

**ADDRESS BY CHIEF OF AIR FORCE  
AIR MARSHAL GEOFF BROWN, AO  
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Thank you, Katherine Zeising.

It is a great honour to deliver one of the keynote addresses at this conference. At the very outset, I would like to offer my congratulations and sincere appreciation to Australian Defence Magazine for convening this important conference. This is the 12<sup>th</sup> Annual ADM Congress and the forum is now firmly established in the calendar of every service chief and force developer as a ‘must do’ event. I am also interested to hear about developments across the land, sea and joint domains and your agenda offers that opportunity.

The ADM Congress brings together key players from the Australian Defence Force, the wider policy community, and from key sectors of defence industry. It provides a robust forum for us to share our latest perspectives, and allows us to take advantage of one another’s latest thinking about issues of common concern.

It is easy and tempting to mouth platitudes and formulaic slogans about the pace of change in the global system, and the pressures on all of us in an era of rapid technological change. Yet, this year, such phrases are laden with genuine significance. For once, the truisms ring true. We are in the midst of a period of profound reappraisal of Australia’s security environment in rapidly evolving global security order, which will demand transformational change from all of us. This year will see release of another Defence White Paper—informed by a first principles review—as well as an updated Defence Capability Plan and the release of an industry policy.

The cumulative effect of all of these will be to shape the Air Force, and the ADF, well into the fourth decade of this century. All of you will be keen to assess their impact on your bottom line and longer-term profitability of your businesses. It is vital that we harness the latest technological innovation to develop forces that are aligned to the evolving threat environment. Secondly we must adapt our culture organisations and intellectual mindset so as to ensure that our forces are postured to the geo-political context in which they are likely to be employed.

We already face complex, simultaneous and multiple challenges. One only has to consider the multiple challenges to which the Air Force responded over the past 12 months to acknowledge that. In that time, we have responded with speed, precision and a carefully calibrated mix of capabilities to a search for a missing aircraft in the most remote part of the world, we have deployed across the world to repatriate the bodies of Australians killed in Europe over the Ukraine and we have dispatched a potent, entirely self-contained air task group to undertake sustained combat operations in a coalition setting in the Middle East.

I note in passing that our airmen are operating in the skies over Iraq where the very first expeditionary air operations of the embryonic Australian Flying Corps were conducted nearly a century ago. As we prepare to commemorate Anzac Day, we would do well to remember the crucial—and too often unsung—contribution of airpower to Australia's maritime strategy in a coalition context since our inception as a nation.

Most strategic analysts agree that the pace of globalisation and commercialisation will intensify. One effect of this is to place even greater pressure on governments in the advanced nations to reduce their budgets and their call on the savings of their citizens. All western governments—including our own—are under sustained fiscal pressure. The perennial attempt to find the appropriate balance between 'guns and butter' is relentless. You only need to read the newspaper any day to understand that this imperative will shape our national security decision-making for the foreseeable future. Austerity is the new normal. This simply must ultimately impact on defence budgets at a time when substantial components of our force are ending their working lives.

Likewise, technological change is imposing its own imperatives on the direction and scope of military modernisation. As an airman, I feel this more acutely than my colleagues. There is a celebrated quote attributed to General George C Kenney, to the effect that 'second best air forces are like second best poker hands—they cost you a lot but get you nothing'. As we enter the era of 5<sup>th</sup> generation technology, those words retain their resonance. Air forces, even more so than other forces, must be at the vanguard of technological change.

Fortunately, successive Australian governments have made, and sustained, the commitment to take Australia into the realm of 5<sup>th</sup> generation air power. This will give us a distinct operational edge out to 2030 and beyond. Today, I will share my observations as to some of the deep cultural and structural changes required of Air Force, the ADF and our industry partners to ensure that we exploit this transformative change to the utmost, later in my speech.

But firstly, it is incumbent on me to provide some details about the inspiring performance of our air task group operating in the Middle East, as part of the campaign against the Islamic State in Iraq and the Levant (ISIL). Our operational performance is a credit to our people across all ranks and specialisations. But it also demonstrates that we are well supported by our industry and contractor partners.

The rate of effort of our aircraft, in very demanding conditions, has been impressive. As you all know, while the aircraft and aircrew are the tip of the spear, their ability to sustain operations in an austere environment, to find targets and to release functioning munitions on to their assigned targets, represent the culmination of a sophisticated system of training, supply and sustainment. A successful strike is the product of an enormous number of people getting their jobs right.

I was delighted to be able to visit our deployed force elements around Christmas. Indeed, I flew a sortie with one of our Wedgetail crews, which really enhanced my situational awareness as to how we are supporting operations in that theatre. The data detailing the key metrics of our performance during Operation OKRA provides powerful testament as to the professionalism of our people. There is no audit of your

training and sustainment systems as unforgiving as war. We have passed that audit with flying colours. Here are some of the most salient facts.

In just over 100 days, the Super Hornets have flown more than 2000 hours, which means that 10 per cent of the Super Hornets hours flown since they arrived in Australia are combat hours. We have only flown 21 000 hours since they came into service, way back in 2011. They have struck over 70 targets dropping 50 GBU-12 laser-guided weapons and 140 GBU-38s GPS-guided weapons. As you know, every weapon on a target marks the culmination of the efforts of a highly trained tight-knit team. And we have successfully engaged every target allocated to us.

The average length of each mission is between 8 and 10 hours, and most missions are conducted over 1000 to 1200 nautical miles. Usual missions are two to four aircraft either on deliberate strike or close air support of Kurdish or ISF forces. Success rate is about 98 per cent. Let me place on the record our appreciation for the impressive support from Boeing, which underpins that operational excellence.

The Wedgetail has flown nearly 800 hours, featuring a success rate in excess of 92 per cent, making us—again—the envy of our allies. The aircraft is operating in Northern Iraq and controlling all operations in Syria and Iraq. The normal mission is 12 hours, although it has been extended a number of times and now has the longest recorded flight by an Australian AWAC platform at over 16 hours, and the longest time airborne by any B737 variant. Boeing and AEW&C System Project Office were critical in fast tracking the fitting of MircChat, which is a secure command and control chat system that is critical to operations in the Middle East now. The Wedgetail is recognized as the preferred platform for the more complex missions. It usually coordinates more than 70 aircraft, controlling all aspects of airspace battle management from the air-to-air refuelling ladder to detailed strike coordination with coalition joint terminal attack controllers supporting Iraqi Security Forces on the ground, in addition to monitoring Syrian Air Force missions and guarding coalition big wing ISR and refuelling aircraft against the potential threat of interception by Syrian aircraft.

The KC-30 tanker has flown over 1000 hours at 97 per cent mission success rate (we only did 2000 hours total last year with them) and offloaded more than 10 000 000 lbs of fuel. It went over to the Middle East only qualified to refuel Australian Super and Classic Hornets and has tanked all US Navy aircraft, including USMC Prowlers and AV-8Bs, as well Canadian Hornets, French Rafale and Saudi and RAF Typhoons. The tanker often flies two 5-hour missions a day.

That snap shot should demonstrate that we are operating at a high tempo in demanding conditions. As I said, we have passed a tough examination, though it must be conceded ISIL does not possess a robust air defence capability and we are able to operate at a floor that would not be possible against a credible peer opponent. But few air forces in the world could assemble a package as balanced and potent as that which we have deployed on Operation OKRA. It reflects extremely well on Air Force and indeed on the whole ADF.

Yet we cannot rest on our laurels. Operations against non-state actors are not the most demanding ones which we must be prepared to prosecute. I endorse the conclusion of

my colleague Air Chief Marshal Sir Andy Pulford—Chief of the Air Staff—that we need to transition from an era of low intensity campaigning to an era of contingency, in which we may have to respond rapidly across the entire spectrum of air power tasks—from delivering humanitarian assistance through to defeating air incursions with little warning. I also adhere to the view that we are likely to be entering a period of increased likelihood of traditional state on state conflict in which the reach, and strategic weight, of air power will constitute the cornerstone of our conventional defence and deterrence.

Like all of you, I am excited at the imminent introduction to service of the Joint Strike Fighter. This will mark a new era in the history of both Air Force and the entire ADF. I formally launched Plan JERICO this week and I trust most of you are aware of its broad outline. It should be obvious that our industry partners must contribute to our vital modernisation vision. We simply cannot achieve transformation without you.

Obviously, it is tempting for industry to see the introduction of the fleet of 72 aircraft, configured into three operational squadrons, as a potential bonanza. However, I want to caution you against cargo-cult thinking. The acquisition of JSF will not be a financial windfall unless we are all able to maximise its performance and break down the cultural and technical walls that impair optimum exploitation of the system. I am also sounding this same note of caution to Air Force in order to dispel any complacent assumption that this weapon provides a panacea, and all that we need to do is train our airmen to fly it and we will automatically attain regional supremacy. It is not that simple—but nothing worthwhile ever is.

The point, which I intend to hammer home in my remaining time as Chief, is that the F-35 replaces *nothing*. But, employed to its capacity, it changes *everything*. This remarkable aircraft is not a replacement for the Classic Hornet or the Super Hornet—it is a transformational weapons system, whose array of sensors and weapons draw no distinction between kinetic and electronic strike, and reconnaissance missions. It possesses a unique capacity to find, fix and strike, but—if it is to achieve its potential—every element of our force must be able to find, fix and strike to the same degree, or at the very least receive, interpret and employ the information that the JSF acquires and disseminates.

In the Information Age, if you cannot break down stovepipes between multiple inputs you can drown in your own information. Operations in Afghanistan have demonstrated the importance of achieving more seamless integration of available effects. Against non-state actors, our almost unchallenged use of the air and the volume of platforms and fires we can bring to bear on them can conceal our shortcomings in this regard. But as we enter an era when we may be faced by both a credible peer competitor, as well as resource constraints on our own modernisation, we simply must employ a ‘system of systems’ approach. The following scenario illustrates why.

In Afghanistan, the Coalition deployed a wide array of platforms and sensors—both manned and unmanned. It was a formidable force, capable of executing the full suite of air power roles. The employment of air power replicates the theory of combined arms and joint warfare. Each capability is designed to offset a vulnerability in another capability. The whole is coherent and greater than the sum of the parts. But the

vulnerabilities are not offset if your command and control is stove piped. And like our USAF allies, we saw this happen all too often in Afghanistan. For instance, imagine that a C-130 may have been tasked to drop supplies in an area plagued by small arms fire immediately beneath an MQ-1 Predator orbit, yet the Predator crew had no warning of the airdrop. Compounding the wasted opportunity, an F-16, operating under adjacent regional command is flying an armed reconnaissance mission oblivious to this scenario. Such opportunities were squandered frequently.

Likewise, information never matures into intelligence but remains raw, voluminous data. Our ability to adapt while conducting operations, as demonstrated by our performance during Operation OKRA, and already established links between Navy and Wedgetail, offer a useful template for us to build on in order to maximise the effects offered by JSF to our joint partners.

The F-35 can credibly be described as the ‘smartest’ aircraft to have ever flown. The greatest risk we face as we introduce this formidable capability is that we succumb to ‘platform replacement’ thinking and continue to operate it within our comfort zone as a slightly more sophisticated Hornet. This would be a travesty, both for the taxpayers who are absorbing the significant sunk cost of the aircraft, but also to our airmen whose lives may, one day, depend upon the winning edge provided by the JSF.

I am happy with the broad vector of Air Force modernisation, especially our efforts to iron out any residual technical issues with JSF in concert with our commercial and alliance partners. But the truly transformative impact of JSF will only be achieved if we align our people and the other enabling elements of our force with it. This will entail an overhaul of how we raise, train and sustain the force. Some trade skills may become obsolete while others will emerge. We will need to be far less stove piped inside Air Force but likewise right across the ADF and the Department. This is not the forum to discuss the full potential of the JSF, but we need to break down cultural and technical walls dividing us from the key agencies of the Australian intelligence community, notably the Australian Signals Directorate and the Australian Geospatial-Intelligence Organisation. If we can achieve this, then the real-time picture that we can make available to a soldier on the ground or airborne in transit to a target, will be the stuff of Hollywood films. It will be unprecedented and the most effective force multiplier we have ever fielded.

You will note that I have mentioned breaking down walls between different parts of our organisation. I use that term quite deliberately and it inspired my choice of the title Plan JERICHO for my vision for a 5th generation Air Force. At present, all of us are too stove piped—Air Force included. But our entire capability development and procurement system is lethargic and unresponsive. Over time we have developed a compliance, rather than governance, mindset. Project AIR5428 generated over 3600 pages of specifications. No doubt they were all well-intentioned and implemented by good people. But in the dynamic era of rapid advances in information technology, stealth and robotics, can we maintain our winning edge and still pay homage to these sacred cows?

Increasingly the ADF must rely on the timely, intuitive and seamless support of a vast array of contractors and experts especially from among small and medium enterprises. The walls between parts of Air Force, between the Services and between the

Department of Defence and the corporate sector simply *must* come down. If you think that sounds alarmist—or even worse just wishful thinking—I would recommend that read you an excellent article in the most recent edition of the *Foreign Affairs*. It certainly grabbed my attention with some dire predictions about the shrinking market for cutting edge innovative companies in the US defence sector.

Our Air Force is very reliant on the US maintaining a decisive competitive edge in emerging technologies with military applications. Ever since World War II, the Pentagon and NASA have been the great engines of innovation and experimentation in a host of fields essential to air and space power. However, that once mighty sector is struggling to adapt to the pressures of commercialisation and globalisation. The former US Deputy Secretary for Defense, William Lynn, is concerned at the confluence of two trends, which have the capacity to blunt that winning edge.

Firstly, clumsy and prescriptive procurement procedures are making it increasingly difficult for new companies to enter the military supplier market. Yet, conversely shrinking Pentagon budgets have forced many traditional, established suppliers to either close their defence divisions or to engage in joint ventures with companies outside the US. This is leading to a serious contraction of the expenditure on research and development in areas vital to air and space power. Lynn has estimated that the combined R&D budgets of the largest five US defence contractors amount to less than either Microsoft or Toyota spend in a single year. Ever since World War II, the Pentagon has seeded research in vital areas. Indeed, the defence sector tended to export cutting edge technology to the commercial sector. Today the converse applies.

Lynn cites a telling example of how this trend is impacting on defence innovation. In late 2013, Google announced that it had acquired Boston Dynamics—an engineering and robotics firm which was best known for creating a system affectionately known as Big Dog a four-legged robot capable of moving with troops over rough terrain. Although the Internet giant agreed to honour Boston Dynamics' existing contracts with the US Army and USMC, it indicated that it would not pursue further contracts with the military. One should not be surprised that Google does not need to curry favour with the Pentagon. Its current market value of US\$400billion is more than double that of General Dynamics, Northrop Grumman, Lockheed Martin and Raytheon put together.

Whatever the benefits to its shareholders, Google's withdrawal from the field of autonomous robotics has the potential to undermine the US military's lead in this dynamic and potentially important domain. Nor is that an isolated example. The tectonic shifts in the broader US and Australian economies have rewarded the most agile and lean corporate entities. In vital areas such as nano-technology, cyber-security, cloud computing and robotics, businesses with no appetite for defence work are setting the pace.

In an era of footloose global capital, this raises a host of issues about the security of designs and the allegiances of suppliers. Again to be agile enough to capitalise on this dynamic situation, we cannot continue to conduct business as usual. As an airman, I need you to help me find a way to stay abreast of the emerging technologies vital to my force, while maintaining your own profitability.

Lest I appear to be ending on a pessimistic note, be assured that I am incredibly optimistic about the direction of both the Air Force and the entire ADF. We are embarking on the most significant force modernisation in the history of this nation. In addition to the big-ticket items essential to modernising our force in order for us to deliver potent joint effects in the implementation of a maritime strategy, there are a plethora of less obvious but vital joint projects, which provide 'joint enablers' without which our forces could not share information or achieve seamless joint effects. It will yield a balanced, modern and potent force.

The opportunities afforded by this comprehensive modernisation of the ADF for local business, are unprecedented. I shared the earlier salutary tale as a warning that we must be innovative, adaptive and aggressive in pursuing opportunities lest we fail to capitalise on this once-in-a-generation opportunity. It will provide enormous challenges and opportunities for all your businesses.

For my own part I remain confident that we can do this together. I am old enough to remember the controversy over the procurement of the F-111, which defied the critics to become one of the most successful defence purchases ever made by this nation. And as I reflect on our history, I draw confidence from that uniquely Australian capacity to rapidly take up new technology. It occurred with jet aircraft, it occurred with the linkage of air and space assets and the exploitation of unmanned aerial systems. That corporate history provides a terrific platform from which to enter the 5<sup>th</sup> generation of air and space power and to harness the full effects of the electronic and cyber domains in the defence of our nation. I look forward to meeting these great challenges together with you and your businesses.