Air Affairs Australia of the critical importance that access to intelligence plays in improving the safety of firefighters and the public. On multiple occasions, local communities witnessed the implications of delayed, or absence of, information on the ability to attack fires quickly and safely. In many ways this was a result of the siloed approach to information-gathering and sharing between jurisdictions. While the fires raced across borders, information about them did not, or it did so slowly. With improved intelligence management alone, Australia would have seen dramatically different outcomes in the protection of lives on the ground and in the air.



*Image (L) taken by Air Affairs Australia special mission Learjet aircraft, of an active fire on the NSW Central Coast in January 2020. Image (R) of R+M Aircraft air tractors undergoing maintenance at Air Affairs Australia facilities in Nowra, NSW. Source: Air Affairs Australia.<sup>3</sup>*

<sup>3</sup> <http://www.airaffairs.com.au/news/archive-2020/index.html>



## Developing a national bushfire response capability

The unprecedented 2019-20 bushfire season, with numerous incidents across multiple states and jurisdictions, highlighted weaknesses in the present set of arrangements between governments, firefighting agencies and businesses involved in response efforts. However, it also pointed to a way forward.

States and territories dealt with their respective fire emergencies in their own ways, involving the use of different aircraft and different reconnaissance and intelligence systems, not to mention command and control structures that involve too many steps between detection and attack, producing unnecessary delays in response times. Meanwhile, due in part to the procedural environment surrounding the ownership of assets engaged by states, assets not being used by one state often sit idle while other states burn.

An extreme example of this problem occurred in the 2018-19 season when Victorian fire authorities held two aircraft and crews on the ground in Nowra for several days and refused access to NSW fire agencies. At the time there was significant emergency fire activity in the north of NSW, and one intelligence aircraft was available to NSW and was operating. There was almost no fire activity in Victoria at the time. When one of the assets was eventually released for NSW use, Air Affairs Australia operations personnel were instructed that the aircraft was not to proceed north of Sydney. Victorian authorities would have had information available to confirm that almost all the emergency activity was occurring north of Sydney.

During an incident in Tathra, NSW, the same year, the systemic roadblocks to intra-agency communications allowed a fire to proceed beyond control limits. At the time, Air Affairs Australia operational personnel were observing smoke from the fire on satellite imagery and repeatedly called the state air desk seeking instructions to launch an intelligence aircraft to investigate, but were advised that the service was not required. While the Air Affairs Australia operations manager took the unusual step to order the launch of a surveillance asset despite the absence of this instruction, the resultant imagery likely contributed to the rapid change in the agency's response. This incident is explored in the Bega Valley Fires Independent Review of June 2018. While this review focused on intra-agency emergency management within NSW, the same systemic roadblocks to effective command and control exist, with varying degrees, nationally.

Furthermore, due to the different product requirements between jurisdictions, Air Affairs Australia also faces unnecessary additional burden in its provision of urgent intelligence to respective authorities on bushfires that cross state and territory borders. Respective fire authorities require products delivered in their own unique format and may reject products in another state's format despite all pertinent information being included. The acceptance of a common product format nationally would address this and would also enable intelligence providers to more easily sharing incidental information acquired en route to a fire in a different state or territory.

Not only is the duplication of effort and resources inefficient and wasteful, the lack of coordination and resource-sharing undermines the efficacy of firefighting efforts, putting lives and properties at risk. Frontline firefighters, state operational personnel and other first responders work heroically despite this disjointed arrangement, which fails to provide the accurate and timely information needed to work effectively and imposes a risk to their own personal safety. We owe it to them, and those who made the ultimate sacrifice defending their communities, to develop a firefighting system that works as well as it possibly can, delivering all the information and resources the crewmember at the end of the hose needs to fight fires.



While the intended acquisition of large air tankers and similar tactical systems is a welcome addition – and further debate on the most appropriate new firefighting aircraft is certainly required (with Air Affairs Australia’s perspectives outlined further below) – consideration of the systems that link these assets together is key. The inarguable reality is that without a holistic, integrated and systemic approach to the collection, dissemination and management of suitable surveillance and actionable intelligence between appropriate platforms, the potential effectiveness of these types of air attack assets are substantially inhibited. That is to say, it is essential to develop a coherent strategy based on trusted and timely information before resources are devoted to attack a fire.

### The value of information

The fundamental need of decision-makers who are performing a role in any emergency management task is information that can be relied upon to make an informed decision in complex and uncertain situations. In many scenarios, essential elements of this picture cannot be obtained from the ground or from direct contact with a hazard – they can only be produced using airborne and spaceborne remote sensing systems.

Achieving this need not be an exercise in re-inventing the wheel. All the necessary assets and technology currently exist, they are just not being utilised effectively and they do not form a coherent, integrated system. In terms of how fires are currently attacked, we find there are far too many steps involved between the initial detection of a blaze, and an asset attacking it (see Appendix 1 for an illustration). These steps all equal time, which gives the blaze the upper hand in establishing itself and spreading before an attack is made. This, in turn, increases the amount of effort required in extinguishing the blaze. Yet the technology and resources exist to dramatically cut down the time between detection and response, while simultaneously increasing safety for air and ground crews involved in firefighting.

Global experience and research have demonstrated that the most efficient application of aerial resources is a rapid initial attack of incipient fires, coordinated through an integrated intelligence and command and control system. Air Affairs Australia is currently partnering with the Victorian government and the National Aerial Firefighting Centre (NAFC) in the trialling of an aerial intelligence and airborne command and control system utilising a Dornier 328 aircraft. This trial forms an important first step towards delivering such a system for use in Australia and will provide important lessons for the development of a national approach.

Air Affairs Australia strongly believes that, if implemented today, a unified national intelligence system would generate high-reliability, precision attack flight path data and monitoring for suitably equipped attack aircraft. This would mean any aircraft attacking fires could conduct dropping operations with overwhelmingly increased precision, situational awareness and safety for aircrews and firefighters in the field.

Air Affairs Australia, in coordination with agency and industry partners in several countries, has worked for several years to define the components of a national integrated system that enables accurate and controlled tactical management of attack aircraft and ground assets in this manner (see Appendix 2 for detail).

**Recommendation:** Recognise the critical importance that accurate and timely integrated intelligence and attack systems play in effective fire suppression and personnel safety and explore opportunities for a unified integrated intelligence and command and control system for Australia.

**Recommendation:** Draw upon experiences from the current Dornier 328 trial under way in Victoria for consideration in the development of a national approach to an integrated intelligence and command and control system.



## Availability of assets

The 2019-20 bushfire season also highlighted how agreements on state access to national firefighting capability are something more often breached than observed. There have been instances where Air Affairs Australia has been forced to simultaneously deny multiple states access to its emergency fleet air assets due to a lack of available resources and personnel. All aerial fire scanning assets were either deployed or undergoing repairs resulting from their significant rate of effort.

The duplication of effort, the lack of coordination and the disjointed approach to firefighting calls for a unified approach that encompasses a unified set of standards, equipment and strategies. As we saw in 2019-20, fires have no regard for arbitrary state and territory borders. Nor should our efforts to fight them.

**Recommendation:** Improve mutual aid arrangements for interstate opportunities on a proactive and predictive basis to share aircraft based on risk, using likelihood and consequence models.

## The AMSA example

Without wishing to pre-empt the design of a national system, the development of the Australian Maritime Safety Authority (AMSA) points to a possible way forward. In many ways the SAR system that pre-dated AMSA echoed the current problematic arrangements with firefighting – a state-based approach with various agencies responsible for marine and aerial assets. It was disjointed and unable to respond in an effective manner to a major event, such as the perfect storm that struck the 1998 Sydney to Hobart yacht race.

Today, AMSA oversees a national approach to SAR, working with state authorities, the ADF and other agencies. As well as coordinating a national response, it also has responsibility for standardised procedures and operational techniques for all agencies. The formation of AMSA demonstrates that state, territory and federal agencies can work together to design and implement a national approach to safety. Doing likewise for firefighting is not beyond us.

National coordination is effective in providing surge capacity for unmet demand, and in coordination of the location of assets in response to seasonal or medium-term risk. The engagement of large fixed-wing aircraft would also benefit from national coordination because of the capacity and speed of response that these aircraft can provide.

## The role of the National Aerial Firefighting Centre (NAFC)

A strengthened national approach would confirm the role of the NAFC, or a similar entity, in providing national facilitation of inter-jurisdiction resource movements; coordination of asset locations in response to seasonal and medium-term risk; and in activities such as the coordination of supplementary resources and the engagement of large fixed-wing aircraft. In this scenario each state or territory would take a centralised approach to dispatch and strategic coordination of aircraft for fire suppression within jurisdictions.

Beyond the nature of a national response is the need to implement best-practice approaches. Our current systems involve far too many steps between fire detection and attack. Indeed, detection can in some instances be a stroke of luck, with a fatigued operator noticing a stray pixel on an image and recognising its significance – as occurred for Air Affairs Australia this past fire season. A standardised national approach to fire detection, with a central agency responsible for calling out assets that can then share that information in real time to the relevant responders is essential. This cuts the time between detection and attack, improving the chances of containing the fire and saving lives.



Technology development in recent years has created an integrated ISR capability continuum of ground, cyber, space and airborne ISR domains. When coordinated effectively, this continuum enables decision-makers to manage resources efficiently, to make effective decisions, reduce chances of incident escalation, and reduces the impact and duration of rapidly evolving and complex emergencies. For emergency management, the ISR domain is a powerful element of this continuum as it offers operational advantages that are not possible through other domains. Simplistically, aerial intelligence, surveillance and reconnaissance (AISR) provides the metaphorical 'bird's-eye view' of a situation. Literally, AISR enhances perspective, reach, penetration, responsiveness, and flexibility of an ISR Support Plan like no other element.

How we attack the fire threat is also open to improvement. Our current approach involves a mix of aircraft with varying capabilities and response times. Best practice would see the utilisation of aircraft with the shortest possible turnaround time and the capability to operate safely in reduced visibility through the use of synthetic vision.

States are inhibited from implementing the changes necessary to achieve these improvements, whether that be due to financial constraints or cultural barriers to change. National leadership will be necessary to bring states and territories along.

**Recommendation:** Explore the creation of a national firefighting capability that can rapidly share intelligence and assets to better coordinate responses in order to increase effectiveness and safety and reduce costs – potentially through the restructuring of NAFC.

### Acquisition of new firefighting aircraft

While Air Affairs Australia provides expert fire intelligence services, rather than fire attack capabilities, it welcomes the opportunity to share its perspective on the latter, developed through years of close coordination with firefighting aircraft and engagement with leading capability providers across the globe.

Over the recent bushfire season, much of the public commentary around potential new aircraft for Australia centred on the acquisition of large and very large air tankers, however this may not be the most cost-effective and capable option to expand Australia's current fleet. Air Affairs Australia strongly encourages greater consideration of the value that water scoopers can provide as an alternative or complementary capability to retardant-carrying tankers. Alongside more effective intelligence sharing and command and control systems, these aircraft can contribute to a national firefighting capability that has far greater speed, agility, and accuracy.

Most aerial firefighting aircraft are fourth- or fifth-hand retired airliners or military aircraft that have been repurposed for aerial firefighting, meaning they are not designed for the rigors of their new role. In contrast, water scoopers are built specifically for aerial firefighting and provide a capability that can often be a quicker, more versatile, and cheaper option to addressing fires.

The value of these aircraft has been acknowledged in countries like the United States, where a 2009 US Forest Service report on the most effective aircraft fleet makeup recommended authorities increase the number of water scoopers by tenfold. This recognised key factors in favour of the platform over tankers included significantly lower turn times that enable more water drops, far greater accuracy in targeting drops to critical areas of fires, lower operational costs and further savings on retardant, and expanded airfield options for landing and basing.



While it is true the capability requirement for ready access to a water source may limit its use in more remote areas, in Australia the fires most critical to extinguish are those closer to large populations and significant infrastructure, which are typically near sources of water themselves.

**Recommendation:** Consider the role that water scoopers can provide as an alternative or complementary capability for air tankers in the development of the most effective national fire response capability.

## Improving the commercial environment and service outcomes

The way we approach procurement goes hand-in-hand with the way we utilise our assets. The unfortunate reality is that current contractual arrangements are not adapting to contemporary conditions. Based on operational activity, bushfire threat periods are becoming longer and less predictable, with an increasing overlap of the northern and southern hemisphere bushfire seasons. This means assets being used more often, over longer periods. This has resulted in gaps in service as crew reach mandated duty limits, particularly for night operations. Moreover, current commercial arrangements are already inadequate, with standing charges not meeting operating costs, putting the financial burden on to the provider.

The 2019-20 bushfire season placed significant financial strain on businesses involved in firefighting, with the high tempo, long season and constant requirement for assets and services driving up overheads, with a majority of costs not covered under contracts. Unless they are exceptionally resilient to large strains on cashflow, these businesses may struggle to remain commercially viable and continue providing critical services for the community. Regrettably, these commercial drivers are often not well understood by all. Indeed, there have been instances where Air Affairs Australia has been criticised for being late on station despite being not being under contract – a reflection of the progressively earlier starts to bushfire seasons that are not acknowledged in contract timings.

At the heart of the matter is the fact that current contracting arrangements and agency structures do not allow for long-term planning. NAFC's function is to act as a broker – a very good broker, it must be said, but brokers are not built for developing and delivering on the longer-term strategy the sector requires. As part of this process we should immediately investigate confirming and extending the role of NAFC as the relevant national body to coordinate aircraft placement and sharing. On the basis of a pilot program, NAFC could potentially be extended in its scope to include a broader emergency service resource coordination role.

It is worth noting here that overseas jurisdictions with similar climate and fire issues to those encountered in Australia generally invest more in aerial fire suppression in total, as well as on a per capita basis, for populations living in high-risk areas. As comparison, the California Department of Forestry and Fire Protection (CAL FIRE) has a fleet of 52 aircraft to fight fires in a jurisdiction 19 times smaller than Australia, and is investing in seven new C-130 air tankers and 12 new S-70i Firehawk helicopters. While Australia is a global leader in many areas of fire intelligence and tactical response to threats, this does not mean we cannot learn lessons from other markets to build the foundation of a successful and sustainable local bushfire response capability.

Efficient ISR support operations require the coordination and cooperation of multiple agencies and supporting service providers on the day of need, which would not be possible unless inter-agency alignment and foresight occurs during the capability planning and procurement process, well ahead of this time.

The reality is that every element of a unified national fire management system is available now and many of the systems are already in use in Australia and simply need to be integrated.



Australian businesses, amongst them Air Affairs Australia, stand ready and have the expertise, technological ability, facilities and people to rapidly produce the required surveillance and attack aircraft, un-manned platforms, communications systems, integration frameworks and personnel training for such a national capability. This would secure positions and create thousands of new jobs for Australians.

### More effective contracting arrangements

If we are to implement more effective procurement measures, there is a need to reinforce and maintain whole-of-service contracted outsourcing as the preferred service delivery model for Australia. We should also seek opportunities for improved contractual arrangements nationally and internationally on a longer-term basis that offers cost benefits, as well as technological improvements. Although, we should continue to review preferred models as costs change and technology advances.

The greatest value is obtained from contract service provision arrangements when a close, professional working relationship with the contractor is maintained, and sophisticated (but not necessarily complex) contract management techniques are employed to monitor and develop contractor performance.

Short, fixed-term contracts, with limited standing arrangements, prohibit operators from stable service mobilisation, make it difficult to retain personnel, and place huge loads on training systems for which the agreements do not allow. In contrast, longer term contracts result in the ability for businesses to provide better equipment, better aircraft and more highly skilled pilots. Cost savings are often marginal, but value-for-money is significantly increased through lengthier contract arrangements. Such contracts are strongly preferred by both contracting agencies and suppliers, provided appropriate rise-and-fall provisions are employed. Where practical, service provision contracts for periods of five or more years, incorporating appropriate rise-and-fall provisions, should be implemented.

As far as practical, contract services should be sufficient for a normal situation on an exclusive-use (dedicated) basis, and only utilise call-when-needed resources when above-normal situations are encountered.

A relevant example of the effect of this is the recent grounding of aerial attack and intelligence helicopters in Victoria for seven days due to helicopter operations being limited due to Visual Flight Rules (VFR). Poor visual conditions at the aerodromes where the helicopters were based prevented their departure. While many of these same aircraft are technically capable of operating within Instrument Flight Rules (IFR), the current contract arrangements do not allow helicopter operators to amortise the significant increase in costs to allow the additional training of crews, addition of systems and development of procedures that would be required to facilitate IFR operations.

Furthermore, there are simple measures that could be undertaken immediately to standardise commercial experiences across different states in a relatively uncontentious way. This would reduce unnecessary administrative costs for businesses and support their ability to plan better. The current divergence across state firefighting agencies in their invoicing requirements on businesses provides one such example. While it may seem trivial, businesses face a tangible additional burden to meet exacting formatting requirements for invoices that are different across states, despite the content requirement being the same.

Another change that would allow businesses to better plan their investments and meet their own payment obligations would be the development of a nationally consistent approach to payment terms. This would include a standard length for payment periods of invoices, and consistency in abiding by these periods for businesses and firefighting agencies alike.



**Recommendation:** Strongly pursue and support the development of a commonality of standards (ie policy, standard operating procedures, contracts, call-when-needed arrangements, resource sharing) and aviation training across all member agencies nationally.

**Recommendation:** Further investigate and develop sophisticated contract management practices better tailored to contemporary operating environments – based on the collaborative models observed such as SAR – in order to enhance efficiency, effectiveness and safety.

**Recommendation:** Investigate experiences from overseas – for instance California – on sustainable industry approaches, and leverage Australia’s respected position as a global leader in firefighting to develop international standards for the industry.

## Changing the culture

If a truly integrated, effective national approach is to work, the issue of institutional inertia must be addressed. This need not be controversial — although the reality is it most likely will be. However, without a change to the underlying policy-making and processes, any work to implement a more effective system will be for nought.

As we are seeing with the Covid-19 outbreak, policy is best developed by experts and applied by specialists. Both bring their respective expertise to the table and, working together, can implement effective solutions to what seem intractable problems. What is key in this is clear and open communication and a willingness from both experts and specialists to change their thinking and their processes – when the facts change, we should change our minds.

The application of this to firefighting is in the thinking and processes used by business unit managers within agencies to develop the strategic and long-term planning of the industry’s structure and operations. At present there is too little use of outside expertise, with a heavy reliance on past practices and in-house advice. In other words, “This is how we’ve always done it” appears to be the mantra.

That is not to say there is no place for such hard-earned and unmatched experience. This incredible source of knowledge should be at the decision-making table providing valuable input, particularly regarding the practical application of policies and the implications on the ground.

To that end, a mechanism needs to be put in place that allow for the independent formulation of strategic policy developed in consultation with firefighting agencies, governments and industry. Once agreed upon, firefighting agencies should be required to justify why they have not followed the policy direction or suggestions produced through this process.

This would ensure policy and planning provide greater consideration to contemporary environmental issues, commercial realities for businesses, technological developments in firefighting and academic debate. This mechanism would ideally be a national one, but at the very least should be considered by individual states in the first instance.

**Recommendation:** Develop mechanisms for the independent formulation of strategic policy, developed in consultation with firefighting agencies, governments and industry.

**Recommendation:** Firefighting agencies should be required to justify why they have not adopted the policy direction produced through this process.





## Conclusion

The 2019-20 bushfire season was unprecedented, not just in the scale of the challenges faced, but in the efforts expended by the tireless volunteers and others across the country who in many cases risked everything to save their communities. Ultimately, we prevailed, but in far too many cases it was luck and happenstance that saw us through. This should not be the case.

Our most recent experiences have highlighted and exacerbated longstanding issues for the sector that call into question the inefficient and unsustainable ways we operate. Our disjointed approach to firefighting needs to end. We need a national approach that truly shares information and assets in a coordinated, standardised way. It needs to use the best-available technologies and practices that allow us to detect, act and defeat fires as quickly as possible.

Some states will struggle to implement the cultural and organisational change that would effect this. As such, federal leadership will be required to coordinate the states and territories in developing a national approach. We have done it before, from railways to AMSA, the states have put aside their more narrow set of interests for the good of the national interest. We can do that again.

Bushfires are ultimately border-agnostic, however the bureaucracy to deliver the data that would help to fight them is very much border-dependant. This is the wrong way to approach the problem. We need solutions that cross our borders as easily as a blaze.

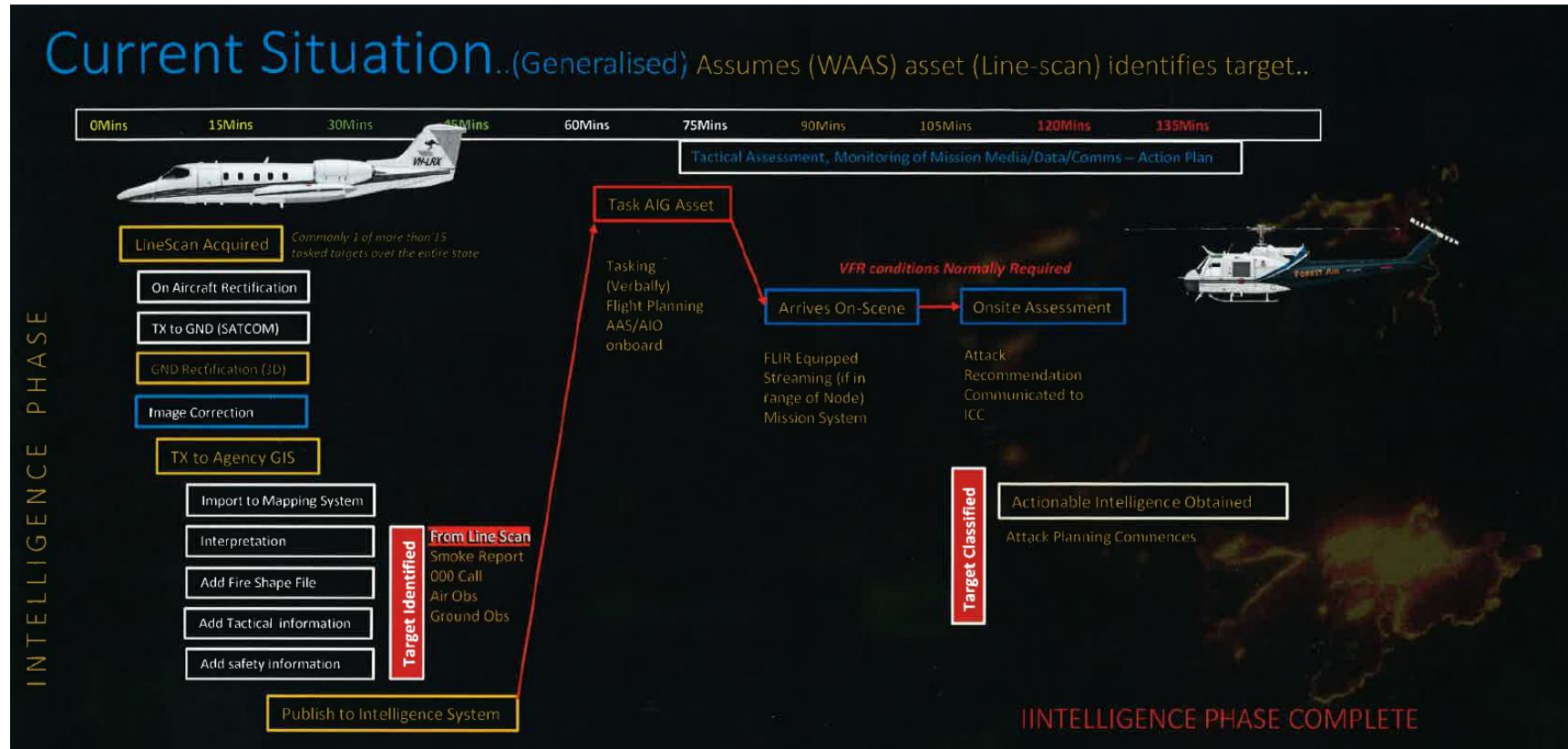
A nationally coordinated response employing standardised best-practice is our best defence against increasingly dangerous bushfire seasons.

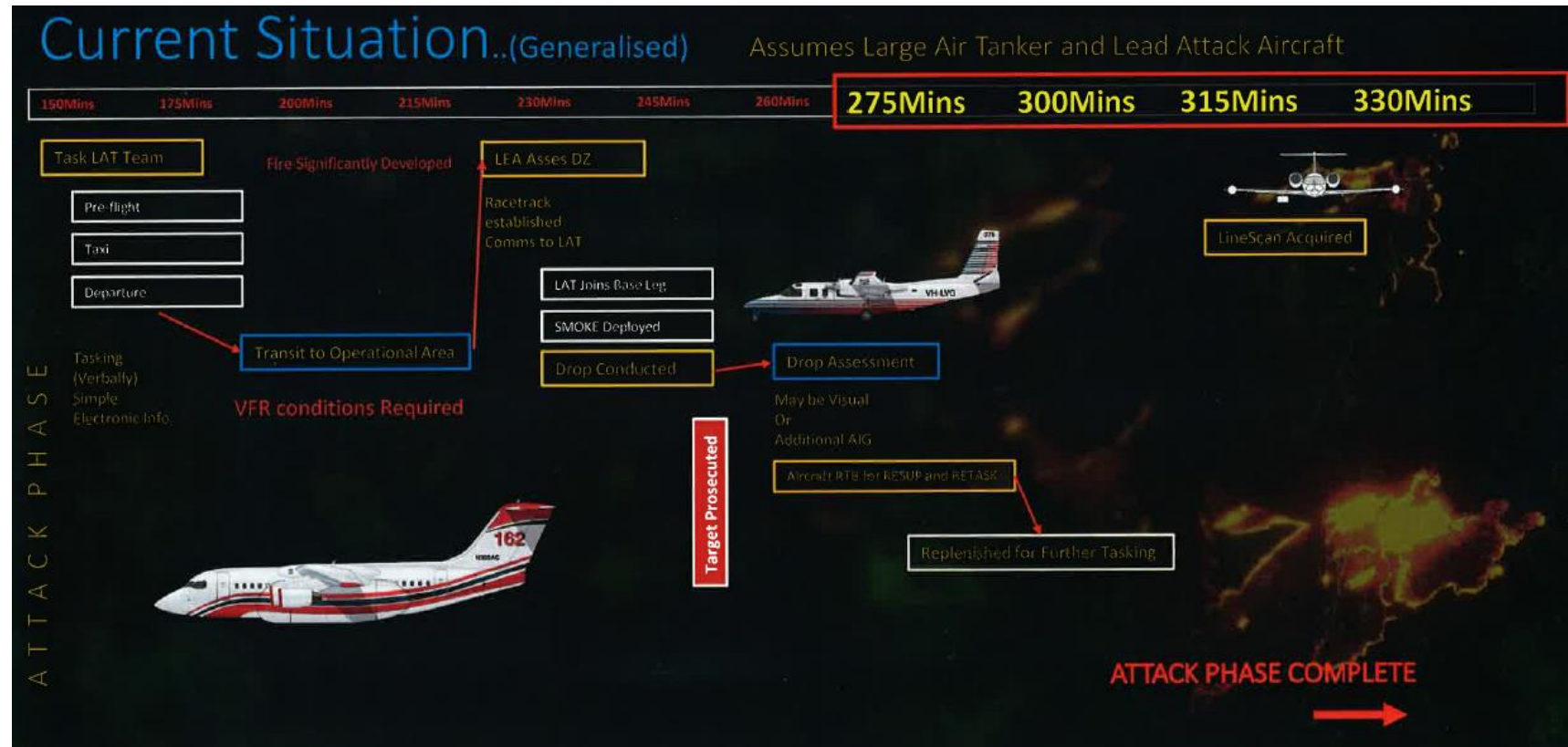


## Glossary

<b>ADF</b>	Australian Defence Force
<b>AISR</b>	Aerial intelligence, surveillance and reconnaissance
<b>AMSA</b>	Australian Maritime Safety Authority
<b>IFR</b>	Instrument Flight Rules
<b>ISR</b>	Intelligence, surveillance and reconnaissance
<b>NAFC</b>	National Aerial Firefighting Centre
<b>SAR</b>	Search and Rescue
<b>VFR</b>	Visual Flight Rules

## Appendix 1





## Appendix 2

### Air Affairs Australia Sentinel Unified Fireground concept

1. **Collect information** from intelligence system from:
  - i) Sensors on the aircraft - eg line scanning, object detection systems, radar, forward looking infrared radar (FLIR) and visual observers;
  - ii) External intelligence assets, either under the direct control of Sentinel or separate operational unified fire ground (UFG) resources – eg airborne unmanned aerial surveillance assets or sensor feeds from AIG assets;
  - iii) Visual reports entered into the intelligence management system by ground personnel.
2. **Acts as a node** of the wider command and control system, state and federal control centres in order to:
  - i) Direct assets on the ground;
  - ii) Provide live video and intelligence to the national system, even if that video or intelligence source is not on the aircraft;
  - iii) Provide overwatch of live fire operations and personnel;
  - iv) Monitor fire aviation assets and record information;
  - v) Create and deliver precision attack data and supporting imagery to attack assets, both airborne and ground-based;
  - vi) Conduct safety of life/preservation of life operations for ground personnel, including dropping of life-saving equipment and directing other emergency assets;
  - vii) Drop digital network base stations to enhance data network.

*Note: This concept is outlined further in the diagrams on the following two pages.*



