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AUSTRALIAN AIR POWER
IN A MARITIME STRATEGY

Dr Sanu Kainikara



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PO Box 7932

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AUSTRALIA

Telephone: + 61 2 6128 7041

Facsimile: + 61 2 6128 7053

E-mail: airpower@defence.gov.au

Website: www.airforce.gov.au/airpower

PREAMBLE

This, the fourth CAF Occasional paper, *Australian Air Power in a Maritime Strategy*, describes the direct contribution that Air Force's air power makes to Australia's security through the implementation of a Maritime Strategy. The Paper provides a strategic overview of the broad concept of a Maritime Strategy while emphasising that traditionally Australia has relied on protecting its sea lines of communication as a foundational requirement for its security.



The efficacy of an Australian Maritime Strategy as the foundation of its security depends on the ability of the ADF to ensure that the nation's maritime and air assets are able to operate without undue interference from actual or potential adversaries. For the ADF to have the ability to act proactively in the maritime domain requires the necessary level of both sea control and control of the air.

In ensuring the security of the nation, the Air Force will be required to contribute both directly and indirectly to shape the environment



in which the military forces will be tasked to operate, deter potential adversaries and respond adequately to defeat adversaries that pose a threat to the nation. In pursuance of this primary task Air Force carries out four core and three enabling roles to achieve military objectives. These air power roles can be complimentary to each other and within a Maritime Strategy the effects they create when integrated with those created by sea and land power achieves optimum effectiveness.

My intent for the CAF Occasional Papers is to make interested decision-makers, policy-makers and strategists, along with the interested public, aware of air power issues of importance, discussed at the strategic level. These papers will be produced as needed, rather than to a fixed schedule.

This Paper, *Australian Air Power in a Maritime Strategy*, was written at my direction. It brings out the salient points regarding the employment of Australia's air power in a Maritime Strategy to secure the nation. Although written from the perspective of the Royal Australian Air Force, the paper may have broader application for other air forces operating in similar conditions.

I endorse the views expressed in this paper and commend it to you.



Geoff Brown, AO
Air Marshal
Chief of Air Force
July 2014





INTRODUCTION

Australia is an island nation, surrounded by large maritime resource zones—it adjoins the Pacific Ocean to the east; the Indian Ocean to the west; the South-East Asian archipelago to the north; and sometimes forgotten, the Southern Ocean to the south. Australia in effect straddles the Indo-Pacific region, which is now the global focus of interest in the security environment and is predicted to be the centre of economic development in the 21st century. It is the world's sixth largest country with around 60,000 kilometres of mainland coastline. Further, Australia is dependent on international trade for its continued economic stability and prosperity. Australia is, of necessity, reliant on the long sea-lanes in the Indian and Pacific Oceans for the transit of the bulk of its trade. Any disruptions to the northern approaches will have immediate and dire consequences for Australia's economy and will become a critical vulnerability to the nation's overarching security. Under these circumstances it is obvious that the foundation of Australia's national security is based on a broad Maritime Strategy.

Geography is central to defence planning, force structure development, the determination of force posture, and the formulation of a security strategy. The geographic positioning of



Australia and its strong politico-economic status minimises the likelihood of a direct attack on the mainland. This geography has also been a driving imperative for the maintenance of a strong, capable and independent ADF. However, indirect attack on its sovereignty—by both state and non-state entities—through actions that target Australia’s economic strength, citizens abroad or international influence is a distinct possibility. In effect, any action initiated to disrupt the international trading system, to harm innocent individuals or to undermine global values, which underpin national prosperity, indirectly threatens Australia.

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When combined, the two factors of dependence on trade as a national priority and the vulnerability of Australia’s primary maritime trade routes impose the reality that Australia must be able to control the air and sea approaches to the mainland. Further, such control should extend as far forward from the borders as possible in order to maximise the warning time and minimise the impact that any attempt to breach this control is likely to bring. In essence, Australia’s security hinges on a Maritime Strategy—a strategy that is a judicious combination of air and sea control achieved through an optimum mix of air, maritime and amphibious power projection capabilities.

National security strategies are also directly influenced by strategic geography. Strategic geography is the control of, or access to, the areas that impact the security and prosperity of the nation. Since it is involved with the security of the nation, strategic geography



Australia's Security and Defence Policy

Australia's national security interests are based on protecting Australia's sovereignty—which includes freedom from coercion by other states—people, and assets, building sustainable security in our region, and shaping a favourable international environment. While Government uses all elements of national power to achieve these ends, the capability of the ADF to defend Australia and Australia's interests is essential to Australia's national security.

The most basic strategic interest remains the defence of Australia against direct armed attack, including attacks by hostile states and by non-state adversaries who possess substantial capabilities—including weapons of mass destruction. The other three key strategic interests are: a secure South Pacific and Timor-Leste; a stable wider region, which is conceptualised as the emerging Indo-Pacific; and a stable, rule-based global order.

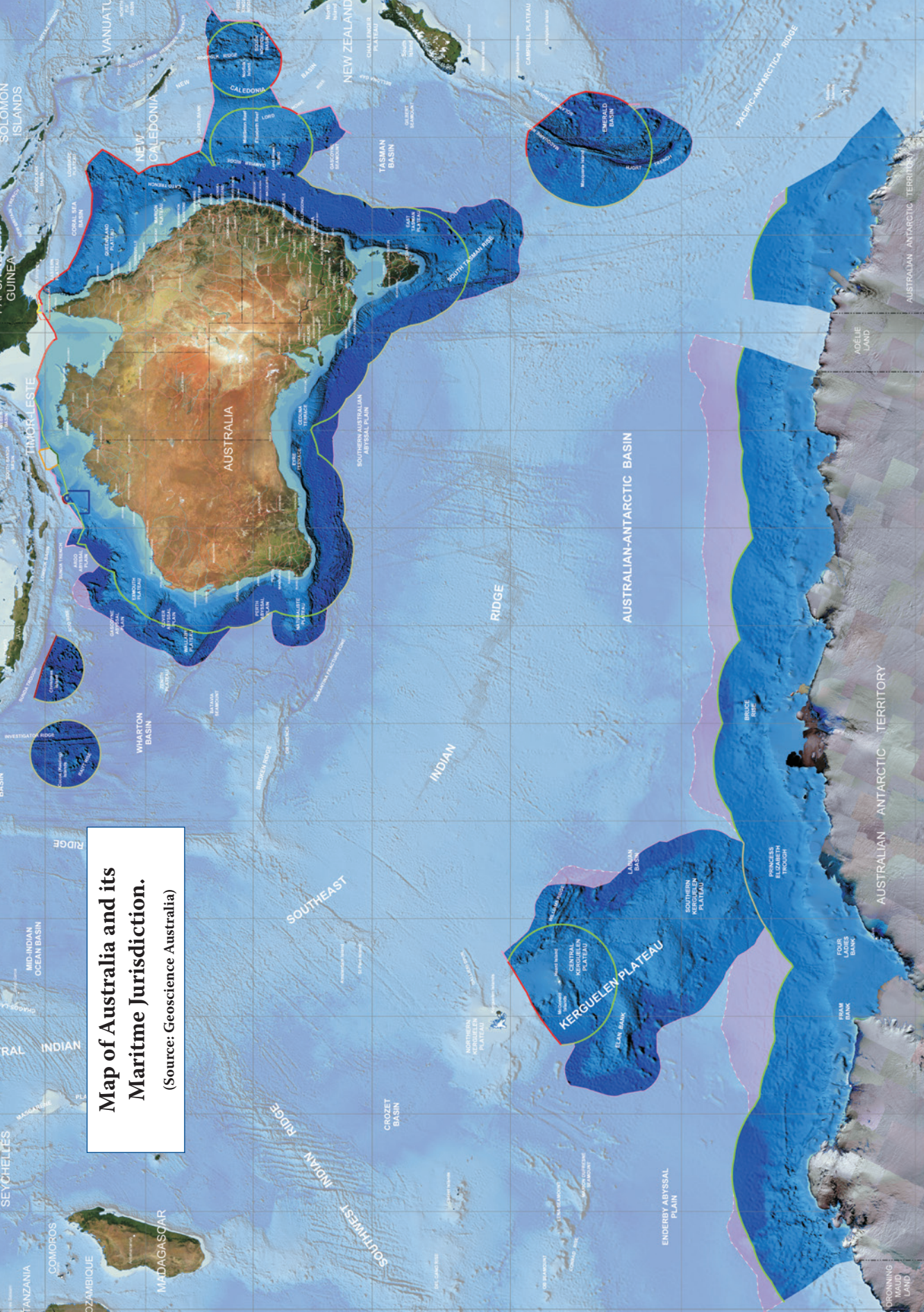
Defence White Paper, 2013

evolves with the changing perceptions of national security and the developmental needs of the nation. The national security strategy released by the then Prime Minister on 23 January 2013 provides an overarching framework for Australia's national security efforts and sets the priorities for the next five years. It envisages enhanced regional engagement in support of security and prosperity in the Asian-Century. Since oceans, more than land, define the Asia-Pacific region, this focus effectively hinges Australia's national security on a Maritime Strategy.



Map of Australia and its Maritime Jurisdiction.

(Source: Geoscience Australia)





BASICS OF A MARITIME STRATEGY

A Maritime Strategy is a very broad concept that assures the safety and security of the nation through the employment of all elements of national power predominantly aimed at controlling the maritime approaches and protecting national resources both on and off-shore. It must not be confused with a Naval Strategy. Although its nuances change with the context, national objectives and forces available, a Maritime Strategy for national security is not a new concept. Traditionally Australia has relied on protecting the sea lines of communication as a foundational requirement for its security and for exploiting its maritime resources. This is a geographic reality supported by lessons from history. In Australia's context, even if a conflict develops on land, its protraction and/or culmination will be directly affected by the control of the sea lines of communication. Therefore, Australian defence needs have historically been focused on maritime capabilities.

Traditionally Australia has relied on protecting the sea lines of communications as a foundational requirement for its security and for exploiting its maritime resources.



The importance of adopting a Maritime Strategy for the security of Australia is further emphasised by the continually changing perception of national security, from primarily one of protection of the borders, to the current concept of advancing national interests and promoting a favourable international environment—this is strategic evolution. Although national security objectives can be met within a holistic Maritime Strategy, its strategic evolution will impact the implementation in a contextual manner.

National Security

National security is a broad and evolving concept. It is concerned with how we shape the environment, and how we prevent and prepare for threats to our sovereignty, people, assets infrastructure and institutions. National security is also concerned with how we respond to such threats and recover from any event which may occur.

Strong and Secure,
A Strategy for Australia's National Security

AIR AND SEA CONTROL

The efficacy of an Australian Maritime Strategy depends on the ADF being able to operate in the maritime environment without undue interference from actual or potential adversaries. In other words it requires capabilities that afford Australia the ability to gain access to areas that others might seek to restrict, and the ability to deny adversaries access to areas that it would seek to control. Such capabilities provide the ADF freedom to operate in the maritime environment. In order to ensure this level of freedom it is necessary to obtain an appropriate level of control of the sea. This can take the form of command of the sea, sea control and/or sea denial. Importantly each of these levels of control will also need a commensurate level of control of the air as a prerequisite for success.





Maritime Strategy

Controlling the sea and air approaches to our continent is the key to defending Australia, in order to deny them to the adversary and provide maximum freedom of action for own forces. This strategy is focused on the maritime domain, and aims to: deter adversaries from conducting attacks against Australia or attempting coercion; achieve and maintain air and sea control in places and times of our choosing in our approaches, deny or defeat adversary attacks and protect key sea lines of communication; deny adversary forces access to forward operating bases or the freedom to conduct strikes against Australia from beyond our maritime approaches; and project power by deploying joint task forces in the Indo-Pacific region and support the operations of regional partners when required.

Such a strategy does not imply a purely defensive approach. The ADF would seek to undertake operations against an adversary's bases and forces in transit, as far from Australia as possible. This might involve using strike capabilities and the sustained projection of power by joint task forces, including amphibious operations in some circumstances.

Australia's military strategy seeks to deter attacks or coercion against Australia by demonstrating our capability to impose prohibitive costs on potential aggressors and deny them the ability to control our maritime approaches. This requires a credible force with effective capabilities for sea and air control and denial, strike and power projection.

Defence White Paper, 2013

Command of the sea implies that dominance in the sea environment has been achieved to such a degree that the risk to one's own forces from enemy action is negligible or non-existent and in the maritime environment is paralleled by command of the air. Both these concepts are increasingly unrealistic to achieve as technology-enabled asymmetric threats become more common. Further, attempts to achieve such command carries the risk of dissipating resources since the environments involved—air and sea—are inherently dynamic in nature. Unlike command of the sea and air,



control of the sea and air is conditional in time and space, where the control required is determined by the objectives to be achieved in context. Within a Maritime Strategy, achieving adequate sea control is predicated on achieving the necessary level of control of the air that permits own forces freedom of manoeuvre to use an area without interference. The level of air-sea control can vary from absolute control to accepting a degree of limited and ineffectual enemy interference.

AIR AND SEA DENIAL

When the primary aim is not to control the air and sea, but to prevent their use by potential adversaries the concepts of sea denial and air defence can be employed. Such denial will also be normally restricted in time and space. Although these operations are primarily defensive in nature at the strategic level, the operations by themselves can also be offensive. Further, the ADF could undertake air defence and sea denial operations in one theatre while simultaneously conducting air-sea control operations in another. There is a distinct difference between denial and control. A high degree of denial could perhaps be achieved even with minimal force availability. However, for the ADF to have the 'ability to act' proactively in the maritime domain requires the necessary level of both sea control and control of the air. In other words, effective sea control cannot be achieved without concurrent control of the air being exercised. Drawing this logic further, the effectiveness of a Maritime Strategy is directly proportional to the ability of the ADF to control the air to the desired level.

Consequent to implementing a Maritime Strategy, the ADF may be required to undertake amphibious operations in the littoral and surface operations at sea as well as over land. Further, it would have to sustain these operations through exploiting the sea lines of communication for logistic and other materiel support.



Fundamental to the success of all these operations and functions is the ability of the force to obtain and maintain the necessary level of control of the air. Therefore, control of the air is a critical requirement for the success of all ADF operations within a Maritime Strategy.

For the ADF to have the 'ability to act' proactively in the maritime domain requires the necessary level of both sea control and control of the air.





ROYAL AUSTRALIAN AIR FORCE IN A MARITIME STRATEGY

Australia's regional environment—the primary operating environment for the ADF—is complex and challenging. It encompasses land, littoral and maritime environments, as well as urban, rural and jungle settings, and is geographically concentrated and widely dispersed. Further, as shown in Figure 1, the ADF may have to operate in more than one theatre simultaneously while undertaking the full range of operations across the spectrum of conflict. The Air Force's ability to carry out concurrent operations is an advantage and can ameliorate the challenges associated with the complexity and spread of the maritime operating environment.

Concurrency is the ability to conduct multiple operations simultaneously in and beyond a theatre in a coordinated manner to achieve maximum effect. Concurrent operations, carefully managed through sophisticated command and control arrangements and conducted at the optimum tempo and intensity can become the controlling element in a campaign. It can overwhelm an adversary in the physical, cognitive and virtual domains, leading to a state of strategic paralysis. Further, air power's flexibility, speed, reach and



precision enables it to concentrate force rapidly at different areas, thereby creating a range of effects concurrently.

In this diverse and predominantly maritime environment, the application of air power is always aimed at creating the desired effect across the spectrum of conflict. When such application is at the higher end of the spectrum of conflict and involves projecting force, Air Force has the advantage of being able to rapidly cover a relatively larger area—even beyond the immediate theatre—than any other force projection capability. This becomes of distinct benefit in the Australian context, wherein the area of interest is geographically vast. Air Force operations—that create multiple effects within the theatre or around it; concurrently or in rapid

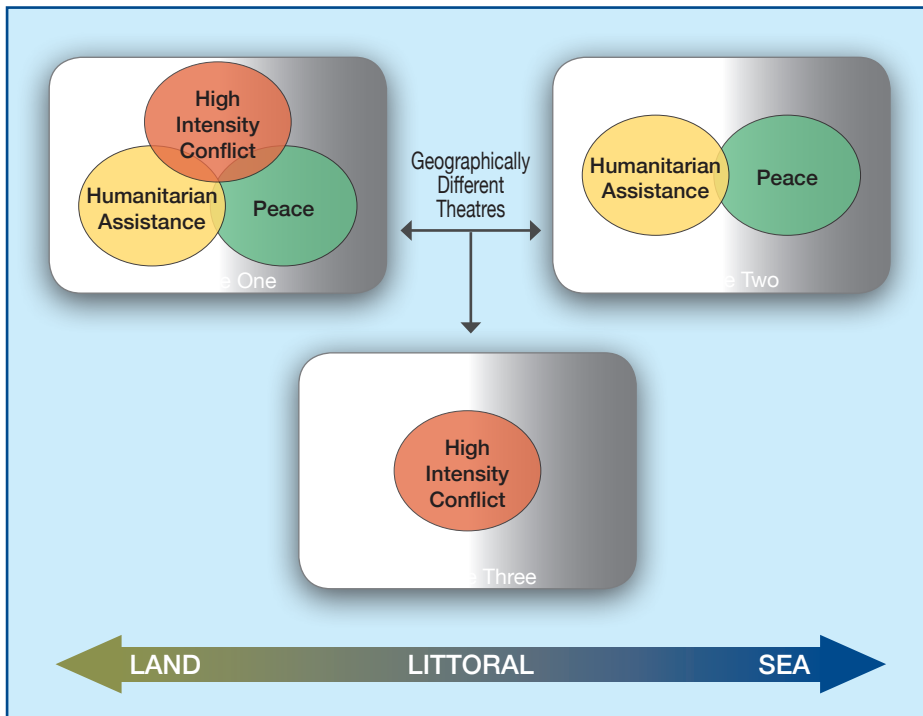


Figure 1: ADF's Operating Environment.

succession; and with varying tempo and intensity as required—are characterised by the speed of response, greater perspective and enhanced reach.

Further, in creating the desired effect, Air Force can optimally overcome the constraints of time and space—that hinder the effectiveness of surface forces—making it easier to dominate across diverse geographical terrain. The systemic application of air power within the joint campaign is aimed at providing a flexible and mobile protective umbrella that can be extended or curtailed as required, within which interference-free surface operations can be conducted to achieve joint objectives.

Although Air Force brings a range of advantages to the conduct of a joint maritime campaign, it also has to contend with certain drawbacks. Numerically small air forces may face a situation in which their limitation in numbers could make protracted concurrent operations difficult to maintain at the required tempo and intensity. This is particularly so for an Air Force that has to maintain a basic operational tempo because of national security imperatives. For the Air Force this challenge is exacerbated because of the expanse of the area that it has to cover, which automatically increases the chances of having to operate at geographically well-separated theatres simultaneously or in quick succession.

The primary task of the ADF is to defend Australia against direct armed attack, as defined in the *Defence White Paper* 2013. Accordingly, the military strategy reflects Government intent and directly influences ADF preparedness, contingency planning and capability development. Fundamentally the ADF must be able to control the air and sea approaches to Australia to the level required to ensure the security of the nation. This translates to a Maritime Strategy in its broadest interpretation. The ADF must be able to **shape** the environment in which it will be required to operate, **deter** potential adversaries and be able to **respond** adequately to defeat adversaries posing a threat to the nation.



SHAPE

There are three primary Air Force inputs that shape and influence the operating environment:

- Engagement with potential allies and neighbours through exercises, reciprocating visits between the Air Forces and other confidence building measures undertaken during times of relative peace and stability;
- the capability to create the desired kinetic or non-kinetic effect;
- the ability to carry out joint manoeuvre; and
- the creation of a rapid responsive logistics chain.

In order to shape the operating environment, the ADF requires the ability to influence and manage the conflict space where, when and to the desired degree for the duration required. Shaping activities require the Joint Force to be able to access, coordinate and employ the various systems to influence and control the adversary's known centres of gravity. This could be achieved rapidly or subtly over a period of time dependent on the context in which the operations are being conducted. This requires the ADF to extend the military component of national power to the adversary in a benign manner. Shaping activities in a Maritime Strategy may have to be carried out in a littoral, maritime, or land-centric theatre, all of which would require the employment of a broad range of the Air Force's air power capabilities, underpinned by its inherent reach. Further the Air Force must be able to carry out these activities across the spectrum of conflict and also continue them through all phases of a conflict that could include operations in uncertain or hostile security environments.





DETER

In order to deter a potential adversary, the Air Force has to be of a sufficiently high calibre to convince an adversary that the consequences of coercion or involvement in a conflict would far outweigh the potential gains that could be achieved. The success of deterrence depends on the demonstrated will of the nation to employ all elements of national power in ensuring national security. Deterrence is a long-term activity that is built on credibility, perception and applicability.

Credibility is a combination of capability and political will to act. Air power capabilities at the high-end of the technology spectrum is one of the ways to apply lethal force to degrade a potential adversary's capabilities. The ability of the Air Force to strike with precision, proportionality and discrimination across the ADF's operating environment is a critical element in Australia's deterrent posture. Perception is built on understanding and being able to manipulate the vulnerabilities, values and centres of gravity of an adversary. The Air Force can directly influence the perception of the adversary by demonstrating—through overt non-kinetic operations like a show of force—that their value system and centres of gravity have been identified and can be targeted if necessary. The applicability of deterrence is dependent on the ability to bring sufficient influence to bear on a potential adversary. Air Force can send a powerful message to adversaries through its ISR and strike capabilities to indicate that they are being monitored and can be targeted at will.

The ability of the Air Force to strike with precision, proportionality and discrimination across the ADF's operating environment is a critical element in Australia's deterrent posture.



The Doolittle Raid - 1942

On 18 April 1942, US Army Air Forces bombers, launched from the aircraft carrier USS Hornet, carried out the first air raids to strike the Japanese homeland. While the damage inflicted was slight, it demonstrated the vulnerability of the Japanese home islands to air attacks and set in motion a number of Japanese military events that would become disastrous for their war effort in the long-term. The plan envisaged the aircraft being launched from the aircraft carrier and recovered in Chinese airfields after attacking targets on Honshu Island. 16 B-25 Mitchell medium bombers attacked targets in Tokyo, Yokohama, Kobe, Osaka and Nagoya and flew on to China. However, a number of challenges forced some aircraft to be destroyed in controlled crash landings and others from the crew bailing out due to lack of fuel.

The direct attack on the home islands gave a boost to American morale after the devastation of Pearl Harbour just four months earlier. More importantly, it provoked Admiral Yamamoto into attempting a hastily organised strike against the Midway Islands that resulted in the loss of four Japanese aircraft carriers and a great number of highly trained aircrew from which the Imperial Japanese Navy never recovered completely for the rest of the war.

The intended effect was both materiel and psychological. While the damage inflicted was easily repaired, the psychological impact on the Japanese nation was great. The fact that the home islands could be directly targeted ensured that some combat assets were recalled for homeland defence, thereby releasing the pressure on some theatres. Perhaps more importantly, the development of a fear complex within the nation was the most pronounced effect that was generated. This went on to shape the environment for the remaining duration of the war.



RESPOND

When other means such as deterrence and coercion have failed to reign in an adversary, it may be necessary for the nation to respond. Further, Australia may have to respond to events that affect the stability of the region or threaten any of its allies and regional partners. Air Force's contribution to the response will be dependent on the evolving situation and will require skilful tailoring of its air power capabilities to be applied across the spectrum of conflict. Response could involve the focused application of lethal force on adversary centres of gravity or the conduct of a full-fledged armed conflict. Air power's inherent characteristics leveraged through the core roles of the Air Force—control of the air, strike, air mobility and ISR—provide a range of response options in and beyond the confines of the theatre.

Response could involve the focused application of lethal force on adversary centres of gravity or the conduct of a full-fledged armed conflict.

Air Force provides flexible control of the air and large perspective ISR, which ensure that response actions involving surface forces can be undertaken with relative freedom of action. Its airlift capabilities combined with speed, reach and payload make it possible to respond and create the necessary effects rapidly and influence a large area of interest. The Air Force's precision strike capabilities can be used to apply lethal force to coerce, punish or destroy an adversary. Within Australia's Maritime Strategy, air power is critical to exercising any response options because of the prerequisite to obtain and maintain adequate control of the air over the operating





theatre. The Air Force must have the inherent capability to respond in a timely manner and the capacity to bring to bear sufficient weight of attack to defeat any emerging threat to the nation.

The Air Force provides flexible control of the air and large perspective ISR, which ensure that response actions involving surface forces can be undertaken with relative freedom of action.

The core roles of the Air Force in functioning within the Maritime Strategy are therefore, quite clear. It must be able to provide the necessary level of control of the air; have the capacity to carry out strike with precision, proportionality and discrimination; possess sufficient air mobility capabilities to be able to facilitate rapid response options; and have sufficient depth of ISR to create the necessary situational understanding.



Operation THUNDERBOLT Hostage Rescue at Entebbe Airport-1976

On 27 June 1976, terrorists hijacked an Air France aircraft with 248 passengers and landed it at Entebbe airport near Kampala, the capital of Uganda. The hijackers freed the French crew (who insisted on staying with the hostages) and non-Jewish passengers and held 105 Jewish and Israeli hostages, demanding the release of 53 convicted terrorists by the Israeli Government. A 48-hour deadline was set before execution of the hostages would begin. Faced with limited options, the Israeli Government entered into negotiations to buy time to plan rescue operations—the deadline was extended to 1300H on 4 July.

The only aircraft in the Israeli Defence Force inventory capable of carrying out the rescue, in terms of range and payload was the C-130 Hercules and the plan was formulated around the use of this aircraft.

The Israeli intelligence agency Mossad was able to build an accurate picture of the terrorists, their weaponry and the area in which the hostages were being held. The rescue mission comprising approximately 100 elite soldiers, named Operation Thunderbolt, was launched at 1320H on 3 July. The air package consisted of four C-130 Hercules transports, two Boeing 707s (configured as an airborne command post and hospital respectively), which were escorted by F-4 Phantoms for about one-third of the distance. The Hercules aircraft landed at 2301H local time after a flight of 7 hours and 40 minutes. The hostages were freed in a lightning attack and the eight hijackers/terrorists killed. The task force lost its commander and two hostages were killed in the cross-fire. The operation lasted 58 minutes and the hostages were brought back to Israel.

This daring and successful raid, never before attempted, demonstrated unequivocally the importance of the inherent reach, responsiveness and penetration capabilities of air power in achieving surprise and creating the necessary effects. It also demonstrated the flexibility of air power in creating an airborne command post and hospital to cater for the emerging exigencies of a military operation. Considering the long distance involved and the time-critical nature of the threat, air power was the only option available to the Israeli Government to rescue the hostages. Rapid response capability with sufficient force that air power provides is an invaluable asset in the contemporary security environment.







CORE ROLES OF AIR FORCE

Air Force remains the principal ADF Service for the generation, employment and sustainment of Australian military air power to contribute directly to national security. In contributing to a Maritime Strategy, Air Force carries out several roles in the pursuit of military objectives. These roles are employed within the government's strategic guidance to the ADF to achieve the desired end-state through the creation of the necessary effects. Further, the air power roles are carried out utilising both manned and unmanned systems and conducted across the spectrum of conflict, ranging from humanitarian assistance to wars of national survival, as shown in Figure 2.

Air Force normally conducts an air campaign to employ its air power. The air campaign is a key component of a joint campaign, and air power is delivered through the performance of its four core roles, optimised through the enabling roles of command and control, force protection, and force generation and sustainment. The core and enabling roles are fundamental and enduring functions that balanced air forces have performed, and ones that military air power has always provided. There is a unique quality to the Air Force's roles. Irrespective of the environment in which it is





Figure 2. The Spectrum of Conflict.

employed—land or maritime—the air power roles remain enduring. In fact the only real difference that the Air Force has to cater for is the necessity to adjust the tactical training regime in a nuanced manner to cater for the environment.

The core and enabling roles are fundamental and enduring functions that balanced air forces have performed, and ones that military air power has always provided.

Air power roles can be complementary and the effectiveness of any one role may depend on the effectiveness of another. Within a Maritime Strategy, the integration of air power effects with those created by sea and land power achieves the optimum effectiveness. The four core Air Force roles are discussed in some detail below.



CONTROL OF THE AIR

Control of the air is the ability to conduct operations in the air, land and maritime domains without effective interference from adversary air power and air defence capabilities.

Control of the air provides freedom from attack, freedom to attack and freedom of manoeuvre and is achieved through the destruction, degradation and disruption of the adversary's air power capabilities. It is usually considered a critical prerequisite for the success of all ADF operations. Australia's military air power capabilities are predominantly resident within the Air Force. The Maritime Strategy on which Australia's security is based is fundamentally underpinned by the Air Force's ability to control the air to the desired degree to permit unfettered surface operations. Contemporary conflicts for the past few decades have been conducted by Western forces against adversaries with little or no air power capabilities. Therefore, the air domain has not been a contested space, precluding the need to fight and obtain the necessary level of control of the air. Western forces have dominated the air domain since the Korean War.

Western Dominance of the Air Domain

Control of the air has not been contested against Western forces in any conflict since the end of the Korean War. The RAAF defines control of the air as the ability to conduct operations in the air and on the surface without effective interference from adversary air power and air defence capabilities. The RAAF has been able to ensure this level of control of the air, either independently or as part of a coalition, for all ADF operations for the past six decades.

The last Australian soldier killed as a result of direct enemy air action was on 25 October 1943, by air actions initiated by the Japanese Air Force during World War II. Similarly, the last RAN ship attacked from the air by enemy air power was on 9 January 1945, when HMAS *Australia* was attacked by Japanese aircraft off the Philippines.



This has resulted in a misguided belief in some quarters that control of the air can be taken for granted, and even more dangerously, that control of the air is not needed to achieve operational objectives. History demonstrates that nothing can be farther than the truth.

By ensuring control of the air, Air Force assures the manoeuvre capability of surface forces and contributes directly to the success of surface operations—in other words, it dominates the theatre battlespace in a holistic manner. However, in order to maintain an inviolate control over the approaches to the nation, the RAAF needs to be a balanced force with the necessary capabilities resident in it and the ability to respond in a timely manner to any threat. A balanced air force is critically reliant on high-value assets that provide force-multiplier effects, such as Airborne Warning and Control Systems and Air-to-Air Refuelling aircraft. However, in the case of smaller air forces the availability of these assets and their criticality could itself become the centre of gravity of the force. Air operations have to be planned taking into account these possible constraints.

By ensuring control of the air, the Air Force assures the manoeuvre capability of surface forces and contributes directly to the success of surface operations.



Control of the Air The Falklands War-1982

In the Falklands War, the Sea Harrier FRS1 and RAF Harrier GR3, together with anti-submarine warfare helicopters provided the core of the air contribution to the overall campaign. The success of the campaign revolved around the ubiquitous presence of maritime air power that was able to carry out the full range of force protection and force projection roles in the maritime and amphibious areas of operations. Fundamental to achieving this was the ability of the Falkland Task Force air element to obtain and achieve control of the air, bordering on air superiority. The air element fought the numerically superior Argentine Air Force (approximately 30 Harriers against about 130 or more Argentine fast jets) and wrested control of the air. Even though the Argentine Air Force offered resistance and carried out some extremely brave attacks that resulted in the loss of four frigates and destroyers of the Royal Navy, achieving control of the air was the critical turning point in the campaign.

All analysis of the Falkland Campaign attributes the success of the British forces to their having achieved adequate control of the air at the earliest opportunity. This was achieved during the initial lodgement, 21-27 May 1982, failing which the entire maritime task force would have been in jeopardy. Although the air element was comparatively small in size, the inherent flexibility of air power assets saw the optimised use of their swing-role capability. (Swing-role is the ability of an aircraft to be reconfigured on the ground to take on different roles like, control of the air, strike, or surveillance.)

Control of the air, long understood to be a pre-requisite for success in all operations, once again proved to be the war-winning factor in the Falklands.



STRIKE

Strike is the ability to attack with the intention of damaging, neutralising or destroying a target.

The ability to strike an adversary—the lethal application of force—is a critical role of the Air Force. This role is relatively more complex and demanding in its conduct as compared to either ISR or air mobility.

Responding to emerging situations or threats could involve attacking the adversary through the employment of lethal or non-lethal, kinetic or non-kinetic means to create the desired effect. The effect could be in the physical or cognitive domain or both. The Air Force carries out strikes through the tailored and timely application of air power to create effects in joint, coalition or multi-agency campaigns. The application of air power—through its strike capability—can be to either achieve direct strategic, operational or tactical objectives or aimed at establishing the necessary freedom of action required by the Joint Force, and in changing the existing conditions to one's own advantage through disruption, dislocation or neutralisation of the adversary's centre(s) of gravity. In order to be successful, such application of force must be done at a rate beyond the adversary's capacity to adapt effectively. In a maritime environment this would entail the capability to respond rapidly over great distances, and even simultaneously in geographically separated operational areas.

Air Force carries out strikes through the tailored and timely application of air power to create effects in joint, coalition or multi-agency campaigns.





Within a Maritime Strategy, and with assured control of the air, the kinetic response options that Air Force brings to the joint force are—strategic attack, anti-surface and anti-submarine warfare, air interdiction, and close air support. Air Force has the capability to carry out attacks on selected centres of gravity with precision, thereby limiting collateral damage. Further, the multi-role capability

Operation OPERA

Israeli Air Strike on Osirak Nuclear Site, Iraq - 1981

On 7 June 1981, F-16 Fighting Falcons of the Israeli Air Force attacked and destroyed the nuclear reactor under construction at Osirak in Iraq. Although Iraq's nuclear program had been established since 1960, it was only in 1981 that it was confirmed by intelligence agencies that the program was reaching successful culmination, with Iraq achieving the capacity to build nuclear weapons. Intense diplomatic efforts to halt French assistance for the project had not been successful and the decision was taken to use military means to destroy the reactor.

The attack was carried out by eight F-16s, each carrying two unguided Mark-84 2,000 pound delayed-action bombs, escorted by six F-15 fighters to provide air cover. The attack was carried out at 1835H local time and 14 of the total of 16 bombs hit the target, completely destroying the reactor. From the first bomb strike to the last the total elapsed time was only 80 seconds. All aircraft recovered to base safely without any external interference.

The strike carried out at a distance in excess of 600 miles was a clear demonstration of the exploitation of the inherent characteristics of air power—reach, penetration, flexibility, and precision—to respond proactively to an emerging situation that needed to be controlled. It is noteworthy that the Israeli Defence Force had considered all military options such as commando raids, paratroopers, and helicopter attacks before deciding to use high-end air power to target and destroy the nuclear reactor that was considered an existential threat to Israel. Air power's precise, proportional and discriminatory attack capabilities that can be delivered responsively to create the necessary effects were employed in an exemplary manner in this classic air attack.



of airborne combat assets permits the application of air power with flexibility and responsiveness. Technological sophistication permits the Air Force to adhere to the basic principles of proportionality and discrimination in the application of lethal force. In the maritime environment Air Force's ability to strike adversary centres of gravity at great distances in a responsive manner, or 'take the fight to the adversary' at short notice, is a fundamental contribution to the deterrent and coercive capabilities of the ADF.

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The strike capability of the Air Force brings an intrinsic advantage to the employment of a Maritime Strategy through air power's inherent speed, range, responsiveness and lethality that create flexibility in response. Air Force's ability to carry out parallel and concurrent operations along with its multi-tasking capability and the enhancement of its operational envelope through force multipliers, such as air-to-air refuellers and airborne early warning and control assets, makes it a decisive element in all operations in the maritime environment. The numerical limitation of the ADF is such that it will have to prosecute actions without recourse to mass while also practising economy of effort. By providing both kinetic and non-kinetic response options, Air Force acts as a force multiplier, substituting its ability to concentrate fire power to create effects as an alternative to mass.



The Sinking of HMS *Repulse* and HMS *Prince of Wales* - 1941

The British battleships HMS *Repulse* and *Prince of Wales* were attacked and sunk by Japanese land-based torpedo and bomber aircraft while they were underway in open water. According to some Defence experts such a decisive attack was never likely to happen. These were the first two Royal Naval capital ships to be sunk by air power in wartime. Their sinking in December 1941 was a devastating blow that crushed British hopes of defending Singapore against the rapid Japanese advance in the region. The Japanese Navy exercised complete control of the air throughout much of South-East Asia and the Indian Ocean after these two ships were sunk. This is a clear example of a single opportunistic strike having a very broad strategic impact.

In modern maritime conflict, Air Force can conduct operations to deny the adversary effective use of their surface vessels and/or submarines. It can also conduct operations to divert, disrupt, delay, degrade, or destroy the maritime military capabilities of the adversary before they can be brought to bear effectively against friendly forces. Occasions could arise wherein a high-value adversary asset would provide only a fleeting opportunity to be targeted. Air power's strike capability may be the only option available to neutralise these 'fleeting targets of opportunity'. In the maritime environment, the speed and reach of air power will be a great advantage in such circumstances and could create strategic effects through a single strike.

Provision of close air support is an important component of the joint campaign and can be critical to the success of surface operations. This is particularly applicable to maritime operations wherein expeditionary and amphibious operations may be contested, while at the same time surface forces may have to deploy and engage in a lighter configuration. In these conditions, coordinated air support to the surface operations becomes an essential criterion that straddles all activities. In amphibious operations, surface forces in



the littoral have limited visibility and manoeuvre options which could lead to fragmentation and loss of cohesion at the tactical level. Timely, precision air strikes could salvage such a situation. In urban and littoral combat situations air power is undeniably a game-changer.

The ability to create appropriate effects is fundamental to the success of a campaign. In a maritime environment the creation of effects has a geographic dimension that could involve the projection of physical assets over long distances and an extended timeframe. The inherent speed, reach and penetration of air power make it an ideal capability to create the necessary effect rapidly and at great distance, targeting the appropriate centre of gravity wherein it will have the maximum impact. Air Force has the ability to project and sustain credible combat power as well as other more benign capabilities to ensure that it can, when required, shape the area of interest adequately. Further, its responsiveness, agility and flexibility makes it a critical influencing element within a joint force applying a Maritime Strategy and engaged in expeditionary and amphibious operations in the region or further afield. Air Force's ability to combine reach, speed, precision, proportionality and discrimination to create the desired effects is unique.

AIR MOBILITY

Air mobility is the ability to move personnel, materiel or forces using airborne platforms.

Air mobility permits the timely deployment or movement of personnel and materiel within the operational environment. This is a capability that has particular importance to the maritime environment where distances are large and other modes of transportation relatively slow. In emerging situations that may require rapid force projection, air mobility is critical to ensuring the adequacy of the response. In this context, air mobility can



indirectly provide lethal response through the fast deployment and subsequent sustainment of airborne forces to conduct amphibious operations or to capture centres of gravity in a far flung maritime theatre.

In a maritime theatre air mobility could become a war-winning capability, with the Air Force's ability to generate a range of options providing the backbone of joint manoeuvre.

Air Force also provides non-kinetic response options when the ADF is applying a Maritime Strategy to secure the nation, primarily when there is a need to respond to natural disasters and to provide humanitarian assistance to alleviate human suffering. Further, it may also be required to deter or coerce a recalcitrant adversary without actually having to apply lethal force. Air Force's airlift capability with its range and the ability to overcome geographical barriers provides a rapid and effective response to emerging situations. This capability is particularly prized in a maritime environment where distances tend to be large and objectives inaccessible to rapid intervention other than through the air. The fact that airlift can carry out multi-theatre concurrent operations greatly increases the deterrent capacity of the ADF.

When Joint Force manoeuvre is achieved through air mobility, it produces two distinct advantages. First, it leaves a very small footprint—physical presence of own forces within adversary territory or close to it—while being able to cover a relatively large area with numerically minimal forces. Second, the speed of manoeuvre that air mobility brings to the insertion and extraction of forces, when required, creates its own unpredictability and the asymmetry of surprise, which by themselves are coveted





in unconventional conflict situations. In a maritime theatre air mobility could become a war-winning capability, with the Air Force's ability to generate a range of options providing the backbone of joint manoeuvre.

The knowledge of the availability of such a capability itself could act as a deterrent factor, thereby restricting the adversary's operational options and enhancing one's own ability to achieve objectives, at times without even having to resort to the application of force. Operations in the maritime environment require the build-up of a dedicated logistics chain, which Air Force's responsive airlift capabilities can create rapidly. Further, the reactive ability to sustain the necessary logistics chain, inherent in the reach and payload resident in the airlift capacity of the Air Force, is critical to the success of distant expeditionary operations that would be a hallmark of the implementation of a Maritime Strategy.

Operation ANODE Solomon Islands – 2003

The ADF's contribution to the multinational Regional Assistance Mission to Solomon Islands (RAMSI), intended to restore law and order in the nation, was named Operation Anode. The Air Force airlifted the ADF contingent to Honiara in C-130 Hercules aircraft between 24 and 29 July 2003. Further, an Air Force contingent of two Caribou transport aircraft and personnel was deployed to provide air mobility in the country—a task that was particularly onerous since the nation consisted of nearly 1000 islands. The air mobility team was complemented by eight Iroquois helicopters; four each from the Australian and New Zealand Armies. The success of RAMSI was facilitated by the rapid deployment of the necessary forces and the subsequent sustainment support provided by the air mobility element which was crucial to communications and supply.



INTELLIGENCE, SURVEILLANCE AND RECONNAISSANCE

ISR synchronises and integrates the planning and operation of sensors, assets, and processing, exploitation and dissemination of systems in direct support of current and future operations.

ISR enables the other core roles of the Air Force and creates situational understanding, facilitated by awareness, analysis, knowledge, comprehension and judgement. Situational understanding is critical to timely and accurate decision-making. ISR provides data, information and intelligence that assist the Air Force and the ADF to achieve battlespace awareness and understanding, potentially leading to information superiority.

Air Force is a primary provider of ISR to the ADF and creates situational understanding for the commander through the employment of airborne, space-based and ground based assets.

The function of ISR is equated with situational understanding—the ability to observe and determine the orientation of both one’s own as well as the adversary’s forces that creates the necessary understanding of the characteristics of the operating environment. Awareness of the events taking place, as close to real-time as possible, is fundamental to optimising the employment of a military force through achieving decision superiority. Developing the necessary level of situational understanding is a direct function of intelligence collection, information exchange and engagement, and the ability to sustain the necessary activities in accordance with the tempo, intensity and duration of the operations. The Air Force is a primary provider of ISR to the ADF and creates situational understanding for the commander through the employment of airborne, space-based and ground based assets. These assets could





also be either manned or unmanned. This capability is critical in pursuing a Maritime Strategy wherein the area of interest could be vast.

Their ability to exploit the third dimension flexibly make air assets ideally suited to carrying out ISR functions that are crucial to understanding the operating environment. Sophisticated technology now permits airborne ISR assets to detect, locate and identify adversaries and track their actions in near real-time, in a persistent manner. Persistence and the ability to carry out wide area surveillance is crucial to maritime operations that could be undertaken in independent theatres. The Jindalee over-the-horizon radar is particularly useful in ISR activities in the maritime environment.

In order to generate the necessary effect within the pattern of operations, the Joint Force must grasp the nuances of the physical, technical and virtual dimensions of the operating theatre. This is particularly important in the maritime environment which could be geographically spread and there could be large distances between operations within the same campaign. ISR provides the joint commander with a comprehensive picture of the entire area of operations so that the adversary's centres of gravity can be correctly identified and targeted with maximum economy of effort. In a dispersed battlespace that would be the norm in a maritime environment, this is a critical advantage. In non-combat operations like humanitarian assistance, situational understanding is necessary to rebuild or restore the social and technical networks that support and sustain the affected population. Information collection, facilitated by Air Force ISR, is fundamental to creating a knowledge edge, the first step towards knowledge superiority. The sharing of knowledge—both vertically within the command hierarchy and horizontally within the technical networks—leads to its optimum exploitation. In order to ensure that these basic requirements of the



Joint Force can be met, ISR provided by the Air Force needs to have high fidelity and adequate speed of processing and dissemination.

Battle of Savo Island – 1942

Following the American assault on Guadalcanal in the Solomon Islands (Operations Watchtower), seven cruisers and a destroyer of the Imperial Japanese Navy's 8th Fleet, commanded by Vice-Admiral Gunichi Mikawa, attacked and defeated a superior force of allied ships (eight cruisers and 15 destroyers) off Savo Island on the night of 8/9 August 1942. The allies lost four heavy cruisers (including HMAS Canberra) and two destroyers. The Battle of Savo Island was a brilliant victory for the Japanese and one of the worst defeats ever suffered by the United States Navy.

Admiral Mikawa's victory was built on achieving complete surprise by transiting in silence the 1000 km from Rabaul to Guadalcanal. The Japanese strike force was spotted en route on no less than five occasions by allied forces—by four aircraft (Air Force Hudsons and USAAF B-17s) and by an American submarine (USS S-38). However, the Allied ISR system failed completely in this instance, leading to disastrous consequences. The surveillance and reporting network was not integrated under a single command; information sharing between ISR elements was poor; and some of the wider ISR capabilities were excluded from the direct reporting system. The defeat at the Battle of Savo Island was almost completely the result of the failure of the ISR system.

In a dispersed battlespace that would be the norm in a maritime environment, the ability to identify the adversaries' centres of gravity is a critical advantage.





COMMAND AND CONTROL

Command and control is the process and means for the exercise of authority over, and lawful direction of, assigned forces.

The core roles of the Air Force are enabled through efficient command and control, which is a key enabling role. Command and control is the exercise of authority and direction by a properly designated commander over assigned and attached forces for the accomplishment of a mission. Such command is exercised across the strategic, operational and tactical levels and reflects the distribution of responsibilities for planning and directing resources allocated to achieve the laid down objectives. The levels of command are applicable across the range of military operations. Since air operations are inherently dynamic and cover large areas, C2 systems need to be flexible and responsive to effectively control and manage air operations within and beyond the theatres of operations.

In the contemporary environment, C2 also needs to take into account the requirement to integrate all the systems that together create an effective air combat force. Integration across the systems that comprise the sub-parts of the holistic picture of air power can only be achieved through efficient and flexible command and control arrangements. This is a critical requirement to optimally employ the 5th generation capabilities that are being inducted into the Air Force. In the maritime environment an integrated fire control system with the Navy would be a precondition to achieving optimised joint effectiveness. The 5th generation Air Force will have superior situational awareness brought about through multi-mission integration which in turn will have to be disseminated to the surface forces, thereby creating an integrated force. In keeping with the air power tenet of 'centralised control and decentralised execution', effective command and control, exercised through centres that are jointly staffed, will be the cornerstone of these developments.





CONCLUSION

All military operations are conducted within a political context and transition is focused on meeting the laid down political objectives. Through the application of a judicious combination of the ability to create effects at long distances, facilitate manoeuvre and control of designated areas with a small footprint, and build-up and maintain logistic chains, the Air Force can shape the battlespace and influence the intensity and tempo of operations, across the spectrum of conflict. However, post-conflict relations between nations and between peoples will be influenced by the way in which military operations have been conducted. Therefore, it is necessary for the ADF to adhere strictly to the principles of proportionality and discrimination in its operations and the application of both lethal and non-lethal force, as well as the creation of both kinetic and non-kinetic effects. Air Force capabilities are ideally tailored to apply force with precision, proportionality and discrimination at the desired level. In combination with its reach, responsiveness and penetration characteristics, air power delivered by the RAAF is a capacity that fundamentally underpins Australia's Maritime Strategy.



Australia being an island nation that does not share a land border with any other nation is dependent on a Maritime Strategy to secure its sovereignty and interests. This has been acknowledged since the beginning of federation and Australia's security policies have been oriented towards formulating an appropriate Maritime Strategy in a contextual manner. Accordingly, the ADF's force structure and force posture have also been oriented towards successfully employing military forces pursuant of a Maritime Strategy.

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It is expected that the ADF will be able to obtain and maintain adequate sea control to ensure uninhibited use of the sea lines of communication that is essential to the continued prosperity of the nation. This cannot be achieved without being able to obtain and maintain the necessary level of control of the air in the area required and for the duration necessary. While such control of the air is of necessity delineated in time and space, it remains fundamental to the success of any other military action that may be required to be undertaken to secure national interests. While control of the air obviously is of paramount importance, other air power roles such as strike, air mobility and intelligence surveillance and reconnaissance also directly contribute to ensuring the security of the nation through the implementation of a Maritime Strategy.

The ADF has to control and influence a large maritime area because of Australia's geographic location. This has to be achieved with numerically limited forces. In this situation Air Force's swiftness of response and the ability to carry out concurrent operations



becomes a critical capability that can be leveraged at will. Swift application of air power denies the adversary time for effective response, can create multiple threats, and is fundamental to the success of dispersed forces operating in a non-linear battlespace such as a maritime environment.

In sum, the Air Force can overcome the challenges of distance and geography to meet the demands of modern-day conflict; create superior situational understanding that could lead to decision superiority; respond rapidly and concurrently to emerging situations; and ensure the freedom of manoeuvre necessary to prevail in all circumstances. This is achieved through its ability to produce controlled, discriminatory effects as required.

No individual Service—Army, Navy or Air Force—can independently implement a Maritime Strategy. It can only be effectively employed when a joint force with an optimised composition, tailored to meet the explicit demand of the prevalent context, is able to deploy without undue hindrance from adversary action from the air or sea. This ability is the foundation on which the safety and security of the nation is built and cannot be achieved without efficient control of the air, sea control and amphibious capabilities.

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