Australian Air Publication
AAP 1000–D

The Air Power Manual

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EFFECTIVE AIR POWER THROUGH PROFESSIONAL MASTERY
iv  The Air Power Manual
FOREWORD xi
ACKNOWLEDGMENTS xiii

CHAPTER 1 AIR POWER DOCTRINE 1
Air Force Air Power Doctrine Series 3
Defining Air Power and Space Power 3
Context 5
Structure 6
Hierarchy of Air Force’s Air Power Doctrine 9
Understanding Air Power Doctrine 11
Professional Mastery 12

CHAPTER 2 PROFESSIONAL MASTERY 15
Introduction 17
Organisation 22
Operations 30
Air Power in a Whole-of-Government Approach 34

CHAPTER 3 CONFLICT AND MILITARY OPERATIONS 37
Introduction 39
Classifications of Conflict 40
Australia’s Principles of War—a Guide for Planning 43
Levels of Command 45
Legal Framework for Operations 47
## CHAPTER 4  AIR POWER AND AUSTRALIA’S NATIONAL SECURITY  51

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>53</td>
</tr>
<tr>
<td>Whole-of-Government Approach</td>
<td>54</td>
</tr>
<tr>
<td>National Effects-Based Approach</td>
<td>57</td>
</tr>
<tr>
<td>Air Power and Australia’s Military Strategy</td>
<td>60</td>
</tr>
</tbody>
</table>

## CHAPTER 5  AIR AND SPACE POWER  69

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>71</td>
</tr>
<tr>
<td>Persistent Effect</td>
<td>72</td>
</tr>
<tr>
<td>Air Force’s Strengths</td>
<td>77</td>
</tr>
<tr>
<td>Characteristics of Air Power</td>
<td>78</td>
</tr>
<tr>
<td>Space Power</td>
<td>101</td>
</tr>
</tbody>
</table>

## CHAPTER 6  APPLYING AIR AND SPACE POWER  105

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>107</td>
</tr>
<tr>
<td>Factors that Shape the Air Force</td>
<td>108</td>
</tr>
<tr>
<td>Joint Warfighting Functions</td>
<td>112</td>
</tr>
<tr>
<td>Air and Space Power Functions</td>
<td>114</td>
</tr>
<tr>
<td>Air Power Roles</td>
<td>116</td>
</tr>
<tr>
<td>Air and Space Power Functions and Roles</td>
<td>116</td>
</tr>
<tr>
<td>COMMAND AND CONTROL</td>
<td>117</td>
</tr>
<tr>
<td>Air Campaigning</td>
<td>118</td>
</tr>
<tr>
<td>Battlespace Management</td>
<td>122</td>
</tr>
<tr>
<td>INFORMATION SUPERIORITY AND SUPPORT</td>
<td>124</td>
</tr>
<tr>
<td>FORCE DEPLOYMENT</td>
<td>130</td>
</tr>
<tr>
<td>Air Mobility</td>
<td>130</td>
</tr>
<tr>
<td>FORCE PROTECTION</td>
<td>134</td>
</tr>
</tbody>
</table>
FORCE APPLICATION 137
Counter Air 139
Precision attack 143
FORCE GENERATION AND SUSTAINMENT 150
Air Power Generation and Sustainment 150
Combat support 153
INTEGRATION OF FUNCTIONS 155

CHAPTER 7  EPILOGUE—INTO THE FUTURE 157
Mastering Air Power for the Future Air Force 159
Appendix1 – Doctrine Hierarchy Outline 163

GLOSSARY 165

INDEX 177
AAP 1000–D—*The Air Power Manual* (Fifth Edition) is the Air Force’s principal air power doctrine publication. *The Air Power Manual* draws together the complex factors that define Air Force’s air power. Our air power is described in a manner intended to provoke analysis, enhance understanding and provide an intellectual foundation on which we can build the mastery to operate our current Air Force to its optimum while we prepare for the future Air Force. Together with its partner publications: AAP 1000–H—*The Australian Experience of Air Power* and AAP 1000–F—*The Future Air and Space Operating Concept* (FASOC), *The Air Power Manual* provides a synthesised view of Air Force’s air power doctrine across its past, present and future.

This edition of Air Force’s air power doctrine is the first to be written through a joint lens, recognising the need to position the force and our people to play a vital role as the Australian Defence Force operates more and more as a seamless force. For this reason, *The Air Power Manual* is both vital reading for the members of the Air Force and an important work to promote a wider understanding of our air power.

The key to realising our doctrine is the professional mastery of the Air Force’s people. Developing this mastery is both the theme and the intent of *The Air Power Manual*. Professional mastery is essential if we are to ensure that the Air Force remains a versatile force ready to make timely and effective contributions when called upon by the Government.
xii The Air Power Manual
Acknowledgments

The Air Power Development Centre acknowledges the valuable input drawn from the ADF joint doctrine series and the doctrine of our allies in preparing AAP 1000–D—*The Air Power Manual* (Fifth Edition). The overseas sources include the United States Air Force doctrine series, the Royal Air Force’s AP 3000—*British Air Power Doctrine* (Third Edition) and the doctrinal guidance developed by the Air and Space Interoperability Council (ASIC). A great debt is also owed to the Air Force and other ADF personnel who provided advice and assistance.

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Chapter 1

Air Power Doctrine
Air Force Air Power Doctrine Series

Doctrine is most effective when applied by professional masters who understand its origins in history and theory, the context in which air power is applied and the transitions our Air Force must undergo to remain effective into the future. To provide this broad foundation of knowledge, The Air Power Manual (Fifth Edition) is published within a set of three thematic Air Force doctrinal publications that together describe and synthesise the Air Force's air power from past to present to future. The three publications that comprise the doctrine set are:

- AAP 1000–H—The Australian Experience of Air Power,
- AAP 1000–D—The Air Power Manual (Fifth Edition), and
- AAP 1000–F—The Future Air and Space Operating Concept (FASOC).

The Air Power Manual is supported by the Australian Defence Force (ADF) joint doctrine series and draws, where appropriate, from the joint doctrine publications, but does not repeat their detailed content.

Defining Air Power and Space Power

Air power is the ability to create or enable the creation of effects by or from platforms using the atmosphere for manoeuvre.

The Air Power Manual uses terminology that recognises the doctrinal shift from ‘aerospace power’ to ‘air power’ and ‘space power’. This terminology reflects the different characteristics
of the air and space operating environments and provides a basis for better understanding and greater innovation in their coordinated application.

Space power is the ability to enable and enhance terrestrial effects through exploitation of the space environment.

Space power supports the application of air and surface power.

Military air power and space power operate in ways fundamentally different to land and maritime power, and they must be understood as complementary across the continuum from the surface to the atmosphere and beyond. For the ADF, space power supports terrestrial power, and Australian government policy is that the space environment is not a theatre for war. Because terrestrially-based operations have primacy for the ADF, with space power being used
to support those operations, this publication is titled *The Air Power Manual*, and the term aerospace has been superseded.

**Context**

*The Air Power Manual* is a professional guide to assist Air Force personnel at all levels, members of the other Services and our partners in national security to gain the understanding necessary to exercise and develop air power and integrate it into military and national operations. The Air Force is a broad group comprising the Permanent and Reserve members of the Royal Australian Air Force (RAAF), the Air Force Program and other organisations that support us. Although *The Air Power Manual* is relevant to all members of this group, the members of the RAAF have a particular responsibility to master its contents and exercise its philosophies.

*The Air Power Manual* describes aspects of air power that are common across all modern air forces, as well as aspects of air power that are tailored to meet the specific requirements of our Air Force. The doctrine also refers to the imminent introduction of new systems that will make the Air Force more integrated, versatile and potent. Because space systems play such a crucial role in operations, *The Air Power Manual* includes key aspects of the unique contribution that space power makes to the generation and application of the Air Force’s air power.

of Australian Aerospace Power, released in 2002. The Air Power Manual represents the latest stage in an evolutionary approach that keeps the Air Force’s air power doctrine fresh; contextualising current thought and practice, drawing from new ideas and responding to the emergent demands of the security environment while preserving relevant foundations derived from proven historical practice and analysis.

Structure

The Air Power Manual provides a practical guide to the Air Force’s air power, describing our responsibility to conduct effective air operations to secure Australia and its national interests. The aim of the manual is to provide a basis from which the Air Force's personnel can develop their professional mastery of air and space
power. The breadth, complexity and importance of professional mastery are described in detail in Chapter 2.

Chapter 3 describes the spectrum of conflict and the broad principles that guide the planning and execution of the range of operations that the Air Force can be required to conduct.

Chapter 4 explains the links between air power, military strategy, national strategy and national policy. These links and principles situate the application of the Air Force’s air power in Australia’s strategic context and the whole-of-government approach to security.

Chapter 5 describes air and space power, with a focus on the characteristics that define the Air Force’s air power. These characteristics are described, individually and in combination, as essential considerations in the planning and conduct of military operations that involve air power. Chapter 5 also describes the ways that professional masters of air power can leverage from air power’s characteristics to create persistent and decisive effects that realise its potential.

Chapter 6 describes the generation and application of air power and provides a brief explanation of the ways in which Australia’s geo-strategic environment influences the design of the Air Force. The application of air power is described with a dominant theme of the Air Force’s air power in partnership with surface forces and other national agencies.

Chapter 7, the epilogue, links The Air Power Manual to the future of the Air Force, described in FASOC.
A thematic approach – the joint warfighting functions

The joint dimension of air power doctrine is reinforced throughout the Air Force’s air power doctrine series by the use of a thematic approach based on a set of ubiquitous and enduring joint warfighting functions. These functions are:

- command and control,
- information superiority and support,
- force deployment,
- force protection,
- force application, and
- force generation and sustainment.

These functions, also used in FASOC, were first introduced to the ADF in 2003 in ADDP–D.3—Future Warfighting Concept. Their use in air power doctrine is based on the judgement that the functions are sufficiently generic to have enduring applicability across the full breadth of military operations, and that the functions themselves can be readily translated into future ADF concepts. The Air Force’s roles are assigned to one function or another to enable the application of air power to be viewed through a shared, joint lens. This approach is more fully described in Chapter 6. The integration of air power into joint operations through the joint warfighting
functions is the organising theme that synthesises *The Air Power Manual* with FASOC.

The framework of warfighting functions used in *The Air Power Manual* and FASOC reinforces the joint dimension of the Air Force’s air power in the ADF’s transition toward seamless military and national operations.

**Hierarchy of Air Force’s Air Power Doctrine**

*The Air Power Manual* is the Air Force’s highest level of doctrine, and describes the fundamental principles that underpin the Air Force’s air power. Because this doctrine has relevance at the strategic, operational and tactical levels of the force, as well as to external agencies, it is also described as the Air Force’s philosophical air power doctrine. The term ‘philosophical doctrine’ is shared across the ADF and is defined in the ADF’s joint doctrine publication Australian Defence Doctrine Publication 7.0—*Doctrine and Training*.

| **Philosophical doctrine** | **Philosophical doctrine explains fundamental principles.** AAP 1000–D—*The Air Power Manual* is philosophical doctrine. For the Air Force, the doctrine draws on strategic and joint guidance to describe the conditions that shape the force and determine the Government’s options for its employment. |
| **Application doctrine** | **Application doctrine explains the use of the fundamental principles.**  
AAP 1002—*The Operational Air Doctrine Manual* is application doctrine. For the Air Force, application doctrine derives operational doctrinal content from principles described in *The Air Power Manual*. AAP 1002 provides a basis for training to conduct effective air operations. |
|--------------------------|--------------------------------------------------------------------------------------------------|
| **Procedural doctrine**  | **Procedural doctrine encompasses more detailed drills, tactics, techniques and procedures to ensure effectiveness and, where required, standardisation and interoperability.**  
Wing and squadron tactical procedures manuals and Concepts of Operations (CONOPS) are examples of procedural doctrine. |

### Types of Air Force air power doctrine

Application and procedural doctrine are more specific than philosophical doctrine, and are generally employed at the operational and tactical levels of command respectively. *The Air Power Manual* guides the development of application and procedural doctrine that provides greater detail on the ways and means the Air Force chooses to prepare and apply air power.

A framework describing how the Air Force may more comprehensively populate its doctrine series in the future is shown at Appendix 1. The hierarchy of application and procedural doctrine to support *The Air Power Manual* will be published separately to the AAP 1000 series.
Further detail on the types and levels of ADF doctrine is provided in ADDP–D—*Foundations of Australian Military Doctrine* and ADDP 7.0—*Doctrine and Training*.

**Understanding Air Power Doctrine**

*The Air Power Manual* is not a set of rules for applying air power that must be followed without question. That would be dogma, and would have little relevance as a basis for mastery of the complexity and challenges inherent in exercising air power. *The Air Power Manual* provides foundational knowledge about air power and space power, a guide for professional judgement in their development and application, and a stimulus for professional mastery in the planning and execution of air operations. Through professional mastery, the Permanent and Reserve personnel of the Air Force can exploit the full potential of the Air Force’s air power, now and into the future.

*The Air Power Manual* is also a foundation for a more critical examination of air power as a vital and integral part of joint military operations conducted within a whole-of-government approach to campaigning. Understanding is required across all Services to integrate air power into such operations. This understanding is especially important when air and surface forces must operate with the highest levels of integration and use synchronised joint manoeuvre to create operational advantage.

**Air power is exercised in partnerships.** *The Air Power Manual* describes the application of the Air Force’s air power in conjunction with the other Services, with Australia’s other national agencies and with the forces of allies and other nations. In some military
operations, the Air Force’s contribution may be the sole operational mission, where this is determined to be the optimum way to achieve the required outcome. In most operations however, the Air Force components will be closely integrated with surface forces to create joint effects.

**Doctrine and air power interoperability.** In the current strategic environment, there is a high likelihood that any major combat operations involving the Air Force will be conducted in coalitions, most probably with the US and UK, but also with other nations. *The Air Power Manual* enhances our interoperability in these coalitions by ensuring that, wherever feasible, the Air Force’s doctrine is consistent with the doctrines of our major allies’ air forces. Therefore, *The Air Power Manual* includes some key air power roles and capabilities that our allies are likely to contribute in operations with Australian forces.

**Professional Mastery**

To prevail in operations, the Air Force requires the correct operational systems, an effective and adaptive organisation, and personnel with professional mastery of air power. Professional mastery is founded on a balance of skill, training, military education, experience and motivation to apply air power effectively in operations and to advance the Air Force. Just as advances in air power and the increasing role of space power in operations necessitate changes to doctrine, professional mastery evolves to meet the challenge of ensuring that the Air Force remains functionally adaptive and so, operationally potent.
Professional mastery of air power is described as knowledge and understanding, coupled with experience and confidence, which empowers a person to realise the full potential of air power in operations. Such mastery includes an understanding of space power. Professional mastery also involves understanding and applying the moral and intellectual aspects of air power, and has a strong focus on conducting operations today while preparing the Air Force for the future. Professional mastery is realised through both commanders and their supporting personnel teaming to deliver shared and understood objectives.

At any time, the Air Force can be legally directed by the Government to apply military force in any of a wide range of operations to secure Australia’s national interests. Our professionalism and knowledge ensure that we are effective in these operations. Our competence, humanity and relevance ensure that we remain respected by the Australian people and our partners. Doctrine has an important role in developing the professional mastery that ensures these outcomes.
Chapter 2
Professional Mastery
Introduction

The generation and application of the Air Force’s air power is dependent on the professional mastery of the people who make up the force. This chapter describes how and why professional mastery is vital to the Air Force, both in the design and management of the organisation that generates air power, and in the conduct of air operations. Professional mastery includes the moral and professional responsibilities of all Air Force members.

The Chief of the Defence Force (CDF) is responsible to the Government for the defence of Australia and the security of its interests in accordance with national defence policy and specific government direction. The strategic environment within which the ADF conducts this task is complex and fluid, requiring the ADF to develop strategy and prepare forces that are adaptive and versatile. The Air Force makes an important and unique contribution to this joint endeavour by developing and maintaining an appropriate air strategy, force structure, state of preparedness and posture. Achieving these outcomes is both vital and demanding, requiring readiness for armed conflict and the adaptability to make a responsive contribution to a wide range of operations requiring the carefully controlled application of force or other actions short of armed conflict. Many of the operations not involving armed conflict will nevertheless be difficult and dangerous, requiring degrees of force preparedness and skill that are comparable to those required for armed conflict.

Maintaining the Air Force’s capacity to contribute to joint operations and to guide the force into the future demands expert decision-making by professional masters of air power. Primarily, professional
mastery is personal, and is the sum of the individual knowledge and understanding of air power and space power plus the experience and confidence gained during a career. Collectively, the individual mastery of air power resident in the members of the Permanent and Reserve components creates a substantial and valuable body of professional mastery within the Air Force. The professional mastery of its members enables the Air Force to realise the full potential of air power for operations of any intensity, duration and degree of integration within joint and coalition campaigns.

Professional mastery is translated from the mastery of our people into the organisation through and from the Air Force’s leaders. Leaders apply their personal and professional skills to shape the force for effective operations, and provide the vision, guidance and process necessary for the force to operate and evolve. Leaders with these qualities will have the ability to anticipate the need for change and to create and exploit opportunities.

To meet the challenge of adapting the force to meet contemporary and future requirements, the Air Force’s leaders must create the culture and environment where the organisation becomes committed to and skilled at learning, individually and collectively. Functioning as a learning organisation with a common vision underpins the organisational dimension of the Air Force’s operational versatility.

Professional mastery within the Air Force is a product of the knowledge, skills and attitudes of leaders at all levels and the flexibility and robustness of the organisation.
Air Force’s values. Accepting and adhering to the values of the Air Force is vital to professional mastery. Just as command and control draws the Air Force’s roles together to create a cohesive and decisive application of air power on operations, values draw together the human dimension of the Air Force. By aligning the way we act and lead through our values, we ensure that the Air Force remains effective, achieving outcomes valued by the nation in a way that is in keeping with the spirit of the Australian people.

The Air Force’s air power is the skillfully directed product of trained personnel, quality equipment, an effective organisation, a forward-looking materiel organisation and responsive operational and logistic support. The Air Force has direct responsibility for the organisation of the RAAF, and shares the responsibility for training personnel and providing operational and logistic support with Australian Defence Organisation (ADO) partners. Every aspect of this activity is a product of decisions made by men and women within the ADO. Many of these people are Air Force air power professionals, while others are members of the Navy and Army, Defence civilians, or contractors. Their efforts are drawn together by an obligation to the creation, maintenance and employment of air power.

Air Force personnel must ensure that their professional mastery of air power permeates the ADO and allied industry. Shared knowledge will ensure that the Air Force best meets the Chief of Air Force’s responsibility to provide the Chief of the Defence Force and, ultimately, the Government with effective air power options for Australia’s security.
Air Force: organisation and operations. As an enterprise, the Air Force conducts and harmonises two critical, but often competing tasks. The first task, primarily organisational, involves managing the current force and designing the future force. This involves three concurrent activities, namely: enhancing existing capability to meet emergent security challenges, planning for the induction of new capabilities and operating concepts, and maintaining strategic relationships with the Government and the national support base. The second task focuses on operations, and involves maintaining the preparedness of the Air Force's air power for assignment to Commander Joint Operations and application in ADF operations. Professional mastery is the tenet that links these two tasks.

Professional mastery must encompass the organisational and operational dimensions of the Air Force in order for it to achieve the outcomes needed by the nation.

The deployable Air Operations Centre during Exercise East Coast Air Defence 2005. Exercising the operational dimension of the Air Force.
Dialogue founded on moral courage and professional mastery

Develop professional mastery

Strategic Planning

Doctrine and Concepts

Defence

Air Force - Organisation

Command and Management

Leadership and vision

Defence

Manage risk

Develop strategic relationships

Capability planning

Exercise forces

Regenerate forces

Contribute to ADF doctrine and concepts

Design the future Air Force

Train and educate personnel

Develop CONOPS and operational doctrine

Plan the operation and sustainment of forces

C2

Plan the operation and sustainment of forces

Manage concurrency

Work with joint, coalition and multi-agency partners

Contribution to ADF doctrine and concepts

Design the future ADF

Train and educate personnel

Develop CONOPS and operational doctrine

Plan the operation and sustainment of forces

Manage concurrency

Work with joint, coalition and multi-agency partners

Figure 2–1 Air Force - organisation and operations
The Air Force organisation is responsible for the planning and sustainment that ensures we remain ready to stand up adaptable and well-prepared forces. The scope and complexity of this task is demanding, requiring management of the force during peace, continuous capability development, preparing for operations, sustaining operations and reconstituting after operations. This is conducted in parallel with designing and implementing effective and efficient processes to maintain, upgrade and adapt the force into the future. The organisation's processes ensure its ongoing operating effectiveness and cultivate the necessary internal and external linkages and dialogue. This requires linkages with the ADO, the Government and its agencies, industry, non-government organisations, allies and coalition partners.

**Designing the Air Force**

Designing a force with the necessary support and operational systems, facilities and people with the requisite skills is a critical task to ensure operational effectiveness. Professional judgement about these factors, guided by the need to create a balanced force scaled to match national security demands, defines the Air Force's critical mass—the necessary minimum to reasonably conduct and sustain operations as and when required by the Government. This is a dynamic process. The changes created by the delivery of new and
improved capabilities through the Defence Capability Plan (DCP), along with changes to strategic and societal circumstances, require that the Air Force be adaptable. Evidence suggests that the speed and frequency of necessary adaptations are increasing, and the Air Force is meeting this challenge by evolving through learning. Only people with a broad and deep understanding of air power and space power, who can analyse and synthesise within a complex strategic context, will be able to make the crucial contributions necessary to adapt the organisation of this enterprise to meet emerging challenges and opportunities.

Professional mastery includes the ability to analyse and synthesise available information in a complex and uncertain context in order to anticipate, assimilate and exploit emerging challenges and opportunities.

**Contributing to the seamless ADF**

Operating the Air Force in a seamless ADF will be one of the greatest challenges faced by professional masters of air power. A seamless force maximises the collective capabilities of the Services by integrating them in ways that, when the force is viewed externally, present no visible seams that could offer a potential point of weakness for an adversary to exploit. Such a force, by design, operates as a single entity, with the Services coupled to a degree beyond the contemporary understanding of joint operations. Ultimately, seamless operations may include integration with other national agencies.
**Joint force.** A general term applied to a force which is composed of significant elements of the Navy, Army and Air Force, or two or more of these Services, operating under a single commander who is in turn directly responsible to the CDF.

**Seamless force.** A seamless force is designed to operate at a level of integration beyond joint, and to offer no visible operational or organisational seam of vulnerability for an adversary to exploit. This degree of seamlessness is aspirational, but working toward meeting it ensures a robust and integrated system of national and military security.

A seamless force does not mean that the Services will be merged. The complexities and specialisations of each Service are such that the professional mastery required to maximise their specific contributions necessitates the retention of individual Service identities. This may create seams within the force when the Services come together in operations. The professional mastery required to design the seamless force must ensure that such seams are identified and managed in a manner that makes them unidentifiable to an external observer. Similarly, the outcomes achieved by the seamless force must be coherent. Designing and operating seamless forces will demand the highest degree of knowledge and understanding of our own Service, the ways in which the Services interact in operations and the ways that the ADF interacts with other agencies. Such mastery must be carefully cultivated in our personnel.

‘We will be a seamlessly integrated force on two levels: internally, with each other, and externally — or ‘cross-functionally’ — with the range of providers, supporting entities, and the community.’ ADDP–D.2—Force 2020
Technical mastery

Air Force’s personnel are responsible for the effective application of air power in operations. This can only be achieved by people who are technical masters of air power, with the skills in their profession that deliver the highest levels of tactical competence. These skills include those in the wide range of support activities that enable the generation and application of air power, as well as the skills to conduct, command and control air operations. Although the investment in developing the Air Force’s technical mastery is substantial, such mastery is vital to the effectiveness that is critical in contemporary operations. It is a core component of professional mastery.

Developing air power masters

The principles of designing, organising and leading the force are so important that the Air Force invests heavily in developing professional mastery of air power in its personnel. The technical mastery and wider skills of the Air Force’s personnel are continually evaluated and updated to ensure their relevance. They guide air power education and training at all levels of officer and airman development, and include traditional military and air power skills as well as other skills like language proficiency that are increasingly necessary in our complex global security environment.

Once acquired, these skills are exercised to the point where the individual gains the necessary confidence to use them to maximum effect. Those people who finally exhibit the highest orders of professional mastery must be recognised by the Air Force and appointed to the positions where they can best apply it. Development of Air Force personnel ensures that maintenance
of the current force and development of the future force continues to provide a credible and relevant air and space capability to meet future security obligations. The education component of this development includes knowledge of the basic principles of war, the strategy of air power and the vital contribution made by space power. This must be placed in the context of an understanding of the importance of air power to Australia’s security and an appreciation of the environmental factors that shape the Air Force and the conduct of air operations in Australia and abroad.

Officer Training School graduation—the Air Force must continue to develop air power professionals.
Cultivating a broader knowledge of air power

Defence’s organisational reforms of the last decade have resulted in much of what was once performed by uniformed members of the Air Force now being undertaken by Defence civilians and commercial contractors. Their role is critical, and optimum outcomes will not be achieved unless these supporting personnel, especially those in key positions, have a clear understanding of the Air Force’s outputs and the Chief of Air Force’s intent for the Air Force now and into the future. Also, the ADF’s evolution to a seamless construct requires that members of the Army and Navy understand the application and operating demands of air power. Similarly, Air Force must understand the other Services in the ADF and the forces of our allies. This understanding ensures that the potential synergies offered by seamless operations are realised. The Air Force's success in engaging people in other Services, forces and agencies will have a direct bearing on the development, sustainment and application of air power.

The integrated and interdependent nature of the ADO relies on air power education that extends beyond the members of the Air Force.

Moral courage

The dialogue between the Air Force and the ADO, and the Air Force and the Government, requires Air Force’s people to have the moral courage to provide honest advice, even when they are aware that such advice might be unwelcome or has the potential to become politicised. Exercising moral courage is fundamental to fulfilling our obligation to the Australian people and the Government,
and underpins the professional responsibility that forms part of
the performance of our duties. Dialogue with the ADO and the
Government is founded on their acceptance that the Air Force will
accord the highest degree of professional judgement to air power
and space power matters that are key to Australia's security. This
includes advice on force development, managing force transition
to new capability, long-term strategic planning issues and the
provision of relevant and realistic air options in response to crises
and emerging conflicts.

Moral courage is the strength of character to honour your
convictions and uphold the Air Force’s values.

Moral courage bolstered by professional mastery allows personnel
to make decisions in complex circumstances where information is
imperfect, and adapt their approach as situations evolve. These
decisions must be guided by career experience and based on a
thorough, contextualised assessment of all known factors. Decision-
makers must be prepared to take responsibility for the consequences
of their decisions, even when they have been proven incorrect or
harmful. These qualities are essential for decision superiority and
the conduct of operations in an environment characterised by
uncertainty and ambiguity.

**Doctrine**

Relevant doctrine, from the philosophical to the procedural, provides
a foundation for professional mastery, a tool for broader education
in air power and a cornerstone for design and employment of the
force. This design includes the force itself plus the location of bases
and arrangements for the provision of essential support. However,
while doctrine lays the foundation for contemporary organisational design, adapting the organisation for the future requires the development and articulation of preferred, viable futures and the execution of strategic plans that are developed in concert with these futures. The conduct of this business-like administrative activity, guided by air power professionals, is as much an example of professional mastery as crafting an air campaign. This administrative activity is critical to position the Air Force to exploit fully the capabilities delivered by the Defence Capability Plan (DCP) and avoid strategic surprise.

**Doctrine provides the means to align individual choices to the organisation’s aims by describing our preferred option for the design of the force and the way we conduct operations.**

**Future air and space power**

*The Future Air and Space Operating Concept* (FASOC) describes the future dimension of professional mastery in designing the Air Force. Founded on extant doctrine, FASOC addresses predictable changes through a new concept that has a high probability of being tested, experimented and refined to provide the basis of future doctrine. By itself, FASOC is an insufficient pointer for the Air Force’s future because it only addresses what functions the Air Force will perform, but not how. Current doctrine, FASOC and a complementary organisational and operational design strategy provide the basis for the actions we take now to begin shaping the Air Force organisation to meet the challenges of the future and to realise the full potential of Air Force’s people and capability.
Operations

Maintaining the readiness and sustainability of air forces to be assigned for operations is fundamental to the Air Force meeting its obligations to the Government. The two executive components of the Air Force organisation, Air Force Headquarters and Headquarters Air Command, are responsible for generating the force, preparing the force for operations and sustaining the force prior to, during and after operations. Professional mastery is vital to prepare forces and to plan and execute effective and appropriate air operations.

An effective operation is one that achieves the Government’s desired outcomes. An appropriate operation is one shaped by intent to be proportionate, discriminate, precise and humane in its conduct.

Planning

The Air Force acknowledges that, in any future conflict, there may not be the opportunity to mobilise and rapidly expand the RAAF, as was possible in past major conflicts. Strategically, the Air Force has maintained a capability edge by acquiring and developing capabilities close to the leading edge of technology that can offset constraints in personnel numbers. This structure, plus the overseas sourcing of many of the Air Force’s prime air power systems, means that acquiring new systems and platforms in the short term to meet a developing crisis would probably not be possible. Hence, the Air Force is designed to contribute to operations by drawing from current capabilities, with an assumption of support from allies and coalition partners in major conflicts. This means that the organisational design of the Air Force must provide for interoperability and strategic relationships where
they are essential to sustain forces for more prolonged, complex and demanding operations.

**The Air Force contribution to operations is drawn from current capabilities and assumes support from allies and coalition partners in major conflicts.**

The relationship between organisation and operations is defined by constant interaction. The organisation manages force generation, training and sustainment in preparation for operations. This includes the full regime of training and exercising to meet preparedness requirements. When called upon for operations by Joint Operations Command, the Air Force contribution is drawn from existing structures, with flexible command and control arrangements applied to combine specific capability elements to meet the requirements of the campaign. Sustaining air power operations, generating forces for rotation, and reconstituting forces rotated out of operations continues during the campaign. At the conclusion of a campaign, the Air Force organisation provides the means to regenerate the force, including making organisational and doctrinal adjustments that have been identified as necessary during operations.

Professional mastery is essential to ensure that the unique qualities of air power are effectively integrated into joint operations. This includes leveraging off the advantages drawn from air power’s characteristics and mitigating any potential vulnerability. Expeditionary operations impose additional challenges on the conduct and sustainment of air operations, and require careful management of the tension between utilising the responsiveness of
air power and the need for careful planning before its application. Meeting this challenge includes the requirement for the Air Force to obtain, secure and operate the necessary bases and sustain operations from those bases while being separated from Australia's supporting infrastructure.

Preparing the force for operations within an effects-based approach requires a close understanding of potential adversaries. Professional mastery also demands that planners recognise that they can never fully know and understand an adversary, although they will always try to achieve this understanding. Consequently, there is always the potential for strategic surprise. In Australia’s military strategy, this means that we apply air power as part of a coordinated national effort to prevent surprise by shaping the environment and deterring adversaries. At the same time, we also prepare and exercise the force to provide an effective and appropriate military response in the event that these actions fail to achieve their intent.

We accept that knowledge of an adversary will never be perfect, and so prepare to mitigate strategic surprise.

Professional mastery is essential to ensure that air power operations are conducted effectively and in accordance with international and domestic law and Australia’s societal norms. The uncertainty of armed conflict is likely to give rise to tensions between pursuing a military objective and potential ethical and legal issues. This situation is likely to be even more complex when operating within a coalition where cultural differences and different legal interpretations among the coalition members create an ethical and legal landscape dissimilar to
Australia’s. The authority to use lethal force, especially in a complex, uncertain and unforgiving environment, is an enormous responsibility. This authority can only be exercised within the Australian societal framework by individuals who are authorised, professionally competent and who possess a high order of moral courage.

Managing risk and moral courage

Moral courage is fundamental to managing risk, rather than avoiding risk, and air power planners and commanders face many pressures in providing leadership in difficult circumstances. When required, air power can be applied to deliver a devastating blow to an adversary, and decisions regarding its use cannot be taken lightly. This includes making decisions that place personnel and equipment at risk where such actions are essential to achieve desired outcomes. Air power’s responsiveness may be used to seize the initiative, but the speed of response also reduces the opportunities to recall or change missions in response to changing strategic or operational circumstances. Any unintended effects from the application of air power could quickly have a cascading national impact, and the current strategic environment leaves a negligible margin for error.

The swiftness and potential lethality of air power means that commanders must have the courage and skills to conduct effective air operations whilst mitigating the potential risks of unintended effects.

Risk management is also critical to the preservation of the force. The loss of any asset from the Air Force’s inventory would have a significant impact on capability, and would have strategic implications. Risk managing the use of air power in conflict demands that expertise be applied well in advance to ensure that all prudent
measures are taken to protect personnel, platforms and systems. Realistic assessments of risk are a critical input to planning force structure and the conduct of operations.

The exercise of professional mastery tempered by moral courage does not mean being risk-averse.

The risk management element of professional mastery continues in peacetime as well as during conflict. The Air Force has a duty of care for its personnel and an obligation to the Australian people for the careful management of Australia’s main air power assets during the generation and preparation of the force for operations. This does not mean that we are risk-averse. Rather, we are educated, aware of risks, and able to make the correct decisions to manage risk effectively.

Air Power in a Whole-of-Government Approach

The carefully planned and precisely controlled application of air power in a whole-of-government approach can apply deterrence, denial and coercion to resolve a conflict in our favour. Air power may also be applied in operations not involving armed conflict, to resolve potential crises, achieve humanitarian outcomes or otherwise support the Government’s policy objectives. At the same time, well-planned and executed operations limit casualties and destruction, and shape situations to support the creation of a secure post-conflict environment. This means that operations must achieve the desired military outcome without creating undesired or unforseen effects that could jeopardise or deny a
national strategic outcome. Consequently, the use of air power must be tailored to integrate with the national security strategy. This can only be achieved by an Air Force with the professionalism and skills to focus the application of air power to achieve national objectives.

Air power must be applied within the three fundamental principles of the law of armed conflict (LOAC)—necessity, humanity and proportionality. This means that air power advisors and planners must have a deep understanding of all aspects of air operations across the entire spectrum of conflict.

Applying air power in operations requires professional masters who can plan and execute operations with a clear focus on achieving strategic and operational outcomes. A balanced combination of personnel with foresight and a broad campaign view, as well as those specialists who can translate intent into deliberate and precise air operations against specific, carefully chosen targets, is essential. The same people whose adaptability, innovation, skill and knowledge of air power create the versatility of the Air Force also leverage off the strengths of that versatility to meet our diverse and complex responsibilities to the Government and national security. The versatility of air power, supported by space power, empowers the Air Force to act quickly in a wide range of security operations coordinated within the broad range of whole-of-government response options. The precision that
characterises air operations enhances the Air Force’s ability to match its actions proportionately to the requirements of the Government’s response.

Because of its potential impact and the speed with which air power can be brought into a campaign, air power has a very high political and public profile, and professional mastery of air power includes the skills to plan and apply air power effectively and proportionately. These skills will be critical in planning air campaigns that create the effects necessary to achieve the outcomes sought by the Government.

The contribution made by the Air Force’s air power as an effective, responsive and highly valued element of Australia’s national security apparatus cannot be overstated. Professional mastery of air power is essential to ensure that the Air Force meets these national security obligations and continues to be at the forefront of the Government’s security options. We are responsible to sustain and develop professional mastery, optimise the current capability of the Air Force, and to ensure that the right choices are made to shape the Air Force of the future.
Chapter 3
Conflict and Military Operations
Introduction

Threats to the security of Australia or its interests can appear at any point on a spectrum of conflict that extends from stable peace and dealing with natural disasters through to major armed conflict or war. The Air Force can be required by the Government to engage in appropriate actions, as an arm of the nation’s military power, in response to any of these challenges. As part of their preparation to respond, professional masters of air power must understand the entire spectrum of conflict, to ensure that the Air Force contributions they plan and execute are effective and appropriate.

*The Air Power Manual* describes the generation and application of air power in joint, combined and coalition operations across the full spectrum of conflict. This chapter discusses the spectrum of conflict and the principles of the legal regime and command structure within which the Air Force applies air power. Because many aspects of military operations in conflict are immutable and well-founded in history, the principles of war are included as an enduring guide for planning.

As noted in ADDP–D—*Foundations of Australian Military Doctrine*, war and armed conflict are often used in doctrine as interchangeable terms, despite the differences between them. For a formal state of war to exist, the resort to war must be lawful and the parties must have made a declaration of war.1 Armed conflict describes conflict between states or protracted violence between government authorities and organised armed groups within a state in which at least one group has resorted to the use of armed force to achieve its aims.

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1 ADDP–D—*Foundations of Australian Military Doctrine*, para 3-2
The terms ‘war’, ‘warlike’, ‘non-warlike’ and ‘armed conflict’ are used in The Air Power Manual according to their doctrinal definition. Legal definitions and guidance on what does and does not constitute armed conflict are found in ADDP 06.4—*Law of Armed Conflict*.

The ADF also conducts a range of military operations as part of national efforts to provide humanitarian aid, disaster relief and assistance to civil authorities. Many of these operations are conducted in harsh and distant locations, and draw heavily on the military skills developed for operations in conflict. The principles described in this chapter have relevance in the full range of operations.

The spectrum of conflict extends beyond war and armed conflict and includes operations in response to threats such as insurgencies, illegal exploitation of Australia’s natural resources, transnational crime and issues arising from environmental and humanitarian crises. Some of these operations will require the ADF to participate in armed conflict, while others will limit the use of force to self-defence. ADF operations within the spectrum of conflict are broadly categorised as warlike operations and non-warlike operations.

**Classifications of Conflict**

**Warlike operations**

Warlike operations are those military activities where the application of force is authorised to pursue specific military objectives and there is an expectation of casualties.
Warlike operations encompass the application of military force in armed conflict or war, where deemed necessary by the Government, and are the most demanding contribution the ADF can make to Australia’s national security. The ADF is the only agency of the Government that is empowered to apply lethal force in such operations to defend Australia’s people, interests and way of life.

War and armed conflict involve the application of military power to force an adversary to either align with one’s own intent or to accept that further resistance is futile. These conflicts are always fought at a cost: they invariably involve terror, violence, chaos, suffering, social and economic dislocation, and the destruction of life and property. Once embarked upon, armed conflict leaves an indelible mark on those who fight, suffer loss or are responsible for dealing with the
enduring consequences. Resort to armed conflict would normally only occur where there is a sufficiently grave risk to national security and the Government has determined that national objectives cannot be achieved without the use of arms.

Non-warlike operations

Non-warlike operations are those military activities designed to assist in resolving crises where the application of force is limited to self-defence.

The ADF may also become involved in a range of non-warlike operations, including activities to coerce adversaries, to assist in resolving crises in situations where the application of force is limited
to self-defence. Casualties could occur in these operations, but are not expected. Non-warlike operations include peacekeeping, humanitarian and disaster-relief operations and assistance to civil authorities. Such operations can be hazardous, and military personnel must be prepared to exercise an appropriate balance of the controlled application of force sufficient for deterrence and a wider range of activities such as negotiation, civil assistance and containment.

**Australia’s Principles of War—A Guide for Planning**

The ways in which the ADF plans and executes military operations are guided by the enduring principles of war. The principles of war are the result of long experience and study of war, and remain applicable as an enduring guide for all military operations. Understanding the principles of war is a critical part of the professional mastery that Air Force personnel develop to prepare for and plan these operations. The principles of war used by the Australian military are described in greater detail in ADDP–D—*Foundations of Australian Military Doctrine*. For air campaigns, the principles of war provide a list of fundamental beliefs that, properly applied, can guide the effective application of the Air Force's air power in joint and coalition operations.
<table>
<thead>
<tr>
<th>Principle of War</th>
<th>Outline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selection and Maintenance of the Aim</td>
<td>The identification of the strategic, operational and tactical objectives and ensuring that military plans and actions remain directed towards those objectives.</td>
</tr>
<tr>
<td>Concentration of Force</td>
<td>Concentration of superior force is the ability to apply military force at the right place, at the right time, and in such a way as to achieve a decisive result.</td>
</tr>
<tr>
<td>Cooperation</td>
<td>Cooperation within a Service, between the Services, between the ADF and the Australian community, and between the ADF and allies or coalition partners is vital for success in war.</td>
</tr>
<tr>
<td>Offensive Action</td>
<td>Offensive action is action by a military force to gain and retain the initiative. In most circumstances, offensive action is essential to the achievement of victory.</td>
</tr>
<tr>
<td>Security</td>
<td>Security is vital in military operations to allow friendly forces to operate effectively with minimal interference from the enemy and deny the enemy the advantage.</td>
</tr>
<tr>
<td>Surprise</td>
<td>Surprise can produce disproportionate results by taking the initiative from the enemy, degrading enemy decision-making and disrupting the enemy’s decision and action cycle.</td>
</tr>
<tr>
<td>Flexibility</td>
<td>Flexibility in operations is the capacity to adapt plans to counter unforeseen circumstances or setbacks, and to capitalise on unexpected opportunities.</td>
</tr>
</tbody>
</table>
### Economy of Effort

The prudent allocation and application of Defence and civil resources to achieve the desired results.

### Sustainment

Sustainment includes the administrative arrangements necessary to implement strategies and operational plans. These arrangements include the logistic and personnel aspects necessary for the efficient support of a force.

### Morale

In any given situation, military success may depend as much on morale as on material advantages. The morale of the fighting force is an embodiment of the national will to resist aggression and coercion.

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**Figure 3–2 - Australia's principles of war**

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**Levels of Command**

Despite its complexity, armed conflict must be conducted in a manner that provides transparency and congruence from the highest levels of decision-making, beginning with the Government, to the armed forces’ commanders and personnel who must act to achieve directed outcomes. One dimension of this linkage is formalised in the levels of command recognised by the ADF—strategic, operational and tactical. These levels of command, described in greater detail in ADDP–D—*Foundations of Australian Military Doctrine*, have relevance and purpose in the full range of ADF operations.
Strategic level. The strategic level of command provides the highest level of direction of the application of national power to achieve political objectives. The strategic level of command can be further defined as the ‘national strategic’ and ‘military strategic’ levels.

- The **national strategic level** refers to the broad political dimension of a conflict or other operation and the mobilisation and coordination of military and other national resources.

- The **military strategic level** refers to the military planning and direction of operations at the macro level. This level of command formulates the desired military end-states and broad military approaches to achieving these end-states.

Operational level. The operational level of command plans, synchronises and conducts operations to achieve strategic objectives. The operational level acts as the interface between the strategic and tactical levels of command. The focus of command at this level is on forming, deploying, operating and sustaining forces.

Tactical level. The tactical level of command plans and conducts military tasks and actions to achieve tactical objectives that contribute to operational and strategic outcomes. The focus is on organising and manoeuvring forces to engage adversaries or conduct other specified actions.

Overlap in command levels. In practice, the levels of command overlap, and the distinctions between them will rarely be completely clear. In contemporary operations, tactical actions have the potential to create disproportionate desired or undesired strategic effects,
and political and military leaders at the strategic level may wish to
directly influence actions at the tactical level.

**Legal Framework for Operations**

The conduct of military operations is subject to domestic and
international law in peacetime and during hostilities. The domestic
and international law associated with the planning and execution of
military operations is defined as Operations Law.

**Operations Law includes, but is not limited to, the Law of Armed
Conflict, air law and law of the sea, and legal aspects relating to anti-
and counter-terrorist activities, overseas procurement, discipline,
pre-deployment preparation, deployment, status of forces agreements,
operations against hostile forces, aid to the civil authority, border
protection and civil affairs operations.**

**Law of armed conflict**

Law of armed conflict (LOAC) is a subset of international law that
governs signatory states when they are engaged in armed conflict.
The Australian Government has ratified the Geneva Conventions
of 1949 as well as the Additional Protocols of 1977. Legislation has
been passed to give domestic effect to these treaties. Even where
there is no enabling domestic legislation, the Australian courts
have taken into account Australia’s international legal obligations
when dealing with matters affecting individuals. Members of the
ADF will be held accountable for their actions and can expect to be
prosecuted where their actions are in breach of LOAC.
Aside from the personal responsibility, breaches of LOAC seriously undermine the legitimacy and credibility of military actions and can lead to outcomes that are counter to establishing the preconditions for a successful transition from conflict to peace. The people of Australia, the ADF and the Air Force have an enviable reputation for fairness, honesty, integrity and respect for the rule of law. This reputation and its vital contribution to shaping the post-conflict environment can be put at jeopardy through breaches of LOAC. Consequently, ADF members, in particular commanders at all levels, must have a thorough understanding of their obligations under LOAC. For those members of the Air Force engaged in the application of air power in offensive operations, the obligations and responsibilities are particularly heavy. Air power can create devastating effects, and failure to use this power with discrimination and proportionality can have serious adverse consequences for the individual, the Air Force and the Australian Government. Therefore, air power professionals must be conversant with LOAC.

LOAC is described in more detail in AAP 1003—*Operations Law for RAAF Commanders* and ADDP 06.4—*Law of Armed Conflict*, and an understanding of this aspect of conflict is an essential element of professional mastery of air power.

**Rules of engagement**

Rules of engagement (ROE) are directions endorsed by the Government and issued by commanders, which delineate the circumstances and limitations within which military force may be applied to achieve military objectives. ROE are issued for operations in peace and conflict.
Air operations generally have a high political profile and a potential for strategic impact which may attract restrictive ROE. Personnel involved in the planning and execution of air campaigns must have a thorough understanding of prevailing ROE and must ensure that air operations, including the weapons used and targets engaged, are conducted within the guidelines mandated in the ROE for each campaign. The combination of ROE and the nature of the battlespace means that campaign planners must develop operational options to achieve the necessary outcomes in ways that satisfy military and political requirements.

**Space law**

The use of space is subject to specific conventions. Pre-eminent amongst the space conventions is the 1967 United Nations Outer Space Treaty (OST), which provides for unrestricted access to space by all nations, establishes space as independent of any claims of national sovereignty, requires that the moon and other celestial bodies shall be used exclusively for peaceful purposes and prohibits the stationing of weapons of mass destruction in space. Although it is widely accepted that space is used for military purposes, placing weapons in space remains a highly contentious issue.
Chapter 4
Air Power
and
Australia’s National Security
Introduction

The Air Force has an enduring responsibility to generate and apply air power in a wide range of military operations to secure Australia and its interests. To meet this responsibility in the prevailing dynamic and complex security environment, the Air Force must be capable of a broad range of operations to achieve persistent and decisive effects in a whole-of-government, effects-based approach to national security.

By generating and sustaining air power with the versatility required for military operations in contemporary conflict, the Air Force also remains prepared for a wider range of operations to enhance and support the activities of other elements of Australia's national power. Within the range of operations, the most critical is to be prepared for military action to defend Australia, including, in extremis, high-end conventional war against a capable enemy. Although the risk of the latter is very low, the consequences are potentially grave. Therefore, the Air Force must prepare forces that are trained and equipped for these difficult and dangerous crises. At the same time, the Air Force must remain ready for the wider range of more likely conflicts and other crises, in Australia's region and beyond, in which the ADF may become involved, separately or concurrently.

*The Air Power Manual* describes the approach that the Air Force has chosen for the generation and application of air power to meet these demands. The doctrine relates directly to the conduct of military operations shaped by the enduring nature of armed conflict, the principles of war and the Australian Government's approach to national security.
This chapter describes how the Air Force contributes to the National Effects-Based Approach (NEBA) to Australia's national security. To make an effective contribution to Australia's security and remain prepared to meet the Government’s expectations, the Air Force structures and operates in accordance with current political, military and geo-strategic realities. The political-military interface, encapsulated in Australia's whole-of-government approach to national security and Australia’s military strategy, guides this contribution. Understanding the rationale for the Air Force’s preferred air power response to this challenge is an important component of professional mastery.

**Whole-of-Government Approach**

Australia’s strategic environment is characterised by complexity, uncertainty and the growth of military capabilities, in our region and further afield, which can threaten Australia’s global interests. Potential adversaries include conventional state-based militaries and, increasingly, capable and unscrupulous non-state actors. These latter adversaries are clever, adaptable and often equipped with lethal modern weapons. Increasingly, they exist and operate within a complex system with formal and informal links to governments and powerful non-state entities. They have extensive global communications and understand how to use public opinion and the world media to support their objectives. Because such adversaries are capable of threatening all aspects of Australia’s national security, the Government’s preferred national response is based on the integrated contributions of all the components of national power.
The whole-of-government approach is the strategic basis of Australia’s response to meeting the complex security challenges of the 21st century.

The Australian Government has adopted a whole-of-government approach to secure Australia and its national interests against a wide range of security challenges.¹ The whole-of-government approach requires the synchronised application of all the components of national power, including the military. This synchronisation occurs primarily at government level, and leads to direction expressed as national security policy and strategy.

National strategy guides decisions on which components of national power will be applied in a situation, and how their actions will be integrated to achieve national outcomes. From this strategy are derived the component strategies that guide the contribution of the components of national power, primarily the diplomatic, information, military and economic (DIME) strategies. The Navy, Army and Air Force will contribute predominantly to the military strategy, but may also be employed by the Government to shape the environment or directly support the strategies of the other components of national power.

The components of national power are founded on a broad range of elements. These elements are interrelated, and interact continually in peacetime and in times of conflict to generate the capabilities within each component. The strength and capability of the military component depends on the societal base from which its people are drawn and the

¹ Department of Defence, Australia’s National Security: A Defence Update 2005, Department of Defence, Canberra, 2005, p10: Department of Foreign Affairs and Trade, Advancing the National Interest: Australia’s Foreign and Trade Policy White Paper, Department of Foreign Affairs and Trade, Canberra, 2003, p125; and Department of Prime Minister and Cabinet, Protecting Australia Against Terrorism: Australia’s National Counter-Terrorism Policy and Arrangements, Department of Prime Minister and Cabinet, 2004, pp v, vi and 10
strength of the national industry, scientific and technology base which supports the development and maintenance of modern military systems.

The whole-of-government approach demands the highest levels of coordination, understanding and cooperation between government agencies to ensure the achievement of positive and enduring national strategic outcomes. The activities of the agencies, which can also include a range of non-government organisations (NGOs), are guided by a diverse range of political and other imperatives and priorities. Further, most of these agencies have unique ways of operating, and will achieve different types of outcomes. Orchestrating their efforts with those of the ADF requires a common basis for defining and focusing the full range of desired outcomes and approaches.
National Effects-Based Approach

The National Effects-Based Approach (NEBA) is used to integrate the actions of all elements of Australia’s national power to achieve outcomes that contribute to the security of Australia and its national interests. The NEBA facilitates a common understanding of challenges and response options, and provides a basis for collaboration in planning and executing operations to achieve national outcomes. Within the NEBA, the planning and conduct of operations must orchestrate the activities and outcomes achieved by a range of national security organisations and other agencies which are likely to operate at significantly different tempos. For example, the impact of a diplomatic line of approach that may mature over a period of weeks or even months must be orchestrated with the almost immediate impact of a military action. Within the military domain of the NEBA, the ADF uses an effects-based approach to strategic and operational planning as a means of translating a broad range of military actions into a sequence of intended effects that lead to desired outcomes.

The National Effects-Based Approach facilitates the integration of the activities of all components of national power.

Effects-based approach

An effects-based approach focuses on actions to influence or coerce adversaries into changing their beliefs, behaviour or actions. The emphasis is on the effects created, rather than on the military or other actions that create effects. The effects-based approach has particular utility as a common set of processes that

2 Influence: to use persuasive power or ability to affect someone's beliefs or actions. Coerce: to compel by forcible action.
enable the integration of the contributions of all components of national power.

An effect is the physical, physiological, psychological or functional impact on the adversary as a result or consequence of own actions.

The effects-based approach demands a sophisticated methodology to determine the ways and means that will achieve the required cognitive influence on an adversary. Cognitive influence in this context refers to creating effects and conditions that shape and influence an adversary’s belief system to align with one’s own aims and goals. Achieving this influence requires a deep understanding of the adversary’s culture and characteristics, the context of each operation and the strategic environment. We should never assume that an adversary’s response will mirror our own.

The range of possible effects that can be generated by a specific action is broad, and often the result cannot be predicted with certainty. Further, adversaries are complex, and will adapt to resist or minimise the effectiveness of any effort to coerce them. This means that the effects-based approach is a process of analysis, decision, strategy, action and observation.

The nature of a National Effects-Based Approach to security means that the ADF will not necessarily be the lead agency. To operate within this construct, ADF personnel must have a clear understanding of the nature of effects and the potential impact that ADF operations may have for other elements of national power. The potential for operations in the current environment to create effects that are counterproductive or even harmful to national outcomes
places a high priority on understanding all the possible effects and outcomes of our actions.

In the military domain, the effects-based approach involves applying appropriate military force to clearly identified vulnerabilities and centres of gravity at the strategic, operational and tactical levels of operations to create the effects that lead to campaign success.

Resolving conflict or other crises through military actions that create effects to influence adversaries is not new. Historically, military operations have always sought to change adversaries’ behaviour towards one’s own preference. What has changed is the degree of fidelity and sophistication now applied in planning and executing operations to create the desired effects. This planning also hedges against the potential for military actions to create unintended or undesired effects that can be counter to, or even prevent, the achievement of desired outcomes.

**Dimensions of the effects-based approach.** The effects-based approach has two key dimensions for military planners. The first is the relationship with the NEBA that integrates the actions of all components of Australia’s national power. The second dimension is the application of the ADF to create joint effects. The relationship between these dimensions is dynamic, and the successful application of the effects-based approach requires the military to collaborate as widely as possible with the other agencies involved. This collaboration is essential to ensure the planning and execution of military operations that create effects coherent with the NEBA and ensure that no joint effect conflicts with achievement of the desired national end state.
Air Power and Australia’s Military Strategy

Australia’s military strategy

The ways in which the ADF acts to achieve national security objectives within the NEBA are described in Australia’s military strategy. The military strategy guides ADF preparation for military operations to secure Australia’s interests by translating government policy into meaningful tasks for the ADF and describing strategic effects that provide a basis for military planning.

This methodology enables robust and transparent linkages between national policy, military strategy and operations. These linkages are essential to the conduct of operations within the NEBA, and provide the means to coordinate military effects with those of the other instruments of national power. The military strategy is a statement of CDF’s intent, and guides planning at all levels of command. The outcomes sought in executing the military strategy can require a wide range of possible military operations. These include operations to **shape** our environment, **deter** potential adversaries and **respond** in operations to coerce or compel adversaries to adopt a course of action that aligns with our intent. Increasingly, these operations also require the ADF to assist in the creation and maintenance of a stable and secure environment after a conflict.
The breadth of Air Force’s capabilities offers a wide range of options to support military strategy.

**Context for ADF Operations.** All ADF operations are joint, and are conducted within an Australian whole-of-government approach that orchestrates military and non-military actions to meet national strategic objectives. Many of these joint operations are also conducted with other forces, in a **multinational** environment. Some of these operations will be conducted in a framework of formal agreements with other forces, while others will be conducted in a partnership united only by a common need, such as an international response to a large-scale humanitarian crisis. Multinational operations conducted within formal agreements are termed **combined** when conducted with an ally or allies, or **coalition** when conducted with nations that are not all allies, but are unified by a common mission, such as the conflict in Iraq. US and UK-led coalition operations are the most likely form of major combat operations that the ADF would undertake.
Figure 4–2 - Context for ADF operations
Increasingly, all these operations will also involve non-military agencies, government and non-government, creating what is described as a multi-agency environment.

**Air Force in Australia’s military strategy**

Australia’s military strategy represents the external policy dimension of military actions to secure Australia and its interests. Within the strategy, the Air Force’s air power can be applied when and where required as part of a joint or independent campaign that contributes to the NEBA. This can include actions which use the characteristics of air power to create persistent and decisive effects through the controlled use of destructive power or through non-lethal engagements, such as humanitarian assistance. The structure and capability necessary for the Air Force to make the required contribution to Australia’s security must be carefully designed to match the demands of Australia’s strategic environment and to integrate in operations with other Services and forces.

Chapter 6 of *The Air Power Manual* describes the range of air and space power functions the Air Force can apply to create precise and enduring effects in operations.

The effects created by Air Force’s air power must complement the effects created by other arms of the ADF and the Government.

Many of the operations conducted by the ADF will have specific start and end points defined in strategic planning. The reality of our current environment is that the Air Force is constantly involved in a range of ongoing ADF operations, such as information
gathering and supporting resource protection in Australia’s region. By shaping our environment and deterring potential adversaries, these operations support the Australian Government preference to resolve any threat to our interests without having to resort to armed conflict.

Although some of the operations in which we currently participate are not declared as wars, they are clearly warlike, and demand the conduct of complex, difficult and dangerous activities that draw on the highest levels of our preparedness. The versatility of the Air Force enables it to make a significant contribution to this wide range of operations, across the spectrum of conflict, that support the military strategy, from ongoing observation of the environment to the rapid application of force for decisive effect. The range of military operations within the military strategy is illustrated in Figure 4-3.

Training with coalition partners enhances interoperability and preparedness for difficult operations.
Figure 4–3 - Military operations within Australia's military strategy
Shaping

The Air Force contribution to shaping Australia’s security environment is based primarily on the activities we undertake to engage other nations. These include regular activities such as mutual exercises, exchanges and visits, and our participation in humanitarian and other relief operations. These shaping activities require the application of a broad range of the Air Force's air power capabilities. Shaping continues through all phases of conflict, and includes operations in benign, uncertain and hostile security environments. In such environments, shaping will require military personnel to develop relationships whilst exercising a skillful balance of force application and protection measures.

Deterring

By maintaining a capable and credible force at an appropriate posture, the Air Force, in conjunction with the other Services, achieves a measure of deterrence without having to apply air power. This effect is created through the combination of carefully selected and well-maintained systems that meet security demands, and the level of training provided to personnel in operations, exercises and training institutions. Participation in exercises with the forces of other nations enables the Air Force to enhance its operational capabilities whilst demonstrating its ability to deploy and apply force wherever and whenever necessary to secure national interests. The deterrence provided by a credible force and military posture will have the greatest effect when supported by a demonstration of the Government’s resolve to use appropriate force when necessary.

Deterrence is a long-term activity that requires sustainment of current capability whilst planning and implementing changes to
the Air Force’s structure, organisation and equipment to ensure credibility into the future. However, because the responses of potential adversaries can never be predicted with total certainty, the Air Force remains prepared at all times to apply military force in armed conflict.

Maintaining the force’s readiness for armed conflict and other high-end operations, should a military response be required, gives the Air Force a latent ability to apply force. In the current security environment, this latent capability is of particular value as a deterrent to prevent lower-level operations in which the Air Force participates from escalating into some form of conflict.

The Air Force contributes to credible deterrence by maintaining its preparedness to apply force whilst continuing to participate in the much wider range of contingencies and other operations that are ongoing in our current security environment.

**Responding**

By developing and maintaining a correctly structured and balanced force, the Air Force is prepared to provide part of a military response where deterrence has failed to dissuade adversary action that threatens our security interests. Such action could be in response to a direct attack or threat to Australian territory, personnel or resources. Alternatively, a crisis within the region may lead to a request for an Australian intervention, most likely within a coalition. Responses could involve armed conflict or one of the broad range of operations conducted to coerce an adversary towards our preferred outcome through controlled use of force short of armed conflict. This may involve the establishment
of an overt military presence to deter further adversary action, enforcement of sanctions or providing support for coercive diplomacy. These operations are invariably complex, challenging and often dangerous. Hence, they have the potential to demand the innovative and effective application of the full range of our air power capabilities. The nature of our environment is such that even peaceful operations may have the potential to escalate into low-intensity conflict or even major conventional conflict. Preparing forces for the most challenging of these operations ensures they can respond appropriately to such transitions.

Planning the application of the Air Force’s air power requires the skill and understanding to tailor military options across the spectrum of conflict, and decision-making to implement these options at any point across the national, strategic, operational and tactical levels of command.
Chapter 5
Air
and
Space Power
Introduction

This chapter describes the characteristics of air power, their impact on its application and the importance of the context in which they are applied. A clear understanding of the characteristics is essential if they are to be exploited in ways that ensure the Air Force generates first-class air power with the necessary combat weight and versatility to be effective in a wide range of operations. Professional masters can ensure that air power is used to maximum advantage by leveraging off the relativities between the characteristics to remediate air power’s limitations and amplify its strengths. Mastery of the relativities allows air power to be tailored for proportionate and discriminate operations that create persistent effects appropriate to the desired end state of a particular campaign.

The chapter describes air and space power and highlights their strengths and weaknesses in operations. The importance of space in modern operations is well recognised, although the unique aspects of space power are less well understood. Understanding the similarities and differences between air power and space power is essential to integrate them in operations effectively.

Knowledge of the characteristics of air power and space power is a key component of professional mastery, and is fundamental for their optimum employment.

The characteristics of air power must be understood as factors governing its effective employment, and not as immutable positive or negative traits. They do not exist discretely, and the application of air power is shaped and enhanced by the synergies
and interactions between multiple characteristics. With skillful planning, professional masters can use the advantages inherent in the characteristics of the Air Force’s air power to ensure that any weaknesses, whether platform-based or systemic, do not place constraints on its application. Understanding the characteristics is an essential component of the skills necessary to plan and execute air operations to create persistent effect.

**Persistent Effect**

Air power uses a combination of physical and virtual presence to create effects that persist far beyond the physical presence of airborne platforms and the immediate results of air actions. Air power’s persistent effect is an outcome created by the innovative and skillful use of the characteristics of air power and the enhancements to air power capability enabled by modern technology.

Air power and space power can create effects on adversaries, or provide enhanced friendly awareness of the battlespace, that with well judged planning and execution can persist far beyond the physical presence of platforms.

Persistent effects achieved through the use of air power have implications for our own and adversary forces. Observation by air and space systems can create persistent knowledge of an adversary’s force disposition and enable the actions required for our information and decision superiority. Equally important in a complex and dispersed battlespace, air power can manoeuvre to create persistent awareness of the disposition of friendly and neutral forces across a wide area. This situational awareness enables
commanders to choose the ways their forces are used to gather information, signal intent or apply force to create maximum effect.

This application of air power can create such pressure on an adversary that their decision-making is shaped in a way that leads to campaign outcomes in our favour. An adversary’s ability to take the initiative can be restricted by the knowledge or perception that they are being constantly monitored and, potentially, threatened.

Air power can provide friendly forces with persistent awareness of the adversary’s disposition, movement, capability and, ultimately, intent. This knowledge can render an adversary relatively, but never wholly, transparent to friendly commanders. Simultaneously, friendly forces can be made opaque to the adversary if the decision superiority achieved through persistence is used to defeat the adversary’s ability to act or respond effectively. Because adversaries are invariably clever and adaptive, planning for operations should always recognise that our complete achievement and denial of transparency is unlikely, although the balance can be tipped to our advantage through professional mastery.

Professional mastery is vital for the effective conduct of air operations to create persistent effect and seize the initiative from an adversary.

**Physical presence.** Physical presence refers to systems comprising aircraft or other air platforms, weapons, sensors and the necessary infrastructure for command and control and other essential support operating within the battlespace. The ability to maintain a physical presence is a product of an air force’s ability to generate and sustain air power. Air forces with sufficient size can maintain extended
continuous airborne presence through the carefully synchronised use of multiple platforms, but at high resource cost. The Air Force can use the endurance of modern aircraft, enhanced by enabling capabilities such as air-to-air refuelling (AAR), to maintain a continuous physical presence in specific locations when required. Uninhabited aerial systems can further extend this presence by removing some of the limitations imposed by human endurance. However, sustaining these operations can place high demands on the resources of the force, in terms of both personnel fatigue and wear on aircraft and support systems. Additionally, in a dispersed battlespace, the effort required to maintain a persistent physical presence in one location may reduce or even prevent the operational capacity to conduct engagements in other areas, especially for a small air force.

Space-based assets can maintain a persistent physical presence over an area of interest through their ability to revisit frequently or maintain a physical presence for long periods, even indefinitely, depending on the characteristics of their orbits and location of the target area. Space power also provides a persistent strategic perspective that can enable air and surface operations to harmonise their contributions. Because satellite orbits are easily identified, the short dwell times and intermittent coverage by a given satellite may provide an adversary with significant windows of opportunity for unobserved activity. Therefore, most satellite surveillance systems must be supplemented by other sensors if continuous surveillance of an area is desired.

**Virtual presence.** In some situations, presence can also be achieved through intermittent air operations conducted at a tempo that maintains persistent operational pressure on an adversary. Such
operations can generate a virtual presence that creates persistent effects for friendly forces. Such effects include awareness of adversary movements achieved by intermittent surveillance operations at a tempo that mitigates the likelihood of operational or strategic surprise.

The virtual presence of air power can influence an adversary without maintaining a physical presence in the battlespace. Virtual presence can be achieved by demonstrating capability or physical presence at carefully managed times, or by using information operations to ensure the adversary is aware of the credible threat or possibility of air power responses to their actions. At the same time, commanders can enhance virtual presence and further inhibit adversary decision-making by attempting to control what the adversary sees of friendly forces and actions, revealing only carefully chosen or orchestrated elements of a campaign, including a tailored balance of actual and deception operations. These operations may coerce an adversary into responding in the same way as if there was a physical presence. Correctly planned and executed, virtual presence can deny an adversary freedom of action or cause them to conduct defensive operations at a rate and for a duration that reduces their capacity to sustain operations.

Maintaining virtual presence requires the skillful use of air power's characteristics. The speed, range, responsiveness and penetration of air power, informed by pervasive intelligence, surveillance and reconnaissance (ISR), allow it to engage and re-engage a range of targets, across a dispersed battlespace, at a tempo that creates a virtual presence. This effect can be further enhanced by the use of stealth technology to conceal friendly actions. The persistence of effect required will be determined by the needs of the joint
or coalition force and may require integrated air and surface operations. Achieving persistent effect without permanent physical presence requires the convergence of professional skill, knowledge of adversary capability, and use of air power technology.

Persistence is a systemic outcome that is achieved through a combination of physical presence and carefully planned operations that use the characteristics of air power to advantage.

Air operations conducted with the correct balance of virtual and physical presence can conserve friendly forces by reducing the need to maintain a high operational tempo in one area, thereby releasing assets for a wider range of operations in other areas or theatres. Achieving the correct balance of virtual and physical presence is essential to ensure that available forces achieve desired outcomes without being used at a tempo that is unnecessarily high and could limit the period that operations can be sustained. The ability to achieve this balance is particularly important for smaller air forces such as the RAAF.
Air Force’s Strengths

The strengths of the Air Force’s air power—persistent effect, perspective, reach, penetration, versatility and responsiveness—ensure that the force can make a critical contribution to the combat and enabling capabilities of the ADF. Some of these strengths exist as discreet characteristics of air power, while others are generated when professional masters combine two or more of the characteristics to exploit their synergies. The Air Force’s strengths are generated and used in ways that ensure any potential weaknesses in its air power cannot be exploited by an adversary and do not constrain friendly freedom of action.

The Air Force’s air power is primarily shaped for persistent effect, perspective, reach, penetration, versatility and responsiveness.

The agile Air Force. The requirement to meet a diverse range of security responsibilities, often within demanding time frames, means that the Air Force must apply its strengths to operate as an agile force. The Air Force’s agility is the result of the innovative and deliberate bringing together of two of its key strengths—versatility and responsiveness. Versatility is the Air Force’s ability to adapt its organisation and forces for a wide range of operations, and responsiveness is the ability to adapt and apply the force in a time frame matched to the situation. The agility thus created allows the Air Force to adapt quickly and act to create strategic, operational and tactical effects where and when required.
Characteristics of Air Power

The characteristics of air power are the foundations of the Air Force’s ability to create persistent effect. They define air power’s ability to conduct operations and leverage from the benefits of space power. The full potential of air power is only realised through the synergies and interactions between all the characteristics of air power, whether they create the Air Force’s strengths, or must be carefully managed to avoid weakness. However, some characteristics have a greater impact than others on the Air Force’s approach to the development and application of air power.
Perspective

Perspective describes the way that a force physically views the battlespace on operations, and is generally limited by their visual or sensor horizon. The operating altitude of air power sensors greatly increases their horizon and field of view, and the view from space can provide a whole-of-theatre perspective. Professional mastery of air power includes the ability to understand and apply a perspective that can cover specific points in a theatre, an entire theatre or even a number of theatres that may extend globally. This understanding is essential for air operations that extend beyond the traditional boundaries of the theatre and into the heart of an adversary’s nation.

In modern operations, the perspective of air power is a vital enabler for the enhanced information, decision-making and C2 that underpin a network enabled force. The operating altitude of air assets can enable their use as key communications nodes to ensure broad situational awareness across and beyond the area of operations. Platforms such as the Wedgetail airborne early warning and control (AEW&C) aircraft and ultimately, high altitude long endurance (HALE) uninhabited platforms will enhance the Air Force’s capacity to maintain a comprehensive perspective over the battlespace.

The perspective achievable from air power can be restricted by terrain, weather, infrastructure or type of target, and should not be considered as the ideal view of the battlespace in all situations. There will be circumstances where the perspective of another force asset, possibly operating in closer proximity to the adversary, may be required. One of the objectives of networking the ADF is to have the capability to select the ‘right’ sensor to enable effective joint
operations in each situation. To achieve this, the technical capacity of the networked force must be complemented by skilled personnel who understand the specific capabilities, strengths and limitations of each Service in different contexts.

The perspective from air and space provides a view of the battlespace that can be decisive.

Reach

Reach is air power’s inherent ability to penetrate deep into the battlespace to create effects.
The reach of air power is a product of several factors in combination. These are:

- a platform’s intrinsic range, augmented by AAR for some platforms for some operations;
- platform and supporting systems sensor range;
- platform and supporting systems communications range;
- weapon type, range and employment options, enabling flexibility to create the right effects;
- the necessary enabling support to operations to ensure the correct effects are chosen for prosecution;
- the necessary logistics support to sustain operations at the necessary ranges and tempos; and
- the professional mastery of Air Force people to reliably deliver complex, synthesised, air operations.

Effectively, reach is a systemic product of the factors listed, and a weakness in any of them potentially compromises the effectiveness of the system. Because reach is a systemic product, and means far more than range, air power professionals should master the concept of ‘systemic reach’ in planning and conducting operations.

The reach of air power is characterised by the relative speed with which it can be effected and the ability to overcome physical or other barriers to penetrate deep into the battlespace and create
the required effects. The systemic nature of air power’s reach also delivers the capability to enhance the joint force’s awareness of the conflict space through the perspective air assets bring.

The reach of Air Force’s air power includes the capability to deploy assets for operations, accompanied by the essential capabilities for C2, information, logistic, administrative, maintenance and personnel support. The support required for operations can be provided through a mix of deployed assets, such as Expeditionary Combat Support Squadrons (ECSS), and reachback.

**Reachback** is a deployed force element’s ability to access military and non-military support from the most appropriate source outside a designated area of operations. Reachback provides access to support from components located beyond the theatre in combat operations or beyond the environmental threats often present in humanitarian aid operations. This dimension of reach includes the ability to access national intelligence and C2 systems as well as logistic support, rotation forces and reserves.

Australia’s investment in enhancing the Air Force’s reach includes the acquisition of new AAR aircraft to increase range, and specialist aircraft, such as the Wedgetail AEW&C, to provide the long range airborne C2 and information capability that is essential for networked expeditionary operations.

**Air power’s range** underpins the Air Force’s ability to manoeuvre and operate where and when needed, either alone in the strategic attack role or as part of a joint operation. Air Force’s range and speed enhances Australia’s capability to rapidly deploy military power across the nation and further afield as required by the Government.
By leveraging off its range and speed, air power can enable the responsive use of land forces in deployed operations through their rapid deployment by airlift and force protection by air combat elements. Used in conjunction this way, air and surface combat power can enable friendly forces to quickly seize the initiative or forestall an escalation in a developing crisis. In such operations, effective joint planning will determine the optimum force balance between air power’s range and speed and the land force’s combat weight.

Reach, reachback and range are not unique to the Air Force. Navy has a significant capability for range in the deployment of large quantities of personnel and material, albeit at a relatively low speed, with reach then applied by organic and supporting systems. Ships can carry much of their logistic support with them, offering an organic capability to conduct and sustain operations for long periods, where necessary, at long distances from home bases. Army is capable of reach through its special forces, as well as other combat systems. Both maritime and land forces can deploy organic capabilities to provide some of the systemic dimensions to reach already listed, such as the necessary C2 and information links.

**Penetration**

For air platforms, penetration is a product of integral strengths such as precision navigation systems that allow all-terrain and all-weather operations, self-protection systems, stealth and evasive tactics that allow flight through an adversary’s passive and active air defences. By combining penetration with the ability to transport surface forces rapidly, air power can significantly enhance the overall manoeuvre and combat effectiveness of a joint or coalition force.
Penetration is air power’s ability to use speed and reach to overcome surface-based physical barriers and enemy defences to conduct missions and engage targets in enemy territory.

From the beginning of a joint or coalition campaign, offensive air power can use penetration to seize the initiative by manoeuvring to attack the enemy directly. Such actions can achieve surprise and can create strategic effects by attacking the adversary’s national centre of gravity.

The penetration of air power can also be used to conduct a wide range of operations to shape the environment, deter adversaries, respond in conflict and conduct humanitarian operations where natural or other physical barriers preclude the ready use of other types of military assets.

Space-based surveillance systems, military and civil, have a capacity for virtual penetration that can greatly enhance a force’s information capability. They can position themselves wherever required to monitor large areas, including remote and access-denied areas, to support communications, navigation, meteorology, oceanography and ISR.

**Responsiveness**

Air power can respond quickly to sudden changes in prevailing strategic or operational circumstances. Responsiveness is achieved by combining speed to deliver precision combat power rapidly, reach to enable air power to be applied across large distances to achieve global presence, and the penetration of air power.
These factors often tend to make air power a key component of the Government’s ability to apply credible ADF combat power rapidly in distant theatres. Responsiveness enables air power to be employed early in a crisis, often before a build up of surface forces can be completed in-theatre. Air power may be the only option to provide an immediate response in some emergent situations.

Carefully tailored packages of aircraft, personnel and support systems can be deployed to a theatre very quickly and can be ready to undertake air operations at the necessary rate and level almost immediately.

The combination of reach, penetration and responsiveness enables the Air Force to leverage off the element of surprise across the full range of military operations. This synergy permits the attack of an enemy at a time, place and manner for which they may not be prepared, and can achieve results out of proportion to the effort expended. Responsiveness, enhanced by agile and aggressive exploitation of information, can provide the degree of surprise that has been a major factor for success in modern military operations. Such success is enabled by command and control systems that support the speed of decision-making necessary to conduct operations at a tempo and effectiveness that defeat or degrade the enemy’s capacity to respond.
The responsiveness of air power can be critical in developing situations.

**Versatility**

The Air Force provides the ADF with versatile air power by developing and exercising the organisation, force structure and operational capacity to act responsively and decisively in a broad range of scenarios.

Versatility enables the Air Force’s air power to be applied in operations to create lethal and non-lethal effects across the full range of military and military-supported operations.

**Versatility in a whole-of-government approach.** To make effective contributions within the military dimension of a whole-of-government approach, the Air Force must generate and sustain
air power capable of a broad range of operations. The Air Force achieves this synergy with whole-of-government security responses through the versatility of the force. This allows the generation of tailored options, including first response options where appropriate, across the entire spectrum of conflict, from aid to the civil power to lethal attacks in armed conflict.

**Force design.** Designing the Air Force to achieve this versatility must consider the specialist demands of air power in conjunction with the increasing need for seamless integration with other Services and forces. The Air Force derives its versatility for operations across a wide range of military operations and contingencies through the intelligent combination of multi-role, multi-mission platforms, networked and adaptable C2 systems, robust logistic support, training, military education, experience and professionalism. The heart of the Air Force’s versatility is its innovative people who are professional masters of their specialisation and understand their part in the generation, application and sustainment of air and space power. Versatility enables the Air Force to make adjustments to its organisation and operational capabilities to offer a broad range of options to meet the Government’s requirements.

**Flexibility**

Flexibility allows air power to be diverted quickly and effectively from one target or objective to another in response to shifting priorities and aims.
The flexibility of air power is its inherent ability to switch between roles and missions. This flexibility is essential for a relatively small force like the RAAF to create the efficiencies that are necessary to achieve the disproportionate degree of effectiveness required in the current security context. One dimension of this effectiveness is platforms and systems that are capable of more than one air power role.

Aircraft capable of undertaking more than one air power role, such as the AP-3C which can conduct surveillance and reconnaissance, anti-submarine warfare and anti-surface warfare, are described as multi-role. Generally, these aircraft only require some system reconfiguration and arming with different weapons to change roles. In most instances, this reconfiguration will require only a short time on the ground.

Swing-roling describes the ability of aircraft to change roles during a single sortie. This capability is already achieved by the Air Force’s AP-3C and F/A-18 aircraft, and the breadth of swing roles is expected to increase with the introduction of platforms such as the F-35 Lightning II—the Joint Strike Fighter. The flexibility of swing-role aircraft can be further enhanced through the use of complementary swing-role weapons.

Swing-roling and multi-roling enable even relatively small deployed air components to create far greater effects than their mass would suggest, whether acting independent of surface forces or in closely integrated operations. The effective application of this flexibility relies on the availability of adaptive C2 systems to provide timely and accurate mission information.
The flexibility of air power offers commanders a wide range of options to unbalance an adversary or degrade their capacity for operations. In addition to the actual or latent application of force, air power can apply persistent pressure on adversaries through constant or intermittent operations such as overt and covert surveillance or probes of adversary airspace. A multi-role platform configured for weapon delivery on one mission can be used for surveillance on the next, with no configuration changes visible to an adversary. The speed and range of air power also gives the operational flexibility to focus on one area or conduct operations simultaneously across a dispersed battlespace. Carefully planned and executed, these operations can create the desired effects without wasting resources or placing crews and platforms at risk unnecessarily.

The flexibility of its air power allows the Air Force to create a wide range of effects.
Concentration of force

To achieve success in war, superior fighting power must be concentrated against the enemy at decisive times and places.

The speed, reach and flexibility of air power, complemented by the accuracy and lethality of precision weapons and advances in information technology, allow the Air Force to concentrate force at the enemy’s critical points at a decisive time to create greatest advantage in the overall campaign. While air power would generally seek to attack critical points where an enemy is weakest, the ability to concentrate force also enables attacks, when required, against those critical points which are heavily defended. Air power has the unique ability to concentrate forces rapidly, possibly originating from diverse locations, perform a coordinated attack in time and space and then disperse quickly. In a dispersed conflict, the flexibility and responsiveness of air power allows it to concentrate force dynamically to meet changing requirements across a large battlespace. Capabilities such as swing-rolling and multi-rolling enhance this ability.

Concentration of force need not imply the use of mass in the traditional sense of large numbers of aircraft. A combination of the accuracy, lethality and discrimination of modern weapon systems allows the Air Force to concentrate appropriate force and create precise effects in ways that do not always require the use of large numbers of assets. Concentration of sufficient forces and the coordination of air assets to achieve the most decisive effect through carefully planned and executed attacks on critical
or decisive points is a cardinal principle in the employment of air power in conflict.

**Concurrent operations**

Concurrent operations are operations coordinated to occur simultaneously to create maximum effect.

Air power’s versatility, reach and ability to concentrate force rapidly enables air forces to perform multiple tasks and support different lines of operation concurrently. Such operations can be conducted against a wide range of targets. Concurrent operations of carefully managed intensity and tempo can control a conflict, disorient an enemy or generate disruptive effects so rapidly that the enemy is unable to respond to all or, in some cases, any of them. Applied this way, concurrent operations can overwhelm an enemy in the physical and cognitive domains, leading to a state of strategic ineffectiveness or paralysis that can render them incapable of conducting effective operations.

**Tempo**

Tempo is the rate of operations relative to that of the enemy.

By planning the application of air power in a way that optimally combines speed of decision with speed of response, the Air Force can play an important part in establishing and controlling the operational tempo of a campaign at a rate advantageous to joint or coalition forces. In some circumstances, controlling the tempo
of operations can be decisive by itself and demonstrates that a measure of control of a campaign has been achieved.

The tempo of air operations need not be high in all situations. The key is to operate at a tempo that friendly forces can sustain, and create persistent effects in a manner and at a rate that the adversary cannot sustain or respond to. Maintaining a decisive tempo requires the ability to make superior decisions and take action at a rate that forces an adversary to modify their decision/action cycle in a way that suits our ends. The decision-making processes that enable operations at a tempo of our choosing must be capable of exploiting volatile information in dynamic, time-sensitive scenarios.

Sustaining the chosen tempo is critically dependent on the ability of friendly information and C2 nodes to enable timely decision-making and shape air power responses. Selection of the appropriate tempo requires a careful assessment of the adversary vis-a-vis our own ability to sustain the application of force at the required level. Operating at a high tempo can complicate sustainment of air operations and rapidly lead to fatigue in combat crews and enabling forces. The operational freedom to set and maintain the tempo of choice, especially in expeditionary operations, is fundamentally dependent on the availability of weapon systems and air base logistics with the capacity to provide adequate support through a long and complex logistics pipeline.
Precision application

Precision application is the Air Force’s ability to create precise, specific effects through the accurate, discriminate and proportional application of air power.

All forces are capable of precision application. However, the speed, range and versatility of air power offer a unique capacity to apply discriminate force in a number of locations quickly and, where necessary, simultaneously. Precision in this context is the ability to engage the required target, create the specific effect desired, and avoid unnecessary casualties, damage or undesired effects. This is particularly important for air operations in the modern environment, where targets tend to be increasingly discrete, often surrounded by people and infrastructure that may not be legitimately hurt, damaged or destroyed. Unintended damage to such infrastructure, or casualties amongst civilians, may create direct or indirect effects that deny the intended outcome of an operation or campaign.

An important distinction exists between ‘precision’ as a means to achieve a desired effect and as a descriptor for precision guided munitions. A precision guided munition can reliably hit a point target with well-defined accuracy. However, to achieve precision effect, the target must be correctly identified and the weapon correctly matched to the target and circumstances in which it will be employed.

Precision effect does not always require the use of precision guided weapons. In carefully identified scenarios, non-precision weapons
that can be directed at a target with sufficient accuracy may be the preferred means to create the required effect.

Any decision to use guided or free-fall weapons must adhere to the requirements to be proportionate, discriminate and humane in the application of force. This may mean that, in some circumstances, even precision weapon systems may not be able to create the required precision effects due to their explosive yield or their inability to discriminate targets adequately. In these instances, a different course of action or means of engaging the target may be required.

Increasingly, air power can also apply precision in roles that do not require the application of force. Aircraft with the necessary onboard systems can provide precise and timely information on a range of targets in air and surface environments. Space-based systems are also delivering precision in information gathering and precision in the navigation and timing data that is essential to the operation of many weapon systems.

**Relative impermanence**

Applied with professional mastery, the relative impermanence of air power can be used to advantage, to create persistent effect without an unnecessarily protracted physical presence. Air power can contribute to operations whilst avoiding the potential military and political liabilities that can arise from an extended physical presence in a foreign country. While it is possible to generate persistence, the relative impermanence of air power also means that it can be drawn down or withdrawn quickly at the appropriate point in an operation, reducing the potential for adverse political
outcomes due to extended presence or the military risk of being drawn into further crises or operations.

Air power’s capability to return to bases, re-arm and re-engage targets can make a vital contribution to sustained air and other operations. By leveraging off its relative impermanence, air power can engage and re-engage adversary forces and facilities with a regularity that creates lasting effects whilst using carefully controlled force that limits the damage inflicted. Such controlled application of air power can assist in minimising the degree of rebuilding that may be necessary in the stabilisation and reconstruction phases of conflict.

**Payload**

Aircraft are able to carry a wide range of payloads, including weapons, sensors, communications systems, passengers and cargo, rapidly and over long distances. A transport aircraft’s payload is the weight of cargo and passengers it can carry, while that of a precision attack or fighter aircraft is the weapons load and tactical stores. The importance of information in the modern battlespace means that specialised aircraft also carry increasingly large and powerful payloads of surveillance, reconnaissance and communications systems.

The accuracy, effectiveness and increased discrimination possible with modern weapons, combined with reductions in the physical size of some weapons, mean that aircraft can now conduct attacks that create precise, decisive effects without the need to resort to large weapon payloads. Use of these weapons can also increase the operational effectiveness of weapon systems by increasing the
number of target engagements achievable by an aircraft or package of aircraft in a single mission.

Although transport aircraft generally carry a smaller payload than ships, this limitation is balanced in operations by the high sortie rate achievable by aircraft and their speed of delivery over long ranges. In some operations, the speed of response required by the Government or campaign commanders will mean that air delivered payloads are the only option to conduct attacks or support other joint operations.

In some contexts, the correct payload delivered quickly and precisely can be of more value in stabilising a crisis than a larger payload delivered after the crisis has matured.

The ability to carry the necessary payloads over extended ranges enables the reach of an expeditionary force. Timely delivery of a force or payload by air may provide a significant deterrent effect, especially if the speed and nature of its delivery implies more substantial action or escalation to follow.

**Platform and system vulnerabilities**

The demands on modern air platforms to have high speed, flexibility, stealth and significant weapon carrying capability mean that they are inevitably constructed from sophisticated, lightweight yet strong, and often highly stressed materials. This frequently creates specific and highly specialised demands on personnel and systems to maintain and sustain air power, including specialised battle damage repair techniques for aircraft. Planning for air
operations must ensure that these vital personnel and systems are not vulnerable to adversary action.

The high-threat environments in which air and space platforms operate place stringent demands on their design, maintenance and self-protection measures.

Additionally, the requirement for air platforms to conduct multiple roles in complex environments, including their vital role as a node in a networked force, has led to increasingly complex and capable onboard and support systems. To protect these vital, and often scarce, platforms, aircraft design frequently includes self-protection systems and redundancy to reduce vulnerability and increase the survivability of aircraft in complex hostile environments that contain highly-capable anti-aircraft weapons. Aircraft with no integral self-protection systems may require protection from other systems or actors, not necessarily RAAF, when operating in hostile environments.

The capability to protect the force is essential to maintaining a credible expeditionary Air Force.

Modern air power capability is essential to joint operations, but is expensive and complex to generate and sustain. Further, the acquisition cycle of air platforms requires a long lead time. Therefore, protection of these assets is vital. Joint planning must cater for their protection and for provision of the complex support required for the effective employment, sustainment and maintenance of high technology air and space assets and systems.
Such support includes the protection of the terrestrial systems and information links of space power assets that are critical to the success of most military operations.

Successful air operations, especially networked operations conducted over long ranges and in complex scenarios, are generally the product of the exploitation of a number of air and space assets operating as a system. This means that those responsible for the planning and execution of air operations must have a clear understanding of the strengths and potential vulnerabilities of any system that is employed. These operations are reliant on system nodes, such as responsive C2 and assured access to information networks, and may also depend upon operational nodes, such as in-flight refuelling and coordinated actions to attain the necessary level of control of the air. Usually, these components are themselves enabled by substantial and integrated ground and space-based infrastructure. Each of these nodes represents a potential point of failure for the system, where loss or degradation can result in mission failure.

**The complexity of applying modern air power and space power in joint and coalition operations can create inherent system fragility that must be mitigated by careful planning.**

By their nature, operations based on the use of systems to produce capability can be vulnerable to fragilities. The Air Force mitigates this fragility by planning and conducting operations to leverage from the strengths across the ADF and allied partners to provide systemic depth. Because no system is invulnerable, planning for air campaigns should include sufficient redundancy.
Understanding the vulnerabilities of systems that integrate a range of air and space assets is essential to ensure that capability development for the force and planning for air and space operations includes measures to mitigate against potential points of system failure. This might include providing force protection to air assets, hardening ground nodes and designing and planning redundancy in critical vulnerable areas. As air power integrates more fully into operations that include all the arms of government, it may become necessary to broaden the means to mitigate systemic fragility to include national security mechanisms.

**Technology**

Keeping the Air Force’s air power at a level that continues to offer the versatility, responsiveness and capability edge required to be effective in operations requires an extensive investment in technology and in training personnel to apply and develop that technology. Rather than be ‘technology-led’, the Air Force chooses to judiciously select air power technologies directly relevant to its role in achieving Australia’s security objectives with maximum efficiency.

Investment in technology is common to all environments and will be ubiquitous in the networked force.
The nature of air operations is such that aircraft need to be able to achieve the highest orders of performance, withstand harsh operating regimes and have a long operating life. Meeting these demands often requires complex and innovative training and technology support, which inevitably creates high associated costs for the entire life of the assets.

Technology can provide the means for effective air power, but people’s professional mastery is vital to its integration into the Air Force and application in operations. The acquisition of new technology and systems must be accompanied by training to develop the technical mastery of the personnel within and outside the force who are responsible for its operation and maintenance. Technology that is not properly understood or optimally employed will absorb inordinately high levels of resources without delivering the intended return.

Simulators and simulation provide valuable means of developing the skilled personnel to operate and support new technologies.
Investment in technology can also be driven by the need to remain interoperable with allies, especially the US, who operate systems at or near the leading edge of technology. Although leading-edge technology offers great returns in terms of capability advantage, the pursuit of such technology carries with it a greater degree of risk than the acquisition of more mature technology. We would only choose to take these risks in areas directly related to critical niche capability. Although the Air Force's systems may not always be at the leading edge of technology, our measured approach has delivered a capability edge whilst mitigating the risk of a technology failure that we do not have the redundancy to absorb.

The resources available to develop the Air Force's capability are finite, and technology choices must be made carefully, often informed by the experiences of technologically-advanced allies.

Technology risk is further mitigated through the use of partnering arrangements that share development risks, maintaining arrangements for the exchange of information with allies and developing a sound indigenous scientific and technical knowledge base to inform capability decisions founded on developing technologies.

Space Power

The pervasive role of space capabilities in military operations, including its ability to facilitate awareness and integration across joint and coalition forces, supports the creation of maximum military effect from air and space power.
Space power is an integral adjunct to air power. The key benefits that space power brings to operations include global presence and persistence, both of which are dependent upon a satellite’s orbital characteristics, and unconstrained overflight as a result of the lack of sovereign borders in space. These benefits are, however, counterbalanced by inherent limitations on the efficacy of space systems—orbits are predictable, satellites have limited manoeuvrability and space-based assets have traditionally been expensive to acquire and operate, although next-generation systems will offer advances in affordability and flexibility.

The edge of space is difficult to define both legally and scientifically. The Karman Line (being the altitude of 100km above Earth’s mean sea level) is, however, often used as a nominal boundary delineating outer space from the Earth’s atmosphere. The term ‘outer space’ is not legally defined, either domestically or in international law. At the time of publication, the Legal Subcommittee of the Committee on the Peaceful Uses of Outer Space is yet to make any determinations on a definition of ‘outer space’. It is widely accepted, however, that a nation’s sovereign airspace ends, and outer space begins, at some point between the lowest orbit altitude of artificial satellites (or alternatively, the highest altitude of conventional aerodynamic flight) and the Karman Line.

Space assets operate in a physically harsh environment marked by extremes of temperature, high levels of radiation, and high velocity particles, including man-made debris. Space manoeuvre is characterised by the laws of orbital motion, which are dictated by orbital mechanics involving extremely high velocities in set orbital planes. This results in predictable orbital paths and a unique
regime for the placement and manoeuvre of space assets. These aspects are so different to air power that they must be understood before being integrated into operations.

Australian military participation in recent operations has reinforced the vital enabling role played by space systems in 21st century conflict. Satellite communications, space-derived intelligence products, and satellite-referenced position, navigation, and timing data have all proved crucial in the provision of improved situational awareness, global command and control, and the creation of precise effects. While Australia has not sought to develop indigenous space-based capabilities, it has capitalised upon space-derived services and products through our strategic alliance with the US and by accessing commercial space systems. This has provided a disproportionate benefit to Australia's national power versus our investment in space systems and infrastructure.

Leveraging off space power is critical to the future of the Air Force's air power, especially in the transition towards a networked expeditionary Air Force.

There is already a growing demand for improved access to real-time or near real-time distributed situational awareness and warning information, more accurate and jam-resistant precision navigation and timing (PNT) systems and near instantaneous, robust global connectivity.

As the reliance upon space increases, so too will the need to manage potential risks in this dependency better, by mitigating the vulnerabilities of space systems and countering emergent
threats from space. Risk management will include protecting the ground components and transmission paths of space-based systems. Ensuring the necessary access to support from space systems will require the development of passive and active counter space capabilities, founded upon an improved space situational awareness.

The Air Force meets its evolving needs for access to responsive space-based support through traditional approaches using alliances and commercial avenues. Planning for the future force considers maintaining current arrangements for access, possibly complemented by indigenous capabilities for space and ground segments. This approach will be driven by emerging space technology trends, including the increased utility of smaller satellite systems, inexpensive access to space-based support, and improved capabilities of space sensors and services.
Chapter 6
Applying Air and Space Power
Introduction

The Air Force remains the principal Service for the generation and application of Australian air power. This chapter describes how the Air Force’s air power is applied in operations and outlines how Australia’s strategic environment shapes the organisation and capabilities of the force. To reinforce the joint dimension of the Air Force’s air power, *The Air Power Manual* describes the application of air power through the lens of six ubiquitous and enduring joint warfighting functions. This view describes the actions and effects of air power in a way that is readily translated into planning for joint effects. The functional framework demands a degree of intellectual change in our approach to the effective application of air power within seamless ADF operations.

The Air Force contribution to the joint warfighting functions is described in a framework of air and space power functions. These functions, also used in FASOC, describe the application of air power in carefully planned and executed combinations of air power roles to create effects that are greater than those created by any individual role. The air and space power functions highlight the vital contribution that space power makes in many applications of air power.

Designing and preparing the Air Force to apply air and space power is the result of careful decision-making. The Air Force’s organisation and equipment is designed to meet the security requirements of the Government, the demands of Australia’s strategic environment and the need to integrate air power in operations with the other Services. There are some key factors that shape the development
of the Air Force’s ability to apply air and space power to meet
Australia’s security needs. These factors are described below.

Factors that Shape the Air Force

Strategic Geography

Australia’s geo-strategic environment is characterised by distance
and the vast areas over which its people, resources and infrastructure
are spread. The bulk of Australia’s population, industry and
infrastructure are located along the east and south-east coastal
strips of the continent, whilst many of our natural resources lie to the
north and north-west. The impact of distance is further heightened
by the breadth of Australia’s national interests, which extend into
the surrounding region and are becoming increasingly global.

The size of Australia’s coastline and littoral regions means that
monitoring and protecting our sovereign territory and Exclusive
Economic Zone requires a national effort, with a significant ADF
contribution. Further, the regional and global nature of Australia's
national interests means that the ADF may be required to act
to secure those interests at great distances from Australia. The
characteristics of air power, particularly its reach, perspective and
responsiveness, ensure that the Air Force can play an important
part in securing Australia's interests.

Australia’s geographic situation also means that potential
avenues for adversary threats are more likely to eventuate from
or through the distant northern parts of the continent and their
maritime surrounds. Therefore, Australia’s military forces must be
able to deploy and conduct operations in these areas to counter
such threats.
Most of the Air Force’s permanent bases are located near population and industry centres, to facilitate ready access to the national scientific and technical infrastructure that supports air power. This often creates significant geographical separation between the Air Force’s permanent bases and vulnerable national assets at the opposite extremes of the continent. Therefore, the application of Australian air power, whether to ensure national territorial sovereignty or to secure national interests further afield, will invariably involve deploying forces and sustaining operations over challenging distances.
By leveraging off the inherent mobility and reach of air power to overcome the challenges of geography and distance, the Air Force achieves its vision of operating as a balanced, expeditionary force. This expeditionary capability requires an integrated combination of platforms, personnel and essential support, including command and control networks, information systems, space system support and logistics.

An expeditionary Air Force means being able to deploy forces where and when necessary, and to sustain operations at a tempo of our choosing.

**Balance**

The Air Force is carefully balanced to meet the security needs of the Government. The correct force balance creates a credible air power posture and, even without being employed on operations, acts as a means of signalling resolve, maintaining strategic influence and deterring potential adversaries. The Air Force achieves this by creating and exercising a force structure with the capabilities to conduct a range of operations throughout the entire spectrum of conflict in a diverse and geographically dispersed environment. The Chief of Air Force assigns force preparedness priorities to match the Air Force’s available resources to national security imperatives. This requires careful decision-making from professional masters of air power, as maintaining unnecessary capabilities or unnecessarily high degrees of preparedness can divert resources from the real needs of the force. In extremis, an imbalance in force structure or preparedness could result in the Air Force being unable to meet its obligations to the Government and the Australian people.
The Air Force defines balance as the correct mix of assets, people, capabilities and preparedness to provide the range of air power capabilities required to meet the strategic needs of the Government.

**Expeditionary operations**

Structuring the Air Force for expeditionary operations also influences the ways in which the Air Force applies air power to maximum effect and mitigates any characteristics of air power that could constrain operations. Adopting a balanced, expeditionary structure ensures that the Air Force remains capable of participating in joint, combined and coalition operations wherever and whenever required by the Government. Hence, planning and generating the correct Air Force organisation and structure includes developing a high degree of equipment and procedural interoperability with coalition partners, particularly the US. This interoperability must be achieved whilst retaining the ability to operate with our regional partners.

To conduct appropriate and timely expeditionary operations, the Air Force plans and prepares to deploy with the smallest logistics footprint that will still ensure the necessary support to operations. This requires planning and structuring the force to minimise the requirements to deploy personnel, equipment, stores and infrastructure. This can be achieved through a combination of deployed support and arrangements to access support from beyond a theatre. Optimising the logistics footprint allows for more effective use of lift assets to deploy combat or other capabilities where needed and can also reduce the deployed force protection requirement. The Air Force’s ability to conduct operations with a small footprint is further enhanced by combining organic
logistic capabilities with those of coalition partners through robust and effective sharing arrangements and a high level of logistics interoperability.

**Mobilisation.** Australia’s relatively small population limits recruiting possibilities, and the Air Force cannot expect to increase the size of the force rapidly in a crisis. Even if it was possible to recruit additional personnel at short notice, the complexity of modern combat systems and military operations requires lengthy training that would preclude their operational employment on an immediate basis. The acquisition of the modern air platforms and systems on which the Air Force’s capability is founded is a similarly long and complex process, focused around the Defence Capability Plan (DCP), and often measured in years between a capability decision and fielding the first operational units. As a consequence, the Air Force will perforce have to go into conflict or other joint and coalition operations with the force-in-being, including the Reserve component, and cannot rely on rapid mobilisation to expand the force in a crisis.

**Joint Warfighting Functions**

The joint warfighting functions described in *The Air Power Manual* are founded primarily on past and present practice, as expressed in current ADF doctrine and operating concepts. The functions are broad and practical, and their use in *The Air Power Manual* and FASOC is based on the judgement that they can be readily adapted as required in the future to suit evolving ADF operating concepts.
The following descriptions of the joint warfighting functions reflect the contribution made by air and space power. The sequence describes a generic framework for the application of the functions in operations.

**Command and control (C2).** Command and control of air power and space power is the authority to direct and integrate systems, procedures, organisational structures, personnel, equipment, facilities, information and communications for the planning and execution of air campaigns.

**Information superiority and support (ISS).** ISS is the fundamental enabler of the C2 system’s ability to understand and act through the delivery of timely, accurate and high-fidelity information.

**Force deployment.** Force deployment is the movement of forces and their support to and from a theatre of operations and within a theatre.
**Force protection.** Force protection describes the actions taken to minimise the vulnerability of deployed and home-based personnel, facilities, materiel, information and operations from the threat posed by an adversary or the environment while preserving the freedom of action and operational effectiveness of the force.

**Force application.** Force application is the conduct of air missions to achieve decisive effects through kinetic and non-kinetic offensive means.

**Force generation and sustainment.** Force generation and sustainment describes the activities to raise and train forces to conduct and sustain air operations, operate permanent air bases and establish and operate expeditionary air bases.

We expect that the warfighting functions will endure into the future as the ADF transitions to a seamless force.\(^1\) By describing the application of air power through this functional framework, *The Air Power Manual* provides a practical link between contemporary Air Force air power and the Air Force’s preferred direction for transition to the future force described in FASOC.

**Air and Space Power Functions**

The air and space power functions describe the Air Force’s organisational and operational actions to generate and deploy forces, apply appropriate military force and sustain air and joint operations within the joint functions. Command and control, enabled by information, personnel and systems that enable superior decision-making, is the vital function that shapes and synchronises the application of the other functions.

\(^1\) Specific definitions and titles for these functions may change as understanding of the principles and application of the seamless force increases.
The relationship between the air and space power functions and the joint warfighting functions is shown in Table 6–1.

<table>
<thead>
<tr>
<th>Joint Warfighting Functions</th>
<th>Air and Space Power Functions</th>
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</thead>
<tbody>
<tr>
<td>Command and control (C2)</td>
<td>Air campaigning</td>
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<tr>
<td></td>
<td>Battlespace management</td>
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<td>Information superiority</td>
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<td>Force deployment</td>
<td>Air mobility</td>
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<td>Force protection</td>
<td>Force protection</td>
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<tr>
<td>Force application</td>
<td>Counter air</td>
</tr>
<tr>
<td></td>
<td>Precision attack</td>
</tr>
<tr>
<td>Force generation and sustainment</td>
<td>Combat support</td>
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<td></td>
<td>Air power generation and sustainment</td>
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</tbody>
</table>

Figure 6–1 - Joint warfighting functions and air and space power functions

The air and space power functions do not mandate any administrative or operational structure for the Air Force. They provide foundation guidance for planning the use of air and space systems and may guide force planning and organisation. The air and space power functions also have utility as an element of the common lexicon for joint and coalition planning, operations and interoperability. Professional mastery is necessary to generate and apply the air and space power functions in ways tailored for specific scenarios, or to enable the actions of other forces or non-military organisations.
The effective generation and application of air power within the framework of warfighting functions requires professional mastery.

Air Power Roles

The *Air Power Manual* describes the air power roles that the Air Force expects to conduct with the force-in-being and with the enhanced capability to be delivered through the Defence Capability Plan. To facilitate the Air Force’s participation in coalition operations, *The Air Power Manual* also describes additional roles that our allies and partners may contribute in coalition operations. AAP 1002—*The Operational Air Doctrine Manual* describes the roles and the ways in which the Air Force applies air power in greater detail.

Roles describe the broad, fundamental and enduring activities of air power that achieve strategic, operational and tactical level objectives.

Air and Space Power Functions and Roles

This section describes the Air Force’s air and space power functions and air power roles within the framework of joint warfighting functions. The colour codes shown in table 6–2 are used to highlight the hierarchical relationship between joint warfighting functions, air and space power functions and air power roles.
Figure 6–2 Legend: Air and space power functions and roles

**Command and Control**

- **Command and Control**
  - **Air Campaigning**
    - Air Campaign Planning
    - Air Campaign Execution
    - Targeting
  - **Battlespace Management**
    - Air & Space Battle Management
    - Airspace Management
The ADF defines Command and Control (C2) as the process and means for the exercise of authority over, and lawful direction of, assigned forces. The air and space power functions related to C2 are guided by this definition.

**Supporting C2.** The Air Force’s C2 function cannot be achieved without capable personnel and effective information and decision support systems. Although deployability of the force’s organic C2 personnel and systems is a primary requirement for expeditionary operations, interoperability arrangements with coalition partners can facilitate the sharing of systems and thereby minimise the Air Force’s C2 system deployment footprint. Generating air power with reach and a minimal footprint relies on C2 supported by a combination of deployed capability and reachback. The support required to achieve effective C2 is essential across all the air and space power functions, and the provision of the systems to enable the Air Force’s C2 function is a crucial aspect of the services provided by combat support forces.

**Air Campaigning**

**Air campaign planning**

Air campaign planning links national strategy, military strategy and specific air and space power functions within a NEBA. This planning initiates the effects-based approach, and synchronises air operations with those of the other components of military and national power to ensure that proportionate force is applied at the right place and time to achieve outcomes that contribute to strategic objectives. This planning also ensures the most efficient allocation of Australia’s numerically limited, but high-capability, air power resources.
Air campaign planning links the application of air power to the military strategy and synchronises air operations with those of the other forces.

Air campaign planning is initiated by military-strategic direction and guidance drawn from political requirements. Because the nature, complexity and fluidity of likely contingencies may not always permit definitive statements of desired outcome at the beginning of a crisis, the interface between strategic and operational level air campaign planning is critical to ensure that planning can evolve as a crisis or other scenario develops.

Air power’s speed of response and ability to engage a range of widely dispersed targets simultaneously and with decisive effect frequently makes it the force of first political choice. This often means that, despite the Air Force preference for centralised planning and decentralised execution of air campaigns, some level of political oversight is expected to permeate at least through the strategic level of planning and into the operational. Professional mastery in campaign planning includes the ability to manage these interactions at all levels of command.
Air campaign planning requires the professional mastery of senior joint, combined and coalition partners.

**Air campaign execution**

Air campaign execution is primarily the responsibility of operational commanders, although interaction and feedback between the operational, tactical and strategic levels will continue for the duration of any air campaign. Execution demands a high degree of professional mastery to create the effects necessary to achieve the objectives of the campaign plan. The execution of air campaigns is based around the air tasking cycle, implemented through the Air Operations Centre (AOC).

**Targeting**

Targeting is the process of selecting and prioritising targets and matching the appropriate response to them, taking account of international and Australian law, national and strategic objectives,
and operational requirements and capabilities. The responses selected through the targeting process can be kinetic or non-kinetic, and can attack the adversary in the physical, cognitive and information domains. Targeting is information-dependent, and is guided by the effects necessary to accomplish joint force objectives, with the ultimate intent of changing the behaviour of an adversary.

Air power applied without the necessary targeting fidelity has the potential to create unfavourable effects leading to outcomes that can be extremely detrimental to military or national objectives. Targeting fidelity and the precision of engagement it enables are essential in operations, where actions to win the conflict must be carefully balanced against the need to create our preferred environment for the ensuing peace.

Targeting is guided by the effects necessary to achieve campaign outcomes.

Targeting is an integral and vital element of air operations, and accurate, timely targeting information must be provided to deployed air forces through a dynamic and responsive system of deployed capabilities and connectivity to national intelligence and targeting resources. For expeditionary operations, this will require resilient and secure information links. In most instances, access to own and allied space-based systems will be critical to providing these links.
Battlespace Management

Air and space battle management (ASBM)

Air and space battle management encompasses the processes of planning, directing, coordinating and controlling air and space assets in operations. ASBM is an inherently joint activity in which the perspective, reach and persistence of air and space-based systems play a key part in the successful command and execution of expeditionary operations.

The Air Force’s air and space battle management system has the capacity to manage Air Force, joint and coalition air operations across and beyond the breadth of Australia’s immediate geography. To meet the requirements of expeditionary air power capability, the organisation of the Air Force includes deployable ASBM facilities that can interface with other force’s command networks to enable integrated or independent air operations.

Interoperability in ASBM systems is a critical enabler for joint, combined and coalition operations, requiring partners to develop agreements, procedures and mechanisms such as friendly force tracking systems. This places stringent demands for accurate information to enable situational awareness and effective decision-making. The capability of modern weapon systems and the density of air and space operations require highly integrated ASBM to avoid fratricide and allow full freedom of operation to friendly forces. This means that ASBM systems must provide a high degree of transparency that allows all partners to share a common picture, while incorporating adequate security to protect the system from adversary access or interference.
Interoperability in air and space battle management systems is a critical enabler for joint, combined and coalition operations.

**Airspace management**

Airspace management is the process of promoting the safe, effective and flexible use of airspace for legitimate military and civilian operations. This activity continues in peace and in times of tension or conflict, and requires a high level of coordination between the military and the civilian agencies responsible for air traffic management. Effective airspace management ensures that civilian and military operations can be conducted with minimum constraint and valuable assets and personnel are not lost as a result of poor airspace management protocols.

Airspace management procedures should facilitate a seamless transition from peace to contingency operations and should be robust enough to support the safe and effective conduct of the full range of the Air Force’s operations. Airspace management has particular importance during humanitarian operations, where coordination between military aircraft and a wide range of civilian aircraft from aid agencies and other non-military organisations may be vital to the provision of support and saving lives.
Information superiority is achieved by synthesising intelligence, surveillance and reconnaissance, and information operations, enabled by responsive and adaptive information systems and processes. This includes the increasing use and capacity of air and space systems to collect, collate and disseminate information from a broad range of sources. The Air Force sustains its capability to achieve information superiority by preparing skilled personnel to analyse the increasing quantities of data generated by its information systems and through strategic relationships that ensure access to information from allies.

Achieving information superiority is dependent on the capacity of support systems to ensure the timely distribution of accurate and high-fidelity information throughout the force’s network. Such support systems provide the means to deliver the necessary
Applying Air and Space Power

information to C2 systems, planning staffs, commanders and fielded forces where and when required. For expeditionary operations, information support systems must ensure that information can be disseminated over long distances, with assurance and integrity, at a rate that supports a commander’s chosen tempo of operations.

Information superiority enables the planning and conduct of networked operations and the selection and creation of effects that enable commanders to achieve objectives across the full range of military operations. Through information superiority, we can initiate the appropriate actions at a speed that allows us to gain and retain the initiative. Superior information can generate superior situational awareness that, correctly handled by professional masters with access to the necessary C2 systems, will enable decision superiority.

**Decision superiority is the ability to make and implement accurate decisions at a tempo that enables friendly forces to operate inside the adversary’s decision cycle.**

Decision superiority enables commanders to quickly adapt and re-orient campaign plans and operations as needed to exploit fully the Air Force’s versatility and flexibility while denying an adversary the ability to make the decisions necessary to continue effective operations.

**Intelligence**

**Intelligence is the product resulting from the processing of information concerning foreign nations, hostile or potentially hostile forces or elements, or areas of actual or potential operations.**
Intelligence that is accurate, relevant, timely and predictive enables dominant knowledge of the battlespace, leading to decision superiority. In military operations within the NEBA, this intelligence must be available where and when required to all participants, from tactical units through to the Government and allies. This requires that the intelligence and C2 networks established for ADF operations must be capable of providing secure links to a range of external agencies.

The intelligence process involves four activities—direction, collection, analysis and dissemination—with the overall objective being to provide superior battlespace awareness to commanders and combat forces. Good intelligence provides commanders with knowledge of the intent and capability of an adversary, warning of threats and understanding of the environment, thereby reducing the likelihood of surprise. Such intelligence also enables the establishment of a favourable level and tempo of operations.

A major characteristic of the unpredictable and asymmetric threats becoming increasingly prevalent in our security environment is the human dimension. Identifying the existence, intent and capability of these adversaries presents different challenges to those posed by threats that can be identified and measured by technical means. In the whole-of-government approach to countering unconventional adversaries there is an increasing requirement for timely human intelligence (HUMINT). HUMINT can complement technical intelligence, such as the imagery intelligence (IMINT) and signals intelligence (SIGINT) gathered by air, space and surface assets, to provide the clarity and accuracy of information required for operations against these difficult and dangerous foes.
Surveillance

Surveillance is the systematic observation of air and space, surface and sub-surface areas, places, persons, or objects by visual, aural, photographic, electronic or other means.

Surveillance is a continuous activity designed to enhance our knowledge of an adversary or other target and provide warning of opponents’ initiatives and significant changes in their activities. Air and space platforms enable wide area terrestrial surveillance that can detect opponents’ initiatives at long range and across wide geographical areas. Integrated with ground-based wide area surveillance systems and national surveillance assets, air and space surveillance significantly enhances our understanding of adversaries and activities within areas of interest.

JORN: Australia’s unique wide-area surveillance capability.
Access to space situational awareness (SSA) information is becoming increasingly important to enable ADF operations to use the advantages of space-based systems and avoid prohibitive restrictions that may be imposed by adversaries’ space-based systems.

Reconnaissance

Reconnaissance is defined as missions undertaken to obtain information about the activities and resources of a designated enemy, or to secure data concerning the meteorological, hydrographic or geographic characteristics of a particular area.

Reconnaissance complements surveillance by obtaining time and area specific information about an identified target and is related to the specific actions being planned.

Air Force’s intelligence, surveillance and reconnaissance

The Air Force’s intelligence, surveillance and reconnaissance capability is a key element of an integrated capability that contributes to the full range of joint, national, allied and coalition resources. The primary objective of air and space surveillance and reconnaissance operations is to provide timely collection and dissemination of data from air and space-based sensors and other collectors. The Air Force provides surveillance and reconnaissance systems with the flexibility to detect, identify and track a wide range of specific targets in contexts that individually require specific techniques and persistence of coverage. Australia’s geography and the breadth of our national interests create a requirement for the Air Force to own and operate surveillance and reconnaissance capabilities that can reach and operate over distant and wide areas, and operate in the maritime, land and air domains.
Combined with the decreasing time frames for which targets of interest are visible in modern crises, these demands influence the Air Force's decisions to acquire responsive, long-range surveillance and reconnaissance platforms and systems. For expeditionary operations, surveillance and reconnaissance operations must be complemented by the capability to disseminate data to analysis and intelligence facilities, either deployed with the force or connected within a robust and secure network.

**Information operations**

Information operations are the coordination of information effects to influence the decision-making and actions of a target audience and to protect and enhance our decision-making and actions in support of national interests.

Information operations coordinate offensive and defensive actions in the information domain to create effects on the understanding, will and capability of adversaries. These operations degrade adversaries’ capability to carry out information-based activities while enhancing and protecting one's own information systems.

Information operations are an integral component of all ADF operations, and can support, or be supported by air operations. The responsiveness, reach, penetration and persistent effect of air power can be applied to conduct or support information operations over a wide geographic area of strategic interest. Responsiveness is crucial, as the decision cycle in the current environment is compressing, and the time available to act against an adversary is also reducing. Air power’s speed of response in information operations contributes significantly to decision superiority.
Air Mobility

Air mobility is the rapid movement of personnel, materiel and forces to and from a theatre of operations and within that theatre by air across the full range of operations. The specific air mobility role to be applied in any of these operations and the associated requirements for special training, force protection and other support is scenario-dependent.

Air logistic support (ALS)

Air mobility provides a responsive means to project force and sustain expeditionary operations in conflicts and other crises.

Air logistic support includes all tasks, other than airborne operations, conducted to deploy, distribute and recover personnel, equipment
Applying Air and Space Power

and supplies. ALS operations may be inter-theatre or intra-theatre and can use the traditional ‘hub and spoke’ logistics delivery model as well as providing direct access to small and austere airfields. Long-range inter-theatre ALS is essential for operations in Australia’s geo-strategic environment, and new aircraft being introduced into the RAAF inventory will provide the Air Force with a responsive global airlift capability. Intra-theatre airlift provides air movement within a specific theatre, using aircraft or helicopters that provide a wide range of tactical options. Intra-theatre operations can provide a commander with time-sensitive airlift, which may be critical to the achievement of theatre objectives. ALS includes operations to carry VIPs in a secure travel environment and, where possible, in relative comfort. Such operations are characterised by their requirements for flexibility in operations and the ability to reach a wide variety of domestic and international destinations.

Air logistics support plays an important part in joint manoeuvre.
Airborne operations (ABN)

Airborne operations describes the use of air power to deliver combat-ready surface forces directly onto the objective. This may be achieved by airdrop or air-land from fixed or rotary-wing aircraft. Although airborne operations can achieve timely operational or strategic outcomes, they often pose high risks. However, in specific contexts, such operations may be the only option to mass forces rapidly in a distant location, or to overcome geographical or other constraints that may delay or negate surface movement.

Airborne operations can also be conducted to deliver special forces in enemy-controlled or politically sensitive territories. The degree of risk, physical and political, inherent in these operations and the challenging environment in which they may be conducted require detailed, integrated planning and organisation, and may require specially trained aircrews.

Air-to-air refuelling (AAR)

Air-to-air refuelling can increase the range, endurance, payload and flexibility of all capable receiver aircraft and enables air power to be projected over long distances or to increase its persistence. AAR will also play an enabling role in expeditionary operations if overseas basing is limited or unavailable for political or other reasons. AAR requires compatibility in terms of equipment, airborne procedures and aircraft performance. Interoperable AAR systems and procedures are a requirement for Australian participation in many operations with other forces.

Because operations enabled by AAR may involve aircraft operating at ranges from which they cannot return to base unaided, use of
AAR has the potential to introduce a point of vulnerability to the mission. This risk can be mitigated by the provision of dedicated force protection for refuelling aircraft, dependent on the air control scenario.

Air-to-air refuelling can enhance the reach and endurance of air power.

**Aeromedical evacuation (AME)**

Aeromedical evacuation is used to transport ill or injured personnel by air under medical supervision to appropriate medical treatment facilities, within or outside the theatre. During contingency operations, AME complements and supports in-theatre medical infrastructure, allowing the use of a smaller in-theatre medical footprint. The Air Force’s AME capability can also be used to augment national medical emergency assets, especially where responsiveness, reach and capacity are critical.
Force Protection

Force protection includes all measures and means to minimise the vulnerability of personnel, facilities, materiel, information and operations to any threat from an adversary or operating environment while preserving the freedom of action and the operational effectiveness of the force. Force protection is performed as a part of all the other functions, and is essential in air operations across the spectrum of conflict and during all phases of a campaign.

Because space-based support is critical to the conduct of air operations, we must act to ensure friendly force freedom to access it while denying such freedom to an adversary. Force protection includes measures to protect the ground and link segments and the incorporation of redundancy in space systems.
**Air base protection**

Aircraft are most vulnerable on the ground, and the protection of air bases is an integral part of applying air power in operations. Air base protection is achieved by a combination of protective air and surface forces and specialised infrastructure design and construction. Air base protection also includes measures to protect the ground support facilities of space-based systems.

Protecting the large areas covered by air bases requires either large static forces or smaller mobile forces supported by persistent surveillance and information systems to detect and identify threats in time to deploy defensive measures. For expeditionary operations, the forces to provide air base protection must be readily deployable by air, and capable of immediate operations in austere and potentially hostile environments. Air base protection includes the capability to recover quickly from attacks, including those using chemical or biological weapons, and to recommence air operations as quickly as possible.

A significant degree of air base protection can be achieved by conducting air operations from bases beyond an enemy's reach. Where operations must be conducted from bases within the adversary's operational envelope, air campaign planning must include careful assessment of the necessary level of air base protection required for the deployed force. In combined and coalition operations, interoperability in air base protection may reduce or remove the requirement to deploy organic protective capability.
Secure air bases are essential for air operations.

**Joint personnel recovery (JPR)**

Joint personnel recovery is the aggregation of military, civil and political efforts to rescue, release or recover personnel who are captured, missing or isolated.²

JPR can be conducted in permissive, uncertain or hostile environments, and includes support to civil search and rescue (SAR), military SAR (MilsAR), combat recovery (CR), combat SAR (CSAR), special recovery operations (SRO) and care after recovery (CAR).

The Air Force does not have a dedicated SAR capability, and contributes to JPR by providing air power support to other agencies and forces conducting recovery operations. In SAR operations, air

² JPR is explained in detail in ADDP 3.6—*Joint Personnel Recovery.*
power’s ability to reach a search area quickly, conduct wide-ranging searches, and provide long-range information support can be critical to the survival of personnel in distress.

The ADF obligation to protect Australian and coalition aircrew or other personnel who may be missing in hostile territory will necessitate the inclusion of CSAR in the planning and execution of operations. For combined and coalition operations, this requires Air Force personnel to maintain a level of understanding of CSAR that facilitates interoperability with other forces when such actions are required. In CSAR, the Air Force can contribute C2, ISR and air operations to protect rescue forces from enemy threats.

The professional mastery of Air Force personnel must include the expertise that enables them to conduct effective JPR and to act in a manner that facilitates their recovery following an accident or hostile action.

**Force Application**
The Air Force contributes to force application through two air and space power functions—counter air and precision attack. The counter air campaign aims to obtain control of the air, which is an absolute requisite for the successful completion of any other military activity. The Air Force also maintains the capability to carry out precision attack in joint and coalition campaigns, independent of surface force actions and as an integrated part of the joint force. Space-based systems are an increasingly critical component of force application, enabling precise engagement, situational awareness, and network connectivity.

The skills and capabilities that enable the Air Force to apply force in armed conflict are readily adapted to conduct operations requiring the controlled use of force short of armed conflict, especially in dangerous or uncertain security environments. The Air Force may be required to protect its own assets, other forces, non-government organisations (NGOs) and operating bases through the application of force or the deterrent effect of our latent ability to apply force. The ability to use force with control and precision, where and when required, gives the Air Force a degree of freedom of action that cannot be matched by other agencies.

Air power exploits its speed, reach and lethality to apply proportionate and discriminate force to create precise effects.
Counter Air

The primary aim of counter air operations is to create the necessary degree of control of the air through the destruction, degradation or disruption of enemy air power.

Control of the air is the ability to conduct friendly operations in all three dimensions without effective interference from enemy air power.

Control of the air allows commanders to exploit the air environment and to conduct surface operations at a place and time of their choosing, without effective interference from enemy air power. Although gaining control of the air is not generally the ultimate objective of a campaign, it is a prerequisite for the conduct of all other operations to achieve campaign objectives. Having control of the air does not guarantee success in all operations, but failure to achieve control of the air in situations where a credible adversary air threat exists will constrain or preclude the conduct of friendly air or surface activities.

Where control of the air is contested, the Air Force will have to conduct a counter air campaign. In other scenarios, the level of control of the air required for operations may be present as a result of the adversary’s lack of air power or an adversary choosing not to commit their air resources due to the deterrent effect of our air forces. Control of the air at the required location, level and duration necessary to enable specific operations can also be created through the use of superior tactics and technology such as stealth. In a whole-of-government approach, the deterrence provided by other
elements of national power may also allow freedom of operation for own air power.

The Air Force will have the lead in counter air operations. However, surface forces, including special forces, anti-air warfare ships, submarines and land-based weapon systems, can assist by attacking enemy aircraft and bases or suppressing enemy air defences.

The versatility of air power can enable the concurrent conduct of counter air and other air campaigns. Professional mastery is required to determine the degree of control of the air required and prioritise the allocation of air assets to this campaign. This planning will maximise the effective use of available assets to achieve control of the air at the necessary level where, when and for the duration required to achieve the commander’s objectives.
The three levels of control of the air are:

- **Favourable Air Situation.** A favourable air situation is one in which the extent of the air effort applied by the opponent is insufficient to prejudice the success of specific friendly maritime, land or air operations delineated in time and space.

- **Air Superiority.** Air superiority is that degree of dominance in the air battle over the adversary which permits the conduct of operations by friendly land, sea and air forces at a given place and time without effective interference by the opposing force.

- **Air Supremacy.** Air supremacy is that degree of air superiority wherein the opposing air force is incapable of interference.

Counter air operations include offensive and defensive actions to obtain the desired level of control of the air.

### Offensive counter air (OCA)

Air power is inherently offensive, and achieves the best counter air results through action to destroy, disrupt, defeat or contain adversary air power as close to its source as possible. Air power will usually be the campaign commander’s principal means of conducting offensive counter air operations because of its ability to detect and engage hostile forces beyond the range of surface weapons and before they can threaten friendly forces.

Destroying enemy air and missile threats on the ground is traditionally regarded as the most effective means to conduct offensive counter air operations.
In the Australian strategic environment, the application of air power against enemy facilities and bases places challenging demands on the reach and penetration of the Air Force’s air power and capacity to sustain deployed operations. OCA aircraft operating over long distances may require support from AAR aircraft to overcome any range limitations.

Because any offensive action has the potential to trigger escalation of a conflict, the freedom of action to achieve control of the air through offensive actions is influenced by requirements beyond the military dimension, such as ROE or political inputs.

**Defensive counter air (DCA)**

Defensive counter air comprises all measures to reduce or neutralise the effectiveness of hostile air action and to prevent the enemy from gaining control of the air. These operations normally take place over or close to friendly territory, and aim to avoid or minimise the damage sustained by friendly forces whilst inflicting the maximum attrition on the opponent.

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**DCA comprises active and passive measures.**

**Active DCA.** Active DCA is direct action taken by air and surface forces to inflict attrition on the enemy and neutralise the effectiveness of hostile air action.

**Passive DCA.** Passive DCA includes those measures, other than active air defence, taken to minimise the effectiveness of hostile air action by enhancing the survivability of friendly forces and installations.
DCA aims to complicate an adversary’s counter air operations by denying information, providing timely threat detection and protecting friendly forces from kinetic, electronic or other attack. These operations are enabled by the ability to network the joint force's sensors, weapon systems and communications through a centralised C2 system.

DCA generally has a very low probability of causing a conflict to escalate. Further, the reduced transit ranges required for defensive operations over friendly territory can enable more persistent counter air operations without the force packaging that may be required for offensive operations into enemy territory. However, DCA is reactive and offers the initiative to the adversary, who can choose the time and place of action and control the tempo of operations.

**Effective and efficient counter air requires a balance of offensive and defensive counter air operations dependent on the context.**

**Precision attack**

**Precision attack is the convergence of information, C2 and weapon systems to engage targets and create effects that achieve campaign outcomes.**

The Air Force’s precision attack capability can shape the environment, deter possible aggressors, and, where necessary, deliver a timely and decisive response.
Maintaining this capability with a numerically small force requires a careful mix of effective C2 networks, support systems and weapon system technology. The proliferation of modern air defence systems places such stringent demands on platform survivability that only highly capable weapon systems, at or near the leading edge of technology, can provide a credible precision attack capability against a capable adversary.

Precision attack is defined by the precision of the effect created, and does not directly imply the use of precision weapons.
Strategic attack

Strategic attack describes the application of air power to create specific strategic effects that degrade or destroy an adversary’s will, warfighting capabilities or any other capacity that would adversely affect Australia’s interests. Strategic attack is a defining function for air forces with the independence to choose their own organisation and force structure to generate and apply air power. Even when conducted independent of surface force manoeuvre, strategic attack is an integral part of the joint military campaign, and can make a decisive contribution in a NEBA.

On land, strategic attack can target an adversary’s leadership, command structure, essential facilities, infrastructure, research and production facilities, and military capabilities. In the maritime domain, strategic attack can achieve decisive strategic effect by destroying or deterring enemy military and commercial shipping that is an integral element of its national power and ability to wage war.

The strategic assessment that shapes strategic attacks is complex, and will be guided by political intent and constraints. Decisions to carry out strategic attack are normally taken at the highest political level, as strategic attack carries a possible risk of creating unintended and undesired effects. If not well-managed, such effects have the potential to adversely change the conduct and outcomes of a campaign, which might detract from achieving the strategic goals of the Government.
The Government believes that this [strike] capability is an important element of Australia's military posture because it provides us with the flexibility to destroy hostile forces before they are launched towards Australia and when they may be most vulnerable. Strike capability allows Australia more scope to determine the pace and location of hostilities, and would impose major defensive costs on an adversary contemplating hostile action against us. Strike forces can provide excellent support to Australian forces deployed abroad, and may also offer a valuable option for contributing to regional coalitions.

*Defence 2000—Our Future Defence Force*

**Integrated air**

Integrated air is the integrated planning and conduct of air operations as part of joint and coalition campaigns. Planning will always be highly integrated, whilst the degree of integration in execution will vary dependent on need.

Integrated air describes the conduct of air operations in carefully planned and executed campaigns and includes counter land and counter sea operations. Planning these campaigns will always be a highly integrated process involving all participating forces. The nature and level of integration between air and surface forces in the execution of these plans is shaped by operational situations and the specific requirements of campaign phases. This integration varies from synchronised manoeuvre and force application through to lesser levels of control focused primarily on deconflicting the activities of friendly forces. Integration is enabled by interoperable C2 and information systems.
Integrated air operations can directly support surface forces, be supported by surface forces or be conducted to achieve campaign outcomes independent from surface force manoeuvre. These air operations are conducted primarily to deprive the enemy of the military power needed to exploit, manoeuvre in, or occupy land or seaspace. Integrated air aims to create primarily operational and tactical effects by degrading an adversary’s warfighting capability. In some situations, integrated air operations can achieve strategic outcomes by attacking military targets, without the requirement to attack an adversary’s national infrastructure or other elements of national power directly. In these instances, integrated air operations against military targets are judged as the most efficient and effective pathway to creating the effects that will achieve our desired end state.

The success of integrated air operations requires effective C2 and timely, accurate intelligence assessments of the adversary to determine the appropriate targeting for each scenario. Integrated air operations in counter-insurgency operations (COIN) against an adversary carrying out dispersed asymmetric warfare present a specific and demanding problem. These operations may require persistent surveillance of the battlespace, robust C2 and information networks and a time-critical attack capability against fleeting targets. Whilst operations against conventional forces require similar synergies, the nature, persistence and degree of integration of these operations differ significantly.

**Counter land**

Counter land operations are conducted against enemy land forces to create effects that support the campaign. Although
most frequently associated with support to friendly surface forces, counter land operations may also be conducted independent of surface force objectives or in operations where no friendly land forces are present.

There are two broad categories of counter land operations; air interdiction (AI) and close air support (CAS).

**Air interdiction.** AI can contribute directly to campaign objectives or support land forces. These operations involve the application of air power against the adversary's military potential before it can be brought to bear against friendly forces. AI and surface manoeuvre must be synchronised in planning to avoid fratricide and enhance the effect of air attacks on the land battle. Integrated air and surface actions may force an enemy to manoeuvre, exposing their forces to attack, or may force the enemy to adopt defensive measures that deny them the initiative. Although planning AI is an integrated process, these operations are normally conducted at such distance from friendly forces that detailed coordination of AI missions with the fire and movement of friendly forces is not required.

> Air interdiction is conducted to divert, disrupt, delay or destroy the opponent's military potential before it can be brought to bear effectively against friendly forces.

**Close air support.** CAS is conducted against hostile targets that are in close proximity to friendly forces or in actual contact with those forces. CAS requires the highest degree of integration between air and surface forces, because of the immediacy of the threat, the close proximity of friendly forces and the risk of fratricide. As the ADF develops its ability to operate as a networked force, CAS will
be increasingly enabled by the networked capability to provide real-time, accurate positional data on friendly and adversary forces, and to provide the appropriate command authority for effective operations.

The degree of integration required to conduct safe and effective CAS requires a high level of joint, combined and coalition training.

**Counter sea**

Counter sea operations describe the application of air power in integrated operations against enemy maritime forces and other assets that directly contribute to maritime campaigns. These operations use the same broad principles as AI and CAS, adapted to create effects in the maritime environment. Counter sea operations are typically integrated with those of friendly naval forces seeking to maintain a desired degree of control of the sea, but can also be conducted as independent air operations within the joint or coalition campaign. These operations can be conducted against surface targets (anti-surface warfare—ASUW) and sub-surface targets (anti-submarine warfare—ASW).

For Australia, security and freedom of operation for naval forces in the maritime approaches are vital to our national strategy to deter or defeat conventional military aggression against Australia.
Air power generation and sustainment focuses on ensuring that the current force has the necessary Permanent and Reserve personnel, skills and equipment to conduct and sustain air operations while maintaining the ability to regenerate the force during and after operations. It must also include concurrent planning for the future Air Force and initiate actions as necessary to ensure the development of appropriate capability. Air power generation and sustainment is conducted across the full range of the Air Force's Fundamental Inputs to Capability (FIC), namely: organisation, personnel, collective training, major systems, supplies, facilities, support, and command and management.

**Force establishment**

Force establishment is primarily an organisational function that establishes the Air Force’s critical mass—the necessary capability
to conduct and sustain operations as and when required by the Government. It is the foundation of all the other functions, and must be exercised with professional mastery if the Air Force is to operate as a versatile, agile expeditionary force. Failure in this function will result in strategic failure of the Air Force.

**Force preparation and sustainment**

The organisational and administrative actions to mobilise the force and to ensure that Air Force personnel are trained and educated to attain the level of professional mastery required to command and operate air power in complex operations are the cornerstones of force preparation. Force sustainment provides the necessary logistic and other support to sustain generated forces during preparation and when they are assigned to operations. This support is drawn from Air Force resources, Defence and from a network of relationships and arrangements with the national industry base, international sources and the forces of Australia’s partners.

Professional mastery to command air power in complex situations is a cornerstone of force preparation.

The high likelihood that the Air Force will be required to conduct expeditionary air operations, potentially at short notice, means that force preparation and sustainment must be responsive and robust enough to ensure the availability of the Air Force's air power where and when required. Essentially, force preparation and sustainment is a dynamic function, requiring careful nurturing and guidance at the highest level. The Air Force achieves this by strategic planning that ensures capability development is done in conjunction with national security direction.
Air and space systems support

Air and space systems support enables the Air Force to evolve towards a networked force and adapt its operational capability by integrating new systems and procedures. This function provides the scientific base to analyse emergent threats, design responses and integrate new systems and weapons onto existing platforms. There is a joint dimension to this function, which provides the technical, intelligence and electronic threat data support to ensure the ongoing operational superiority of the ADF’s electronic warfare systems. Air and space systems support has a vital role in optimising the battle-worthiness of the Air Force’s airborne platforms and systems, enabling the Air Force to meet the Government’s policy requirement to ‘provide our forces with a clear margin of superiority against any credible adversary’.  

New systems undergo extensive testing before being integrated into Air Force capability.

Combat support

The primary aim of combat support is to facilitate the effective application of the Air Force’s responsive expeditionary capability by providing the essential services required to sustain air operations from air bases in Australia and abroad.

Permanent air base operation

The Air Force’s capability to mount expeditionary operations, conduct forward operations, prepare forces and support their deployment on operations is centred on its permanent air bases within Australia. The permanent air bases are those in continuous use by the force. The permanent air bases enable the Air Force to prepare forces and conduct the full range of air power roles, and are an essential component of the sustainment and C2 capability that enables expeditionary RAAF and joint operations. These bases can also support combined, coalition
and multinational operations, including those requiring the provision of facilities and consumables for large numbers of overseas forces. The Air Force's permanent air bases are operated by a combination of RAAF, other Defence and contracted personnel. The balance of RAAF and other personnel is determined by the need to provide effective air base operations with the most efficient use of resources whilst ensuring that the RAAF maintains the necessary skill-sets and numbers of personnel to conduct effective expeditionary and forward air base operations when required. These skills and personnel also enable the RAAF to activate and operate its 'bare bases' when required.

**Expeditionary air base establishment and operation**

The Air Force’s ability to operate as an expeditionary force is dependent on its capacity to establish and operate forward air bases in Australia and offshore. The operational expeditionary component of this function is generally embedded in the permanent air base organisation and drawn together when required by flexible C2 arrangements that allow the formation of elements tailored for the needs of each operation and location. The synergy between this function and the Air Force’s mobility makes a vital contribution to the responsiveness that is a key strength of the force. Specialised skills and air power mastery are essential to understand the air base requirements for each operation, conduct comprehensive planning, establish forward air bases and sustain air operations.

This function also includes establishing the necessary support infrastructure for the Air Force to conduct operations from other nations’ established military or civilian air bases. The diversity in scale, location and degree of support required for expeditionary
Applying Air and Space Power

operations requires air base establishment and operation capabilities that are flexible and scalable. This flexibility includes ensuring access to critical information and assets, from deployed resources and through a network of enabling, logistics and support links. Generating these capabilities requires extensive training and the development of the highest levels of interoperability with allies and potential coalition partners. The responsiveness and flexibility of the Air Force is completely dependent on its ability to perform this function with the smallest possible footprint.

Non-air base support to operations

The ability to perform the combat support function also enables the Air Force to provide a range of support services to operations that need not entail the activation or operation of an air base. Non-air base support can include the provision of logistics, personnel, communications, financial management, security, safety, civil engineering, health, historical, media, legal and chaplaincy services. This role can support Air Force operations or the operations of collocated elements of joint, combined and coalition military forces or non-military agencies.

Integration of Functions

The air and space power functions must be applied in carefully constructed combinations if they are to guide the planning and execution of efficient and effective air operations. All the functions rely on C2, and none of the functions will be delivered without the foundation activities drawn from air power generation and sustainment. Without the abilities inherent in its force application and air mobility functions, which are in turn enabled by combat support, information security and support and C2, Air Force will not
be able to make the viable contribution to national security that the Government demands.

Professional mastery brings together the capabilities of the Air Force and exploits the air and space power functions and their synergies to ensure the optimum application of its air power. Such mastery today is essential to guide the Air Force into the future.
Chapter 7
Epilogue—Into the Future
Mastering Air Power for the Future Air Force

The Air Force’s capabilities and skill at conducting operations mean that air power is frequently an element of the Government’s first response to crises and other contingencies across the spectrum of conflict. The joint dimension of these operations cannot be overstated, and will have an increasing influence on doctrine as the ADF evolves towards a future defined by seamless forces. This evolution of the ADF means that the Air Force must maintain its current effectiveness whilst designing and preparing the force to remain effective and highly-regarded into the future.

Those parts of The Air Power Manual that refer to the future are included as the basis for this planning. Through the future-focused content and its flow-on into air power training and education, doctrine lays a strategic foundation for the transition to the future Air Force. The professional mastery of Air Force personnel is at the heart of this transition. Professional mastery will enable them to continue conducting effective air operations to meet today’s challenges while beginning to design and adapt the force for the future.

None of this is easy. While the current capabilities of the Air Force are well known, and there is a clear picture of the capabilities expected to arrive in the force during the life of this edition of The Air Power Manual, the people of the Air Force must deal with two broad challenges. First, they must integrate and operate those capabilities to maximum effect in the current environment. Second, many of the capabilities
currently in service, or soon to be acquired, will remain part of the Air Force into the 2025 time frame of AAP 1000–F—The Future Air and Space Operating Concept. This means that Air Force personnel must begin preparing to draw the maximum operational effectiveness from those capabilities in an environment shaped by emergent technologies and concepts that cannot be predicted with certainty.

The Air Force’s future is as part of a seamless and networked force, operating within a whole-of-government National Effects-Based Approach to security. The implication of this is that the Air Force must develop the ability to operate seamlessly in joint, multi-agency and coalition operations. The Air Power Manual uses the joint warfighting functions and within them, the Air Force’s air and space power functions, as the framework to describe the application of air power and space power in the seamless, networked operational context.

These functions provide a framework for describing the application of air power in a way that is relevant now, and is expected to endure into the future. Defining air power along functional lines also means that, should the warfighting functions evolve as the ADF adapts its doctrine and warfighting concepts, the Air Force will be well-positioned to adapt its air power doctrine and concepts to remain congruent with the ADF. Because doctrine and concepts provide guidance for training and shaping the Air Force, this approach to managing doctrinal change has been selected to best guide any subsequent doctrine-related impact on the force’s organisation and operational capabilities.
Because Australia's security environment is uncertain, complex and interrelated with a difficult range of global security challenges, the Air Force must be prepared for a wide range of possible operations, with the ability to conduct armed conflict to secure Australia's interests remaining at the core of its readiness. Doctrine reduces some of the uncertainty associated with the present, and documents like FASOC attempt to improve our readiness to confront the future by expressing a preferred aim point. However, there is no way to remove the uncertainty of the environment or to predict the actions of potential adversaries with certainty. Therefore, true professional mastery demands the ability to synthesise complex information and the moral courage to make difficult decisions and act in the face of ambiguity.

Our strategic intent for the ways the Air Force and its people will meet these challenges into the future is articulated in FASOC.
Appendix 1 – Doctrine Hierarchy Outline

AAP 1000

AAP 1000-F

AAP 1000-D

AAP 1000-H

AAP 1003 Operations Law for RAAF Commanders

AAP 1002 Operational Air Doctrine Manual

Future operating sub-concepts

AAP 100X Series of application doctrine publications.

Subordinate procedural doctrine.
Adversary
An adversary is a party acknowledged as potentially hostile to a friendly party and against which the use of force may be envisaged.

Air Campaign Execution
Air campaign execution is the execution of the air campaign plan.

Air Interdiction (AI)
Air interdiction is the operations conducted to destroy, neutralise or delay the enemy’s military potential before it can be brought to bear effectively against friendly forces and at such distance from friendly forces that detailed integration of each air mission with the fire and movement of friendly forces is not required.

Air Superiority
Air superiority is that degree of dominance in the air battle over the adversary which permits the conduct of operations by friendly land, sea and air forces at a given place and time without effective interference by the opposing force. [ADG-Air Force]

Air Supremacy
Air supremacy is that degree of air superiority wherein the opposing air force is incapable of interference. [ADG-Air Force]

1 Australian Defence Glossary - Air Force definition
**Airborne Operations**
Airborne operations are the use of air power to deliver combat-ready surface forces directly onto the objective.

**Airdrop**
Airdrop is the delivery of personnel or cargo from aircraft in flight.

**Airspace Management**
Airspace management is the coordination, integration, and regulation of the use of airspace of defined dimensions.

**Armed Conflict**
Armed conflict describes conflict between states or protracted violence between government authorities and organised armed groups within a state in which at least one group has resorted to the use of armed force to achieve its aims.

**Asymmetric Warfare**
Asymmetric warfare is the military action against an adversary to which he may have no effective response and which pits strength against weakness, sometimes in a non-traditional and unconventional manner.

**Battlespace**
The battlespace consists of environment, factors and conditions that must be understood to successfully apply combat power, protect the force or complete the mission successfully. This includes the air, land, sea, space environments, the included enemy and friendly forces, facilities, weather, terrain, the electromagnetic spectrum and the information environment within the operational areas and areas of interest.
**Centres of Gravity**
Centres of gravity are the characteristics, capabilities or localities from which a nation, an alliance, a military force or other grouping derives its freedom of action, physical strength or will to fight.

**Civil Search and Rescue (CIVIL SAR)**
Civil SAR is the recovery of isolated civilian personnel in distress, and can also relate to military support of a civil SAR operation.

**Close Air Support**
Close air support is air action against hostile targets which are in close proximity to friendly forces and which require detailed integration of each air mission with the fire and movement of those forces.

**Coalition**
A coalition is formed by two or more nations, which are not all allies, united by a common mission.

**Combined Operation**
A combined operation is an operation conducted by forces of two or more allied nations acting together.

**Command and Control (C2)**
Command and control is the process and means for the exercise of authority over, and lawful direction of, assigned forces.
**Concurrent Operations**
Concurrent operations are coordinated operations conducted simultaneously. [ADG-Air Force]

**Control of the Air**
Control of the air is the ability to conduct friendly operations in the air and on the surface below it without interference from enemy air power. [ADG-Air Force]

**Counter Air (Operation)**
Counter air is an air operation directed against the enemy’s air offensive and defensive capability in order to attain and maintain a desired degree of air superiority.

**Counter Land and Counter Sea**
Counter land and counter sea operations are conducted to deprive the adversary of the military power needed to exploit, manoeuvre in or occupy land or sea space. [ADG-Air Force]

**Counter-Insurgency Operations (COIN)**
Counter-insurgency operations are those military, paramilitary, political, economic, psychological, and civic actions taken by a government to defeat insurgency.

**Decision Superiority**
Decision superiority is the ability to make and implement more informed and more accurate decisions at a rate faster than the adversary.
**Defensive Counter Air**
Defensive counter air comprises all measures designed to nullify or reduce the effectiveness of hostile air action, and to prevent the adversary gaining the initiative by obtaining control of the air. [ADG-Air Force]

**Doctrine**
Doctrine is the fundamental principles by which the military forces guide their actions in support of objectives.

**Effects**
Effects are the physical, physiological, psychological or functional impacts on the adversary as a result or consequence of own actions. [ADG-Air Force]

**Expeditionary Operation**
An expeditionary operation is the projection of military power over extended lines of communications into a distant operational area to accomplish a specific objective.

**Experimentation**
Experimentation is the application of the structure and methods of experimental science to support the understanding and determination of future defence capability via the exploration of novel future concepts and contexts to link current Defence Force planning to future Defence needs.
Favourable Air Situation
A favourable air situation is one in which the extent of the air effort applied by the opponent is insufficient to prejudice the success of specific friendly maritime, land or air operations delineated in time and space. [ADG-Air Force]

Forward Operating Base
A forward operating base is an airfield used to support tactical operations without establishing full support facilities.

Humanitarian Assistance
Humanitarian assistance is the use of available military resources to assist or complement the efforts of responsible civil actors in the operational area or specialised civil humanitarian organisations in fulfilling their primary responsibility to alleviate human suffering.

Information
Information is the unprocessed data of every description which may be used in the production of intelligence.

Integrated Air
Integrated air is the integrated planning and conduct of air operations as part of joint and coalition campaigns.

Intelligence
Intelligence is the product resulting from the processing of information concerning foreign nations, hostile or potentially hostile forces or elements, or areas of actual or potential operations.
**Interoperability**
Interoperability is the ability of military forces to train, exercise and operate effectively together in the execution of assigned missions and tasks.

**Joint Operations**
Joint operations are operations in which elements of more than one Service of the same nation participate.

**Joint Personnel Recovery (JPR)**
Joint personnel recovery operations are the aggregate of military, civil and political efforts to rescue, release or recover personnel from permissive, uncertain or hostile environments whether they are captured, missing or isolated.

**Maritime Interdiction**
Maritime interdiction operations are conducted to enforce prohibition on the maritime movement of specified persons or material within a defined geographic area.

**Multi-mission**
Multi-mission platforms are those capable of undertaking more than one specialist task during a single sortie. [ADG-Air Force]

**Multinational Operation**
A multinational operation is conducted when two or more nations operate with each other, without a formal agreement, united only by a common need.
Multi-role
Multi-role platforms are those capable of being reconfigured quickly so that they can undertake alternative roles. [ADG-Air Force]

Offensive Counter Air (OCA)
Offensive counter air is the air power role relating to operations mounted to destroy, disrupt or limit enemy air power as close to its source as possible.

Operating Concept
An operating concept is an articulation in broad terms of the application of military art and science within some defined set of parameters. In simplest terms, operating concepts describe how military forces operate. [Guide for Developing and Writing Military Concepts]

Operation
An operation is a designated military action using lethal and/or non-lethal ways and means to achieve directed outcomes in accordance with national legal outcomes and constraints.

Precision Application
Precision application is the ability to apply force or conduct other actions in a manner that creates the specific effects required to achieve desired campaign outcomes. [ADG-Air Force]
**Professional Mastery (Air Power)**

Professional mastery is the sum of the individual knowledge and understanding of air power and space power plus the experience and confidence gained during a career. [ADG-Air Force]

**Reach**

Reach is air power’s inherent ability to penetrate deep into the battlespace to create effects. [ADG-Air Force]

**Reconnaissance**

Reconnaissance is undertaken to obtain information about the activities and resources of a designated enemy, or to secure data concerning the meteorological, hydrographic or geographic characteristics of a particular area.

**Responsiveness**

Responsiveness is the synergy of speed, reach and penetration that enables the application of air power where and when required. [ADG-Air Force]

**Rules of Engagement (ROE)**

Rules of engagement (ROE) are directions endorsed by the Government and issued by commanders, which delineate the circumstances and limitations within which military force may be applied to achieve military objectives.

**Seam**

A seam is a recognised and definable boundary between two systems, forces or agencies. [ADG-Air Force]
**Seamless Force**
A seamless force is one designed to operate at a level of integration beyond joint, and to offer no visible operational or organisational seam of vulnerability for an adversary to exploit. [ADG-Air Force]

**Space Power**
Space power is the ability to enable and enhance terrestrial operations through exploitation of the space environment. [ADG-Air Force]

**Strategic Effect**
Strategic effect is the disruption of an enemy’s strategy, ability or will to wage war or carry out aggressive activity.

**Surveillance**
Surveillance is the systematic observation of air, space, surface or sub-surface areas, places, persons, or things, by visual, aural, electronic, photographic or other means.

**Targeting**
Targeting is the process of selecting and analysing targets and matching the appropriate response to them, taking into account national strategy and operational requirements and capabilities.

**Target**
A target is the geographic area, complex, installation, platform, object, capability or entity planned for capture, neutralisation, exploitation, or destruction by military forces. A platform may be air, sea, land, or space-based, and an entity may be a person, government, organisation or body. A capability may include information and command and control systems.
**Tempo**
Tempo is the rate of operations relative to that of the enemy.

**Warfighting**
Warfighting is the government-directed use of military force to pursue specific national objectives.

Warfighting is the government-directed use of military force to pursue specific national objectives.

**Weapon System**
A weapon system is the combination of one or more weapons with all related equipment, materials, services, personnel and means of delivery and deployment (if applicable) required for self-sufficiency.

**Whole-of-Government Approach**
The whole-of-government approach is the Australian Government strategy of coordinating the elements of national power in pursuit of national strategic objectives.
Index

Active Defensive Counter Air 142
Aeromedical Evacuation (AME) 130, 133
Agility 77
Air and Space Battle Management (ASBM) 122
Air and Space Power Functions 107, 114, 156
Air and Space Systems Support 152
Air Bases 153, 154
Air Base Protection 135
Air Campaign Execution 120
Air Campaign Planning 118
Air Campaigning 118, 135
Air Force Headquarters 30
Air Force’s Strengths 77
Air Interdiction (AI) 148
Airlift 83, 131
Air Logistic Support (ALS) 130
Air Mobility 130, 156
Air Operations Centre (AOC) 120
Air Power—Definition 3
Air Power Doctrine 11
Air Power Generation and Sustainment 150, 155
Air Power Roles 116
Air Superiority 141
Air Supremacy 141
Airborne Early Warning and Control (AEW&C) 79, 82
Airborne Operations (ABN) 132
Airspace Management 123
<table>
<thead>
<tr>
<th>Term</th>
<th>Page Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air-to-Air Refuelling (AAR)</td>
<td>74, 132</td>
</tr>
<tr>
<td>Anti-Submarine Warfare (ASW)</td>
<td>149</td>
</tr>
<tr>
<td>Anti-Surface Warfare (ASUW)</td>
<td>149</td>
</tr>
<tr>
<td>Application Doctrine</td>
<td>10</td>
</tr>
<tr>
<td>Assistance to Civil Authorities</td>
<td>40, 43</td>
</tr>
<tr>
<td>Asymmetric Warfare</td>
<td>147</td>
</tr>
<tr>
<td>Australia’s Military Strategy</td>
<td>60</td>
</tr>
<tr>
<td>Balance</td>
<td>110</td>
</tr>
<tr>
<td>Bare Bases</td>
<td>154</td>
</tr>
<tr>
<td>Battlespace Management</td>
<td>122</td>
</tr>
<tr>
<td>Capability Development</td>
<td>22, 99</td>
</tr>
<tr>
<td>Care After Recovery (CAR)</td>
<td>136</td>
</tr>
<tr>
<td>Centre of Gravity</td>
<td>59, 84</td>
</tr>
<tr>
<td>Characteristics of Air Power</td>
<td>78</td>
</tr>
<tr>
<td>Civil Search and Rescue</td>
<td>136</td>
</tr>
<tr>
<td>Close Air Support (CAS)</td>
<td>148</td>
</tr>
<tr>
<td>Coalition</td>
<td>61</td>
</tr>
<tr>
<td>Combat Recovery (CR)</td>
<td>136</td>
</tr>
<tr>
<td>Combat SAR (CSAR)</td>
<td>136, 137</td>
</tr>
<tr>
<td>Combat Support</td>
<td>153</td>
</tr>
<tr>
<td>Combined Operations</td>
<td>61</td>
</tr>
<tr>
<td>Command and Control (C2)</td>
<td>117</td>
</tr>
<tr>
<td>Components of National Power</td>
<td>55</td>
</tr>
<tr>
<td>Concentration of Force</td>
<td>44, 90</td>
</tr>
<tr>
<td>Concurrent Operations</td>
<td>91</td>
</tr>
<tr>
<td>Control of the Air</td>
<td>98, 139, 141</td>
</tr>
<tr>
<td>Counter Air</td>
<td>138</td>
</tr>
<tr>
<td>Counter Air Campaign</td>
<td>137, 139</td>
</tr>
</tbody>
</table>
Counter Land 147
Counter Sea 149
Counter-Insurgency Operations (COIN) 147
Critical Mass 22, 150
Decision Superiority 28, 72, 73, 125, 126, 129
Defence Civilians 19, 27
Defensive Counter Air (DCA) 142
Designing the Air Force 20, 22, 29, 87
Diplomatic, Information, Military and Economic (DIME) Strategies 55
Disaster Relief 40
Education 12, 25, 28, 87, 159
Effects 58
Effects-Based Approach 57
Elements of National Power 55
Expeditionary Air Base Establishment and Operation 154
Expeditionary Capability 110, 111, 153
Expeditionary Combat Support Squadron (ECSS) 82
Expeditionary Operations 31, 82, 92, 111, 118, 121
Favourable Air Situation. 141
Flexibility 87
Force Application 114, 137
Force Deployment 113, 130
Force Design 87
Force Establishment 150
Force Generation and Sustainment 114, 150
<table>
<thead>
<tr>
<th>Topic</th>
<th>Page Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Force Preparation and Sustainment</td>
<td>151</td>
</tr>
<tr>
<td>Force Preparedness</td>
<td>17, 110</td>
</tr>
<tr>
<td>Force Protection</td>
<td>114, 134</td>
</tr>
<tr>
<td>Force Structure</td>
<td>17, 34, 86, 110, 145</td>
</tr>
<tr>
<td>Force Sustainment</td>
<td>151</td>
</tr>
<tr>
<td>Forward Air Bases</td>
<td>154</td>
</tr>
<tr>
<td>Fundamental Inputs to Capability (FIC)</td>
<td>150</td>
</tr>
<tr>
<td>Geneva Conventions</td>
<td>47</td>
</tr>
<tr>
<td>Geo-Strategic Environment</td>
<td>108, 109, 131</td>
</tr>
<tr>
<td>Headquarters Air Command</td>
<td>30</td>
</tr>
<tr>
<td>Hub and Spoke Logistics</td>
<td>131</td>
</tr>
<tr>
<td>Information Networks</td>
<td>98, 147</td>
</tr>
<tr>
<td>Information Operations</td>
<td>75, 124, 129</td>
</tr>
<tr>
<td>Information Superiority</td>
<td>124, 125</td>
</tr>
<tr>
<td>Information Superiority and Support (ISS)</td>
<td>113, 124</td>
</tr>
<tr>
<td>Information Support Systems</td>
<td>125</td>
</tr>
<tr>
<td>Information Systems</td>
<td>110, 124, 129, 135, 146</td>
</tr>
<tr>
<td>Integrated Air</td>
<td>146</td>
</tr>
<tr>
<td>Integrated Operations</td>
<td>88, 149</td>
</tr>
<tr>
<td>Intelligence</td>
<td>124, 125</td>
</tr>
<tr>
<td>International Law</td>
<td>47, 102</td>
</tr>
<tr>
<td>Interoperability</td>
<td>12, 30, 111, 112, 115, 118, 122, 123, 135, 137, 155</td>
</tr>
<tr>
<td>ISR</td>
<td>75</td>
</tr>
<tr>
<td>Joint Force</td>
<td>24, 82, 121, 138</td>
</tr>
<tr>
<td>Joint Personnel Recovery (JPR)</td>
<td>136</td>
</tr>
<tr>
<td>Joint Warfighting Functions</td>
<td>8, 107, 112, 116, 160</td>
</tr>
<tr>
<td>Karman Line</td>
<td>102</td>
</tr>
</tbody>
</table>
Law of Armed Conflict 35, 47
Levels of Command 45, 120
Limitations of Space Systems 74, 102
Military SAR (MILSAR) 136
Military Strategic Level of Command 46
Military Strategy 32, 55, 60, 63, 64, 118
Mobilisation 112
Moral Courage 26, 33, 161
Multi-Agency Environment 63, 160
Multi-Mission Platforms 87
Multinational Environment 61
Multinational Operation 61, 153
Multi-Role Platform 87, 88
National Effects-Based Approach (NEBA) 54, 57, 59, 63, 118, 126, 145
National Power 55
National Security Strategy 35
National Strategic Level of Command 46
Non-Air Base Support to Operations 155
Non-Government Organisations (NGOs) 56, 138
Non-Military Agencies 62, 155
Non-State Actors 54
Non-Warlike Operations 42
Offensive Counter Air (OCA) 141
Operating Concepts 20, 112
Operational Flexibility 89
Operational Nodes 98
Operational Planning 57
<table>
<thead>
<tr>
<th>Topic</th>
<th>Page Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operations Law</td>
<td>47</td>
</tr>
<tr>
<td>Organisation</td>
<td>20, 77, 86, 87, 107, 111, 160</td>
</tr>
<tr>
<td>Organisational Design</td>
<td>29, 30</td>
</tr>
<tr>
<td>Passive Defensive Counter Air</td>
<td>142</td>
</tr>
<tr>
<td>Payload</td>
<td>95</td>
</tr>
<tr>
<td>Peacekeeping</td>
<td>43</td>
</tr>
<tr>
<td>Penetration</td>
<td>83</td>
</tr>
<tr>
<td>Permanent Air Base Operation</td>
<td>153</td>
</tr>
<tr>
<td>Persistent Effect</td>
<td>72</td>
</tr>
<tr>
<td>Perspective</td>
<td>79</td>
</tr>
<tr>
<td>Philosophical Doctrine</td>
<td>9</td>
</tr>
<tr>
<td>Platform and System Vulnerabilities</td>
<td>96</td>
</tr>
<tr>
<td>Posture</td>
<td>17, 66, 110, 146</td>
</tr>
<tr>
<td>Precise Effects</td>
<td>90, 103, 138</td>
</tr>
<tr>
<td>Precision</td>
<td>35, 90</td>
</tr>
<tr>
<td>Precision Application</td>
<td>93</td>
</tr>
<tr>
<td>Precision Attack</td>
<td>143</td>
</tr>
<tr>
<td>Precision Guided Munition</td>
<td>93</td>
</tr>
<tr>
<td>Precision Weapons</td>
<td>90, 94, 144</td>
</tr>
<tr>
<td>Preparedness</td>
<td>17, 20, 31, 64, 67, 110, 111</td>
</tr>
<tr>
<td>Principles of War</td>
<td>43-45</td>
</tr>
<tr>
<td>Procedural Doctrine</td>
<td>10</td>
</tr>
<tr>
<td>Professional Mastery</td>
<td>17</td>
</tr>
<tr>
<td>Range</td>
<td>75, 80, 82, 89, 93</td>
</tr>
<tr>
<td>Range of Operations</td>
<td>17, 40, 53, 64</td>
</tr>
<tr>
<td>Reach</td>
<td>80</td>
</tr>
<tr>
<td>Reachback</td>
<td>82</td>
</tr>
<tr>
<td>Reconnaissance</td>
<td>128</td>
</tr>
</tbody>
</table>
Relative Impermanence 94
Reserve 5, 11, 18, 112, 150
Responsiveness 31, 33, 75, 77, 84, 90, 99, 108, 129, 139, 155
Roles 116
Rotary Wing Aircraft 132
Rules of Engagement (ROE) 48, 142
Satellite 74, 102
Seamless Force 23, 24
Seamless Operations 23, 26, 107, 160
Self-Protection Systems 83, 97
Shaping 64
Space Power 4, 101
Space Situational Awareness (SSA) 104, 128
Space-Based Support 104, 134
Space-Based Systems 94, 104, 121, 128, 135, 138
Special Recovery Operations (SRO) 136
Spectrum of Conflict 39
Speed 75, 81, 83, 89, 90, 96, 138
Strategic Attack 145
Strategic Environment 17, 54, 107
Strategic Geography 108
Strategic Surprise 29, 31
Surveillance 127
Swing-Role 88
System Fragility 98
System Vulnerabilities 96
Systemic Depth 99
<table>
<thead>
<tr>
<th>Term</th>
<th>Page(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Systemic Reach</td>
<td>81</td>
</tr>
<tr>
<td>Targeting</td>
<td>120, 147</td>
</tr>
<tr>
<td>Technical Mastery</td>
<td>25</td>
</tr>
<tr>
<td>Technology</td>
<td>99</td>
</tr>
<tr>
<td>Tempo</td>
<td>91</td>
</tr>
<tr>
<td>The Future Air and Space Operating Concept (FASOC)</td>
<td>3, 7, 29, 107, 112, 114, 159, 161</td>
</tr>
<tr>
<td>Uninhabited Aerial Systems</td>
<td>74</td>
</tr>
<tr>
<td>Uninhabited Platforms</td>
<td>79</td>
</tr>
<tr>
<td>United Nations Outer Space Treaty</td>
<td>49</td>
</tr>
<tr>
<td>Values – Air Force</td>
<td>19, 28</td>
</tr>
<tr>
<td>Versatility</td>
<td>18, 35, 53, 77, 86, 91, 93, 140</td>
</tr>
<tr>
<td>Virtual Presence</td>
<td>72, 74</td>
</tr>
<tr>
<td>Warlike Operations</td>
<td>40</td>
</tr>
<tr>
<td>Whole-of-Government Approach</td>
<td>34, 35, 53, 56, 61, 86, 126, 139, 160</td>
</tr>
</tbody>
</table>