The Sea Power Centre - Australia was established to undertake activities to promote the study, discussion and awareness of maritime issues and strategy within the Royal Australian Navy, the Department of Defence and civil communities at large. Its mission is:

- to promote understanding of sea power and its application to the security of Australia’s national interests
- to manage the development of RAN doctrine and facilitate its incorporation into ADF doctrine
- to contribute to regional engagement
- to contribute to the development of maritime strategic concepts and strategic and operational level doctrine, and facilitate informed force structure decisions
- to preserve, develop and promote Australian naval history.

Comments on this volume or any enquiry related to the activities of the Centre should be directed to:

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Foreword

Projecting power from the sea to influence events ashore is a fundamental role for any maritime force. This role is integral to the span of maritime tasks from combat operations such as land strike and amphibious operations, through to humanitarian assistance and disaster relief. For Australia, the need to be able to fight ‘at sea’ and establish sea control allows us to fight ‘from the sea’ where we are able to assist in achieving strategic goals.

With the commissioning of HMAS Tobruk in 1981, the ADF commenced the development of an amphibious force that would greatly enhance our ability to conduct operations from the sea. Complemented by six heavy landing craft (the hard working and now venerable Balikpapan class LCH) and initially supplemented by the sea-lift capabilities of the converted ferry, HMAS Jervis Bay, the seed of a sea-lift and amphibious capability was planted. The capability grew considerably in 1994 with the purchase of two ex-USN Newport class tank landing ships, commissioned as HMA Ships Kanimbla and Manoora, and further troop-lift capability was added for operations in East Timor in 1999 with the charter of the fast catamaran, HMAS Jervis Bay.

The 2007 decision to acquire two Spanish designed amphibious ships (LHD), to be named HMA Ships Canberra and Adelaide, marked the next major advance in the development of the amphibious capability and, given the size and capability of these ships, was also the most ambitious. Operating these ships to their full potential to project power from the sea to the shore will considerably challenge not just the RAN, but also the ADF.

The RAN Sea Power Conference 2010, Combined and Joint Operations from the Sea, was held in Sydney between 27 and 30 January 2010. Held once again in conjunction with the Pacific 2010 International Maritime Exposition and the International Maritime Conference, the Sea Power Conference aimed to provide a forum for exploring the ADF-wide implications of this significant capability increase and to highlight the beneficial attributes of maritime power projection - benefits that the LHD will be particularly well placed to exploit. The papers presented during the conference covered a broad range of issues and were written by serving and retired naval officers, both from Australian and international navies, and a wide range of academics.

Given that Australia’s amphibious capability will be truly joint in nature, it was fitting that the keynote address was given jointly by the three Chiefs of Service. Each gave a unique perspective of how their Service would contribute to amphibious capability.

PART 3 International Perspectives

The RoK Navy’s Amphibious Capabilities
Sukjoon Yoon

Indonesian and Australian Naval Cooperation
Desi Albert Mamahit

A Royal Marine Perspective on Amphibious Operations
Andy Salmon

Towards a Doctrine for Combined and Joint Operations from the Sea
Marcus Houben

The Littoral: The Archetypal Joint Paradigm?
Jeremy Blackham

Defining and Describing Maritime Irregular Warfare in Asia
Martin Murphy

PART 4 Australian Amphibious Concepts

Enhancing Australia’s Civil-Military Capabilities
Michael G Smith

The Future ADF Amphibious Warfare Capability
Ian Jarvie

Developing Amphibious Capability:
The Need for Greater Industry Engagement
Rowan Tink

Sustainment of the Canberra Class LHD
Kathryn Richards and Chris Nelms

Training Implications of the Canberra Class LHD
Daryl Bates

Combat Aviation Afloat: The Fleet Air Arm Perspective
Tony Dalton

Combat Aviation Afloat: A Sea Change for Army Aviation
Andrew MacNab

Key Factors in Attaining the Future ADF Amphibious Capability
Stephen Woodall

The Execution of Expeditionary Operations
by Joint Operations Command
David Johnston
and the challenges that they faced in achieving it. Their presentations form the first part of this volume, and provide an insight into how the ADF is evolving into a maritime force.

The next part looks at recent operational experiences, both Australian and international. Humanitarian operations such as those conducted in the wake of the 2004 Indian Ocean tsunami, counter-piracy operations in the Gulf of Aden, and Australia’s peacekeeping operations in East Timor all provide valuable lessons in the challenges of conduction maritime power projection both close to home and at a distance in the face of a range of threats.

Part Three gives international perspectives on expeditionary and amphibious capability. Presentations from Republic of Korea, the Netherlands, the United Kingdom and Indonesia provided an interesting perspective on the common challenges and the considerable differences in how our countries are approaching acquiring and using this capability.

The final part examines Australian issues and gives a good indication of the broad scope of challenge we face. These include establishing an appropriate and workable command and control structure, training implications of generating sailors with the required skills, how best to sustain an amphibious capability, and implications for Australian industry. The papers in this section show the ADF has a lot of work facing it in the coming years, but the benefits will be considerable.

In closing, I would like to thank one individual who, more than any other, was responsible for the success of the 2010 Sea Power Conference. Commander Keith Smith, RAN, was the conference organiser for the 2006, 2008 and 2010 conferences and he approached them all with tireless drive, enthusiasm and professionalism. The Sea Power Centre - Australia and the RAN owes Keith a considerable debt of gratitude for his sterling service.

The 2010 Sea Power Conference was an extremely thought provoking, challenging and enjoyable three days. I hope you find that the papers presented in this book reflect the conference and that they stimulate further thought, discussion and action.

Gordon A Andrew
Captain RAN
Director
Sea Power Centre - Australia
November 2011

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Notes on Contributors

Note: Positions held were at the time of the conference.

**Commodore Darryl Bates, AM, RAN** is Commodore Training, Fleet Headquarters.

**Air Marshal Mark Binskin, AM** is Chief of Air Force.

**Vice Admiral Sir Jeremy Blackham, KCB (Rtd)** is Editor of the *Naval Review* and Vice President, Royal United Services Institute, United Kingdom.

**General Peter Cosgrove, AC, MC (Rtd)** was Chief of Defence Force (2002-05).

**Vice Admiral Russ Crane, AO, CSM, RAN** is Chief of Navy.

**Commodore Anthony Dalton, CSM, RAN** is Commander Fleet Air Arm.

**Senator the Hon John Faulkner** is Minister for Defence.

**Mr Andrew Forbes** is Deputy Director (Research), Sea Power Centre - Australia.

**Rear Admiral Izuru Fukumoto, JMSDF** is Vice President of the Japan Maritime Self-Defense Force Staff College.

**Lieutenant General Ken Gillespie, AO, DSC, CSM** is Chief of Army.

**Lieutenant Colonel Marc Houben, RNLMC** works at the Netherlands Maritime Warfare Centre.

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Major General Andy Salmon, CMG, OBE, RM is Commandant General Royal Marines and Commander UK Amphibious Forces.

Major General Michael G Smith, AO (Rtd) is Executive Director, Asia Pacific Civil-Military Centre of Excellence.

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Captain Stephen Woodall, CSC, RAN is Commander Australian Amphibious Task Group, Fleet Headquarters.

Rear Admiral Xiao Xinnian is Deputy Commander South Sea Fleet, PLAN.

Captain Sukjoon Yoon is Director of Maritime Strategy Studies, Naval War College, Republic of Korea Navy.
PART 1

Keynote Addresses
Thank you for the opportunity to open the RAN Sea Power Conference, the International Maritime Conference and the Pacific 2010 International Maritime Exposition.

The ocean that surrounds us, with its challenges of distance and danger, has shaped, and continues to shape, our nation. Both through its constraints, and through its opportunities, it has been a fundamental influence on our economic development, our trade and industry infrastructure, our culture and our sense of ourselves, and of course, our strategic priorities.

If the most basic strategic interest of any nation is the deterrence of armed attacks, then for Australia, that interest demands the ability to achieve and maintain superiority and control of the oceans around Australia and the air above them.

It was in recognition of this that the Defence White Paper 2009, *Defending Australia in the Asia Pacific Century: Force 2030* placed such a significant focus on enhancing Australia’s maritime capabilities. This is a maritime strategy, not just a naval strategy. Australia needs a joint, integrated, flexible and highly deployable ADF to control our approaches, secure offshore territories and facilities, defeat any incursions, and protect the bases from which our naval, air and land forces operate.

This is a key component of Defence’s ability to carry out the many and varied tasks the Australian community expects, and the Australian government requires.

The realities of our geography demand that the ADF can exercise force at sea and project force from the sea - whether for military or for humanitarian ends.

In *Defending Australia in the Asia Pacific Century* the government has made it clear that while the principal task for the ADF is to deter and defeat armed attacks on Australia, it must also be ready and able to contribute to stability and security in the South Pacific; military contingencies in the Asia-Pacific region and more broadly, in support of efforts by the international community to uphold global security and a rules-based international order; and to respond to humanitarian crises at home and abroad.

The security of our community, our nation’s economy and the integrity of our environment can all be threatened by illegal activities (such as people smuggling, illegal fishing and the drug trade). The security of our borders is maintained by the multi-agency operational authority Border Protection Command, with up to 18 vessels and 14 aircraft patrolling Australian waters 365 days a year, including seven *Armidale* class patrol boats and a major fleet unit from the RAN, two AP-3C Orion maritime
patrol aircraft from the RAAF and Army Regional Force Surveillance Unit patrols. Up to 350 personnel from across the ADF take part in the protection of Australia’s national interest against civil maritime security threats in Australia’s offshore maritime domain, such as: illegal exploitation of natural resources, illegal activity in protected areas, unauthorised maritime arrivals, prohibited imports/exports, maritime terrorism, piracy, compromise to bio-security and marine pollution.

Northern Command (NORCOM) plays a significant role in coordination for these efforts. I am pleased to announce today, that after close consideration the government has decided to retain it in Darwin. Though there was a strong argument that its transfer to Canberra would save money, the strategic positioning of the command, and its strong role in managing operations from northern Australia, as well as its work assisting our northern neighbours, overrode those considerations. NORCOM will remain the ADF forward Joint Task Force Headquarters responsible for commanding operations and coordinating Defence activities in the north, as well as regional and community engagement. It will also operate as a forward headquarters for the conduct of border protection operations.

Our capacity for maritime force projection from the sea enhances Australia’s ability to carry out our responsibilities as active and committed members of the global community and protect our national interest in the areas of peacekeeping, counter-terrorism, counter-piracy and humanitarian response.

While open-sea peacekeeping operations are rare, patrolling of coastline, rivers and estuaries can be an essential component of monitoring ceasefires. Of course amphibious vessels, helicopters and other maritime capabilities can provide considerable logistical support for peacekeeping operations.

Similarly, the capacity to provide military assistance to support law enforcement at sea and in coastal areas is a significant part of Australia’s counter-terrorism capabilities.

Piracy is another threat to global maritime security, and Australia has cross-tasked our frigate and a portion of our AP-3C maritime patrol aircraft effort currently in the Middle East to take part in counter-piracy operations, in addition to their counter-terrorism and maritime security patrol duties.

One major fleet unit commenced counter-piracy operations in the Gulf of Aden on 12 September 2009 under the US-led multinational counter-piracy mission Combined Task Force 151. This mission will play a part in reducing the threat posed by piracy in the region by providing a major deterrent presence, and escorting merchant shipping.

And, in recent years we have seen the absolutely essential importance of maritime capabilities in responding to humanitarian crises in our region. In the wake of the 2004 Boxing Day tsunami, for example, HMAS *Kanimbla* deployed with landing craft, two Sea King helicopters, and an engineering support group. Australian engineers focused their efforts on clearing debris in Banda Aceh, as well as providing potable water and improving sanitation. *Kanimbla* also operated its primary casualty reception facility. In late 2009, major surface vessels provided urgent humanitarian assistance to the victims of the earthquake in Padang and the tsunami in Samoa.

None of these tasks could be carried out without strong maritime capabilities. And in a world of changing regional dynamics and rapidly emerging asymmetric threats, they cannot be achieved without versatile, flexible maritime capabilities. This is the maritime capability outlined in *Defending Australia in the Asia Pacific Century*. It is the maritime capability we are building. On the acquisitions front, there are a range of very significant major projects under way.

As set out in the 2000 Defence White Paper, *Defence 2000: Our Future Defence Force*, the *Adelaide* class FFG are to be replaced by a new class of air defence capable ships, the *Hobart* class DDG, which will deliver an effective, flexible and sustainable air warfare capability for the security of Australia. The first steel was cut in 2009 and production of these powerful sea control and force projection platforms is well underway. The opening of the new ASC shipyard in Adelaide in January 2010 was an important milestone for this project and the timing coincides with the transition of this project from design and engineering into full production of these warships.

The *Canberra* class amphibious ship project will provide the ADF with one of the most capable and sophisticated air-land-sea amphibious deployment systems in the world. The 27,000 tonne LHD will be able to land a force of over 2000 personnel by helicopter and water craft, along with the weapons, ammunition, vehicles and stores they require. The laying of the keel of the future HMAS *Canberra* in Spain four months ago was an important step in developing this expeditionary capability. This A$3 billion project will substantially enhance our ability to quickly deploy humanitarian relief where it is needed and provide maritime manoeuvre of substantial land forces.

The government will also acquire a fleet of eight new ‘future frigates’, which will be larger than the *Anzac* class vessels. They will be designed and equipped with a strong emphasis on submarine detection and response operations. They will be equipped with an integrated sonar suite, and be able to embark a combination of naval combat helicopters and maritime unmanned aerial vehicles.

In addition, existing patrol boats, coastal minehunters and hydrographic survey ships will be replaced by 20 versatile, multipurpose ‘off shore combatants’.

*Defending Australia in the Asia Pacific Century* recognises that to meet Australia’s future security challenges we must be able to conduct combat operations away from Australia’s shores. One of the most effective ways of doing this entails growing and enhancing our submarine capability. Australia’s submarine capability is a
significant part of meeting Australia’s future strategic needs. But, I stress, it is also a very significant challenge for Defence, for Australia’s defence industry, for me and for my colleague, the Minister for Defence Personnel, Materiel and Science, Greg Combet.

Let me be frank. The availability of the *Collins* class submarines has been less than optimal. We have faced a number of unanticipated problems arising from issues with the design and manufacturing process. The latest, as the Chief of Navy announced on Monday, was the failure of a generator on HMAS *Farncomb* due to a manufacturing defect. It is true to say that the complex and sophisticated nature of modern submarines adds to the challenge of design and manufacture. However, this does not reduce the need to get it right.

As we look toward the development of Australia’s future submarine capability, it is essential that we learn from the challenges we have faced and are still facing with the *Collins* class. We are examining closely the many lessons from their design, manufacture and sustainment, and we must draw from this experience to do better in the future.

One of the steps we are taking as we consider the requirements of Australia’s future submarine capability, and how best to deliver that capability, is the contracting of the US-based RAND Corporation to examine the nature of the required design capability. We will be receiving their analysis and findings shortly.

The *Collins* class is not the only challenge we have faced on the maritime capability front. The *Adelaide* class upgrade became a ‘project of concern’ because of substantial schedule delays. When the current government was elected this AS$1.5 billion project was over four-and-a-half years behind schedule, with serious concerns about whether it was even achievable. These delays resulted from a significant underestimation of the complexity of the upgrade task at project inception in the late 1990s. It was an ambitious project, updating the capability and supportability of the ageing FFG, which was critical to improve their ability to defend themselves against the growing capability of anti-ship missiles.

Changes in project scope, from six to four ships, and decisions in 2006 regarding the prime contract, resulted in an agreed new program schedule that, I am pleased to publicly acknowledge, has been achieved. As a result of close and effective cooperation between the Department of Defence and the prime contractor, Thales, we have now contractually accepted the upgraded FFG.

The upgraded FFG is a formidable capability that now operates with: state of the art anti-ship missile defence capabilities, including SM-2 Block IIA and evolved Sea Sparrow missiles, and a vertical launch system; improved air surveillance and fire control radars; a new electronic surveillance system; and new torpedo warning, mine avoidance, and hull-mounted search sonars. The employment of the ships over the last couple of years during the upgrading has provided the navy with the opportunity to make preliminary assessments of their materiel capabilities.

These assessments have culminated in the Chief of Navy approving ‘initial operational release’ of the capability, allowing the Navy’s formal program of Naval Operational Test and Evaluation to proceed.

There is still work to be done to operationally evaluate, tune, and tailor the delivered systems for use by the Navy in contemporary environments for contemporary operations.

We also need to be able to configure these ships and their systems to ensure they can deploy for specific operations with the best possible capabilities to meet credible threats. There is now a sufficiently defined pathway to that outcome and I am pleased today to announce the removal of the FFG upgrade project from the ‘projects of concern’ list.

We have learned valuable lessons from the FFG upgrade experience and, more importantly, we are delivering a significantly improved capability with substantial opportunities for further improvement through the operational testing, evaluation, and tailoring process now underway.

The upgraded FFG capability sets an international benchmark for what can be achieved with this class of ship. I congratulate all involved on the outcomes that have been achieved.

*Defending Australia in the Asia Pacific Century* states that as a matter of urgency the government will acquire a fleet of new naval combat helicopters to provide eight or more aircraft concurrently embarked on ships at sea. These new aircraft will possess advanced anti-submarine warfare capabilities including dipping sonar and air launched torpedoes, as well as the ability to fire air-to-surface missiles. The new helicopters will be acquired under Project AIR 9000 Phase 8 to replace the current Seahawk helicopter and the cancelled Super Seasprite helicopter.

I appreciate that this decision is of great importance to a number of you here today. The government will be considering Project AIR 9000 in the near future - and will be seeking a way forward that provides the optimal balance of capability, cost, interoperability, risk and value for money.

These new capabilities will enhance the strength and flexibility of the ADF. But for the ADF to operate at the highest possible level of effectiveness, including as a leader or member of a coalition, individual capabilities must be integrated into a cohesive force. To this end, all the capabilities I have outlined will be underpinned by advances in the network-centric warfare capabilities of the ADF. These will be delivered through an array of projects including the military satellite capability
to provide strategic and tactical satellite communications capabilities to support ADF operations, and the maritime communication modernisation to enhance the maritime tactical wide area network.

Network-centric warfare significantly enhances our capacity to operate as an effective and efficient fighting force, but it is also the key element of our ability to work with other forces. We must be able to share our information with those that need it, and use theirs for our own purposes.

The advent of radio in the late-19th century meant that for the first time naval forces could have knowledge of an enemy’s location without being in visual contact. The Royal Navy were the first to capitalise on this technical revolution with the establishment of an Admiralty War Room in the early 1900s that plotted all known warship positions around the world.

Australia’s navy has operated with other navies since the colonial naval forces merged in 1901 to form the Commonwealth Naval Forces, the predecessor of the RAN.

In 1914 the Imperial Japanese Navy battlecruiser *Ibuki* assisted in escorting the ANZAC convoy across the Indian Ocean, the RAN worked with allied navies from Europe and North America through two World Wars, and in recent times we have operated with our nearer neighbours in the Asia-Pacific region.

In the ‘information age’ the key to continued interoperability is the ongoing ability to share information amongst a task force or coalition. But the most important capability in the ADF, of course, is not something you will find in the Defence Capability Plan. The most important capability Defence has is its people.

Everywhere I go as Minister for Defence I hear how highly both Australians and those from other countries regard the men and women of the ADF: their courage, their professionalism, their determination. The history of Australia’s Navy, Army and Air Force has been one of ordinary Australians achieving extraordinary feats.

The men and women who serve our country are of the very highest calibre: but one of our most pressing needs remains ensuring that we have the people and the skills necessary for the defence of Australia.

For the Navy, there was an urgent need to develop more effective ways of recruiting people, and retaining those in whom we invested so much. There are now very positive indicators of change on this front. Recruitment is currently strong and separation is at record low levels. We are now making sure that we position ourselves to be able to build on these successes regardless of economic conditions.

The Navy initiative, New Generation Navy (NGN), is a key element in building the Navy of the future. *Defending Australia in the Asia Pacific Century* funded an additional 700 people to reduce the pressure on the Navy’s workforce as it achieves its mission, but simply funding more positions is not enough. NGN, in addressing culture, leadership and structure, is designed to take the Navy from the position it finds itself in today to the ‘future navy’ of 2014 when the first of its new platforms enter service. NGN has had a successful first year, with a restructure that will lay the foundations for cultural change. Along with leadership commitment and development, this will transform the Navy into a more sustainable and people-focused organisation.

Two NGN projects focus on recruitment and reforming the Navy’s approach to training to meet future requirements while another is helping access the vital experience of ex-serving members, and streamlining the process for these people to rejoin the Service. As at 1 December 2009, recruitment and retention was 143 per cent of the number in the same period in 2008, 729 compared to 508 the previous year, of which 114 (double the previous year) were men and women returning to the Service.

Two other culture projects have also started that aim to improve the delivery of people-focused work practices and formalise the assessment of Navy people against the Navy’s signature behaviours around people, performance and professionalism.

At the higher levels, the navy has been divided into two commands:

- Navy Strategic Command, with responsibility for capability management, engineering and people.
- Fleet Command, responsible for the Navy’s capability to meet operational requirements, along with the significant task of providing end-to-end training of all Navy people both individually and collectively at the force level.

The benefits of this new structure are already being seen.

The leadership that has been shown at all levels of Defence, from the Chief of Defence Force and the Secretary down, in embracing necessary change and responding to the challenges of the future, can give the Australian community great confidence in the ability of Defence to continue to carry out the complex and varied tasks Australia’s national interest demands.

These tasks range from humanitarian relief to counter-terrorism and direct combat. The ADF must be ready to act within Australia’s borders, or elsewhere in the world, where our interests and international peace and security are threatened.

Australia’s ocean borders have been a defining feature in our history as a nation. We must continue to grapple with the strategic challenges, and embrace the strategic opportunities, created by our unique geography.
Our maritime capability is critical to Australia’s capacity to protect and defend ourselves. Ensuring the defence of Australia requires a maritime capability that is strong, flexible, versatile, integrated and state of the art.

That is the force we need, and that is the force we are building.

On behalf of the Royal Australian Navy, I am very pleased to welcome you all to Sea Power Conference 2010. This marks the start of what I hope will be three days of topical, stimulating and highly relevant presentations.

It gives me great pleasure to welcome in particular the many visitors from overseas, both chiefs of navies and the senior officers of marine corps, coastguards, armies and air forces, but also the many speakers who have travelled a long distance to contribute to this conference. Thank you for helping to make this event a success. I am also pleased to welcome many members of the retired community to the conference. Finally, it is good to observe that many serving officers, sailors and civilians of the RAN are with us today.

The theme for this year’s conference is Combined and Joint Operations from the Sea. It was selected well over 12 months ago, but the events of 2009 have confirmed the belief we had that the theme would be timely and important to the future development of not only the RAN, but the ADF as a whole.

At the time of the last conference in 2008 the government had recently announced its decision to build the three Hobart class DDG - the air warfare destroyer in the parlance of the day - and the two Canberra class amphibious ships (LHD). Vice Admiral Russ Shalders, RAN, the previous Chief of Navy, noted that the decision to acquire these ships marked a watershed in RAN history, and that we faced an exciting future as these ships are brought into service.

Admiral Shalders also noted that we face an uncertain future - the rise of non-conventional threats such as terrorism and the proliferation of weapons of mass destruction have not replaced traditional state-based military threats but has added to them. We need to be prepared to conduct a range of responses in the maritime domain across the spectrum of operations - from the benign to the use of lethal force. And we need to be prepared to face these challenges both independently, and in conjunction with others as the strategic circumstances dictate.

In 2008 the government pledged to deliver a white paper on Defence during its first term and, in keeping with this Defending Australia in the Asia Pacific Century: Force 2030 was released by Prime Minister Kevin Rudd in May 2009. From the Navy’s perspective, it lays out a clear path toward the development of a more capable and potent force, better able to conduct joint and combined operations in the maritime environment. The strategic directive that we have from government is very clear -
our future development is directed towards our primary obligation of deterring and defeating attacks on Australia.

Some of the future capabilities detailed in Defending Australia in the Asia Pacific Century are inherently naval in nature. Of particular note, the decision to double the submarine force from the 6 Collins class submarines to 12 future submarines is a significant rebalancing of the Defence force structure. The new submarines will have greater range, endurance and capability than the Collins. The future submarines will contribute significantly to operations from the sea in undertaking land-attack, anti-submarine and anti-shipping operations, and the support of special forces.

Maintaining a balanced, capable force structure is a challenge faced by all navies, especially those with submarines, and it is one to which the RAN devotes considerable attention. Defending Australia in the Asia Pacific Century’s future submarine program, together with the Hobart class and the other programs in the Defence Capability Plan, represents the next generation in underwater warfare and addresses our own recent challenges in fleet sustainment.

The fundamental premise of Defending Australia in the Asia Pacific Century is consistent with the guiding principle of maritime doctrine – that maritime forces exist to establish sea control in order to conduct maritime power projection and to permit the use of the sea by military, commercial and private vessels.

Our prime minister made the point very clearly only last week, at the opening of the new ASC shipyard in Osborne, South Australia, when he reinforced the need for Australia to have the capability to articulate our maritime power. He went on to make it clear that a strong maritime element is key to our future force and committed to a larger, heavier and more potent maritime force for a range of roles to establish control of the seas and project force into the maritime environment including in support of our land forces.

Defending Australia in the Asia Pacific Century overtly recognises that this entails a fundamentally maritime strategy, for which Australia requires forces that can:

- operate with decisive effect throughout the northern maritime and littoral approaches to Australia
- more broadly contribute to military contingencies in the South Pacific and wider Asia-Pacific regions
- support global security as and where necessary
- if Australian interests are deemed to be engaged, then the ADF needs the capability to continue to be involved in operations abroad.

In its introduction, Defending Australia in the Asia Pacific Century defined Force 2030 as a major new direction with a significant focus on enhancing our maritime capabilities. However, it would be wrong to conclude that this major new direction is only about enhancing the RAN – it is very much about the ADF as a whole. Our capacity to project force will be stronger, larger and more sustainable, we will do so when required as a joint expeditionary force and, because we live in a geostrategic environment dominated by the oceans, we will do so in a maritime environment. Put very simply, the ADF is going to be operating over, on, and from the sea.

Which brings me back to the theme of this conference - Combined and Joint Operations from the Sea is not just relevant to the RAN but must be focused on power projection in the maritime domain. As a result I have asked Chief of Army, Lieutenant General Gillespie, and Chief of Air Force, Air Marshal Binskin, to join me in giving these keynote addresses. I have asked them to provide a view of what their Services will bring to the joint force and what challenges they face to realise the vision of Defending Australia in the Asia Pacific Century, and how those challenges will be addressed.

First, it is necessary to view these issues from a Navy perspective and explore the maritime domain itself to look at what will change and what will remain important for Australia into the future.

Globalisation is the major trend that has shaped world affairs in the last 100 years and its influence is unlikely to wane. The constant free flow of ideas, capital, goods, services, information and people across national borders will continue and, importantly, it will continue to provide a stabilising influence as strong interdependencies are created amongst nations. On the other hand it will also facilitate the spread of some ideologies opposed to our values and facilitate the means to turn these ideologies to actions such as terrorism.

Australia will continue to remain critically reliant on sea transport for our trade – both exports and imports. Our economy is fundamentally dependent upon the global economy, particularly the increasingly important Asia-Pacific sector. The strategic straits to our north and the entry ways into the Indian Ocean – the Red Sea, Strait of Hormuz and Malacca Strait – will carry increasing amounts of Australian trade. We will also retain our strong cultural and historic links with Europe and the United States, so events far from Australia will continue to have the potential to affect us.

The world’s population will continue to rise. By 2030 the number of people on the planet is estimated to reach 8 billion and this will place considerable pressure on resources, and increase the humanitarian consequences of natural disasters. Climate change, the increasing demand for energy resources, and the challenge of a guaranteed water and food supply for many areas of the world will exacerbate the pressures placed on an increasingly urbanised and dense population.

The operational demands that disasters place upon the ADF were keenly felt in 2009. In January the devastating bushfires in Victoria and the floods in Queensland resulted in large numbers of Defence personnel working with the civil authorities to
provide relief. In March, Cyclone Hamish washed thirty one containers off the deck of the cargo ship MV Pacific Adventurer posing a considerable risk to other shipping in the area. Over a two-week period the coastal minehunters HMA Ships Yarra and Norman located and marked the position of all the containers.

Of course, humanitarian aid is often undertaken without the need for a disaster as a catalyst. In July the heavy landing craft HMA Ships Betano and Wewak, in company with USNS Richard E Byrd, participated in Operation PACIFIC PARTNERSHIP 2009, delivering engineering, medical and dental aid to Samoa, Tonga, Solomon Islands, Kiribati and the Marshall Islands. By August, the ADF was back in Tonga, this time to assist with the location and recovery of bodies from the sunken ferry Princess Ashika. The same month, assistance was rendered to the Papua New Guinean authorities in the recovery of victims of the Kokoda air crash.

The Indonesian and Samoan earthquakes of October necessitated the largest overseas humanitarian operations of the year, Operations PADANG ASSIST and SAMOA ASSIST. In Indonesia alone, 1.3 million litres of water were produced, 1300 medical patients were treated and over 500 tonnes of aid delivered. A similar amount of aid was delivered to Samoa and Tonga in November.

We can only hope that 2010 is a safer one for all in our region - but this month’s tragedy in Haiti reminds us again that wherever we live, we all remain at constant risk from natural disaster. We again find ourselves ready to provide assistance to people in need.

Just prior to the release of Defending Australia in the Asia Pacific Century, Australia was described as a potential maritime superpower. The argument was that Australia’s jurisdictional claim of 27 million km², or 4 per cent of the planet’s ocean area, is an area rich in resources, an area that defines our borders with our closest neighbours, an area rich in biodiversity, rich in actual and potential energy resources, and an area that is increasingly under threat from climate change, maritime crime, illegal exploitation of our resources and pollution.

However, the report went on to argue that despite the oceans being central to our future prosperity and security, Australia as a nation has not developed as a maritime power. Historically, we have not been a country that uses the sea to promote our national interests. It seems that the Australian era of ‘sea blindness’ - the unwillingness or inability of the majority to acknowledge the importance of the oceans to the nation’s prosperity and security - is drawing to a close. The capability of embarking landing force personnel is required. This has been recently

as we need to recover from a current shortfall in the trained force and then grow to crew the enhanced force of the future. However, I am optimistic that there are some positive indications that this downward trend has reversed - recruitment is currently strong and separation rates are at a record low level.

Alongside this was the commitment of additional funds to target the changing needs of those who serve, including not only remuneration, but also family support, housing and health care. These commitments align with the New Generation Navy (NGN) initiative that commenced in early 2009. NGN is founded upon the three pillars of culture, leadership and structure, and is the vehicle that Navy will use to implement the Strategic Reform Program. The first wave of cultural reforms is progressing well as we embed key signature behaviours that are aligned with our enduring Navy values.

In addition to getting the right number of people trained and at sea, in order to be an effective force we need to have and comprehensively understand our doctrine. The five keys to having an expeditionary capability are:

• Forward - the ADF must be able to take its presence to where it is needed by the government. The oceans provide a highway to enable this and we need to take full advantage of this freedom.
• Mobile - we will not have expeditionary capability if we do not exercise it. Air Force and Army elements will become more used to being at sea and deployed either on operations or as a contingency.
• Offensive - it is axiomatic to success in military operations that we take the initiative. We need to be able to quickly establish a forward presence from which we can react to government direction as the strategic circumstances require.
• Self-reliant - a truism of contemporary maritime operations is that we work in coalitions, often with partners with whom we do not have historic links. But it is our ability to operate both independently and with others that makes us valuable to coalitions and the ability to be self-reliant is a key tenet of Defending Australia in the Asia Pacific Century.
• Adaptable - in our maritime doctrine the adaptability of maritime forces to match the strategic situation is one of the fundamental characteristics that define their utility. A force capable of expeditionary operations is able to respond to a humanitarian crisis just as readily as conducting military operations without changing its configuration.

The future ADF amphibious capability will be a truly joint capability. The LHD ship’s company is testament to this with a significant number of soldiers permanently posted to the ship as well as members of the RAAF. To ensure that the amphibious capability continues to develop and maintain a high level of readiness, the optimum balance for embarking landing force personnel is required. This has been recently
discussed with the Chief of Army, and we share the aspiration to have landing force elements embarked whenever a LHD puts to sea.

The ADF has to develop a joint command and control organisation that is capable of coordinating the ‘raise, train, sustain’ functions of the future amphibious capability. This organisation should be able to readily transition to an amphibious staff in a joint task force headquarters, linking the maritime, land and air component commanders. In addition, this staff must be sufficiently robust to be able to continue the ‘raise, train, sustain’ function while also planning or executing an operation.

These are uncharted waters for Australia, and we are also working to develop a joint system of evaluating and certifying operational readiness. Our three Services have well established training regimes - before a force is assigned to the Chief of Joint Operations for deployment. There is however, currently no formal assessment process to determine the readiness and/or preparedness of our amphibious capability and there needs to be.

The ADF has been working towards a networked force for some time and amphibious capability is providing an immediate focus for this work. The development of an amphibious warfare command support system and a common operating picture that takes input from the various environmentally-based operating systems will be a significant milestone to ensure the LHD joint operations room will be able to support operations from the sea and sea-basing.

An important element in developing a fully networked force is coordinating the integration of the future Army systems being introduced during the period the LHD enters service. These will ensure that full connectivity can be established between the landing force and the land component commander afloat. No less important to the future networked force, particularly in the amphibious environment, is the ability to electronically track and manage the movement of logistics, and Joint Project 2077 is integral to this.

We also need to develop our rapid environmental assessment capabilities to ensure we understand the complexities of the littoral environment we are operating in, both at sea and ashore. Our mine countermeasures capabilities have to be able to be employed where they are needed, as part of the advance force preparing the way for the landing force. We have a successful history in achieving this from the Pacific theatre in World War II and we need to maintain those skills.

The future role of intelligence in understanding the expeditionary environment and giving the commander as comprehensive a picture as possible on which to base his decisions is fundamental. It is particularly pleasing to report that the Navy recently appointed its first cadre of officers to the new intelligence officer’s branch. These officers will be extremely important to our ability to operate forward while being connected to strategic support back here in Australia.

At the 2008 Sea Power Conference, Professor Geoffrey Till explained his view of how navies might develop in the future - in particular he put forward two models of future navies which he called the ‘post-modern navy’ and the ‘modern navy’. In very simple terms, the distinction between the two was that post-modern navies are about providing security to the global system that indirectly benefits a nation’s prosperity, that essentially maritime phenomenon of globalisation, while modern navies reflect the more traditional necessity of providing security to the state rather than a global system.

One of the major differences between a modern navy and a post-modern navy that Professor Till talked about was the way that power could be projected from the sea. The modern navy was about land strike and amphibious warfare and the post-modern navy was about reassurance, humanitarian assistance and disaster relief operations, and regional and global confidence building measures.

Defending Australia in the Asia Pacific Century has given us the means for all of these roles. The ADF of the future is both modern and post-modern. And the challenge is for us to provide the full range of tasks at the government’s direction without compromising our capabilities in any of them. This conference is about the future navy, and the future defence force, and how and what we need to change to respond to the challenges facing us.
May I start by thanking the Chief of Navy for inviting me here today - I think it says something about the ADF when you see the three Service Chiefs delivering a keynote address at what many would see as a purely naval event. Russ - thank you for the privilege.

A New Era

The Army is in the midst of a significant transformation. Not only are we changing structurally we are about to undergo a period of major re-equipping. In addition to Joint Project 2048, a range of related projects, such as Land 121 (vehicles), Land 400 (armoured vehicles), Land 17 (artillery), Air 9000 (helicopters) and Joint Project 2072 (communications), will soon provide a world class ‘amphibious deployment and sustainment’ capability with increased networking, more capable helicopters, enhanced joint fires and a complete range of vehicles.

This large scale platform improvement must be accompanied by an equally large cultural and doctrinal change if our nation is to best benefit from this significant investment in capability. Within Army we are currently having the necessary broad-based debate about what change is required to maximise our emerging amphibious capability.

Basil Liddell Hart once observed, ‘A small but highly trained [amphibious] force striking “out of the blue” at a vital spot can produce a strategic effect out of all proportion to its slight numbers’. This observation offers an insight into the opportunities for Australia’s small Army and its sister Services.

Yesterday

Surprisingly for many students of history, Australia’s initial engagement in World War I was a successful campaign by the Australian Naval and Military Expeditionary Force to capture German held territory in New Guinea. The landing force consisted of six companies from the Royal Australian Naval Brigade and an infantry battalion, with signals, medical and other enablers. The naval element consisted of three cruisers, a transport and three destroyers under the command of a rear admiral. The maritime and land commanders worked together in what we today call a ‘supporting and supported’ role to conduct an expeditionary campaign in the early days of the war. All these decades later, the decision by our government to introduce the ‘amphibious deployment and sustainment’ system, with the centre piece being the two Canberra class amphibious ships (LHD), will enable Australia to not only reproduce past amphibious capability, but exceed it.
Defending Australia in the Asia Pacific Century: Force 2030 reinforces the notion of amphibious manoeuvre for Australia’s land force, facilitated by the amphibious and sea-lift ships. Indeed, the ability to project military power throughout our region and beyond, by deployment and sustainment from the sea, places land force maritime manoeuvre in the littoral environment as a key component of future ADF capability.

In platform terms, the LHD will allow the ADF to achieve world’s best amphibious practice and increase our interoperability with our allies. We will be capable of projecting military force beyond Australian shores without the requirement for coalition key force projection enablers. The suite of amphibious operations that Army can contribute to, including humanitarian and disaster relief is well articulated in our amphibious concept that has already been mentioned by the Chief of Navy. Army also has amphibious doctrine but this needs to be reviewed, especially when analysed against emerging coalition doctrine. This work is currently being conducted by the modernisation and strategic planning staff at Army Headquarters.

In the Adaptive Army’s training and education stream, we continue to review the strategic environment to ensure our concepts, doctrine, training and education are relevant, and that we prepare our people appropriately for contemporary and future operations. To this end, Army recently released its latest version of Adaptive Campaigning. This document is Army’s future land operating concept and provides the conceptual and philosophical framework, and force modernisation guidance, to achieve these requirements, including our amphibious aspirations.

Adaptive Campaigning incorporates recent operational lessons and insights and is informed by current scientific research, worldwide trends, as well as domestic and international developments. Most importantly, it describes the actions of an integrated land force response, as part of a joint and whole-of-government approach, to the operational demands that we will face in the future, where the amphibious capability will be a key component of national resolve.

Tactical Guidance
The Joint Amphibious Capability Implementation Team, in conjunction with Army Forces Command, has produced the Amphibious Landing Force Concept of Employment, which proposes an Army amphibious capability drawn from emerging and practised international doctrine. The concept highlights a number of areas where the amphibious capability will provide a significant force multiplier, such as ship to objective manoeuvre (STOM). But to reinforce Chief of Navy’s point:

While STOM, distributed manoeuvre and sea basing are currently defined in the Australian operational lexicon, they need to become better understood as the new amphibious era approaches. These concepts are beyond single Service wherewithal, and require the application of joint, integrated and combined capabilities to achieve mission success.

In an amphibious operation it is feasible, indeed highly likely, that, while the RAN maintains maritime security and Army conducts land operations, the RAAF will be conducting intelligence, surveillance and reconnaissance; combat air patrol; and commencing air bridge operations. Other agencies, such as the Australian Federal Police and AusAID will be coordinating activities to enhance stabilisation. Consequently, all Services will need to embrace the joint and often multi-agency nature of amphibious warfare as it will be intrinsic to Australia’s success in the future.

The complexity of joint requirements in amphibious warfare runs parallel with command and control requirements and we have a good deal more thinking to do on this topic.

Command and Control
While our coalition partners have standing landing and amphibious command organisations that are generally co-located and plan together for exercises and operations, Australia has no equivalent. The US Marine Corps (USMC) and the US Navy, and Britain’s Royal Marines and Royal Navy, maintain these standing arrangements and respectively share the specialist amphibious capability role in their nations’ inventories - they provide forces permanently structured to achieve effects on land, operating from the sea.

Command and control of the landing force requires Army to reflect on past experiences as it looks toward the challenges ahead. A commander land force (CLF) organisation embedded in the formation that will conduct the amphibious operation, and co-located with the commander amphibious task force (CATF), would appear to be a natural fit. While the RAN will base the LHD at Fleet Base East in Sydney, it may be that a potential location of any CLF/CATF headquarters is in Brisbane, allowing for co-location with Headquarters 1 Division, our Deployable Joint Force Headquarters. Such co-location would provide a commander amphibious task group, bolstered with additional Army staff, as a sound command and control solution while we mature our amphibious capability.

Army’s Contribution
The operational concept document for Joint Project 2048 defines the Army amphibious ready group (ARG) as a battle group-based organisation with enablers such as armour, medium artillery, aviation, engineers and logistics. It will have approximately 2200 personnel and reflect the USMC/RM models, while articulating in detail in the Amphibious Landing Force Concept of Employment.
This concept recognises that amphibious-related training requirements exceed baseline infantry skills, as the landing force requires exposure to the maritime environment of surface and air assault. Additionally, it appreciates that contemporary amphibious warfare is about being able to operate congested flight decks, hazardous well docks, operating a range of vehicles with moving platforms and over beaches through surf. It recognises our need to tailor logistic support requirements, manage the joint battlespace, support joint fires and command from a joint operations room afloat without recourse to operating ashore.

The training necessary to safely operate in the maritime environment has been well articulated by Australia’s allies. Army intends to move forward quickly by drawing heavily on this knowledge to produce an amphibious force with similar training regimes. Survivability at sea will be a mandatory training requirement for all the landing force, and not just specialist Army personnel attached to the ships.

Force Generation

Shortly, Army will have 10 battle groups and a commando regiment available for tasking, however, with three amphibious ships there is insufficient capacity to generate 10 amphibiously-trained battle groups. The British model yields three battle groups, with one ‘on-line’, and this is facilitated through a slightly greater Royal Navy ship availability than the RAN will have. Army is currently conducting analyses into how we can best achieve the ARG construct. The focus will need to be on providing one on-line battle group for the conduct of amphibious operations, at the same certification level as our coalition partners. Also important, is the requirement for exposure to sea-lift and follow-on operations for the remainder of the Army. Potentially, various options exist but as a guide for consideration I highlight three that cover the spectrum of capability levels achievable:

- **Option One:** Placing one battle group as the amphibious specialist battalion, similar to an airborne battle group, and group enablers, such as fires, communications and logistics assets in support. This option would allow a high level of capability to be achieved, that is certifiable to US/UK standards. This option would, however, introduce significant force rotation and sustainment issues for Army, especially with our current operational commitments.

- **Option Two:** Similar to the USMC marine expeditionary units and 3 Commando Brigade of the Royal Marines, an Australian brigade, grouped as a combined arms task force, may be best placed to be the Army’s amphibious specialist, providing entry and allowing heavier, or follow-on, forces to penetrate following the amphibious operation. This would provide capability comparable to the US/UK certifications levels.

- **Option Three:** Similar to the French model where, until recently, annual changeovers occurred between battle groups as this would permit Army’s 10 battle groups exposure to amphibious capability. This would allow capability development to be broad but would potentially not achieve US/UK certification standards.

Linked to these options, the 2nd Commando Regiment will also be incorporated into the ‘on-line’ landing force as part of the advance force component. Similar to the Marine Expeditionary Unit approach of the USMC, or the Brigade Reconnaissance Force of the Royal Marines, it will be necessary to rotate a Commando Company with the landing force.

Cultural Change

The notion that Army only uses Navy for sea-lift and Air Force for airlift must be changed. The introduction of enhanced command and control architecture and other forms of sea-based support, as highlighted in *Defending Australia in the Asia Pacific Century*, will allow Army units conducting disaster relief, or patrolling in complex terrain, to call upon Navy and the Air Force for supplementary support. Furthermore, the introduction of emerging amphibious doctrine, such as STOM, distributed manoeuvre and sea basing highlights that this capability is more than just delivering Army to the amphibious objective area. It is clear that Army needs to learn how to live, deploy, operate in, and operate from the LHD to maximise the government’s investment in this capability.

Certification

Navy, Army and the Air Force will certify the discrete sea, land and air elements of the amphibious capability prior to melding the force for joint certification. However, we are looking with open minds at the creation of a joint agency in the ADF to certify the entire joint amphibious capability. This could potentially be part of the Joint Capability Coordinator’s responsibility inside the Vice Chief of Defence Force Group. This certifying office would ensure that areas requiring attention are addressed from a joint perspective. Combined certification could be achieved with US, UK, New Zealand and other allies’ amphibious forces through activities such as Exercises TALISMAN SABRE and COMMANDO RAJAH.

Logistics

Another area we are focusing on is in materiel management. Operating and maintaining equipment in the embarked environment will place additional challenges and demands on Army’s people and resources. This will attract an additional training bill for our soldiers, but we are examining methods to reduce this burden, such as providing advanced knowledge of the amphibious environment. As an example, vehicle preparation prior to embarking will extend the life of any vehicles and reduce recovery requirements while on the beach. Furthermore, knowledge of the watercraft freight procedures will expedite loading and enhance
logistic throughput. We also acknowledge that aviation platforms require additional servicing and maintenance when in a maritime environment, but the clean hangar will provide a dust-free and environmentally controlled working space for maintenance crews.

In essence, we are reviewing all our ground vehicle, watercraft and aircraft fleets to ensure we have the most effective and efficient maintenance and usage procedures. For example, we have found that we maintain our Black Hawk helicopters about a third more than the US Army. And in one fleet of light ground vehicles, simply reducing the requirement for monthly non-technical inspections to every second month has had saving in nearly 100,000 man hours per year with no detrimental capability impact. These examples will give you a flavour of how Army intends to create more agility in the force and to make our resources go further without capability impact. There are many facets to the logistic component and the United States and United Kingdom have dedicated units to complement the respective landing forces. We are drawing on their experience and knowledge to help guide our thinking on amphibious logistics.

Conclusion

The LHD, whilst Navy owned, are the centre of a new joint force designed primarily to support Army, as a leading part of the amphibious capability. In order to maximise the inherent capabilities of the future amphibious system, Army needs to prepare itself for the arrival of the first LHD in March 2014. This period will generate several issues for Army, which include: selecting a formation with attached enablers as the amphibious specialists, introducing an appropriate command and control structure for amphibious operations, interoperability with allies and implementing a robust logistic capability to deal in the amphibious arena.

Ultimately for Army it is about effectiveness, through the careful assessment and decision making necessary to select a landing force model in order to manage identified risks, and then realise efficiencies:

- Efficiencies in time by reducing individual and collective training.
- Efficiencies in space through optimising training areas and opportunities.
- Efficiencies in equipment holdings through every day fleet management procedures.

Lastly, we will seek capability certification with allies to ensure the necessary interoperability. Our Army does not want to be called marines, but because of its size and structure it needs to train, look and fight like marines (a force that is trained, configured and optimised to conduct operations over the land but launched from the sea).

Finally, it is important to be conscious of the view that, ‘We are, and seek to remain, the best small Army in the world.’ The introduction into service of the LHD will provide an additional means of reinforcing this position. Army must prepare for an era that will see battle groups operating in the wider joint operating arena, spending frequent and sometimes extended periods at sea; so Army must be prepared to exploit the inherent capabilities offered through future capability projects. In summary, if we are to remain the best small Army in the world then we need to be able to demonstrate an ability to adapt, prepare, sustain and excel as a component of a future ADF and regionally dominant amphibious capability.
On 5 January 1945, the heavy cruiser HMAS Australia and the destroyer HMAS Arunta were operating with American naval groups covering the amphibious landing force during the Lingayen Gulf operation when enemy aircraft damaged both. Australia sustained four more hits from suicide bombers over several days, with the last occurring at 1300hrs on 9 January. Three of these hits were ‘major’, but the cruiser was able to continue operating until the end of the landing operation.

This date, 9 January 1945, is an important one for Australian operations, for it was the last time that an Australian sailor (or soldier for that matter) died because of enemy air attack. Today, 65 years later, it is easy to take air superiority for granted. This would be a serious mistake.

As a former naval officer, I have a great fondness for the sea. My passion, however, is flying and it is the role of air power in combined and joint operations from the sea that is discussed here.

Upfront I must say that I agree with my fellow Service Chiefs in believing that amphibious operations are exceptionally difficult. The coordination effort required to get a large diverse task force together and operate effectively a long distance from home is considerable.

It is true that each Service brings important and critical specialist capabilities to these types of operations. Putting such an operation together successfully requires professional and technical masters from all the environmental domains working in a truly joint manner.

Nowadays, air power is integral to all military operations - and amphibious operations are no different. Actually, I might be so bold as to state that air power is essential for the safe and efficient conduct of all amphibious operations, even in the most benign threat environments.

The Role of Air Power in Amphibious Operations

Although joint operations in an amphibious environment have occurred for centuries, the arrival of air power complicated the planning and conduct of these operations considerably due to the threat and opportunities it presents. Today, to maximise the chance of success, air and space power must be considered from conception right through to completion.
So what is the role of air power in an amphibious task force? In answering this question, I will assume for the remainder of this presentation that there is a military threat to the task force. In the cases where this is not so, the role of air power is far simpler - to provide intelligence, surveillance and reconnaissance (ISR), and air logistics support.

In macro, the role of air power in all types of amphibious operations - demonstrations, raids, assaults and withdrawal - is fundamentally the same. These roles include operations to shape the environment, deter potential adversaries and respond with operations to coerce or compel adversaries to adopt a course of action that aligns with our intent. Let me expand on these roles using our current and then planned capability.

Current Capability
Long before an Australian amphibious task force sets sail, air power will be preparing the battlespace. The air combat force will be actively shaping the area of operations in order to establish the required air superiority. Full spectrum ISR missions will be underway - the Jindalee over-the-horizon-radar network will be providing broad area ISR, while the P-3C Orion maritime patrol aircraft will conduct localised ISR for both surface and sub-surface contacts. Strike assets - and this may be the same as the ISR assets as many of our aircraft can ‘swing’ between roles - working in close consultation with naval surface and sub-surface combatants will be clearing the area of surface and sub-surface threats.

The air transport fleet will be moving vital supplies to staging areas - whether within Australia or overseas to the staging country. Whatever the task, they are all vital to the successful employment of an amphibious task force.

During the movement and action phases of the operation, the focus of air operations will remain the same except that offensive air support will be a key enabler. Finally, at a point in the operation, airlift will start to provide direct flights into the area to sustain the land forces.

Depending on the operation, Australian can add its air power to that of our allies. We have spent decades ensuring interoperability with our coalition partners - interoperability that ranges from equipment, doctrine, weapons and tactics, techniques and procedures, through to command and control of air operations.

Of course, the key to bringing all these weapons systems together as a capability is the people of the RAAF - professional, dedicated, talented and very resourceful - they are the best in the world. In addition, despite what you may hear in the media, in the RAAF we currently have excellent recruiting results and the best retention rate for over 30 years.

Future Capability
With the successful delivery of the capabilities outlined in Defending Australia in the Asia Pacific Century: Force 2030, the RAAF will be a fully networked force able to project and sustain combat power like never before.

The key to our ability to project power will be the KC-30A multi-role tanker transport aircraft, which will provide nearly all RAAF operational aircraft true ‘global reach’. This is not a trivial thing as few air forces around the world have this capability.

Global reach will allow RAAF combat aircraft, be they fighter, strike, anti-submarine warfare, ISR or airlift, to operate further afield and with greater persistence than before without drawing upon the resources of our allies. This is a huge benefit to any amphibious task force operating far from Australian shores.

Another major platform that will enhance Australia’s ability to project and control air power over an amphibious task force will be the airborne and early warning aircraft, which will provide a high-fidelity surveillance picture over an area of 400,000km² at any given time and significantly extend the task force’s situational awareness and survivability.

Replacing the venerable P-3C Orion will be the P-8 Poseidon multi-mission maritime aircraft equipped with modern ISR, anti-submarine and anti-surface warfare sensors and weapons. Combined with a high transit speed and the ability to refuel in flight, the P-8 will provide a superior capability for rapid area search, identification and engagement tasks.

With regard to airlift, the future mid-sized battlefield airlifter will provide the final part of the airlift equation that, when combined with the C-17 and C-130 aircraft, will ensure we have an effective and efficient airlift force capable of delivering a large spectrum of loads into most operating environments.

Finally, the RAAF is in the early stages of developing a robust and sustainable unmanned aerial system (UAS) capability. We are currently operating the Heron UAS in Afghanistan and continue to pursue a broad area maritime ISR capability for the future. These capabilities come with new challenges and opportunities. For example, while persistence and reach are key operational benefits, the personnel cost of the increased ISR processing, exploitation and dissemination requirements is a major resource issue that will need to be understood and addressed.

With our order-of-battle, however, we do acknowledge that we have some limitations. First is the obvious requirement for secure operating bases. Second, like our sister Services, is the fact that, even with unprecedented recruiting and retention success, we operate within a fixed set of resources - both people and systems. While I have no doubt that the amphibious operation will be the focus of the Joint Task Force (JTF) Commander, from an air perspective it probably will not be the only ‘fight in town’.
Therefore, we must ensure there is a robust prioritisation and apportionment process in place at the joint task force level to ensure the required effects are coordinated across the entire battlespace, but with the ability to focus when required in the amphibious objective area and immediate surrounds.

**Controlling Amphibious Task Force Air Power**

Command and control of the air component, far from our shores, is done via the Air and Space Operations Centre (AOC) and associated deployed command and control components. The AOC, embedded within Headquarters Joint Operations Command, is the means by which the JTF Commander commands and controls their joint air power, including that force supporting any amphibious task force.

These air operations are conducted under centralised control and decentralised execution.

Centralised control is exercised by the Joint Force Air Component Commander (JFACC) who has the responsibility and authority for planning, directing, and coordinating all ‘air effects’ in accordance with the JTF Commander’s concept of operations and air apportionment decisions. Through centralised control, the JFACC synchronises and integrates the actions of assigned, attached, and supporting air capabilities in time, space and purpose. This control provides coherence, guidance, and organisation to the air effort and maintains the ability to focus the tremendous impact of air capabilities wherever needed across the theatre of operations, while minimising the risk of fratricide.

Decentralised execution is the delegation of execution authority to subordinate commanders. This makes it possible to generate the tempo of air operations required and to cope with the uncertainty, disorder and fluidity of combat. In the case of amphibious operations, air assets will normally be tasked in ‘direct support’ of the commander amphibious task force (CATF) and eventually the commander landing force.

As previously mentioned, the AOC is the tool that JFACC uses to command and control the air component, the composition of which is heavily dependent upon the nature of the air component and the weight of the air power effort. A lot less if the task force is only for humanitarian assistance; significantly more if kinetic effects with the associated full targeting and ISR support are required.

Due to the complex role the AOC is required to perform, even a small AOC is a relatively large organisation. This is important to note, because many of the personnel are drawn from active units that may be required on operations. Therefore, especially within the ADF, we must ensure that we do not duplicate functions in cascading subordinate headquarters.

The location of the AOC is dependant upon the nature of the operation. Do we locate them forward or remote back to Joint Operations Command in Bungendore? How do we ensure all the needs of the Area Air Defence Commander, CATF and potentially other commanders are met concurrently? How do we ensure seamless air operations during the transition of command from CATF afloat to the commander landing force ashore?

Joint operations are complex, but are more so when combined with required concurrency demands, the relatively large size of the AOC, fixed personnel resources, the difficulty providing broadband-secure communications and secure working accommodation, as well as the very important need to be fully responsive to subordinate commanders. This led to the preference to locate small teams forward for liaison and close coordination and remote back to a fixed AOC. This preference however, requires the JFACC to ensure that each subordinate commander has air subject matter experts relevant to the function of their respective headquarters so that they have timely and accurate advice, and, importantly, direct access and input to the JFACC.

In preparing to meet the uncertainties of the future, all three Services - so too our allies and coalition partners - face similar challenges in operating in increasingly complex and dangerous environments. With respect to air power, the evolving threat of advanced fighter, strike and ISR aircraft, combined with complex surface-to-air and surface-to-surface missile systems - both land- and sea-based - means that we need to maintain a highly trained and well-equipped Air Force capable of supporting amphibious operations in environments varying from benign right through to the highly complex. In short, what I am talking about is a balanced force that can employ the ‘right effects through precise control.’

**Conclusion**

I would like to re-emphasise what many of us here already appreciate. That is, amphibious operations are extremely difficult operations to command, plan and conduct, especially when the adversary has any level of offensive or defensive counter air capability.

My key message is that, regardless of the maritime environment that the amphibious task force is operating in - brown, green or blue water - or the phase of the operation; air power expands the ISR, strike and defensive capabilities of the task force and provides a significant sustainment function. Further, we have the command and control systems in place to do this effectively and with the best efficiency.

Today, we are very fortunate indeed to operate in an area of operations where surface forces can expect to go about their business unhindered by enemy air power. This may not always be so in the future. In Australia’s case, it is easy to take control of the air for granted, as it has been a period of 65 years since an Australian sailor and just over 66 years since an Australian soldier was killed because of direct enemy air attack. It is my job to make sure this period continues to expand - a job I and 14,300 RAAF personnel take very seriously.
PART 2

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Recent Operations
The United Nations Convention on the Law of the Sea 1982 designated 60 per cent of the world’s oceans effectively free of national control, however, nearly all energy shipping routes at some stage pass through waters that are under the jurisdiction of coastal states.

The international competitiveness of developed countries in maritime shipping is decreasing due to high costs, but since the 1980s, developing countries have been active in growing their merchant shipping fleets using a cheaper labour force. As a result, competition in international shipping has intensified.

It is now a common trend within the shipping industry for shipowners to use flags-of-convenience to reduce their operating costs. Consequently a state’s dependence on another nation’s ship and crew to transport its own trade is increasing and thus interdependence in the maritime domain is deepening.

Since the 1990s, some shipping companies have taken advantage of the increasing use of containers and the consequential increase in container ship size to combine their global operations and improve their collective efficiency. The ‘Grand Alliance’ comprising Hapag-Lloyd of Germany, NYK of Japan and OOCL of Hong Kong, is such a grouping.

As an island country, Japan relies on foreign trade for its existence and prosperity, with 99.7 per cent (by weight) being seaborne. In 2006, Japan’s self-sufficiency in energy, including nuclear power, was only about 18 per cent; resulting in Japan importing 90 per cent of its crude oil from the Middle East, via the Indian Ocean and the Malacca Strait. Similarly, as Japan’s self-sufficiency in food production, currently about 40 per cent of calorie required, is also decreasing, food is predominantly imported from the United States and East Asia. As Japan developed its economy, it also increased its dependency on other states for food and energy, which is a situation facing many other states today.

Given this reliance on seaborne trade, the internationalisation of the shipping industry and the downward trend in the number of Japanese merchant ships is a serious concern, as maritime transportation is Japan’s highest security vulnerability. The number of Japanese-flagged ships peaked in 1972 at 1508 ships and 56,833 crew; in 2007 there were only 92 Japanese-flagged ships with 2694 crew. If there was a national emergency, it has been estimated that Japan requires 450 ships and 5500 crew.
The shipping industry has become truly globalised, as has crime at sea. As an example, on 22 July 2009, the United Arab Emirates captured a container ship carrying North Korean weapons on a Bahamas-registered, Australian company-owned, cargo ship bound for Iran, where the cargo had been ordered by the Shanghai branch of an Italian company. In all, seven states were involved in this incident, and it is said that they all worked together to intercept and capture the ship. International cooperation is indispensable in order to manage global issues, such as piracy, drug trafficking, and maritime terrorism.

Many conflicts and acts of sea robbery and piracy occur along important sea lines of communication from East Asia to Africa and Europe. As interdependence between national economies grows, international relationships become multi-layered and more complicated, requiring multilateral rather than the bilateral relationships of the Cold War era.

With the increasing use of flag-of-convenience shipping, national merchant fleets are shrinking, and this is leading to an increased interdependence between states for shipping. But the internationalisation of the shipping industry has also seen an increase in crime and disorder at sea, as security vulnerabilities within the shipping industry are easily exploited. Consequently, free and safe use of the seas is becoming a common interest for all states.

In order to best deal with these changes, it is time for the Japan Maritime Self-Defense Force (JMSDF) to refocus its core mission from the protection of sea lines of communication in an emergency, to developing a framework for peacetime international cooperation. Given all these interdependencies, the JMSDF has to prepare for international maritime security cooperation.

Counter-Piracy Operations

The Commander-in-Chief of the Self-Defense Fleet has under his command all units involved in counter-piracy operations. A surface unit generally comprises two escort ships and approximately 400 personnel, with eight Japan Coast Guard officers also onboard to provide legal advice. Each escort ship has one or two patrol helicopters and speed boats. A counter-piracy air unit consists of two P-3C maritime patrol aircraft and approximately 150 personnel (100 navy/50 army).

As part of its counter-piracy activities, the JMSDF conducts direct escort operations for merchant ships transiting the Internationally Recommended Transit Corridor (IRTC) in the Gulf of Aden. Surface ships conduct escort operations between the east and west ends of the IRTC. The duration of a single trip is approximately a day and a half. During these operations, escort ships maintain communication with merchant ships via international VHF radio and use their own helicopters to conduct patrols. JMSDF surface ships use Djibouti port as their main supply base.

Over the initial period of 30 March to 22 July 2009, 41 operations were conducted to escort 121 ships. Under the original rules of engagement the JMSDF was only authorised to escort Japanese-related shipping (ship, crew or cargo), but after considerable debate in the National Diet, a new law was promulgated on 19 June 2009 allowing the JMSDF to escort any ship or vessel. From 28 July 2009 to January 2010, 57 operations were conducted to escort 435 ships (140 Japanese-related/295 foreign).

Using Djibouti international airport as its main base, the JMSDF air squadron independently conducts area-wide surveillance in the Gulf of Aden to gather intelligence and provide information on piracy. When the P-3C aircraft collect information on suspicious ships, it is relayed to JMSDF escort ships, foreign navies and merchant ships in the area in order to suppress piratical activities. Over the period 11 June 2009 to 22 January 2010, 149 missions were conducted: 23 maritime patrol sorties sighting 1600 ships, and 126 counter-piracy operations sighting 8700 ships.

The Impact of Global Maritime Security at a Regional Level

Counter-piracy operations in the Gulf of Aden and the coastal areas off Somalia serve as an example of how global maritime security issues and operations might positively impact on regional security. There are several necessary characteristics for maritime security:

- Long-term peacetime operations are required in order to have the ability to respond to global issues that impact on good order at sea, such as drug/human trafficking, piracy and terrorism.
- A state cannot achieve maritime security in isolation as threats may often come from beyond its borders/maritime zones. The international community needs to recognise that maritime security is a common interest and that multilateral cooperation beyond existing security frameworks and political systems is both necessary and possible.
- It is essential that the international community provides feasible measures for sustained effort in areas such as diplomacy, police action, economic development and nation building in Somalia.
- Common rules and information exchange measures are indispensable for naval cooperation.

There are a few multinational security frameworks that enable some maritime security cooperation:

- The International Seapower Symposium was created by the US Navy in 1969 as a biennial meeting of naval leaders from around the world.
- The Western Pacific Naval Symposium was created by the RAN in 1988 focusing on professional naval mastery.
The Indian Ocean Naval Symposium was created by the Indian Navy in 2008, including marine police and coastguards.

In various parts of the world, navies are cooperating on maritime security issues:

- Indonesia, Malaysia and Singapore are cooperating to manage sea robbery in the Malacca Strait.
- The European Union, NATO and Combined Maritime Forces, along with a number of independent navies, are cooperating on counter-piracy operations in the Gulf of Aden and off Somalia.
- Since 2007 the US Navy has taken a lead role in humanitarian assistance operations in South America, the west coast of Africa, and in Southeast Asia along with other navies and non-governmental organisations.

Information sharing as part of counter-piracy operations appears to be the only example of global naval cooperation, albeit some ad hoc cooperation for some escort operations. For example, a Republic of Korea Navy destroyer protected a North Korean cargo ship from a piracy attack on 4 May 2009, the PLAN has escorted many Japanese-related ships, and the JMSDF after July 2009 has escorted many Chinese-related ships. It is possible that this cooperation might improve confidence building measures and defence exchanges between the East Asian states.

The effects of global maritime security on regional security at the unit level are: mutual understanding and confidence building; and progress on advising different rules of engagement, information exchange measures and procedures is expected to improve partnerships between navies. Consequently, at the national level, communication mechanisms and crisis management systems can be established, as well as progressing unit level and personnel exchanges. This can then expand to regional levels and may result in common efforts to improve regional security and the establishment of multilateral cooperative frameworks for maritime security.

The economic interdependence of states emphasises the importance of a stable security environment at global and regional levels, in order to maintain economic prosperity. In terms of maritime security, navies, coastguards and maritime agencies undertaking law enforcement activities play a leading role in establishing a global cooperative system.

In order to respond to global issues, cooperation and partnerships are the key factor. If synchronisation amongst the international community improves operational efficiency and effectiveness, then naval partnerships and cooperation can have a positive impact on regional maritime security.
Equipment and Training

When performing these escort missions, the commandos might encounter pirates who differ markedly from possible adversaries in conventional operations. Therefore, special weapons and equipment are necessary to fulfil the counter-piracy mission, including:

- individual small arms including an automatic rifle (with under-barrel grenade launcher), a general purpose machine gun, and a sniper rifle
- distant fire support weapons including anti-air machine guns, grenade launchers and heavy-machine guns fixed to the Z-9 helicopter
- portable communication devices including hand-held radios and satellite communication equipments, night vision goggles, and positioning instruments
- personal protective equipment including bullet-proof vests and helmets
- non-lethal ammunition including high explosive squash-heads, flash bombs, tear shells, baton bullets and smoke grenades
- other equipment including air gliding and climbing equipment and evidence collecting equipment such as camera/video recorders for law enforcement purposes.

During escort operations, commandos undergo continual training including the ability to use their weapons to suppress, rather than kill, a target. The main focus of the training includes gliding via sling from a helicopter, transferring to a RHIB, carrying out security and escort exercises, transporting commandos to merchant ships, drills for capturing pirates, investigating and verifying suspected pirate ships, and rescuing hostages. Live ammunition may be used during this training, with an emphasis on the use of the sniper rifle and the anti-air machine gun; and non-lethal ammunition to deter and subdue pirates. Training activities take into account environmental conditions such as operating at night, poor visibility and high-sea states.

Operational Employment of Commandos on Escort Missions

For specialised vessels, vessels loaded with important materials and merchant ships located in vulnerable positions within a convoy formation (and thus prone to piracy attacks), commandos are deployed to provide onboard protection, which also helps relieve the pressure on the escorting warships.

The commandos are transferred to the merchant ships by helicopter or speed boat, and deploy to positions dictated by the structure of the ship’s hull and vulnerable positions susceptible to attack. They conduct continuous monitoring against suspicious maritime targets; launch signal flares, high-explosive squash head and flares to warn and dispel pirates; and are authorised to fire both warning shots and direct firing at pirates if required.

There are usually 2-4 commandos on the helicopters patrolling above the convoy. These commandos carry light weapons and camera/video recorders as well as operating the heavy machine gun mounted onboard the helicopter. Experience demonstrates that deploying helicopters with commandos onboard is a very effective means of counter-piracy. First, with the advantage of speed, the helicopters are capable of patrolling a vast area within a short period of time. Second, the helicopters deter many pirates, who usually abandon their attempts to attack merchant ships while still far away. Third, the helicopters are highly effective in an intelligence, surveillance and reconnaissance role.

While conducting escort missions, the commandos will be continually on deck, providing a 24-hour guard to protect against pirate attacks. In case of suspicious activity implying an impending pirate attack, the commandos will immediately deploy to their respective combat positions.

Basic engagement principles for commandos at sea

PLAN commandos strictly adhere to the basic principles of international and domestic laws, and observe the standard regulations for weapons use while at sea. When a suspected target approaches a ship, a non-lethal warning shot such as a signal flare, high-explosive squash-head or flash bomb is fired; and if necessary, the anti-air machine gun will fire over the bow of the pirate ship as a warning.

When the target is nearer and verified as a threat, the anti-air machine gun or rifles are used to conduct barrage fire. If this does not act as an adequate deterrent, or if the pirates return fire, the highest ranking commander on the spot will determine the appropriate response.

The PLAN commandos are a new concept and their composition, missions, equipment, training and possible roles remain under development; importantly the concept will be further shaped through the exchange of ideas and experience with various naval colleagues.
In his address, Vice Admiral Russ Crane touched on how many of those who attended the 2010 Sea Power Conference came over great distances, which is a great segue to discussing the operations we in the Seventh Fleet engage in, as they also involve great distances. This ‘tyranny of distance’ is something we have to manage every day. This paper will cover a lot of ground, but focuses on three things:

• A brief overview of the forces in Seventh Fleet.
• Some insight into how we manage our forces to mitigate this tyranny of distance.
• A real world example of our planning by walking you through our most recent patrol, which involved more than one contingency.

The amphibious forces under Commander US Seventh Fleet include USS Blue Ridge, an amphibious command and control ship (as well as Fleet’s flagship). Though responsible for her manning and training, Blue Ridge is not the main battery of the Amphibious Commander, which is the amphibious ship USS Essex (LHD). Commander Amphibious Squadron 11 is responsible for tactical operations and is normally embarked on Essex, which is the centrepiece of the amphibious ready group (ARG). Essex carries 1200 marines and most of their aviation capability. USS Denver (LPD) is the second most capable air platform with room for 800 marines. The two small amphibious ships (LSD) - US Ships Harpers Ferry and Tortuga - are air capable platforms with room for 500 marines. These three ships have well decks and are typically deployed with a variety of landing craft.

Turning to the tyranny of distance, the Fleet’s amphibious ships load their marines and equipment in White Beach, Okinawa where, at 16kts, it is 2 days steaming time to Manila, about 5 days to Thailand, 7 days to Jakarta, and 11 days to Sydney. So how is the tyranny of distance mitigated? Well, by being out and about. And though the amphibious forces aspect of our presence will be discussed, what will be described can be applied to that presence writ large. A lot of thought is given to how that presence is apportioned to greatest effect. We want to create a presence that:

• reduces response times to any contingency so we can assure our allies, and dissuade and deter bad actors in the region
• builds trust and cooperation among friends and allies
• improves capabilities - ours and those with whom we exercise.

We are deployed or underway at least 50 per cent of the time; in fact this is a standing rule in our biannual scheduling conferences. It is a pretty easy mark to hit...
when you schedule and commit to 21 exercises involving 10 countries, all aimed at supporting Commander Seventh Fleet’s ‘persistent priorities’, which are:

- develop and build maritime partnerships
- maximise force posture throughout the region
- maintain operational readiness.

So for at least half the year the Fleet is on deployment, ready for tasking, improving proficiency while building relationships and using our presence to take advantage of opportunities that arise. Many of the exercises conducted are also coalition-enabling exercises. Exercise TALISMAN SABRE 2009 was held in Australia with our Australian partners and Canadian forces also participated. Exercise COBRA GOLD, which starts next week, has US, Thai and Korean forces along with a number of invited observers. Exercise CARAT allows us to work closely with such partners as Thailand, Indonesia, Malaysia, Singapore and Brunei, to name some of the countries involved.

Moving onto our most recent Fall Patrol, one of two patrol cycles we run each year (the second being in Spring), our presence allowed a rapid response to the contingencies that did arise; in this case a number of natural disasters. Let us start with the full overview of the planned schedule:

1. Amphibious integration training (Japan, 28-29 September).
2. Philippines FHA 09 (Philippines, 4-11 October).
3. Indonesian FHA 09 (Indonesia, 9-14 October).
4. PHIBLEX 09, an amphibious bilateral exercise with The Philippines (Philippines, 15-26 October).
5. Korean Interoperability Training Program (Republic of Korea, 1-5 November).

A typical Fall Patrol cycle for the Essex ARG would have us execute events 1, 4, 5 and 6 described above, which we did. This schedule was changed based on real world events that will be discussed in a moment. What is not typical is that Essex, our flagship, was in a shipyard undergoing an extended maintenance period until the last activity of the patrol. Here is a rundown of what we did during the Fall Patrol:

- Amphibious integration training, normally a two-week work-up, was shortened due to humanitarian assistance operations.
- Assisted The Philippines (unscheduled opportunities to provide humanitarian assistance).

Denver deployed to assist Indonesia (unscheduled opportunities to provide humanitarian assistance).
- With Denver rejoining the ARG, some of PHIBLEX was able to be salvaged. This required the original schedule to be modified, but allowed us enough time to accomplish the major objectives both navies and marines desired.
- Took part in the Korean Interoperability Training Program.
- Returned to Okinawa for ANNUALEX, which saw Essex out of the dockyard and able to rejoin us.

This is how we maintained and made best use of our presence during that Fall Patrol. I would now like to provide some insight on our humanitarian assistance and disaster relief (HADR) efforts with particular emphasis on Indonesia.

At this point it is prudent to discuss an event that occurred at the end of the preceding Spring Patrol as some lessons learned were useful a month later.

Napoleon once said he would rather have lucky generals than smart ones. But again, when you are underway 50 per cent of the time your chances at being lucky improve.

In August the Essex ARG, having just returned from TALISMAN SABRE in Australia, was off-loading its marines at Okinawa when a warning order was received to assist Taiwan which had just experienced Typhoon Morakot. Essex had an extensive maintenance period scheduled so the amphibious Squadron 11 Commodore and his staff moved from Essex to Denver, reconfiguring the latter with two MH-53 and MH-60 helicopters and some embarked US Marine Corps heavy-lift detachments to assist. Now the MH-53 is actually a minesweeping helicopter with strengthened frames to pull minesweeping sleds, but this also makes them ideal heavy-lift platforms.

Commodore Donald Schmieley, USN, set two precedents that we used in Indonesia a month later:

- He used the MH-60 to conduct aerial surveys and verify landing zones, which freed the MH-53 to focus on heavy-lift missions.
- He established relationships with numerous non-governmental organisations (NGO) and USAID representatives, many of the same personnel we would see again in Indonesia and The Philippines a month later.

The damage done by the typhoon was considerable as numerous villages and hundreds of roads were destroyed, 57 bridges were damaged, and 376 people were dead and 254 missing, with around 30,000 displaced. Over the period 17-22 August 2009, Denver’s helicopters undertook 55 sorties, which saw them conduct aerial surveys of damage, as well as transporting 10 multi-function engineering vehicles, 3 excavators, 7 bobcats and 20 boxes of relief supplies.
Fast forwarding to the period of late September/early October, the Denver ARG was in Okinawa preparing to sail to The Philippines for PHIBLEX. The destroyer USS McCampbell was in Hong Kong, while the US Air Force humanitarian assistance rapid response team, which is a deployable field hospital, was ashore in Guam (where it is stationed when not deployed). We also had the supply ship USNS Richard E Byrd in the Sulu Sea.

In the space of three days a tsunami struck American Samoa (29 September), three earthquakes shook Sumatra (30 September), and Typhoon Ketsana hit The Philippines (3 October). As Third Fleet forces out of Hawaii assisted the Samoans, we reconfigured the three ships in the Denver ARG to assist The Philippines and Indonesia simultaneously. This is called ‘split ARG operations’. Being inherently flexible platforms, amphibious forces are able to shift from engagement missions to HADR missions in short order. This flexibility has been of increasing value in recent years.

How this split mission could be accomplished was discussed with the mission commander for The Philippines, Brigadier General Mark Brilakis. It was agreed to keep the two LSD in The Philippines with their CH-46 helicopters and air cushioned landing craft. I was tasked to fly down to Indonesia as the mission commander, and Denver followed with three USMC CH-53 heavy-lift helicopters. McCampbell was dispatched by Seventh Fleet with her two SH-60 helicopters, as was Richard E Byrd.

On arrival, we immediately began coordination with a number of people. One of them was Captain Steve Woodall, RAN, who had been deputy commander amphibious task force during TALISMAN SABRE 2009, just two months prior. We discussed US and Australian responses to the crisis and agreed to stay in touch. Later we would meet with Australian Army elements in-country and share information.

We then formed a humanitarian assistance survey team and flew to Jakarta, arriving on 4 October. We arrived in Padang that same day thanks to the RAAF. We started ground surveys and began coordination with USAID and NGO, establishing a forward command post with support from US 353rd Special Operations Group elements that were already in Indonesia conducting an exercise.

Our assessments with USAID representatives (some from the Taiwan operations), NGO and the Indonesian military found the city to be in stable condition with utilities and limited running water. Therefore the outlying countryside would be our priority due to mudslides and the destruction of homes. During this time we also educated relief agencies on our capabilities and started coordinating missions together.

The portable field hospital arrived and saw its first patients on 7 October. On 9 October, Denver and McCampbell arrived, followed by Richard E Byrd the next day with civilian Puma helicopters, which was a big boost to survey operations. From 9-13 October we surveyed and conducted heavy-lift missions to the countryside.

We started at 9000lbs of lift the first day and peaked at 70,000lbs 12 days later. The field hospital started with 120 patients on the first day and ramped up to full capacity (approx 350) by the second day. Throughout this effort we worked with a coalition of people from Indonesia, Australia, Japan, Singapore, Mexico, France, and Russia, with whom we were exchanging information.

By 13 October we had reached the tipping point and saw a notable decrease in demand for lift and hospital patients, while roads were opening and water access improved. With concurrence from USAID and the US Embassy we informed everyone we would soon transition. Captain Woodall was briefed regarding our intentions, which allowed for an elegant transition as HMAS Kanimbla was arriving with a civil engineering battalion including rice irrigation experts. We put out a last call for lift missions. The day after our ships left, the Australian task force arrived. All US forces were gone by 17 October.

To recap and again emphasise, having well trained amphibious forces was the foundation for success. Having amphibious forces with flexible and encompassing capabilities like command and control, well decks for utility craft, flight decks and air traffic controllers, state of the art medical facilities, and room for staffs to plan, which amphibious ships have in abundance. Having them forward deployed and underway let us respond quickly while many exercises in the region helped us build standing trust and cooperation.

Facebook and Twitter accounts were set up to improve transparency and communication. Some information was general and used by the press, while other information was useful for the international relief community and their efforts; all were very well received. This HADR mission exemplified how amphibious capability assures our friends and reinforces alliances. Importantly, although our forces can surge when necessary to respond to crises, trust and cooperation cannot be surged.
The aim of this paper is to outline the US Marine Corps (USMC) perspective on the global situation and how it relates to our conference theme of Combined and Joint Operations from the Sea. The paper will touch on USMC top priorities, global security posture trends, and why we believe power projection from the sea will always be required—whether facing asymmetric threats or conducting major theatre war operations. A discussion regarding the terms of programming to support our capability to meet the requirements of either scenario will conclude the paper.

**Top Priority**

It is always best to begin with our number one priority. For the USMC today, that priority is the marines and sailors in combat. We are just now coming to the closure of one fight while becoming more deeply engaged in a second. This is, of course, referencing Iraq and Afghanistan. We entered into a war with Iraq in 2003 for a number of reasons, a search for weapons of mass destruction (WMD) being one of them. As you know, we did not find the WMD that we expected—a surprise, for a number of reasons. Another surprise was that we became engaged in a prolonged counterinsurgency struggle, first with the Saddam Fedayeen and then with a loosely organised but well-funded Al Qaeda in Al Anbar Province—a struggle for influence that, at times, looked bleak. Fortunately, the perseverance of our fighting men and women—and those of our allies—carried the day. The good news, for all of our countries and for the region, is that we will leave Iraq having decisively crushed Al Qaeda; at least to a degree it will give the legitimately elected Iraqi government a chance to further the aspirations of its people.

Afghanistan now stands at another decisive point in a similar battle. As you no doubt all know we will, by this spring, have close to 20,000 marines in Helmand Province. The fight in Afghanistan poses us new and different challenges than Iraq. Modern counterinsurgency doctrine envisions, at some point, turning over the battle to a local government and its security forces. The government and security forces in Afghanistan remain a work in progress. We are, however, confident that, with the leadership of the international community, NATO and other allied governments, and the courage of our collective armed forces, the Afghan government and security forces will develop, in time, into the partner that the coalition needs to bring a successful conclusion to our combat role there.
Global Security from a Naval Perspective

At this point it makes sense to discuss the global situation, specifically our perspective on where we are and where we are going. Such a discussion will clearly inform just how critical naval forces and power projection from the sea are today and will be tomorrow.

The global security situation continues to evolve along several trends. Some of these developments have been clear for nearly two decades. Others have emerged more recently and still others are just now becoming apparent. Not surprisingly, naval forces have successfully adapted best to the trends that have been clear for the longest time and continue to develop coping mechanisms for those trends that are just coming to the fore.

These trends - both existing and emerging - warrant a closer look. First, asymmetric conflict is of primary importance today and is likely to remain so for the mid to long term. Second, speedy and flexible access to the global commons - critical sea lines of communication, maritime chokepoints, key coastal areas - and to conflict zones will be decisive to future operations. Third, because an ounce of prevention will remain the equal of a pound of cure, engagement - or Phase 0 operations - will remain our first choice in dealing with these trends. Finally conventional, high-end wars may be enjoying a very welcome vacation, but, unfortunately, we believe they are still an unwelcome possibility.

Why have our enemies seemingly abandoned conventional combat for insurgency, guerrilla operations, terrorism, and transnational crime? The reasons for this are several. First, the combined conventional military dominance of the nations that support international stability and order is such that most enemies would be ill-advised to fight us directly. Second, irregular warfare is relatively inexpensive - the guerrilla and the terrorist do not require large budgets, significant territory or a major population base. Insurgency, crime, and terror have ever been the preference of the weak. Third, the indirect approach is culturally consistent and accepted in many of the places where our enemies have taken root. Finally, there is the persistent perception that insurgency and terror are the best way to defeat a democracy.

How will these asymmetric adversaries fight? It is clear we have become familiar with their mode of operating. They use strategic, operational and tactical means to avoid our advantage in technical intelligence, weapons stand-off and accuracy, and precise effects. These adversaries conceal their forces in mountains, jungles, swamps, deserts, and cities. They live off and among a sympathetic or an intimidated population. Most importantly, the goals of their operations are not to physically destroy our forces - a statement of little comfort to the scores of families of Australian, British, US and other allied and coalition troops that have made the ultimate sacrifice in this struggle for influence. These adversaries will kill as viciously and indiscriminately as any enemy we have ever encountered. Instead, the new threat uses military operations to create a strategic communication impact on their local population, our domestic public and the broader international community.

War for them is also a struggle for influence, one centred on intimidation and deception. Fighting and ‘winning’ in the short term are less important than wearing an adversary down. Their operational art seeks to make the tactical result in terms of physical destruction irrelevant. Whether we lost more forces and equipment or they did does not matter - they still win.

For these reasons and others, access and anti-access are increasingly becoming the focus of military operations. The reason for this trend is similar to the first. If a US, Australian or other allied force can establish and sustain itself in a particular area, recent experience shows that it will win. The answer for our enemies is obvious - keep coalition forces out or choke off their lines of communication before decisive combat power can be generated. Anti-access takes many forms. On land - although many means exist - the most well-known anti-access weapon is the improvised explosive device (IED). At sea and in the littorals, anti-access tools include mines, coastal defence weapons, integrated anti-landing defences, coastal defence craft, submarines, and boat-borne IED. States - some seeking to threaten international stability - maintain the most capable access denial weapons. The diffusion of seaborne anti-access means into the hands of non-state actors - Hezbollah and the Somali pirates come to mind - is, however, both interesting and alarming.

The third trend, prevention over cure, is particularly important for us here in the Pacific. If we have learned anything over the past decade, it is that social and economic problems, left to themselves, do not get better with time. Moreover, only by being present, engaged, listening and, where necessary, lending a helping hand, can nations understand the latest trends and developments, maintain access across the region, detect potential instability, and help our regional friends and allies help themselves. What does engagement look like? Last year 3rd Marine Expeditionary Force (III MEF) participated in over 80 bilateral and multilateral engagements, high-level officer visits, exercises, humanitarian and civil actions, planning conferences, and subject matter expert exchanges. This year we are again scheduled to participate in a similar number of events. Over the past decade, III MEF forces have responded to eight major humanitarian crises. Throughout Southeast Asia we have been able to respond rapidly to fill the gap between the capability of governments, international organisations, and civilian aid agencies and the requirements of devastated and needy populations. III MEF supports the broader interagency and international efforts to prevent terror and insurgencies from taking root among vulnerable populations. Such efforts include everything from training local security forces, to building schools and digging wells, to providing medical and dental care that would otherwise never reach those in need. Finally, III MEF combat capabilities stand ready to deploy anywhere to deter, and, if deterrence fails, to act.
The fourth trend, the dormancy of conventional wars, is the outlier. It is not just about irregular warfare. As unpleasant, messy, and exhausting as the current fighting is, we should never grow nostalgic for the other kind of war. As the 20th century showed us, large scale conventional conflict is a disaster on a massive scale. It would be great to say that the sort of devastating wars that the multitude of soldiers, sailors, airmen and marines fought over the last century are a relic of the past never to return, however, this is not the case. We are enjoying a welcome hiatus - an intermission, if you will. There are several states that possess significant conventional capabilities and are led by regimes that are willing to use them. More alarming, sooner or later, a large and powerful state may determine that the current world order is no longer in its best interest. To forestall such a war, we must maintain a capable, conventional deterrent even as we optimise current forces for the asymmetric fight.

Why Power Projection from the Sea?
What do all of these trends have in common? They all show how necessary naval forces that possess the capability to project decisive combat power from the sea are in today’s dynamic world. And the USMC believes they will remain necessary well into the future.

Naval forces must be expeditionary, however, being expeditionary does not, in this context, mean regularly deploying to a fixed, large-scale, contractor run base in a foreign country. Expeditionary forces are those that can go anywhere, on a moment’s notice and operate from the sea or from small, austere bases ashore. Expeditionary forces are light enough to get there quickly but heavy enough to sustain themselves and get the job done. Only one kind of force can do all of those things: a naval force based on multi-mission combatants and amphibious ships with embarked, combined-arms landing forces - be they Australian soldiers or US marines.

Naval forces must also be flexible enough to counter the irregular threat. Counterinsurgency is not about firepower as decisive operations can be a product of creativity and perseverance. Perseverance and creativity means finding new ways to protect the population from the enemy. Perseverance and creativity means realising that sometimes not shooting is better than shooting. Perseverance and creativity means truth is often counterintuitive - that a local answer that makes no sense to us makes sense to them. Although we have not cornered the market, perseverance and creativity, more often than not, can be found among our modern naval forces.

Naval forces are the gold standard of engagement. We can deploy ourselves, sustain ourselves, remain on the littoral, or go well inland. We can train with partner nation’s navies, armies, marines (if they have them), air forces and special operations forces.

We can train to the full spectrum of combat, security and support operations. When the training is done, we re-embark and redeploy.

The key to gaining and maintaining access to the global commons and conflict zones remain naval forces. Recall the list of seaborne anti-access capabilities - mines, coastal defence weapons, integrated anti-landing defences, air defences, coastal defence craft, submarines and boat-borne IED. Power projection on and from the sea is the method of choice to combat each of these threats. Consider the example of the Somali pirates or, for that matter, the proximity of pirates to equally critical sea lines of communication here in the Pacific. What other means exist to disrupt and defeat pirates other than a naval force composed of surface combatants and embarked troops capable of conducting visit, board, search and seizure operations or of going ashore to disrupt pirate bases?

Finally, there is no capability more feared in large-scale, conventional war than the ability to land large formations on an enemy flank or in their rear. Amphibious forcible entry operations are the premier means to accomplish such a manoeuvre. Combined with other forcible entry means such as airborne and air assault operations, the amphibious assault remains a capability that deters conflict. Should deterrence fail forcible entry operations provide a joint force commander with a war-winning blow. We believe that the only force that can conduct amphibious forcible entry is the type of naval force that I have just discussed.

Programs for the Future
For the USMC/US Navy team, maintaining the ability to project power from the sea involves four key initiatives:

- Maintaining sufficient force structure.
- Amphibious ship building.
- The Joint Strike Fighter (F-35).
- The expeditionary fighting vehicle.

First, our marines, sailors, civilians and family members are the sine qua non of our corps. Without them, we are nothing. It is this group of dedicated men and women that must win the long war, train and remain globally engaged all the while continuing to evolve and transform in response to the changing character of warfare. Noting just how much of a strain the past eight years of war have been on this singularly indispensable population has become a cliché. To reinforce the cliché: the force has been and remains under tremendous strain. We have come to realise that the key to the resilience of our young warriors is dwell time - time to be with their family or friends, time to rest, and time away from deployments, combat, and contingencies. To be fair, we take away some of that dwell time for training, education, maintenance and so on. The key is: during dwell, a marine or
sailor generally comes home at the end of his work day. Experience has taught us that the right deployment-to-dwell number is about 1:2 ratio. Recently, we have been fortunate to be provided the resources to grow the Corps to 202,000 personnel. With this number of marines, we believe we can maintain that critical 1:2 ratio even as we increase our numbers in Afghanistan.

Second, amphibious ships too often are associated only with the high-end of military actions. Such associations are inaccurate. Consider the four current and emerging trends discussed. First, insurgencies, terror, and crime - the asymmetric threat - occur in and among the people. The vast majority of the world’s population lives in the littorals. This is especially true here in the Pacific. Iraq is coming to a close. Afghanistan is the fight of today. The next war among the people will most likely occur much closer to the coast. Neither Iraq nor Afghanistan are littoral countries yet each conflict, early on, required amphibious ships to project combat forces ashore. In the case of Afghanistan, the first major boots on the ground were US marines from two marine expeditionary units (MEU), penetrating inland from two amphibious ready groups. In Iraq, amphibious task forces from the east and west coast of the United States delivered key combat power.

Second, anti-access defence require forces that can penetrate those defences and create a lodgement for the introduction of follow-on troops. As I mentioned earlier, ground forces deploying by air alone cannot accomplish this mission. Only amphibious forces supported by multi-mission surface and sub-surface combatants can get the job done completely.

Third, it has already been discussed that, for Phase 0 shaping and presence, amphibious ships with embarked landing forces are our force of choice. You have only to look as far as the MEU. Every US combatant commander fights tooth and nail to maintain a MEU embarked on amphibious ships on station. Our own 31st MEU, paired with the US Navy PhibRon 11, is the busiest unit in the Pacific.

How many amphibious ships are enough? A better question may be - how many are too few? Today the US Navy is in somewhat of a trough with only 30 amphibious ships. Maintenance requirements reduce this total to the mid 20s. This is barely enough to sustain the current deployment rotation, sometimes it is not enough. Discussions between our two Service staffs have settled on a required number of 38, enough to sustain the current deployment rotation, sometimes it is not enough. Maintenance requirements reduce this total to the mid 20s. This is barely enough to sustain the current deployment rotation, sometimes it is not enough.

The Joint Strike Fighter - in particular the F-35B short take off and vertical liftoff (STOVL) variant - is at the heart of our aviation capability. Among the things that make the USMC unique is our organisation for combat - the Marine Air-Ground Task Force. Its striking power is found in the aviation combat element. In this regard, we have accepted some risk. The USMC has not bought a new fixed-wing combat aircraft in 11 years. We decided to forgo the purchase of F/A-18 E/F models and focus on skipping a generation of aircraft. We are eagerly awaiting the delivery of our fifth generation, STOVL F-35B. We also realise that many of our allies - Australia among them - will purchase a variant of this aircraft. We are convinced that this aircraft will provide us with the necessary technology, survivability, precision and flexibility to meet the threat environment we discussed earlier.

We are never going to do another assault like Tarawa. Anti-access defence will require our amphibious ships to remain a minimum of 25nm off coast during the assault. To bridge this distance, the US Navy/USMC team have developed a triad of platforms: the air cushion landing craft, the MV-22 Osprey aircraft and the expeditionary fighting vehicle (EFV). The first two platforms are in service today and have proven themselves in combat. The MV-22 has gone from being looked at askance to being a highly sought after combat capability. The EFV is still in development. The program has, in the past, suffered from reliability problems and cost overruns. We believe those problems have been solved. The current amphibious assault vessel is a good vehicle, but it is 35 years old and is showing its age. Its weapons are only for self-defence and its armour is no-longer capable of properly protecting embarked troops. Most importantly, its top water speed is from 6-8kts. It cannot close the distance from over the horizon. The bottom line for the EFV is this: as a sea-going nation, can the United States afford to not possess a forcible entry capability? If the answer is yes, the EFV is unnecessary. If the answer is no, then, to cover the 25nm, we need the EFV.

Closing

Today, all nations with an interest in peace, stability, and prosperity are at war with a transnational, asymmetric, non-state enemy that seeks to dominate the world. The top priority of the USMC is to support our marines, sailors and civilians engaged in that fight. As we look to the future, we see this conflict continuing for the mid- to long-term. Our belief is that combined and joint operations from the sea, the very relevant theme of these proceedings, are the key to success in this struggle. Moreover, forces that can project power form the sea can gain access to critical regions of the world, shape the environment to prevent war and alleviate suffering, and deter future war. Forums like these, which attract so many high-ranking military professionals, are critical in building a secure world and improving how we serve our respective nations.
By way of scope it is necessary to talk briefly about the New Zealand ‘incorporated’ approach to humanitarian assistance and disaster relief (HADR), the response process and, in particular, the New Zealand Defence Force (NZDF) ‘Plan for the Pacific’. Then by way of example how Operation SAMOA TSUNAMI was undertaken will be discussed briefly.

New Zealand’s role in the South Pacific is clearly defined by geography in the first instance. It is also defined by our circumstances of having elements of constitutional responsibility for Tokelau, Niue and the Cook Islands – people from these nations are New Zealand citizens. New Zealand has a large resident Pacific Island community who account for 10-12 per cent of the population. We are also a significant player in the region in economic, social and diplomatic terms.

So it follows that our HADR focus for the supply and delivery of aid assistance in a material sense is in the South Pacific. Outside of the region, where we do not have assets that can be brought immediately to bear, our response is likely to be in the form of financial assistance.

The Pacific Islands are particularly vulnerable to natural disasters such as cyclones, flood, tsunami, earthquakes and volcanic activity. The number and intensity of natural disasters appears to be growing, and the impact that they have on physical, social and economic livelihoods of communities can be devastating.

The New Zealand Agency for International Development (NZAID), a subset of our Ministry of Foreign Affairs and Trade, leads the New Zealand government’s humanitarian assistance response in the Pacific. It works closely with a range of government agencies, including Defence, in leading and coordinating responses. Relationships with regional partners, such as the UN Office for the Coordination of Humanitarian Affairs, the Red Cross/Red Crescent and other non-governmental organisations (NGO), are vital to ensuring an effective and timely response. The FRANZ Arrangement, inaugurated in 1992 with the purpose of avoiding duplication of effort in response to a natural disaster in the South Pacific, is of particular importance.

NZAID manages any response to natural disasters in close consultation with the Ministry of Foreign Affairs and Trade and other relevant agencies through two gatherings. First, the Emergency Task Force, which is a first call response group consisting of, amongst others, Foreign Affairs, the NZDF and the NZ Red Cross that:
• assesses the need for a response. As far as the NZDF is concerned this does not delay our preparations for response in a sense of 'be prepared to' including placing of a deployable headquarters at ‘notice to move’
• considers the nature of a possible response to an impending disaster or one that might have occurred
• plans a suitable response, in consultation with appropriate agencies in an emergency of scale
• manages the ongoing response in an emergency.

The second gathering is the Interdepartmental Response Network, which is a larger group convened by NZAID if the complexity of a disaster so demands. It comprises members of the Emergency Task Force plus senior directors from Department of Prime Minister and Cabinet, NZ Police, Meteorological Services of NZ and the NGO Disaster Relief Forum. Its role is to ensure that effective coordination, support and resources are available across government as well as ensuring close coordination with civil society. Both the Emergency Task Force and the Interdepartmental Response Network are convened dependant on the likelihood of the devastating impact of a natural disaster.

As for the NZDF, a standing Plan PACIFIC RELIEF outlines arrangements for the provision of defence force assistance to Pacific Island nations affected by a natural disaster. It is activated where an all-of-government response has been directed and in response to a request from NZAID.

Under this plan the mission of the NZDF is to provide rapid assistance, coordinated with an all-of-government response supporting a NZAID-led response to a natural disaster. Our mission is also to assist with setting conditions for recovery. There are of course limitations, and we do not deploy NZDF assets without the formal request and permission of the host country. Also, all NZDF assistance is provided from in-service equipment and capability. We do not, as a rule, purchase additional stores or equipment for the sole use of HADR activities.

In terms of a 'concept of operations', we identify five phases in a humanitarian assistance and disaster relief operation. None of these is discrete and they might often overlap, but significantly they are aligned with the NZAID planning format for disaster relief:

• The reconnaissance phase involves prompt activation of a range of reconnaissance and support capabilities to produce an accurate appreciation of the disaster situation. It is therefore a significant informant to appropriate response options and subsequent operation.
• The emergency relief phase involves the provision of appropriate defence force resources to minimise loss of life or injury, and to provide for the welfare of the affected populace. This will often involve the provision of relief support and positioning of both military and civilian personnel in the affected area.
• The disaster recovery phase involves the provision of NZDF resources to assist with the restoration of normal community life. By this stage it is anticipated that appreciation of the disaster situation is pretty well complete and there is a good idea of what is required. This phase will often be shaped by the New Zealand government in the form of post disaster directives.
• The reconstruction phase is not an aspect we would normally be involved in unless specifically requested or directed. The preference here is for civil agencies to take over this aspect of a response to disaster relief.
• The redeployment phase involves packing up and heading home to New Zealand.

In terms of our three Services, Air Force, Navy and Army, we identify a number of likely tasks appropriate to the phases in the concept of operations:

**Air Force.** Air assets can normally be put in place pretty quickly and satisfy immediate requirements for aerial photography, air mobility tasks - including the insertion of reconnaissance teams, aero-medical evacuation and the establishment of a communications rear link. Air mobility tasks continue in the emergency relief phase as well as the establishment of an airport terminal operations capability and tactical communications.

**Navy.** For naval force elements, response times may be longer, but obviously the availability of harbour and port facilities will be essential when determining how we might mount a response. Key in any response is our amphibious sea-lift ship, HMNZS Canterbury, for use as a sea-basing platform and from which disaster relief equipment, stores and personnel can be transported.

**Army.** From an army perspective, determination of the nature and extent of early health and civil engineering needs is an early requirement in the reconnaissance phase. The focus continues in the subsequent emergency relief phase but we also plan for pioneering and debris clearing teams, force protection if necessary, the establishment of a civil-military cooperation organisation, head of mission liaison, and, as always, establishment of tactical and strategic communications links.

The first action on receipt of advice that defence resources are likely to be needed is a Chief of Defence Force (CDF) operations directive issued from the strategic headquarters to the Commander Joint Forces New Zealand, which is, more often than not, preceded by a warning order. Thereafter it is the responsibility of the Joint Operational Commander to call in the response time for force elements identified for the operation and arrange for diplomatic, customs and agriculture clearances as appropriate. Access to ports and airports, shore services, flight facilitation and aircraft parking space may need to be arranged.
Significantly we keep responsibility for coordination of public information at the strategic level, that is Headquarters NZDF in close consultation with NZAID, but we ensure that a public relations element is attached to the national command element as well.

We make an assumption that no administrative or logistic support will be available from the host country. Support plans for the provision of fuel, rations, and medical and general stores are developed utilising stocks deploying from New Zealand or an intermediate point.

All deployed personnel are self-sufficient for a period of 7-14 days. We note that more robust or permanent arrangements for accommodation, transportation and camp services might be required thereafter. We absolve our normal operating costs but unfunded marginal costs we charge to the Ministry of Foreign Affairs.

So how does all this come together?

On 30 September 2009 at 0648hrs NZ time an 8.3 Richter scale earthquake struck approximately 180km off the southern coast of Samoa. The earthquake generated a tsunami that caused the loss of 180 lives; considerable injury to survivors; and widespread damage and destruction of property and key infrastructure along the south coast of Western Samoa, American Samoa and the northern Tongan island of Niuatoputapu.

Initially the tsunami warning included New Zealand and prompted a civil defence warning for the North Island. We in Defence were therefore also preparing to respond to a potential domestic emergency during the morning of 30 September but the only effect in New Zealand was some minor sea surge on the north-east coast and the tsunami alert was cancelled mid afternoon.

The New Zealand government immediately directed an all-of-government response to the crisis following a request from the Samoan government for disaster relief. The government also immediately made NZ$2 million available to NGO for emergency supplies, relief and recovery activities.

Subsequently the ‘all-of-government’ approach featured a significant deployment of NZDF assets and New Zealand government health personnel and resources. Over the period 30 September to 22 October the NZDF provided humanitarian assistance and disaster relief to Samoa and Tonga, in particular to the southern side of Upolu Island and Niuatoputapu.

The response was underpinned by effective cooperation under the FRANZ Arrangement in coordinating relief supplies and deployment of defence assets.

The devastation and loss of life and injury on the southern Samoan coast was significant, but there was little if any damage to key infrastructure situated on the northern side of the island such as airports, harbours and ports. Most of the country was able to function effectively while key support was provided to those affected areas.

So what of the NZDF response? A CDF warning order was issued on the morning of 30 September followed by the operational directive. The reconnaissance phase began almost immediately with a P-3K aircraft sortie to assess the extent of the damage early that afternoon after the Samoan government formally requested a reconnaissance flight. That aircraft stayed on in Samoa for two days of the reconnaissance phase.

We established a task group with four task units comprising:

- a senior national officer who became the commander land forces with staff from the Environmental Health Organisation; a helicopter detachment and air load team; public relations; an operational diving team; and Army medical, pioneer and water purification sections
- a strategic airlift task unit comprising RNZAF C130 and B757 aircraft
- an airborne maritime patrol and surveillance task unit of P-3K aircraft
- an amphibious task force comprising Canterbury and a SH2G helicopter.

In conjunction with NZAID, the commander task group was initially tasked to provide immediate emergency support to Samoa in order to limit further loss of life, and provide situational awareness and a base for further support as necessary. Very early in the piece the mission was extended to Niuatoputapu. This latter part of the operation required sea basing which was supplied by Canterbury.

Useful for reconnaissance over the first three days, the P-3K was also used in a search and rescue role off Upolu.

We deployed approximately 100 personnel over the first three days in the response phase, mainly medical and engineering specialists. These people went directly to the affected areas, staying there for as long as they were needed. Support for the deployment of civil aid was provided by both RAAF and RNZAF airlift aircraft.

Significantly there was considerable demand for aero-medical evacuation very early in the piece, which tied up a lot of RNZAF air assets.

Canterbury deployed to Niuatoputapu and Apia on 10 October after being brought out of a maintenance period and on arrival quickly proved herself as a ‘one stop shop’ in a HADR operation.
In terms of observations and lessons learnt from this operation:

- The importance of multilateral and bilateral agreements cannot be underestimated. Coordination of effort is a key factor in success.
- We must be mindful and indeed expect at least initial tension in public and/or political expectation that practical aid will be deployed immediately.
- There will often be an element of ‘serendipity’ where defence assets are close at hand to be brought to bear quickly and effectively.
- The Samoan government and people were able to provide for a lot of their own requirements. Much infrastructure remained intact.
- It is important to respond to their needs and not what we think they might need. Be mindful of interdepartmental rivalries both at home and in the assisted country.
- Strategic air and sea-lift is vital. Aero-medical evacuation is likely to be an early requirement and take up limited resources.
- Plan to accommodate the media and VIP visits, which are invariably good for morale.

All up, this was viewed as a successful operation; we were able to provide appropriate capabilities where they were required with the right balance of Navy, Army and Air Force elements. An integrated and coordinated approach, facilitated by NZAID was a key factor in the operation’s success.

On Boxing Day 2004, a huge earthquake off Sumatra created a tsunami that devastated many nations around the Indian Ocean rim. In almost every subsequent year since there has been a major natural disasters, either overseas or in Australia. There were two such disasters in 2009, those being the tsunami that hit Samoa and the major earthquake that hit Padang in Indonesia. When such disasters occur, the international community, including Australia and the ADF, seek to assist in dealing with the aftermath.

This paper outlines ADF activities during operations SUMATRA ASSIST, PADANG ASSIST and SAMOA ASSIST in order to draw out some lessons for combined and joint operations from the sea. This paper will, by referencing personal experience as the maritime component commander at the time, focus particularly on SUMATRA ASSIST, and draw parallels with the other two operations. As might be expected, the similarities between all three humanitarian assistance and disaster relief (HADR) operations are considerable.

The paper focuses on the maritime aspects of these operations and their contribution to the joint effort. It must, however, be acknowledged from the start that much of the hardest work in these operations is done ashore by the joint force, by other coalition partners and, most importantly of all, by the governments and people of the nations hit by disaster.

The paper will conclude with some lessons learned and thoughts on the implications of new ADF amphibious capabilities for the conduct of such operations in the future. With new capabilities centred on the Canberra class amphibious ship (LHD), the ADF will have far greater capacity, but will also face major doctrinal, command and control and training challenges if it is to realise the full potential of the new capabilities.

**Operation SUMATRA ASSIST**

On 26 December 2004, a major earthquake off Sumatra created a tsunami that devastated many of the coastal areas of northern Sumatra, as well as other nations around the Indian Ocean rim. The 9.0 Richter scale earthquake was the worlds most severe in 40 years. The tsunami had an overwhelming human and physical impact: almost 225,000 people lost their lives, thousands are still missing, 400,000 homes were reduced to rubble, and 1.4 million people lost their livelihoods.
In northern Sumatra, the worst hit area, the tsunami caused massive devastation, loss of life and a major humanitarian disaster. Some 130,000 people were killed and 37,000 remain missing; actual figures will never be known. Within Banda Aceh the flood waters reached several kilometres into the city, totally devastating a strip 2-3km wide along the coast in low lying areas. All major buildings and infrastructure in this area were completely destroyed, although the south eastern half of the town was left relatively intact. Communications were devastated with all major bridges either damaged by the earthquake or swept away by the subsequent tsunami. Most of the roads were impassable and the waterways were blocked with debris. The city’s electricity and water supply infrastructure was badly damaged and the water supply was severely contaminated. The hospital survived, and was useable after a massive clean up, but many of the medical staff had died in the tsunami.

Enormous damage was also inflicted down the west coast of Sumatra. This coastal fringe is characterised by a single sealed road winding around mountainous foothills, penetrated by low lying coastal river valleys. The road often disappeared into the sea where the coastline had been redefined and almost all the bridges were destroyed, their spans swept hundreds of yards upstream by the force of the wave. A very few villages situated on higher ground survived. Elsewhere, the remaining evidence of villages was the thousands of concrete slabs where houses and larger constructions once stood. During a flight down this coast in the aftermath of the tsunami there were almost no people to be seen.

International responses

In response, government, non-government and military forces from many countries launched massive international HADR efforts. Before discussing Australia’s response, a few observations about the scale of the Indonesian and other international efforts are merited.

First and not withstanding the scale of international aid efforts, the efforts of the Indonesian military and other services were fundamental to the recovery. Despite the devastation and the loss of so many people, including key military, police, medical and other emergency personnel, it was Indonesians who did much of the heavy lifting in recovering from the disaster, including some of the worst jobs such as the recovery and burial of the thousands who had died. Another important issue was that Indonesia was, quite naturally, sensitive about both the presence and security of foreign military forces, especially in Aceh where the ongoing conflict between the Indonesian government and the Free Aceh Movement (GAM) had claimed almost 15,000 lives over the past 30 years. This raised questions of both sovereignty and security. Genuine help from the international community was very welcome, but there was also an expectation that foreign forces would remain no longer than necessary.

Second, the efforts of other nations were very much in evidence. In Banda Aceh the airfield was crammed with the aid encampments of nations from around the world, as well as many non-governmental organisations (NGO), and a German hospital was working alongside the Australian one. Offshore a fleet of ships, including US Ships Abraham Lincoln, Essex and Bonhomme Richard; the German ship Berlin; and the French ship Jeanne D Arc; Singaporean and Japanese units were providing support as well. A particular impression in Banda Aceh was the continuous flow of US Navy helicopters ferrying aid from the airfield down the west coast of Sumatra, mounted in a low profile, politically sensitive, but very effective way from the ships off the coast.

Australia’s response

Against this background, the Australian response can be put in some perspective. While the magnitude of the disaster was still unfolding, the relief effort began immediately in Canberra and diplomatic posts in affected countries. In the first 36 hours following the disaster:

• an emergency task force of senior officials was established in Canberra at 1800hrs on Sunday 26 December to coordinate Australia’s response
• the AusAssist Plan, a standing AusAID disaster response plan, was activated on 27 December
• essential supplies from the AusAID emergency store were sent to Indonesia on four RAAF C-130 Hercules aircraft, together with two AusAID funded medical teams to conduct health assessments and provide primary treatment
• AusAID funded the immediate deployment of four participants in United Nations disaster assessment and coordination teams to Thailand and Indonesia
• AusAID staff from posts in affected countries were dispatched to disaster areas to assess the tsunami’s impact
• additional staff from Canberra were sent to Indonesia, Thailand and Sri Lanka to support staff in those posts.

The prime minister and foreign minister attended the ASEAN Tsunami Disaster Summit in Jakarta on 5 and 6 January 2005. Among the key outcomes of the visit was the agreement between the governments of Australia and Indonesia to form an Australian-Indonesia Partnership for Reconstruction and Development, committing A$1 billion over five years.
The ADF contribution

As part of Australia’s assistance to Indonesia, the ADF immediately commenced Operation SUMATRA ASSIST. On 27 December 2004, Combined Joint Task Force (CJTF) 629 was established to provide transport of humanitarian aid, health and engineering support in northern Sumatra. CJTF 629 comprised a headquarters, maritime, engineer, health support, air, support and communications groups. At around 1000 people, it was small compared to the massive scale of the disaster, but it was carefully targeted to provide assistance in the most crucial areas.

The task force mission was to provide HADR to the regional disaster area in northern Sumatra/Aceh in order to assist the Indonesian government’s relief efforts. The area of operations extended down the west coast as far as Meulaboh, 95nm south of Banda Aceh, but the focus of operations was in Banda Aceh.

By 28 December, air assets were flying into Medan and, on 30 December, the first medical and water purification teams arrived in Banda Aceh. These initial teams faced the full impact of the disaster, including the terrible reality of the death toll. The water purification teams were rapidly set up in the middle of town, which proved to be one of the decisions that maximised the impact of the early Australian effort. The town water supply was badly damaged and contaminated, so this small team was the first to provide large quantities of fresh water to the population in the aftermath of the disaster.

On 2 January 2005, Headquarters CJTF 629 was established in Medan, and its commander, Brigadier David Chalmers, conducted his first visit to Banda Aceh the next day. From 5-7 January, the aviation group and ANZAC Field Hospital deployed and set up in Banda Aceh to commence relief efforts. At this stage most of the deployed force was in place, but awaiting the arrival of the stores and equipment, particularly the engineer’s trucks, bulldozers, lift and other heavy equipment that could only arrive by sea. This was already on its way in HMAS *Kanimbla* (LPA).

The maritime contribution

The forces assigned to the Maritime Group were:

- *Kanimbla*
- *Kanimbla*’s embarked Army Beach Landing Team
- *Kanimbla*’s embarked Primary Casualty Reception Facility (PCRF)
- two LCM-8 landing craft
- two Sea King helicopters
- a Deployable Geospatial Survey Team
- a clearance diving team element.

The maritime group role was to provide ‘level 3’ medical support to all task force personnel, as well as provide sea transport, resupply and sustainment support to the engineer group, and direct support to humanitarian aid operations where it did not adversely affect support of other task force operations. These operations could include health support to the local population and provision of transport for humanitarian aid stores. One of the key advantages of having this maritime support was minimising the footprint ashore, so that our personnel could concentrate on providing assistance without placing any further load on devastated infrastructure.

Deployment

*Kanimbla* conducted pre-sail preparations in Sydney on 30-31 December. The ship sailed from Sydney for Darwin on 31 December in order to embark the engineer group and remaining PCRF personnel. Embarkation in Darwin was completed in a hectic 28 hours, and the ship sailed for Banda Aceh on 7 January.

On 31 December I was assigned as the maritime component commander (MCC) with 10 staff split between *Kanimbla* and Headquarters CJTF 629. After some initial planning in Sydney, the MCC element was set up in Medan on 5 January.

Establishment

Over the next week, the maritime concept of operations was developed and promulgated to support the task force. On 9-10 January, a reconnaissance was conducted in Banda Aceh, including an aerial and beach reconnaissance of potential landing sites for the embarked *Kanimbla* forces. This identified two possible sites in the Banjir Kanal, Krueng Aceh, which appeared to offer promising access from the sea, as well as relatively good access to a major road into the centre of Banda Aceh. Due to the devastation and debris caused by the tsunami along the shoreline, no other potential sites in Banda Aceh could be identified. The only other possible site was the port of Malahayati, 30km to the east, but, due to the distance from Banda Aceh along an unsecured and badly damaged road, this was considered undesirable. Moreover, it would have placed *Kanimbla* too far from the scene of action ashore to be able to provide effective support to the task force ashore.

On 12 January, *Kanimbla* arrived off Medan and embarked Brigadier Chalmers, the MCC, staff, Indonesian military liaison officers and members of the media by helicopter. The ship arrived at anchor off Banda Aceh the next morning and immediately commenced preparations to offload the engineer group. A few anxious hours followed, as the survey team found that the water off the previously identified sites was too shallow to get an LCM-8 up to the shore without leaving a water gap too deep for vehicles to ford.
Alternate solutions were investigated and by mid afternoon a site had been found near the canal mouth suitable for LCM-8 operations at all states of tide. This site had been initially discarded because tsunami damage to the canal bank denied access to town. On reassessment, however, the engineers decided they could repair the bank and build their way into town. The beach landing team and equipment were landed to the site to improve it and repair the banks and roadway. This was completed on 14 January, with a first offload of vehicles being landed and driven to the work and accommodation areas in Banda Aceh that afternoon. Additionally, some personnel and stores were flown ashore in the Sea Kings during the day. The next day, the main offload of vehicles by LCM-8 progressed rapidly and was completed that evening.

These events reinforced both how essential the embarked survey team was to the operation and the need to remain focused on a local solution to the problem when the initially selected sites proved untenable. As an aside, the delay caused by the search for a new landing site was a sensitive issue, as the media were expecting the ship to arrive and the vehicles to be going ashore within hours. The first media stories therefore had a negative tone, whereas completing the landing across that devastated shore in just over 48 hours was actually a major operational success. The subsequent media coverage was very positive, but it demonstrates the problems in aligning operational and media expectations and timelines.

Support

Once the offload was completed, the focus of maritime component operations shifted to establishing routines to support the forces ashore with fuel and water, hot food, laundry, and the opportunity for personnel to rotate through Kanimbla for temporary respite from the difficult living and working conditions ashore. Additionally, the Sea Kings commenced humanitarian stores delivery missions down the west coast, PCRF personnel commenced rotating through the ANZAC Field Hospital to assist with patient care, and Kanimbla work parties started work ashore, clearing drains at the main hospital. Throughout the operation, the Sea Kings regularly supported VIP visits, including the Prime Minister, Minister for Defence and Chief of Air Force.

This employment continued for the next few weeks, interspersed with brief periods at sea to make water and to resupply from ships in the Abraham Lincoln Carrier Strike Group and Essex Expeditionary Strike Group. The presence of this US support was of enormous importance, greatly increasing the amount of support that Kanimbla could provide ashore by minimising the time spent off station. These trips to sea also enabled liaison with the senior US commanders afloat on how best to share information and coordinate operations.

Transition and redeployment

By early February, the immediate HADR tasks had been met or were being assumed by the United Nations and NGO, and Commander George McGuire, RAN, the new commanding officer of Kanimbla, was about to assume the position of MCC. While the total devastation of some areas was still obvious, the most striking difference over the month was huge areas that had been badly damaged and almost completely devoid of people were now busy. Formerly deserted roads now had traffic, and people were working in large numbers to get badly damaged homes repaired, businesses going again and to clear away debris.

Planning for rotation or withdrawal of the task force was progressing. Additionally, the Indonesian government had indicated that foreign forces would be expected to be out of the country by around 26 March, but that they should plan to depart sooner if their job was done. Accordingly, reconnaissance of potential extraction sites was conducted, including the existing landing site and other possible sites in Banda Aceh, Sabang, Malahayati Port and Belawan Port (Medan). These assessments indicated that the best option for extracting ADF heavy equipment from the Banda Aceh area was through Malahayati Port to the island of Sabang, where the equipment could be cleaned to Australian Quarantine Inspection Service standards prior to loading in both Kanimbla and commercial assets for return to Australia.

By the beginning of March, further advances had been made in northern Sumatra. Now up and running, the hospital had transitioned back to Indonesian staff. The engineers had cleared and reclaimed significant areas, as well as producing much of the clean water that was essential in preventing the spread of disease. The use of ADF helicopters was no longer necessary, because both the requirement had reduced and there were now other means of transport - road, sea and civil helicopters - to meet remaining tasking. On 4 March, the engineer group handed over water purification equipment to Indonesia as one of the last major humanitarian contributions by Australia as part of the emergency disaster relief mission. The Indonesian government and international NGO were now better placed than the military to provide the people of Indonesia with the type of long-term specialist support still required.

The aid provided by the ADF as part of the operation included approximately:

- 1200 tonnes of humanitarian aid distributed by air
- 70 aero-medical evacuations
- 2530 people transported by air
- 3700 medical treatments
- 4.7 million litres of clean water produced
- 9000m³ of debris cleared
- 1000m of road cleared
The Second Indonesian Earthquake

On 28 March 2005, a second 8.7 Richter scale earthquake occurred off the coast of northern Sumatra causing major damage, particularly to the islands of Nias, Simeulue and Banyak. Nearly 1000 people died and a further 70,000 were displaced. Australia, through AusAID, provided an initial A$1 million for shelter, food, clean water and medical care. On 30 March, a team of AusAID, ADF and consular officials together with a medical team from Banda Aceh arrived on Nias.

In the meantime Kanimbla, then alongside in Singapore, was diverted back to Indonesia. After sailing from Singapore at midnight on 29 March, the ship arrived off the coast of Nias early on the morning of 2 April, having embarked medical staff and stores off Sabang. Additional medical staff, emergency medical supplies, water, a forklift and specialist rescue equipment were flown into Sibolga, the nearest small port on the west coast of Sumatra, by two C-130 Hercules aircraft some 110km away.

Within hours of arrival, Kanimbla embarked the first casualties by Sea King from Teluk Dalam on the southern point of the island. The Sea Kings also ferried casualties from Teluk Dalam to the Singaporean field hospital at Gunung Sitoli. As Kanimbla reached full operational stride late on 2 April, deploying both Sea Kings to continue evacuating casualties, helicopter SHARK 02 crashed in the vicinity of Amandraya with the loss of nine lives. The second Sea King, which was airborne at the time, recovered two survivors back to Kanimbla. Following the crash, Kanimbla proceeded south to the vicinity of Teluk Dalam, where on 3 April a recovery team was deployed to recover the bodies of those who died in the crash.

In spite of the crash, Kanimbla continued operations, establishing a clinic ashore in Teluk Dalam and continued to treat patients ashore and onboard. USNS Mercy and USS Niagara Falls arrived in the vicinity, taking the pressure off Kanimbla’s more limited medical facilities. Once again, the support of these ships was crucial to keeping Kanimbla on station, as she had been relatively low on provisions when crash-sailing from Singapore.

The general distribution of aid was through the aviation hub at Sibolga, from where it was transported to Gunung Sitoli by routine ferry or rotary wing assets such as the Singaporean CH-47. The airfield at Gunung Sitoli had been damaged and was only able to land light aircraft. Gunung Sitoli had become the coordination hub and most organisations based their coordination cells in this location. The Singaporean field hospital was established there and this area received the priority for the initial assistance. Teluk Dalam, the second biggest population centre, was the secondary focus of the humanitarian effort. Injured personnel were evacuated by helicopter from 10 locations across the island to Gunung Sitoli, where they were either treated or flown to Sibolga or Medan. The aircraft also ferried aid stores out of Gunung Sitoli to the outlying villages.

After operating off Teluk Dalam, and following consultation with the local authorities, the decision was made that Kanimbla could do the most good operating into Lahewa. The LCM-8 landing craft were then loaded with bags of rice and deployed north to Lahewa with medical health check, survey and clearance diving teams to find a suitable landing site at Lahewa. Kanimbla joined the landing craft off Lahewa at first light on 6 April, setting up a medical clinic and landing working parties to offload the rice. Kanimbla remained off Lahewa for the next four days, while the landing craft collected and delivered 95 tons of rice to Lahewa and 38 tons of rice to Sirombu, further down the west coast of Nias.

The clinic ashore in Lahewa was extremely popular and, at its peak, treated 230 patients in one day. In order to entertain the children (and adults) who were hanging around the clinic, and allow the medical staff to get on with their medical tasking, Operation KINDERGARTEN COPS was instigated, which saw the ship’s company sent ashore to play cricket, soccer and football with the children and keep them from swamping the clinic. The response to KINDERGARTEN COPS from the local people was overwhelming and the ship’s company found the experience extremely rewarding.

Kanimbla departed the vicinity of Lahewa on 10 April, as no earthquake-related ailments had presented at the clinic for the previous two days and the rice which had been delivered was sufficient to sustain the community for four weeks. During Operation SUMATRA ASSIST - Phase II, the ADF helped the earthquake victims in Indonesia by providing:

- 133 tonnes of rice
- 5000 litres of water
- 570 patients with treatment ashore by medical staff
- 13 surgical and further treatments conducted on board Kanimbla
- 7 Sea King aero-medical evacuations
- repairs for Lahewa town water pump and generator
- over 138 tonnes of stores moved by C-130 Hercules
- hundreds of smiling faces - KINDERGARTEN COPS entertained hundreds of children in Lahewa teaching them to play cricket and Australian rules football.
**Kanimbla** arrived back in Sydney on 30 April, having made an enormous contribution to both phases of Operation SUMATRA ASSIST, while also having to deal with the tragedy of the nine lives lost in SHARK 02.

### Operation PADANG ASSIST

On 30 September 2009 a 7.6 Richter scale earthquake struck off the coast of Sumatra near Padang. It was followed by further aftershocks on 1 October. On this occasion there was no tsunami. Nevertheless, the devastation in Padang and surrounds was enormous. More than 1100 people died, many more were injured, and some 135,000 homes were destroyed.

JTF 629 was the ADF contribution to whole-of-government operations to assist the Indonesian government in providing assistance to those affected by the earthquake. The task force was commanded by CJTF 629 through a headquarters based on elements of the Deployable Joint Force Headquarters in Enoggera, Queensland. The task force included an engineer squadron, health detachment, logistic and support elements, and two C-130 aircraft and their associated support.

The maritime component included:
- **Kanimbla** (CTG 629.1)
- two Sea King helicopters
- embarked PCRF
- two landing craft
- 10 Force Support Battalion (10 FSB)
- one Deployable Geospatial Survey Team.

Its role was to contribute sea-lift, rotary wing support for logistics and aero-medical evacuation capability, level 2 PCRF capability, amphibious lodgement and extraction of force elements, sustained logistics over the shore, and personnel support to the reconstruction efforts.

While the scale and duration of PADANG ASSIST were somewhat less than SUMATRA ASSIST a few years earlier, the similarities in the mission and assigned forces are obvious. As before, priorities included the provision of clean water and medical assistance, the transport of stores, the clearance of debris, and the reconstruction of important infrastructure. This included a purpose-built medical facility, making two local schools safe, repairing a bridge to allow safe passage through town and access to the local market, diverting water back into the rice field irrigation system, and building a temporary road to facilitate safe access through landslide affected areas.

The last elements of the Joint Task Force (JTF) departed Indonesia for Australia on 2 November, following handover of the healthcare facility to the local health authorities, and the completion of all reconstruction tasks. The many tasks achieved by the Australian contingent included:
- 1.3 million litres of water produced and distributed
- 1300 patients treated
- 63 buildings assessed for structural integrity
- over 500 tonnes of humanitarian aid flown into the region.

### Operation SAMOA ASSIST

On the same day as the Padang disaster, another major earthquake and associated tsunami caused devastation in Samoa and Tonga. The ADF responded with the rapid loading and dispatch of a C-17 Globemaster aircraft packed with supplies and personnel to assist in the HADR effort.

Once the longer term requirements for assistance and stores were determined, HMAS **Tobruk** was assigned to SAMOA ASSIST to provide sea-lift capability as part of whole-of-government support to the Samoan and Tongan governments. **Tobruk** deployed on SAMOA ASSIST with:
- one AS350BA from 723 Squadron Flight One
- one LCM-8 (from 10 FSB)
- two LARC V (from 10 FSB)
- one Deployable Geospatial Survey Team
- an additional 7.2m RHIB
- two light utility boats
- a two-person Defence public relations team.

**Tobruk** was also loaded with a range of construction stores, heavy equipment and relief aid for both Samoa and Tonga, including a donated fire truck to replace one destroyed by the tsunami.

While offloading cargo in Samoa, over 60 ADF personnel assisted in clearing debris from the lagoon. Smaller teams visited local pre-schools to conduct repairs and clean up work. The ship’s medical officer conducted a health clinic at the village of Lalomanu, surveys were conducted around Aleipata Wharf, and the donated fire truck was handed over to the Samoan Fire Brigade.
A similar cargo offload and provision of assistance ashore took place a couple of days later at Niuatoputapu, before Tobruk proceeded to Nuku'alofa where cargo and VIPs were loaded for transport back to Niuatoputapu.

SAMOA ASSIST was a more limited sea-lift operation than SUMATRA ASSIST or PADANG ASSIST. Nevertheless Tobruk demonstrated the amphibious capability to provide sea-lift, cargo carrying capacity, skilled personnel, logistics and medical support, and logistics over the shore movement, all in close cooperation with government and civil agencies.

Lessons and Conclusions
This paper will not give a litany of tactical lessons learned from these three operations; all were successful, and to a large extent they validated our doctrine, and existing experience and knowledge.

*Australian Maritime Doctrine* describes a number of characteristics of maritime forces, including mobility in mass, access, reach, poise and persistence. All three operations reaffirm the validity of these characteristics. Amphibious units provide the means to transport the necessary heavy equipment over thousands of kilometres, and the capability to land it across a devastated shoreline. Perhaps most importantly, the ability of such ships to remain close offshore for several weeks, providing support to the relief efforts, while minimising the political and physical footprint ashore, is a key enabler of operational success. The presence and operations of US Navy units offshore during SUMATRA ASSIST demonstrated the importance of this characteristic even more convincingly and was also a key factor in the ability of *Kanimbla* to remain on station until her presence was no longer necessary.

One particularly crucial area is command and control, because the same lessons keep recurring, and because our command and control challenges and opportunities are about to become much greater with the introduction of the vastly greater capabilities of the new *Canberra* class amphibious ships (LHD) and other new ships.

When establishing a JTF headquarters for a new operation it is very important that maritime component staff be engaged in or with the JTF headquarters staff as early as possible in the planning for the operation. Current ADF structures can make this difficult, as our tactical level maritime, land and air command and control capabilities are geographically separated. Nevertheless, it is essential if the joint plan is to take into account the capabilities of the assigned forces and make full use of them. As the three operations discussed demonstrate, a major amphibious unit offers many capabilities in addition to its ability to transport and land heavy equipment and stores, including its helicopters and landing craft, its medical staff and facilities, its command, control and communication capability and its ships company. All of these can and should be used to support ADF troops ashore and to provide direct aid to local populations.

Looking to the new capabilities the ADF will soon be employing, each of the new LHD has the capacity of all three current major amphibious units, and the total capacity of new ADF amphibious capabilities will be between four and seven times what we presently have. The LHD/LPA comparison is stark:

- 30,000 tonnes v 8000 tonnes.
- 1000 v 450 troops.
- up to 10 MRH90 v 3 Sea King helicopters.
- 4 v 2 landing craft.
- 150 vehicles v 40 vehicles.
- Greatly increased medical facilities.

Clearly, these ships will revolutionise ADF capability to perform such operations. They will have much greater lift capability, more helicopters, better medical capability, greater endurance, and far greater capacity to support operations ashore from the sea. All these capabilities will greatly improve the effectiveness and impact of ADF efforts.

At least as important is the increased command, control and communications capability of the LHD compared to an LPA. During SUMATRA ASSIST, the location of Headquarters CJTF 629 was driven by a number of factors, including the need to be close to relevant Indonesian authorities, to minimise footprint ashore in the disaster area, and the command and control capability of *Kanimbla*. It was set up in Medan for most of the operation, requiring commanders to constantly move between Medan, Banda Aceh and *Kanimbla*. Options of moving onboard *Kanimbla* were considered and rejected, as the ship had neither the space nor the systems to support the headquarters.

The LHD, however, addresses all the requirements of a commander amphibious task group, commander landing force and an amphibious battle group, and while also accommodating a small JTF headquarters. Although space and systems capacity is not unlimited, it is vastly greater than an LPA, and provides a real option to command the complete operation from onboard rather than ashore. There are some factors to be considered:

- In the first instance, some initial command and control capabilities will have to deploy into theatre, as it will always take time to load and deploy a ship.
- Even after the ship arrives, some command and control capability will be required ashore, to cater for those occasions when the ship has to move off-station to replenish.
Nevertheless, in SUMATRA ASSIST the presence of a LHD would have

- negated the requirement to maintain a large headquarters in Medan
- put the commander at the scene of action for more of the time
- minimised the Australian footprint ashore.

In effect, the LHD have the potential to be an almost self-contained forward mounting base for such operations. In doing so, the LHD will further reinforce the joint nature of these operations and the associated command and control arrangements. They will force the ADF to plan and conduct HADR operations differently.

All of this has considerable implications for the ADF in regards to joint thinking, doctrine and training. This development is a great and immediate challenge for the ADF over the next few years if we are to ensure that we fully realise the enormous potential inherent in our new capabilities.

I am going to talk about sea power and how it was used by the ADF in East Timor over 1999-2000. From this I will draw out some general observations on the importance of sea power to Australia if it was to undertake similar interventions in the future.

In early 1999 the vexed question of East Timor rose to the top of the international agenda when Indonesian President BJ Habibie, in reply to a letter from Australian Prime Minister John Howard, said that he was willing and indeed eager to conduct a plebiscite inside East Timor to determine the wishes of the people of that country, or that part of Indonesia as it was then, in terms of whether they wish to be integrated further into Indonesia, to have some form of autonomy or, in fact, be independent.

On 7 May 1999 the United Nations agreed to set up an election monitoring group in East Timor. Throughout 1999, and through to the actual ballot in August of that year, violence grew and the political forces which were set on the country remaining part of Indonesia in particular, became extremely active and very violent. In the face of this violence, the international community together with the Indonesian government decided that an intervention force was necessary and so INTERFET came into being.

But Australia’s direct military involvement in East Timor precedes the INTERFET deployments. On 6 September 1999, in response to that great outburst of violence that followed the announcement of the ballot on 4 September, there was an evacuation operation conducted by the ADF to help the departure of UN staff, other foreign nationals, some East Timorese who were at special risk and of course other Australians in the area. This was called Operation SPITFIRE, and in the jargon then in use, it was called a ‘services assisted evacuation’, and was conducted using RAAF C-130 aircraft flying into the capital Dili and to Baucau, the other main town of East Timor, and the only other place with a large airstrip. The ‘assisted’ part of that services assisted evacuation meant that it was a permissive environment, meaning the aircraft, crew and the evacuees were guaranteed safety at the airhead and theoretically from assembly areas elsewhere to those airfields. So Australian security troops who travelled on the aircraft and their colleagues who conducted the administration at the aircraft ramp were all unarmed.

I was in overall operational command of the operation, albeit from my desk in Brisbane as the Commander 1st Division. I was in the last couple of months of my tenure as the Commander of the Deployable Joint Force Headquarters, having had more command positions than just about anybody else in the ADF. I was in my 5th command job at that time, having previously been the Commandant of the Australian Defence Force Warfare Centre, but more crucially, I had gained
The Importance of Sea Power to INTERFET

The ADF led the coalition, not just ashore in East Timor, but across the operating domains. The ADF embarked on the operation with confidence and trust, and this confidence was largely rewarded, this trust largely repaid. Importantly the ADF did not need to exert any high-end capabilities in its own defence.

But there is no doubt that the East Timor experience was an early paradigm for the ADF entering the new millennium. In the future, in a different location with a different threat, all of these capabilities in waiting will be an even more vital part of the mix. What might be called an underpinning of this paradigm was East Timor’s geostrategic position. The island is remote from Australia’s nearest base, but not nearly as remote as other places might be in some future scenario. Although parts of the sea approaches are in open waters, East Timor’s northern coast has chokepoints and larger areas of sea space constrained by land masses. There are several tactical airfields outside of East Timor but close enough to be significant. East Timor’s coastline is rugged and somewhat inaccessible over most of its length, especially its southern shore. It’s only developed port of capacity and direct relevance is Dili and this was very small and its immediate approaches easily denied to logistic shipping. In essence, it is pretty typical of a large number of alternative destinations in our region.

On 20 September 1999, the media focus on the deployment was in areas to which they had access, so the global viewing audience would have been excused for thinking that the whole thing was being done by air with the RAAF and its partner air forces moving the whole force. But before the first aircraft took off, RAN and other coalition naval units were already entering the close area of operations, having sorted hours sometimes days beforehand. While every ship had a primary role that was vital to the operation, every ship also reinforced that intangible, almost spiritual, aspect of sea power: presence. Presence was established at that first moment and maintained during the 173 days of the operation.

The meaning and value of presence within the sea power continuum is hard for lay people to grasp and among lay people might be included military colleagues who have never contemplated much less enjoyed the presence of ‘presence’. In its most applied form, it is a sign of interest, influence, indeed intent by a nation or a group thereof. And at its most benign, it is a powerful reminder of friends across the water. The sunrise of 20 September in East Timor revealed presence. The first hint that some of the many thousands of East Timorese who had fled Dili, up into the high ground south of the city, the first sign they would have had of their deliverance, was to gaze out to sea and see Australian frigates standing to in the port.

As another example of presence, throughout much of the second half of the operation a battalion was stationed in the Oecussi Enclave, a bite size chunk of East Timorese territory sitting well inside West Timor on its northern coast. Its only practical logistic lifeline is by sea from the rest of East Timor. The enclave

ADF had to feed, move and, in some cases, force prepare our INTERFET partners. The

An interesting and little known sideline to SPITFIRE was the presence in international waters of the Navy’s then newest, albeit leased ship, the large catamaran HMAS Jervis Bay. When the Chief of Defence Force made the decision to support SPITFIRE by deploying Jervis Bay, much about the evacuation was unclear. The number of evacuees was not established, but might have stretched into several thousand meaning that an air operation might have become quite protracted with more risk to all concerned. If air operations were prevented by security or safety issues at the airfield, then the evacuation might have come to a grinding halt. In an emergency overload, Jervis Bay could take many hundreds of evacuees in one lift, be back in Darwin overnight and well on her way back to Dili for another load by dawn. Our air operations at that time were constrained to daylight hours although the RAAF pushed that envelope on more than one occasion. While the sea option was not used and Jervis Bay bobbed around for about a week to the discomfort of her embarked troops, it was a great comfort to me to have the sea option available.

On 20 September 1999 the ADF commenced its biggest operation, as a joint force, since World War II. This statement is based on a number of grounds. First, on pure numbers and diversity; just about every part of the deployable ADF was immediately and comprehensively involved and personnel numbers ashore, afloat and in the air amounted to many thousands. Australia was the mounting and logistic base for the operation, not just for ADF elements, but for most of the INTERFET force. The ADF had to feed, move and, in some cases, force prepare our INTERFET partners. The

considerable insight and understanding of sea power and joint operations through my time at the US Marine Corps Command and Staff College at Quantico. There I learnt not just about the doctrine of amphibious operations and that strand of the exercise of sea power which enabled amphibious operations, I also learnt the estimate and planning process (what in Australia we call the appreciation process) pertinent to amphibious operations.

Arising from Navy’s quiet contribution to SPITFIRE were some quite clear and valuable insights for the future. When violence and mayhem rule in a neighbouring country requiring the evacuation of relatively large numbers of people, the Navy will potentially have a powerful and vital role. Airfields are quite easy to deny unless effectively protected by security forces; a rioting mob can deny an airfield relatively easily, though the same rioting mob will be less able to afect the seaward approach. Ad hoc beachheads, a jetty, or helicopter landing zones are smaller places to secure. The two keys for the naval role, apart from that overarching and endless need for security, are timeliness and speed of deployment and capacity. Jervis Bay was very good, but it lacked a helicopter and small boat ship-to-shore capability. The new Canberra class amphibious ships (LHD) will be great on the capacity and the capability side, but the ADF will need to be very proactive in planning and executing contingencies if the evacuation aspect of sea power is to be optimised in terms of timeliness and speed.

On 20 September 1999 the media focus on the deployment was in areas to which they had access, so the global viewing audience would have been excused for thinking that the whole thing was being done by air with the RAAF and its partner air forces moving the whole force. But before the first aircraft took off, RAN and other coalition naval units were already entering the close area of operations, having sorted hours sometimes days beforehand. While every ship had a primary role that was vital to the operation, every ship also reinforced that intangible, almost spiritual, aspect of sea power: presence. Presence was established at that first moment and maintained during the 173 days of the operation.
is rugged and has only a marginally useful airfield. For much of the early weeks after troops were inserted, a warship was kept just off the coast of the enclave, demonstrating presence. One needs only to ask the troops ashore what they thought of being able to look over their shoulder 24/7 to see a friendly warship to understand what the concept means. Fundamentally in relation to the planning and conducting of the East Timor intervention, the abiding concern of the ADF senior leadership was sea control. Without sea control the operation would not have been possible.

How might the ADF experience in East Timor be applied further afield? Hypothetically, say there is an island in Australia’s region where insurgent elements have gained control over, and plan to use, some high-end military capabilities, such as maritime strike aircraft, missile armed surface combatants and maybe even submarines. If this were the case, then the land operations of an intervention force might be the easy part of an operation. To some degree the difficulty of imposing sea control depends on the size of the amphibious objective area. We could go mad debating this, but let us say, for the sake of argument, that the seaward side is large enough to enable shipping capable of carrying the heavy parts of the combat echelons of a brigade and its first and second echelons of combat support and that these elements will be seeking to go ashore by helicopter and small craft in proximity of a port and an airfield. This is classic Army stuff and what we sought to do in East Timor. Working backwards, our sea control needs to provide elbow room in the amphibious objective area secure from strikes from air, surface, or sub-surface adversaries. Just to be especially greedy, the landing force will typically also desire the navy to provide the maximum supporting combat power into the littoral of the amphibious objective area. Naval gunfire support, air defence and increasingly into the future, provide the maximum supporting combat power into the littoral of the amphibious objective area. Naval gunfire support, air defence and increasingly into the future, enduring access to precision fire from assets such as armed helicopters and this is just at the landing force’s sharp edge.

What the soldiers in East Timor took for granted and will continue to do so in the future was the major ongoing requirement for Navy to secure the sea lines of communication from the mounting base to the amphibious objective area. Here then is the rub. Turning back to East Timor for a moment; projecting and sustaining ashore a brigade which started at that size on light scales which subsequently became a division(-) over a protracted period will consume a wealth of naval and an airfield. This is classic Army stuff and what we sought to do in East Timor. Working backwards, our sea control needs to provide elbow room in the amphibious objective area secure from strikes from air, surface, or sub-surface adversaries. Just to be especially greedy, the landing force will typically also desire the navy to provide the maximum supporting combat power into the littoral of the amphibious objective area.

In East Timor for reasons of prudence, I was fixated on having two infantry battalions plus the lead elements of a mixed armoured battle group ashore in the first 24 hours. Every time the logisticians would approach me in the planning phase to tell me it was ‘proving difficult’, which is a polite euphemism for telling a general he is dreaming, I would send them back to the drawing board. East Timor showed me the value in having a modern and more substantial amphibious lift capability. Jervis Bay and HMAS Tobruk performed extremely well, but when subsequently the government was considering modernising our amphibious warfare capability, the proposed LHD received my strong support. This was not only because the ships provided a vital component of joint combat capability, but because of their extraordinary flexibility and capacity in logistic terms. Planning for deployments in our region has to wrestle with the availability and capacity of local infrastructure which is severely constrained, and we will be limited in what we can exploit in this regard. If you need something that is modern, technical and high-end, it is better that you bring it rather than expect to find it.

Inconveniently and almost invariably the land problem will take weeks rather than days to resolve, or months rather than weeks. Virtually everyone but the sailors will take this sea control aspect for granted, because while it is happening across the continuum of the operational space, it is very quickly over the horizon and out of sight of the television cameras and thus out of mind.

We also need to consider one of the great operational truths concerning ADF offshore deployments. In all but the smaller and shorter deployments, our logistics will be provided by sea. Certainly this was the case in East Timor and no doubt will be the case for other than modest deployments in the future, notwithstanding the wonderful capacity of our RAAF transport fleet, significantly enhanced by the C-17 aircraft. The tonnages of equipment and materiel and replenishment items even down to food and water, means that the preponderance of land force needs and frequently, dependencies beyond that military force, will be carried in merchant or naval ships.

Now while I have introduced some of the logistics considerations to this debate, another important aspect of operations is command and control, and I think its achievement exemplifies the flexibility and the variety which a modern force will expect of its maritime assets. I vividly recall the first arrival of Jervis Bay into Dili Harbour crammed with infantry. As on later arrivals, it was crammed with vehicles and stores after the Navy was able to adapt the loading ramp to the setup at the dock. I came to think of it as our Navy jumbo jet, about a 12 hour run from Darwin full of people, equipment and stores, joining us at 40kt. It caused a stir on its first arrival, plus the lead elements of a mixed armoured battle group ashore in the first 24 hours. Every time the logisticians would approach me in the planning phase to tell me it was ‘proving difficult’, which is a polite euphemism for telling a general he is dreaming, I would send them back to the drawing board. East Timor showed me the value in having a modern and more substantial amphibious lift capability. Jervis Bay and HMAS Tobruk performed extremely well, but when subsequently the government was considering modernising our amphibious warfare capability, the proposed LHD received my strong support. This was not only because the ships provided a vital component of joint combat capability, but because of their extraordinary flexibility and capacity in logistic terms. Planning for deployments in our region has to wrestle with the availability and capacity of local infrastructure which is severely constrained, and we will be limited in what we can exploit in this regard. If you need something that is modern, technical and high-end, it is better that you bring it rather than expect to find it.

Later, I was the Chief of Army when the Australian government made the decision to invest in what will be the Hobart class destroyer as the centrepiece of Navy’s future surface capability. I gave it my full support based on my keen appreciation of how difficult our deployment into East Timor would have been if our air situation had been other than benign. And of course this is not sea control as a sort of a flash in the pan; the control has to outlast an adversary to deter or defeat the threats.
also partly to demonstrate that the ship was not full of some kind of ‘star wars’ technology.

Given our region, much of our combat and logistics flexibility will revolve around the use of rotary wing aircraft. Every land force commander will strive mightily to reduce this dependence over time. Equally every commander will crave every airframe and crew they can possibly obtain in the early part of any deployment. I am sure my Navy colleagues will forgive the ‘pongo’ attitude where many soldiers see a warship as a support system for a helicopter or two, as much as they see it as a deep water fighting system. Of course, in relation to land operations Navy ships can be seen as sanctuaries, hospitals, mess halls, workshops, store houses and transport. No Australian soldier was ever despondent to see a RAN warship come into view. All of these very self-centred views should never be confused with Army’s appreciation that the Navy exists to fight the maritime battle and these marvellous capabilities that the Army loves to exploit are peripheral to the main game.

In East Timor we managed to exploit all of these coincidental capabilities to the fullest extent possible. But one I have not yet mentioned is the information environment. Among the many other qualities of RAN ships is that they are highly sophisticated cyber environments. In this regard, we relied heavily on both the communications and intelligence capabilities this bestowed. This ability to play host to electronic data of the most sophisticated nature is an enormous benefit to the force afloat or ashore seeking advantage in the information domain. Australian land forces have many similar capabilities but all of these have to be moved, established, operated, exploited and secured under more _ad hoc_ and stressful arrangements. In East Timor and in any subsequent deployment where naval units are part and parcel of the force, their eminent place in the information domain will be and must be exploited to the full.

Looking back over the more than ten years since the East Timor deployment, among the many lucky breaks that came my way was the serendipity of my several opportunities in the years before 1999 to consider and understand force projection involving maritime operations. Generals will never understand the vital minutia of naval warfare just as admirals will avoid a dilettantes’ knowledge of infantry minor tactics. But in the Australian strategic context every general, whether in a cooperative or permissive environment such as East Timor, or in some other more dangerous situation, every general had better understand and embrace the realities of sea power in order to survive and succeed ashore.
The geography of the Korean peninsula defines the perception and attitude of the Korean people to the oceans. The economic use of the sea, whether it be fisheries, marine industries or seaborne trade also led to a recognition of the importance of the littorals (the coastal fringe), as the majority of the population of Republic of Korea (RoK), as well as its industry is located there.

Warfare has been endemic on the Korean peninsula for over two millennia, not only between warring Korean factions, but amongst neighbouring countries that saw Korea as either a springboard to China or as a dagger thrust at Japan. Much of this warfare was maritime in nature, at least initially, further highlighting the importance of the littoral not only as the area from which Korea might be invaded (or its maritime industry harassed), but also where it might mount its defence.

The 1948 division of the peninsula into Republic of Korea and Democratic People’s Republic of Korea (DPRK) and the subsequent Korean War (1950-53) further emphasised the importance of the littorals to military operations, specifically to allow offensive and defensive amphibious and sealift operations along the entire peninsula.

As geographical circumstances and historical experience have driven the development of RoK armed forces towards amphibious and sealift operations, this paper examines the current amphibious capabilities of the RoK Navy/Marine Corps, and plans for improved capabilities to meet perceived capability deficiencies.

Current Amphibious Capabilities

The RoK Navy was created on 5 September 1948 and currently undertakes the following missions: during peace it is to provide deterrence, strategic reach for peacekeeping, assistance to humanitarian assistance and disaster relief operations; while in war it is to safeguard the sea lines of communication, conduct sea control and power projection, and conduct amphibious operations in the rear and flank areas of the DPRK. The Navy has approximately 41,000 personnel and is divided into three fleet commands covering the East, West and South seas surrounding the southern half of the Korean peninsula and based in Donghae, Mokpo and Pyongtaek respectively; with an anti-submarine flotilla and a submarine flotilla based in Jinhae, and a naval aviation wing command based in Pohang.
The RoK Navy’s Amphibious Capabilities

Its current inventory includes: three Kwanggaeto Daewang (KDX-I) class, six Changmuong Yi Sun-shin (KDX-II) class, and one Sejong Daewung (KDX-III) class (with another two under construction) destroyers; nine Ulsan class frigates (and one ‘future frigate’ under construction), 24 Po Hang class and four Dong Hae class corvettes; nine Chang Bogo class and three KSS-II class (with another six planned) submarines, as well as a number of midget submarines; 81 Sea Dolphin/Wildcat class and three Guumokuri class (with another six under construction and a further 11 planned) fast attack craft; and 10 mine warfare vessels. The inventory also includes 19 amphibious ships of varying sizes that will be discussed below.

On 15 April 1949 the RoK Marine Corps was created to undertake amphibious operations along the littorals of the Korean peninsula, with a subsidiary role to protect offshore islands. It currently consists of two divisions (1st Marine Division based in Pohang, 2nd Marine Division based in Gimpo) and the 6th Marine Brigade based in Paekyoung-do, with approximately 28,000 personnel. The Marine Corps has its own vehicles (and equipment) for getting and operating ashore but relies on the Navy for sea manoeuvre.

While these forces represent a comprehensive range of capabilities, fully able to operate independently if required, and also suitable for integration with other RoK forces and those of United States, the RoK government in December 2008 directed these forces be developed towards the ability to conduct ‘brigade-sized’ amphibious operations on the Korean peninsula. In order to achieve this, a number of elements have been identified as high priority for further development.

A mandatory element of an amphibious capability is a landing force organised, trained and equipped to conduct amphibious operations. This is provided by the Marine Corps’ two divisions, consisting of three combat supporting units with tracked, wheeled or dismounted organic mobility, a light artillery regiment, two combat engineer squadrons, a logistic regiment, light and support amphibious assault helicopters from the 6th Naval Air Flotilla, a landing craft squadron, a command support group with air defence, an electronic warfare capability, operational communications and tactical intelligence collection units.

A variety of amphibious shipping is required to move and land both the landing force and its associated equipment and logistic support. The Navy currently has one large amphibious ship RoK Ship Dokdo (LPD); six landing ship tank (LST) - four Alligator class and two ex-US S12-1152 class; two Solgae class hovercraft (LCAC); and 10 LCM-8 landing craft. These assets are used by 53 Amphibious Squadron to provide the launch platforms for amphibious assaults and raids by landing craft and support helicopters.

Dokdo can accommodate a full amphibious force and deploy 10 amphibious support helicopters required for the battalion-size amphibious assault; while the various LST have the necessary command and control facilities for company-size amphibious operations, and are capable of landing a two company group surface assault, as well as heavy equipment. Both Dokdo and the various LST provide the specialist amphibious lift needed to load, sustain and deliver rapidly elements of the Navy’s amphibious task forces tactically configured including troops. They have a dock, and the LST have stern offload ramps and carry mexeflotes, which are large, powered pontoons capable of offloading heavy stores and materials from amphibious shipping and chartered shipping. Dokdo has the ability to conduct concurrent surface and air offloading without relying on a beaching capability. These vessels provide the landing forces strategic mobility and operational manoeuvring.

Dokdo is the centre-piece of the Navy’s amphibious task force and is able to transport, project and sustain a battalion-sized force ashore. Prior to its acquisition, the Navy was only able to project a single marine company ashore using rigid inflatable boats. Dokdo embarks 654 marines in addition to its crew of 150. It carries 10 main battle tanks, five light armoured vehicles and 10 light inflatable boats in the garage; two hovercraft (LCAC) in the dock; and has 3,000m² of storage space in the hold. It has a shipboard wide area network, one rolling airframe missile short-range air-defence system, two close-in-weapon-systems, and one 3-D SMART air-search radar. Displacing approximately standard 13,000 tons, it should be capable of a speed in excess of 22kt and a range of 6000nm. The two LST 512-1152 were built in the United States and transferred to the Navy in 1974, but are too obsolescent for current operations and will be replaced by new vessels of approximately 4500 tons planned under Defence Reform Basic Plan. Design improvements for the four Alligator class LST include stern ramps for the underway launching of tracked landing vehicles, a helicopter deck for airlift operations, and a lengthened bow ramp.

The projection of the landing force ashore involves the use of raiding craft, landing craft, hovercraft, and embarked helicopters, which can be transferred to the landing force on completion of a landing, providing it with tactical mobility in the absence of amphibious shipping.

Organic air is a critical capability that is in short supply; it is necessary to lift the landing force ashore as well as to maintain effective littoral surveillance. The Navy’s combat aircraft must be capable of operating from a variety of ships and austere bases and perform a variety of missions; similarly its aviation units must be organised, trained, and employed as integral parts of a naval amphibious task force. Currently the Navy is only able to project a single marine company ashore using a mix of Lynx, SH-60 and UH-1 helicopters. Given the shortfall of organic air, a brigade-size amphibious operation is only capable of ‘administrative’ landings.

Doctrine, training and education are functions that enhance Navy/Marine Corps integration, and expand maritime manoeuvre across the spectrum of possible conflict. Amphibious warfare doctrine has been fully integrated into the RoK armed forces with extensive cooperation through joint doctrine/procedures between the
Navy and Marine Corps covering such areas as fire support, logistics, command and control, and ship-to-ashore manoeuvre; additionally a joint amphibious operational concept was issued by the Joint Chiefs of Staff in 2008. Doctrine is implemented through education and training and an increasing focus on amphibious operations will require enhancement of existing programs. Navy and marine personnel need to improve their capacity to identify warfare trends, process and standardise procedures, seek and select critical information, and make decisions quickly on an intuitive basis. Such capabilities can be enhanced through extensive investments in education, war-gaming and combat simulation activities, and battlefield visualisation techniques. The Naval War College operates a war-gaming centre to simulate brigade-size amphibious operations and educates its students using the Cheonjajong battle command training program, while the operational headquarters of the Navy and Marine Corps use the Pilsoung battle command training program allowing exercise scenarios for the three fleets and amphibious task forces on a regular basis.

Interoperability between the Navy and Marine Corps is critical, as is RoK armed forces interoperability with the US Navy and US Marine Corps. For Republic of Korea, it is not only force generation and operational procedures that are important, but also a common access-to-information process. The former includes: establishment of combined amphibious command structures; transferring doctrine, operational procedures and technological assistance for amphibious warfare; as well as joint/combined amphibious operations training, exercises and actual operations. The latter includes: sharing information at a system level on a regular basis; conducting regular staff talks between the two navies and marines; and sustaining a commitment to integrated multinational naval exercises and operations.

New Amphibious Concepts

Amphibious warfare concepts have evolved over time, influenced to a certain degree by technological innovations, and also changing strategic circumstances. For Republic of Korea, there has been a shift from focusing on the threat of, and ability to respond to, large-scale conflict (which led to a large and cumbersome marine corps) to that of small flashpoint conflicts that require the ability to conduct small-scale amphibious operations.

In order to move assets from ships lying over the horizon to objectives deep inshore, the Navy will require the new capabilities with greater range, able to operate in a variety of climate conditions, with the ability to seamlessly transit from manoeuvring at sea to manoeuvring ashore and vice versa. This new approach to the planning and conduct of amphibious operations draws upon concepts developed by the US Navy and US Marine Corps: operational manoeuvre from the sea, ship-to-objective-manoeuvre, and marine air-ground task force, which incorporates the ideas of sea basing and sea/air lift. This means the Navy/Marine Corps will rely on light, rapidly deployable manoeuvre forces supported by remote fires. These forces require staging bases, in or near the theatre of operations, to support troops, logistics and combat fire support.

The acquisition of agile and reliable platforms to conduct force projection and sealift tasks was proposed in Navy Vision 2030. These new requirements will allow the conduct of ‘division-scale’ amphibious operations based on hybrid naval task forces that will dominate the Korean peninsula and its littoral.

Required Capabilities

For the Navy, sea basing refers to an overarching operational and tactical concept of next-generation logistic over the shore to support the amphibious operation, likely comprising several built-to-mission large amphibious ships (LPH) and escorting combatant vessels. As the Navy does not have any overseas bases, a substitute sea-based facility at sea or near the littoral will be needed, particularly if all land-based airfields and naval bases have been destroyed.

According to Defense Reform Basic Plan (published in 2005 and revised in 2009), the Navy plans to build two additional LPH to take on this sea basing function. They will have a modified design from Dokdo and each will be fitted with a crane to ease stores loading and reduce ship-to-shore and ship to objective resupply cycle times. Vehicle loading will be aided through a door on the port side and lateral corridors will be enclosed within the nuclear, biological and chemical citadel, with a food elevator connecting to the garage. As befitting to its role as a command station of the amphibious task force, the new LPH will also have a totally integrated platform management system linking all sensors, weapons decoys and communication systems across a common network and into an amphibious operations command and control centre.

Sea/air lift is critical to the Marine Corps operational manoeuvre concept, and given the geography of the Korean peninsula, it is based on a short supply and combat logistic support role that is either ship-to-ship or ship-to-shore. The sea/airlift capabilities required include: integrated landing craft manoeuvre and rotating aircraft capabilities to move lift and project amphibious force, power projection involving integrated joint force or coalition force with high tempo at sea and ashore; commercial lift to selective project the amphibious forces via self-deployment; limited offload, including the ability to assemble tailored sustainment packages directly to units ashore or inland; and ensure access to all equipment for inspection, maintenance, testing and selective reconfiguration of tactical loads. To enhance its sea-lift capacity, the Navy requires additional LPH, replacement LST, and more hovercraft (LCAC) to improve offload and resupply capabilities.

The Navy’s current inventory of naval aviation assets include fixed wing aircraft and helicopters to conduct anti-submarine warfare, ten Blackhawk and ten UH-1H transport helicopters for troop movement, and other utility helicopters. Over the
period 2013-15, the Navy would like to field an amphibious-purpose helicopter onboard Dokdo and possibly the new LST; but no decision has been made concerning the type of helicopter. In the interim, utility helicopters procured under the Korean Helicopter Program will be used. Under Defense Reform Basic Plan approximately 60 helicopters are planned to go to the Marine Corps, and they will be modified for an amphibious role. The flight deck and hanger of Dokdo, if not used for extra vehicle storage can hold six Lynx or SH-60 helicopters.

For the Navy/Marine Corps to conduct amphibious operations in the littoral, additional challenges exist in the areas of intelligence, command and control, fire support, aviation, mine countermeasures, and sustainment.

The high tempo of amphibious operations essential to successful amphibious operations requires that intelligence be provided to decision makers with a minimum of delay. Technology permitting the rapid dissemination of intelligence products will play an important role in this effort. However, the key to effective intelligence support to amphibious operations lies in the orientation of intelligence specialists. In particular, intelligence specialists must be capable of rapidly making educated judgments on what the enemy is likely to do. The Korea Network Tactical Data System developed for the Navy will support the Marine Corps intelligence requirements to conduct the amphibious operation.

To improve its mobility ashore, the Navy will increasingly take advantage of sea-based fires and seek shore-based fire support systems with improved tactical mobility. To support rapidly manoeuvring forces, the Navy must streamline its fire support coordination procedures to improve responsiveness. To provide effective fires, forces afloat and ashore require the ability to deliver fires with increased range and improved accuracy and lethality.

As sea mines are a cheap weapon that can limit the mobility of ships and landing craft in contested littoral waters, the Navy must enhance and further develop its mine countermeasures capabilities, focusing on counter-mine/obstacle reconnaissance, mine marking and clearing capabilities, precision strike; and in-stride breaching to support manoeuvre at sea, ashore, and during the transition from the sea to land.

The requirement to sustain fast-moving, powerful combined armed forces conducting ship to objective manoeuvre will strain the best logistics system. Speed and mobility comparable to the assault forces’ will be necessary for combat support service elements responding to the dynamic demands of new amphibious operation. This support must be efficient, secure, and timely, with the option to remain sea-based or to build-up support areas ashore. Delivery means and material handling demands are great, as are the needs for the command and control system capable of rapidly communicating requirements and flexibly managing ‘right time, right place’ support.

Some Findings
The current ability of the Navy to conduct division-scale amphibious operations is inadequate, but the Navy believes that planned and proposed capability enhancements including the ability to conduct sea basing and sea/air lift will provide a balanced force capable of conducting multifaceted amphibious operations across the spectrum. Until this regeneration is completed, the Navy and Marine Corps are pragmatic in the use of their amphibious assets.
Indonesian and Australian Naval Cooperation

Desi Albert Mamahit

Indonesia and Australia are two countries with differing historical, political, economic and cultural backgrounds. Geography, however, places both nations as neighbours with the sea as their ‘border’. Their national interests differ, however when it comes to security issues, both have the same objective - maritime security stability. Both agree the shared maritime region should be free from any disturbances and illegal activity along their maritime boundaries; these conditions create interdependency between Indonesia and Australia.

This security interdependency requires both countries to cooperate in order to manage and resolve regional security threats. While their political and security cooperation has waxed and waned over time, nevertheless the current situation and conditions have pushed both Indonesia and Australia to increase their cooperation on the basis of mutual trust and benefit, without interfering in the internal affairs of each other.

Indonesia-Australia confidence building measures need to be strengthened, especially amongst their navies, and are an activity that needs to be continuous and prolonged. But it should be recognised that confidence building will also experience tough times when there is disagreement on crucial national interests.

On 13 November 2006, Indonesia-Australia relations entered a new phase with the signing of the Agreement between the Republic of Indonesia and Australia on the Framework for Security Cooperation (Lombok Treaty). Among nine categories for cooperation in the Agreement, three are defence-related, concerning maritime and emergency cooperation. This paper will elaborate Indonesia’s perspective on Indonesia-Australia defence cooperation, especially for ‘military operations other than war’ in order to achieve regional maritime security.

Indonesia-Australia Security Issues

The United Nations Charter acknowledges all nations’ sovereignty rights, where a nation has the right to defend its people, to secure its national assets, to maintain its jurisdictional area and rights to live, and to develop equally with other nations in the world. On the other hand, the Charter also acknowledges the rights of minorities to live and develop peacefully. Each country should be able to balance these two interests, since a slight disturbance to the balance has implications for regional and global security. As a sovereign state, one of Indonesia’s main national interests is to ensure its territorial integrity and the safety of its people. As a developing
country, it is only natural for Indonesia to be concerned with its territorial integrity. Historical experience has influenced how Indonesia reacts toward internal issues related to the interests of other countries.

One element influencing Indonesia-Australia relations is Indonesia’s internal issues. The ability and maturity of both countries in managing the implications of such issues will also affect the quality of their defence cooperation, as well as other elements within the Lombok Treaty. Other elements influencing relations are non-traditional security issues, such as illegal fishing, human trafficking, illegal logging, drug trafficking, piracy, natural disasters and accidents at sea. These issues, directly and indirectly, affect the relationship and hence require strong and beneficial cooperation. A cooperation mechanism for each issue would simplify their management.

One issue that is important to Australia is Indonesian fishermen from East Nusa Tenggara and South Sulawesi sailing to the waters off Ashmore Reef (Pasir Island). These waters are under Australian jurisdiction; but historically these fishermen have long searched for sea slugs in these waters. And from an Indonesian perspective, illegal fishing in its exclusive economic zone in the Arafura Sea has led to an estimated loss of US$15 billion in possible revenue, and another US$15 billion lost in other seas. These fishermen make use of the maritime boundary between Indonesia and Australia as a means of escape. Hence, it is crucial for Indonesia to cooperate with Australia in order to tackle this issue.

Over the past few years, illegal smuggling has proven to have a significant impact on the quality of the Indonesia-Australia relationship. As a ‘doorway’ to Australia, it is highly possible for Indonesia to become a transit point for human trafficking activities. Indonesia highly appreciates Australia’s policies on managing human trafficking, however Indonesia refuses to receive any negative implications from such policies. This issue requires full understanding from Australia as Indonesia also has obligations under a number of international regulations, such as the United Nations Convention on the Law of the Sea 1982 in regards to interdiction of illegal migrants in its waters.

Indonesia is active in dealing with illegal smuggling, either those who are going to or are positioned around, or moving out of, Indonesian waters. These illegal smugglers use Indonesia as transit point to Australia. Table 1 shows the number of people smuggling incidents managed by the Indonesian navy in 2009.

<table>
<thead>
<tr>
<th>Time</th>
<th>Location</th>
<th>Personnel</th>
<th>Country of Origin</th>
</tr>
</thead>
<tbody>
<tr>
<td>7 January 2009</td>
<td>Sabang waters</td>
<td>192</td>
<td>Myanmar</td>
</tr>
<tr>
<td>3 February 2009</td>
<td>Lhokseumawe waters</td>
<td>198</td>
<td>Burma</td>
</tr>
<tr>
<td>9 June 2009</td>
<td>Dumai waters</td>
<td>33</td>
<td>Afghanistan</td>
</tr>
<tr>
<td>10 September 2009</td>
<td>Lombok waters</td>
<td>56</td>
<td>Afghanistan</td>
</tr>
<tr>
<td>11 September 2009</td>
<td>Lombok waters</td>
<td>14</td>
<td>Afghanistan</td>
</tr>
<tr>
<td>11 October 2009</td>
<td>Sunda Strait</td>
<td>253</td>
<td>Sri Lanka</td>
</tr>
</tbody>
</table>

Table 1: people smuggling apprehensions in Indonesian waters, 2009

Those seeking to illegally enter Australia use a variety of methods:

- Fly from their country of origin to one of Indonesia’s airports as tourists in separated small groups, and then regroup in one spot and hire an unregistered small ship to sail to Australia from designated beaches.
- Sail from their country with their own boats or small ships, moving along Indonesia’s coast to avoid authorities, while looking for resupply in Indonesia before heading to Australia.
- Much of this activity might be coordinated by their accomplices located in Indonesia and Australia.

While the presence of these people in Indonesia is legal, Indonesia does not wish to be used as a transit point for them to subsequently move to Australia and seek illegal entry, thus Indonesia cooperates with all relevant parties to solve this issue.

Indonesia, which in Australia’s defence policy is categorised as being its northern approaches, has a strategic geopolitical position in regards to Australia’s national interest. As a seaborne trading country that is highly dependent on the security of Indonesian waters, especially the Lombok and Ombai straits, Australia emphasises the importance of freedom of navigation. Indonesia values highly the practice of freedom of navigation; however such practice should also consider the principles of an archipelagic state’s sovereignty.

Over the past few years, humanitarian assistance and disaster relief has influenced the nature of Indonesia-Australia relations, especially the 2004 tsunami in the Indian Ocean, where Aceh was one of the worst-hit areas. On 26 May 2006, Yogyakarta in Java experienced a 5.9 Richter scale earthquake, and on 30 September 2009 West Sumatera was hit by a 7.6 Richter scale earthquake. Australia played an important role in assisting Indonesia in managing the aftermaths. Unfortunately Indonesia does not yet have a good mechanism for controlling foreign forces coming onto its territory, which affects the ability of invited warships and equipment moving into Indonesia to provide assistance in response to natural disasters. Hence, there is a need to develop procedures for such cooperation.
Some nations suffer predominantly from natural disasters, such as Indonesia and The Philippines. Over the period 2006-08, Indonesia struggled with earthquakes, flooding, tsunami and volcanic eruptions. Compared with other nations, Indonesia has the highest diversity and frequency of natural disasters, due to its geographical position.

As Indonesia is prone to natural disasters at any time of the year, including drought, earthquake, extreme cold, flooding, landside, tropical storm, tsunami, volcanoes, and wave surge, a major focus of the government is on the ability to conduct humanitarian assistance and disaster relief operations.

The 2004 tsunami is the perfect example of international disaster management and relief efforts. The world witnessed international efforts to assist victims in Aceh: around 6000 personnel from 34 countries, 117 medical teams, 9 aircraft carriers, 1 floating hospital, 14 warships, 31 aircraft, and 82 helicopters were involved. This military-led disaster relief operation could be classified as the biggest military operation other than war in the last 50 years.

Ships transiting Indonesian and Australian maritime boundaries are prone to navigational accidents due to bad weather and high tides. Australia possesses surveillance radars with the ability to operate and detect small ships transiting from Australian to Indonesian waters. Indonesia also has surveillance radars but they are not positioned to monitor movement along the maritime border, hence coastal surveillance cooperation should be considered. Existing surveillance mechanisms along the Malacca and Singapore straits provide a good example of how such cooperation might occur, where Indonesia and Singapore cooperated to establish surveillance radars to monitor the movement of surface ships in these waters.

**Current Indonesia-Australia Cooperation**

Indonesia-Australia defence cooperation is currently positive and productive. Through the Indonesia-Australia Defence Strategic Dialogue, both countries have began to further develop their military cooperation programs. Both countries have also agreed to expedite coordinated naval patrols as part of the maritime security cooperation framework; nevertheless its execution will require the development and agreement of standard operating procedures between the two navies. The coordinated patrols would take place in hot spots along the boundary. Improved communication is necessary to enable coordinated patrol planning, and would have to be established between Australia’s Northern Command and Indonesia’s naval bases at Merauke and Kupang, and the Eastern Fleet Command Office.

Looking at combined exercises, the Indonesian navy participates in the Australian-run Exercise KAKADU, along with New Zealand, Malaysia, Papua New Guinea, and Singapore; and after 10 years, the bilateral Exercise NEW HORIZON has been reactivated. Currently under Exercise CASSOWARY, Australia and Indonesia exercise coordinated patrols using small warships. Indonesia has suggested that if the coordinated patrols are effective, CASSOWARY is unnecessary; but Australia insists it should continue as the exercise and the combined operational patrols are different activities. During port visits, both navies conduct passage exercises.

**Future Indonesia-Australia Cooperation**

The Lombok Treaty binds both Indonesia and Australia to a variety of actions that require implementation. Reflecting the theme of this conference *Combined and Joint Operations from the Sea*, Indonesia holds the view that humanitarian assistance and disaster relief, search and rescue, and patrol coordination could all be enhanced through increased training between the navies, and a focus on planning and conducting maritime operations. Until now, the combined operations undertaken by the Indonesian and Australian navies have not covered humanitarian assistance and disaster relief, nor search and rescue.

The ability to respond to regional natural disasters is critical as they are not easily predicted but often occur causing a huge loss of life and considerable material losses. Indonesian response efforts to such disasters are limited due to poor operational availability of platforms, poor communication and coordination mechanisms including the development of standard operating procedures. Combined exercises that focus on humanitarian assistance and disaster relief would be very useful.

Search and rescue is both an international and national obligation, with international cooperation enhancing national capabilities. Indonesia has bilateral agreements with Malaysia, Singapore, Australia and the West Pacific regional coordination centre operated by the United States; and the possibility of agreements with Papua New Guinea and The Philippines are being explored. Indonesia hopes that cooperation in this field can be expanded to accommodate natural disaster management, improve safety of navigation and prevent accidents at sea. There is a need to prioritise activities to improve general education and training, development of personnel skilled in search and rescue, as well as the use of equipment and communications.

The use of Indonesia as a transit country for illegal people smuggling into Australia remains a concern between both countries, and increasing political instability in a variety of countries leads to a continuation of people trying to enter Australia by sea. Indonesia is committed to managing this issue with Australia, and both recognise the difficulties this entails.

Turning to operational patrols, the proposed coordinated patrol activity cannot commence until the standard operating procedures have been agreed and signed. Importantly though, these patrols should not just focus on people smuggling in the Timor Sea, but also illegal fishing in the Arafura Sea where Indonesia has experienced serious losses of fish stocks and revenue. Indonesia hopes that Australia would
Combined and Joint Operations from the Sea

Indonesian and Australian Naval Cooperation

assist in apprehending these illegal fishing vessels including their mother ships that enter Australian waters near the maritime boundary in the Arafura Sea.

Enhanced intelligence sharing between the Indonesian and Australian navies would also be useful, and not just limited to Australian interests, such as the position of ships smuggling people into Australia; but also to Indonesian interests, such as intelligence on illegal fishing activities in the Arafura Sea and ships transiting north towards the Lombok Strait and the Timor Sea.

There has been an increase in activity (and its intensity) between the two navies and this could lead to opportunities for logistics cooperation. Initially this could take the form of replenishment between ships and perhaps ship maintenance, where Indonesia would value access to Australian expertise.

The Lombok Treaty also discusses cooperation on mutually beneficial defence technologies and capabilities, including joint design, development, production, marketing and transfer of technology as well as developing mutually agreed joint projects. Cooperation could commence immediately through available mechanisms at the department/ministry of defence level.

Future Indonesia-Australia defence cooperation should be prioritised around intelligence, counter-terrorism, maritime security, humanitarian assistance and disaster relief, and peacekeeping operations. The basis for regional maritime cooperation should be based on the following principles:

- The peaceful settlement of disputes.
- The renunciation of the use or threat of force in resolving differences.
- Respect for national sovereignty.
- Non-interference in countries’ internal affairs.
- Consensus-based decision-making.
- The comprehensive nature of security.

To improve maritime cooperation between the Indonesian and Australian navies when considering maritime security operations, the following activities might be considered:

Coordinated naval patrols, focused along maritime boundaries, would be more efficient and effective with improved communications linkages between naval bases, warships and maritime patrol aircraft; and use of fast patrol boats as the preferred platforms for these activities.

Both navies could use a comprehensive approach when conducting humanitarian assistance and disaster relief operations, with an organised management approach to maximise the effectiveness of daily operations. Recent responses to natural disasters highlight the need for small amphibious craft, floating hospitals and helicopters as part of the initial response as well as during the reconstruction phase. It is therefore crucial that Indonesia and Australia cooperate on combined humanitarian assistance and disaster relief exercises and operations, which would require the development of standard operating procedures that could also incorporate the activities of non-governmental organisations and United Nations agencies.

Search and rescue operations at sea have become a necessity due to increased accidents at sea by small and traditional boats, as well as overloaded boats used for people smuggling that attempt to enter Australian waters without adequate food and water, access to weather news or adequate navigational equipment. Similar concerns exist for traditional fishermen that often suffer the same problems as well as equipment malfunction leading them to drift into Australian waters.

Conclusion

Geographical and geopolitical conditions between Indonesia and Australia have resulted in regional security interdependency for both countries. If political instability were to occur in Indonesia, this would impact upon regional political stability and either directly or indirectly, would impact upon Australia. Bilateral defence cooperation in order to manage regional maritime security issues is one method of ensuring an appropriate level of political stability. While both countries have their own national interests, this does not preclude them enhancing their security cooperation in support of mutual interests. Furthermore while there are occasional disagreements between the two countries on crucial issues, there is an opportunity to seek consensus on regional security issues.

The Indonesian perspective is that maritime security cooperation at the operational level between the Indonesian and Australian navies through coordinated patrols, humanitarian assistance and disaster relief exercises and operations, and search and rescue at sea operations is the most efficient and effective method to enhance regional political stability. This can best be achieved through implementation of the Lombok Treaty by respecting the principles of mutual trust and benefit.
The Royal Marine Perspective on Amphibious Operations

Andy Salmon

I am billed to give you my perspective as the Commandant General Royal Marines and Commander UK Amphibious Forces, so I am going to cover briefly how our amphibious capability evolved, what the inventory looks like at the moment and what we want to do with it, and I am going to address some of the future challenges and some of the context that we face right at the moment. Now all of this is in the spirit of learning, because this should be viewed as a transfer of knowledge and exchange of ideas so that optimum solutions can be found that minimise growing pains.

We have come a long way since Gallipoli in World War I, the sheer size of the Normandy landings in World War II, operational manoeuvre to turn the tide in the Korean War, and the first ever air assault into Port of Suez in 1956. And of course the Falklands War in 1982, which was a really close run thing and a stark reminder of the needs and challenges of the maritime and littoral environment. Importantly, have we learnt the lessons?

You need adequate specialist shipping, not the big cruise liner SS Canberra that we had for the Falklands. We called it the big white whale with troops climbing down its sides into small boats ready for a quick transfer to the beach, all while under aerial attack; this was no different from what we did at Gallipoli. As you cannot count on air supremacy, you will need dedicated aviation assets for air defence and for close air support on the ground. As you all know, during the Falklands the Royal Navy took considerable punishment. Some of the ships were of the wrong type for the campaign and we lost a number of them. Importantly, the loss of either one of our two aircraft carriers would have lost us the war. You also need a landing force that knows the environment, specialist expeditionary capabilities and adequate enablers especially logistics. Now all of these components need to be rehearsed and synchronised, because littoral operations is an inherently joint business. And as you would probably appreciate, there are no shortcuts in developing and maintaining an amphibious capability.

Turning to more contemporary events over the past decade, despite our focus on Iraq and Afghanistan, we have undertaken a number of other amphibious operations. The two amphibious ready group (ARG) interventions into Sierra Leone in 2000 epitomised the strategic impact that an ARG and aircraft carrier group can have - a kind of expeditionary ready group. In Afghanistan, the Special Boat Service and 45 Commando Group flew into Bagram from the sea to hunt for Osama bin Laden as part of Operation ANACONDA. And 3 Commando Brigade conducted a helicopter assault into the Al Faw peninsula in 2003 ably assisted with naval gunfire support.
from RN and RAN warships. And there was the humanitarian effort after the Israeli intervention in Lebanon a few years ago.

Similar to your 2009 Defence White Paper Defending Australia in the Asia Pacific Century: Force 2030, our Strategic Defence Review in 1997 underlined the government’s commitment to jointery and rapid expeditionary response. We created a joint rapid reaction force, procured a range of specialist amphibious shipping and enhanced the landing force. At the same time this has been underway, we have been focused on two landlocked campaigns in Iraq and Afghanistan whilst trying to find the resources and time to keep the amphibious capability alive. So the issue has been one of balance and how to restore it; I will come back to this later.

So, what is our current amphibious capability? It is based around seven platforms: the helicopter carrier HMS Ocean (LPH), two Albion class assault ships (LPD), and four Bay class auxiliary landing ships (LSD); associated helicopters and equipment, and of course the landing force. Ocean was launched in 1995 and while it does not have a dock, it can operate four medium landing craft (LCVP) from its side and carries 800 marines; it also has capacity to take up to three CH-47 Chinook, 12 Sea King or Merlin, and six Lynx or Apache helicopters. HM Ships Albion and Bulwark were launched in 2001 and utilising their well dock, each has four medium landing craft (LCVP), four utility landing craft (LCU) and carry 400 marines; each also has the capacity for two Sea King or Merlin helicopters. Importantly the Albion class acts as the command and control platform and in order to achieve this, you also require amphibious operations officers and staff specialists to make sure that all the components of the amphibious force can be synchronised. The Bay class auxiliary landing ships were launched in the mid-2000s and are operated by the Royal Fleet Auxiliary. Each has a dock, two utility landing craft (LCU) and can carry 700 marines; they also have the capacity for one CH-47 Chinook, and one Sea King or Merlin helicopters. Importantly, each also carries two mexeflote - the large barges that are absolutely essential for simplifying movement of equipment between ship and shore. You also need amphibious assault squadrons to operate from the rear of the ship to make sure that everything’s stowed away neatly and correctly and are familiar with what is sometimes a very challenging environment. That is our specialist amphibious shipping, but of course you need a few more logistic ships for sea-basing. The landing force recently expanded to around 5000 personnel, of which about 63 per cent are marines.

Where do I sit within the UK command structure? The Maritime Battle Staff comprises the Commander UK Maritime Forces and Commander UK Amphibious Forces; importantly we have our own staffs, and mix and match them according to whatever scenario we face. I have about 50 people on my staff and we have to be prepared to be the joint component commander, and I can achieve this because we are a combined organisation; Royal Marines only comprise about 50 per cent of my staff, I also have Army, air cells, a RN element, logisticians, embedded US Marine Corps officers, as well as officers from the French Navy and Dutch marines. If needed, I can also augment my staff with officers from the US, Dutch, Italian and Spanish navies from the maritime forces staff across the corridor. This allows me to switch between amphibious, land and maritime competency with relative ease. As an example of the breadth of our command capability, in 2009 we provided the core of the 400 divisional staff that ran coalition operations in southeast Iraq, and shortly we will be transitioning to and will be assuming operational command of the European Union counter-piracy activity Operation ATALANTA. Answering to me are two bespoke one star formations: Commander 3 Commando Brigade and the staff that comprise Commander Amphibious Task Group; they are co-located and live, work and eat together.

I am dual roled as the Commandant General Royal Marines. This gives me an advantage because I can pull a lot of these things together and it is useful to have somebody at the top of the amphibious organisation which gives us a sense of ownership and a sense of coherency. But I also have other responsibilities. The Royal Marines have been shaped by their maritime expeditionary and commando operating environment. We provide 35 per cent of tier one Special Forces for the United Kingdom and we have other specialised capabilities like our Fleet Protection Group Royal Marines who look after the nuclear deterrent and also provide specialist maritime teams for things like counter-piracy and counter-narcotics at sea. On this latter point, only last week we created a new P Squadron of 100 sailors for maritime protection and interdiction on the high seas.

The Falklands War highlighted the importance of the ability to operate over the horizon. You do not need a sophisticated opposition to cause damage in shallow waters, a swarm of suicide boats with improvised explosive devices can cause you as much of a headache as low-technology land-to-ship missile systems. So we want to conduct ship to objective manoeuvre (STOM) from over the horizon to maximise surprise and security and it is founded upon simultaneous air and surface assault.

The current planning assumption is to launch an assault echelon of two commando groups with associated brigade command and control, command support and command support system, within the six hour normal cycle of darkness. This will be supported by integrated joint fires and in order to do this we will need to improve C4I staff, response times, precision, range and effect.

Attack aviation will also play an important part in littoral manoeuvre operations; it will be able to deliver offensive action, control and direction of other joint fires, ISTAR and command support. It makes a great escort for support helicopters and will also provide organic fires on the objective area. Land-based fires remain essential to meeting the demands of guaranteed short response times and must remain capable of being moved by aviation or surface assets.
Finally it is worth noting that over the horizon does not mean we will forever do away with a lodgement ashore. Where there is a requirement to go heavier than two commando groups or the need to sustain them for longer than a five day period, our current constraints would demand a lodgement and a period of consolidation before striking subsequent targets. Nevertheless, applying STOM and the improvements in sea-based support assets means we are able to give much greater depth to the lodgement ashore than was previously achievable.

Now you have seen the modern maritime high-end aspiration, but these techniques are equally applicable at the soft end. We practiced all of this, from the sea, in Sierra Leone in 2000 where we used Ocean as a forward operating base and a floating supermarket without deploying too much combat power ashore. We wanted to minimise our tactical and logistic footprint ashore and STOM allowed us to do this.

Now this is all well and good, but let us come back to the issue of balance. The impact of 11 September 2001 heralded a new epoch, paving the way for improvements in our weapons systems where our fire power now is a quantum leap ahead of what was available to a commando unit on the ground ten years ago. We have protective mobility, enhanced combat and communication information systems, and new specialist organisations.

We have also obviously undergone a considerable increase in operational tempo. My own headquarters has deployed five times on operations since 2003. The brigade has deployed to Kosovo, Afghanistan (three times) and Iraq. In 2009, 75 per cent of the Royal Marines were committed to operations and the same will happen in 2011, so we are busy.

Our marines are a precious resource and we have created a much better learning organisation to assimilate the vast numbers of lessons from operations. We need to create more multi-skilled marines who can think, have open minds, can learn fast, are flexible and adaptive; modern commandos who can operate amongst the people.

But all of this comes as a cost to our core role, and we have to consider the impact of current operations on warfighting roles and skill-sets, the impact on sustainment and the service life of current equipment and the need to plan for and procure new equipment, all within constrained economic circumstances.

So, how might we restore the balance? The UK government has agreed to resource a small scale, focused, intervention capability based on a carrier and ARG, and this is obviously good for the maritime community as we need to be able to intervene around the world. To implement this, we have developed a progressive series of exercises over the next two years to deliver and generate this capability. There is an exercise going on at the moment off the coast of Norway with the Dutch navy/marines and US Marine Corps. Over the summer we will be operating a carrier group and an amphibious group off the eastern coast of the United States, together with US Marine Corps aviation and maritime support. We will also be commanding Task Force Helmand next year, so even though we are still busy in Afghanistan, we hope to restore the balance to make sure that we can generate a meaningful amphibious capability.

I have talked about developing improved over the horizon capability; we have received a lot of the equipment already, it is just a question of making sure that we can get hold of the enablers that we do not own and that needs a lot of negotiation and willingness by our partners across Defence to commit to this capability. We have a modest program already funded to bring in new armoured fast patrol vessels to carry marines for over the horizon and riverine operations, new medium scale landing craft and replacement hovercraft.

This mix of equipment and plans is relevant as the one thing we can predict is that the future will be as uncertain and unpredictable as the past. In my own short career the United Kingdom has been strategically surprised on numerous occasions. The Falklands in 1982 was one; northern Iraq in 1991, where the Brigade deployed for humanitarian operations, is another. In 2000, we crash moved from an exercise in France and within six days the ARG and the whole of the commando group were poised ready to intervene in Sierra Leone. This gives you an idea of the global reach and flexibility you can have when you start coming from the sea.

As we look to the future and the types of contingencies we might face, it is clear that we will need to be smart, particularly when providing human security. If you think of some of the challenges that exist: competition for scarce resources, migration population issues, environmental disasters, global warming, and the like, any use of soft military force must aim at achieving a positive outcome. This means delivering to the needs of individuals and communities at home and abroad.

We need to combine diplomacy, outreach and influence with the use of force to deliver better human security, and it is very people focused. During our planning, we have to be scalable as well as interoperable to achieve what is needed on the ground. We will have to be very responsive and also in tune with the environment. There is no point putting the wrong construct ashore, based on what equipment we have, if it is irrelevant to what is actually needed. So any use of military force in human security operations must be tailored, making use of relevant equipment and intelligence and ISTAR becomes increasingly important.

But to achieve this, we will have to operate with other agencies and indigenous forces, so the marines of the future will also have to be multi-skilled. We will also have to create and be better at managing hybrid civilian and military interagency teams to ensure far more effective whole of government solutions to these problems. So you have to be agile, flexible and ready.
Having employed a marine corps since 1665, the Royal Netherlands Navy is not a newcomer to amphibious operations. Now, at the end of the first decade of the 21st century, the Dutch navy operates two amphibious ships (LPD), has a marine corps of 3300 men and can field an integrated amphibious staff for up to brigade-size amphibious operations. A joint support ship is expected to enter service in 2012. The Netherlands has had the good fortune to cooperate with the United Kingdom within the UK/NL Amphibious Force (AF). The UK/NL AF was established in 1972 and is considered a classic example of successful amphibious integration. This bi-national formation allowed the Netherlands to gain extensive operational experience and build up a considerable body of professional amphibious expertise. In terms of its amphibious capacity, the Netherlands Navy and the Royal Netherlands Marine Corps are where they are today because of 35 years of UK/NL AF and the special relationship they enjoy with the United States Marine Corps.

The Netherlands strives to be a relatively small but experienced, capable and specialised amphibious operator. During the last decade, however, evidence was growing that we had to rethink our approach to amphibious operations. What was required was a capacity that enabled the execution of compact, focused and distributed operations from the sea. This paper covers the evolvement of amphibious doctrine, the forces that conduct amphibious operations, the staffs that direct those forces and the planning models they use. My central question is whether it is possible to discern discrete ‘waves’ or generations in the evolvement of amphibious warfare - which I think is the case.

Developments in the Maritime Domain

There are four trends or developments within the maritime domain that induced The Netherlands to change its perception of the utility of amphibious forces.

The first trend is the concern for ecological as well as territorial integrity. Maintaining the territorial integrity of the sovereign nation is an enduring task for the armed forces of that nation. But there is also the sense of a growing need for maintaining the ecological integrity of a nation or region. In The Netherlands guarding the ecological integrity is not considered to be a direct task for the armed forces but when it comes to a safe and clean maritime environment, navies and coastguards come into play. The oceans are increasingly recognised as belonging to the ecological heritage of mankind. The call for regulating the freedom of navigation
to prevent misuse, causing enormous or irreparable damage to the maritime commons, is growing louder.

The second trend is the political and social implications of climate change. International terrorism and climate change are among the greatest challenges of the 21st century. Climate change will inevitably lead to political and social tension, and eventually to ‘climate wars’, so the German sociologist Harold Welzer has written. For example Bangladesh, one of the most densely populated countries on earth, faces the aggravated risk of flooding, which means that up to 30 million people have to look for higher ground in a region that is plagued by political and social instability. In the West Indies, South Pacific and elsewhere, vulnerable island states are located such that they may become uninhabitable when the sweet water wells turn saline.

The third trend is the recognition of the strategic importance, and at the same time the strategic vulnerability, of urbanised littorals. The littorals are among the most rapidly urbanising areas in the world. These concentrations of population, wealth and information are amongst the most important areas in the world, but they are also among the most vulnerable. Cities usually develop in a pre-planned way, but significant parts of many very large cities are developing without serious planning, resulting in a lack of essential services and security.

The fourth trend is the operational potential for disaster relief from the sea. The unfolding relief operation in Haiti is a case in point. Humanitarian relief operations from the sea work, as do evacuation operations and the temporary support to civil authorities in maintaining public order and safety. These are operations where a whole-of-government or comprehensive approach is more likely to be taken, and in which navies have a significant, yet supporting, role to play.

These trends have given a new impulse to the debate on combined and joint operations from the sea as they force us to reconsider existing ideas, opinions and approaches.

A Generational Approach?

Now to the main issue: can we take a generational approach to amphibious operations? We can and should. Why? We need a conceptual tool to prove the strategic relevance of these types of operations. Many people, including some of the most influential policy makers, associate amphibious operations with the large WWII campaigns such as those conducted in the Pacific theatre and in Europe. These were costly, both in blood and treasure, and not a very popular policy option amongst policy makers.

The image of marines landing on a hostile shore is quite persistent and has gelled in the public mind, in no small part due to Hollywood movies. But those massive undertakings against a hostile shore may well be a thing of the past. Operational experience since WWII such as the Falklands campaign, the 1990-91 Gulf War, Operation ENDURING FREEDOM and most recently the evacuation operation in Lebanon have led to changes in method and practice, materiel and doctrine. We, as a maritime and amphibious community, hold the responsibility to explain these changes, not only for ourselves as professional soldiers and sailors, but also to policy makers, our political masters and the general public.

First generation amphibious operations are characterised by the establishment of a bridgehead, the use of follow-on forces and the extensive use of naval gunfire. Key examples for this generation of amphibious warfare are the operations in Guadalcanal and Tarawa, predominantly American operations during the ‘island hopping campaign’ in the Pacific theatre in 1942-43.

Second generation operations saw the manoeuvrist approach being introduced as a key characteristic, most notably in the ship to objective manoeuvre approach. A good example of this generation is the amphibious phase - if it may be called that - at the beginning of Operation ENDURING FREEDOM, when American marines were flown in directly from amphibious shipping to targets deep inside Afghanistan.

Third generation amphibious operations are characterised by a distinct time criticality, a minimum of preparation time, a very short and intensive planning cycle, the execution of the operation with the forces as they are, and a joined-up and whole-of-government approach. A good example of this operation type is the evacuation operations off the coast of Lebanon.

The Evolution of Amphibious Staffs

Let us now take a closer look at the evolvement of the staffs employed to direct amphibious operations. Beginning at the top, doctrine states that there is a commander amphibious task force (CATF) and there is a commander landing force (CLF). CATF is a naval officer and the overall commander, and CLF is usually a marine officer and subordinate to CATF. CATF and CLF have their own staffs, a naval or amphibious staff and a landing force staff.

In the first amphibious manual, the American Tentative Landing Operations Manual from 1934 it was stipulated that the naval commander would have overall command of the landing force, since the landing force was only one element in a complex task force organisation designed to protect the landing force from sea and air attacks from the enemy. The naval staff planned the operation in its entirety; however, this did not work, as a key moment in any amphibious operation is when authority is transferred from the ship to the shore. It is the moment when the CATF lets the landing force go. From then on the landing force is either on its own or becomes integrated in a land component under the command of a land component commander. At the time the question of when and how to transfer command ashore was either left unaddressed or insufficiently addressed.
It took the terrible price paid by American marines at Guadalcanal to change this model. Only then were the admirals, Halsey, Nimitz and King, willing to accept an important modification of the manual for amphibious operations. From that point on the navy agreed the landing force commander would be subordinate only during the two initial phases: moving to the objective area and the initial landings. During the planning stage the navy and marine commanders would be equal and they would submit any disagreements to a common superior.

The problem with this model is that CATF and CLF have conflicting operational interests: CATF does not want to risk capital ships by getting too close to the shore; CLF wants to get as close to the shore as possible, land as quickly as possible with as much combat support as can be provided. This business model is basically one of competition. However, this model can work and has worked, but at the cost of endless friction and frustration between very large staffs working on a common plan. In amphibious warfare – believed by Sir Basil Liddell Hart to be the most complex form of warfare - the first principle of war, a unified command, was not exercised. This model of two different staffs working together on an equal basis is with us to this day. However, it may well be that this type of staff organisation is on its way out. Third generation amphibious warfare focuses on smart tactical combinations ready to deliver strategic effect. The emphasis is on the capacity to react and deliver quickly, across the spectrum of operations. Information is the key. In order to maintain a fast-paced operational momentum it is essential to unify command and keep the staff relatively small and integrated. The staff is joint and allows for substantial civilian or interagency input. Another interesting aspect is that third generation amphibious warfare is also about making the comprehensive approach from the sea work. ‘Follow-on forces’ can take the form of civilian agencies. Transfer of authority may or may not be intra-military, but rather interdepartmental or from the public to the private domain. For example, if authority is transferred to local authorities or non-governmental organisations.

As a general observation one can add that military staffs have a strong inclination to grow during an operation, sometimes they even double in size. This process of strengthening a staff is usually referred to ‘augmentation’ in which augmentees fill various staff-slots or provide specific expertise. The most common procedure is ‘upward augmentation’, where units augment higher headquarters. The reverse mechanism can then be called ‘downward augmentation’: instead of strengthening the next-higher headquarters, the subordinate unit is strengthened by the headquarters with additional staff capacity. Downward augmentation may become a characteristic of third generation amphibious operations of the future.

Some Observations on Planning

Now let us look at the planning models in use. Planning an amphibious operation is problematic and complex at the best of times. The seminal planning model is described in NATO publication ATP-8B Vol 1 *Doctrine for Amphibious Operations*. This planning model places all planning elements in a fixed sequence. As a result it is very time and staff intensive, it also has a lot of built-in friction that must be ‘ironed out’.

![Characteristics 1st GEN Planning](image)

- All elements of ATP-8
- Fixed sequence
- Process is very time and staff intensive
- Process has a lot of built-in friction

**Figure 1: First generation amphibious planning model**

The second generation planning model contains similar elements, but in a different sequence, as the original model proved to be a too rigid framework.

The dilemma of getting there early versus the proper stowage of amphibious ships was one of the drivers of the amendment seen here.
The third generation planning model contains only the essential elements of the original. In other words: only the tip of the spear remains. As mentioned, time criticality is a characteristic of these operations, meaning that only fully prepared and ready-to-go units can work with this model. Another consequence is that there is very little, if any, time for a rehearsal - a dogma in the planning of an amphibious operation. Based on operational planning models like the 7-Questions-model or the Marine Corps planning process, planning with this model is short and intensive. The planning and execution of Operation BALISTE, the French naval operation to evacuate citizens from Lebanon was done in this way.

**Figure 2: Second generation amphibious planning model**

The characteristics of the second generation planning model are:
- All elements of ATP-8
- Different sequence to save time
- Doctrine proved to be too 'tight'

**Figure 3: Third generation amphibious planning model**

The future developments include:
- Developing a better understanding of the direction in which our amphibious capacity should develop
- The Netherlands navy, in collaboration with the navies of Sweden, Norway and the United Kingdom, devised a series of multinational amphibious experiments
- Important themes are the employment of maritime special forces, projection of people and materiel over the horizon, and riverine operations from the sea
- These experiments will test aspects such as combat range, sustainability issues, force protection, and the influence of weather on communications and sensors
- We hope that these experiments will result in additional knowledge and the awareness required to review and update concepts of operations.

Part of these experiments is the testing of what has been called the joint amphibious action group. This group is not a standing formation, but a way or concept of organising enablers and making smart combinations. For example: LPD operating with their own landing craft squadrons; company groups of marines operating in tandem with maritime special forces; and important elements like a joint ISTAR unit, hydrographers, a medical element and maritime transport helicopters as joint enablers. With this approach it is hoped that traditional naval attributes like reach, poise, flexibility and presence can combine with a compact strike capacity and a limited footprint.

**Future Developments**

To develop a better understanding of the direction in which our amphibious capacity should develop, The Netherlands navy, in collaboration with the navies of Sweden, Norway and the United Kingdom, devised a series of multinational amphibious experiments. These experiments will be conducted in 2010 and involve personnel and materiel from these nations. Important themes are the employment of maritime special forces, projection of people and materiel over the horizon, and riverine operations from the sea. These experiments will test aspects such as combat range, sustainability issues, force protection, and the influence of weather on communications and sensors. We hope that these experiments will result in additional knowledge and the awareness required to review and update concepts of operations.

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Conclusion

The navy’s role is to deliver ‘security at and from the sea’. Combined and joint operations from the sea are part and parcel of that approach. The maritime domain is being used by a variety of users for a variety of reasons. It is a complex domain in which many interests coincide. In this dynamic playing field navies can, and should, play an increasingly useful role in a variety of ways safeguarding these varied interests. At the end of the 19th century geopolitician Sir Halford Mackinder said, ‘He who controls the Heartland, controls the World Island, controls the World’. Geopolitics is back, but in a strange, fragmented way: we now have energy politics, eco-politics, carbon politics, water politics, resource politics and so on. One can imagine the urban littorals to be the Heartlands of the 21st century, which makes paraphrasing Mackinder tempting: ‘he who controls the urban littorals…’ It is not difficult to believe that the 21st century will be a maritime century. Combined and joint operations from the sea are a capability that allows nations and armed forces to deliver strategic effect and meet the challenges of the 21st century where it matters most: the heartlands of our century, the urban littorals.

It may seem strange to be telling an Australian audience about the significance of force structures, operational doctrines, manning, support and even career development of the littoral areas, especially after your own recent operational experiences and in the light of your own force re-structuring plans so convincingly outlined already. In the United Kingdom the subject is not well understood, or at least so one might infer from the way in which the combined single equipment plan is being put together. It is therefore worthwhile to briefly explore this subject. After stating a proposition, some reflections will be offered for debate, given from a United Kingdom point of view, and they will echo things that have already been said in these proceedings.

There is substantial debate about the balance between security management tasks, counter-terrorism and counterinsurgency and the greater dangers, but perhaps lower prospects of major interstate war, a debate this paper will not enter. It is assumed that a large proportion of operations of whatever kind will be both joint and combined, and that many of them will require entry into potentially hostile territory, frequently from seaward. However, as the aim of this paper is to use littoral operations as a more general paradigm, this is not critical.

The starting point is the littoral area, an area made up of the five combat environments: land, sea, air, space and cyberspace. It is defined here as the area where the sea abuts the shore, including the hinterland of both, out to the range where a commander can reasonably expect to have information and to make decisions affecting the conduct of operations. At the seaward side, this might be at least 200-250nm. Ashore, it may initially be less, except in the air where it might be out to 200nm, however, it may well increase its area on shore as operations develop.

My proposition is that it constitutes a new joint paradigm which will affect not just our command structures but the way in which we plan, train, equip for and support our operations. Of course it is not purely a naval preserve, although the sea may be the entry route for operations, the base for power projection, for logistic support and ultimately the exit route too. It is an area of limited lines of sight, a difficult sensing environment, close to enemy bases and force structures, and with short ranges. It is an area crowded with weapons, sensors and platforms; an area where traditional service demarcations cannot easily work, since the boundaries between environments are, to say the least, blurred. It is as challenging a management and command problem as you could hope to meet. It is important to understand that
none of the environments is specific to a particular service; the ancient Greeks called all their commanders, sea and land, strategoi or generals and expected at least some expertise in both environments. Today is no different. The littoral is a complex, crowded area almost certainly operating both manned and, increasingly, robotic vehicles and it is, par excellence, the arena of joint warfare where our success will depend on how seamless the joining is. As discussed below this is the arena where the value of the capability approach to equipment acquisition is most clear. To summarise, the littoral is: unitary, joint, multi-environmental and complex.

To illustrate the thinking here it is necessary to list a few examples, the first is information. Today we are amassing huge amounts of data through a vast range of sensors, many of them competing for position in the same battlespace or bandwidth. Some are operated communally, some by individual users; we are almost certainly gathering the same information more than once, or obtaining information of use to someone else, either in another Service or another partner nation. But we are often more concerned with who owns the sensor. Rather than tap into the ‘information ring main’, we prefer to control the sensor - in case the other person lets us down. Yet we know that every additional platform or sensor brings with it interface and integration problems and a logistic tail - manning, training, repair and support - and we know too that the logistics ‘drag’ is the most difficult part of deployed operations. Surely what field commanders want is not more equipment, but more connectivity, and especially more sharing of common assets, which is at least as much a mindset problem as a process or equipment problem. This leads to another proposition, one voiced by General Salmon: ‘output, not ownership, matters’.

The same can be said about airspace control and denial. Once again we have a range of platforms and weapons - fighter aircraft, sea- and land-missiles - backed by ISTAR assets, airborne sensors and weapons, from land- and sea-based aircraft as well as ground-based systems. Again there is the suspicion of duplicated effort within a single sea/land/air continuum - the littoral air space; remember my definition of the littoral. It is suggested there remains a less than perfect full air picture, and a less than perfect coordination. More importantly, but less forgivably, there exists a less than perfect agreement on who should own and operate what; even, in the case of the United Kingdom, descending into the illogical proposal that air assets, operating in a single arena, should be owned by more than one operator. It is a mystery as to why the proposal to build aircraft carriers in the United Kingdom should be so often stranded, and may even yet break its back, on the rock of disputed ownership of the aircraft.

What does the littoral paradigm teach us about operations? And what does the joint or combined commander of this theatre actually need? When discussed with the Chief of Joint Operations his answer was clear: he wanted a joint planning staff which understood joint operations. He wanted component commanders and force components with deep professional understanding and skills in their individual environments. He wanted the force components to have the deep environmental knowledge for him to be able to assume they could deliver their part of the joint plan without him needing to worry about it; he wanted professional warriors at the cutting edge, not purple ones. But he was not interested in who manned what, only in what they did. In a sense, this was the easy part of the problem and perhaps ample justification for the existence of separate forces, although of course we have to work out how to combine this specialist skill with joint skills when necessary.

The much more difficult issue is the shape of the force structures involved, and how to reconcile the confronting of military contingencies with the capability approach to acquisition without, as a well loved British radio show put it, deviation, hesitation or repetition. Or rather, how it can be done efficiently and cost effectively? There is something of a tug-of-war between the analysis of threats and vulnerabilities which underlies the first and the definition of outcomes and capability gaps underlying the second. Here again the littoral problem seems to stand proxy for a more general problem facing force planners. It needs to be emphasised that, in the United Kingdom at least, this is a very difficult question indeed, since it has become clear that any defence review led by the armed services is virtually certain to lead to the derivation of a force structure that is beyond what the nation is prepared to spend on its defence, and even on occasions beyond what the national defence industry can manage, and is therefore arguably nugatory effort.

In this area the combination of the ‘joint approach’ and ‘capability approach’ is both at its most useful and most difficult. The benefit of the capability approach is clear. If we define it as ‘specifying the desired outcome without reference to the means of delivery’ it becomes clearer, and if we become even more simplistic and describe a capability by being able to say ‘I can do…something’, for instance ‘I can control the airspace’, it becomes clearer still. It allows us to treat a particular problem, say control of the airspace as a single whole and perhaps deduce the elements that would give us the most efficient answer, irrespective of existing force structures and all those less definable culture and ethos issues which interfere. Further, it might help us find the most cost effective overall solution in the particular scenario. But there are other issues, the cultural ones already mentioned, which are too numerous to list now. There is also a serious ‘silo problem’; it is, for example possible that the optimal solution that we deduce for the littoral air space is less efficient for indirect fire support or deep strike. This issue has resulted in considerable difficulty in the United Kingdom, where individual ‘integrated project team’ leaders inevitably focus on ‘things’ they have been asked to produce and we have pushed them hard to meet tough cost, time and performance targets that tend to create a very monocular view of their programs and a blindness towards everyone else’s. It has become apparent that the scope of programs and what they embrace is a crucial decision and one in which program boards need to think very clearly. It is also clear that such boards are inevitably going to trample on the toes, traditions and prejudices of the Services, which will over time likely breed a different kind of joint officer if the acquisition process is going to succeed in such a complex area.
It is very clear how important is the role of the ‘senior responsible owner’ of a program in managing all the lines of development, and how broad and ‘joint’ a view of operations and organisation he is going to need. For this reason I believe that, in British parlance, he needs to belong firmly to the capability organisation and not to a single Service. We can pursue this thought further if you wish in discussion, but my proposition is that the littoral shows us something of how we must be organised for acquisition too, and how the role of senior responsible owner will sometimes need to be exercised, and probably should be exercised, by an officer from a different Service from his predecessor and different from our older more single Service arrangements.

But can any specific deductions be made about our force structures from this particular theatre of operations? There are two areas where the answer is very clear: C4ISTAR and logistics. Self-evidently a common recognised picture and common targeting data are a sine qua non of operating in the littoral. Equally self-evident is the fact that a number of different assets operating in all the military environments without a single picture and command structure would be positively dangerous. One of the most difficult aspects of resolving this is persuading commanders to inform you of what they want to know, or what sorts of things they want to know, rather than what assets they need to find it out. This is difficult because the former requires serious disciplined thought in advance, yet it is the epitome of the much vaunted capability approach.

The same general principle applies, pari passu, to logistics. The essence of logistics is that the fighting man shall have whatever he needs, whether it is ammunition, spares, fuel or ‘tinnies’ at the moment that he needs it - hardly a revolutionary insight. It is simple enough explained like that, yet it is the most difficult aspect of expeditionary warfare and the one that can most quickly cause a disaster. It is also quite plainly a joint service operation, with a large number of items being shared, as well as many being Service or environment specific, and perhaps with particular Service specific final delivery means. But much of the problem is common, even if some of the surrounding conditions may vary.

In expeditionary littoral warfare the majority of stuff is likely to arrive by sea as aircraft simply cannot lift the weight and a sea logistic base is more secure, has a lower land footprint and can, at least during the early phases of an expeditionary operation, store logistic items in better condition than is usually possible ashore. It was this thought of course, plus the evident need, at least in the initial stages, for seaborne-based command and control, and other ISTAR related gear, which led to the British concept of the joint sea-based logistics ship, which has, for the time being, ‘bitten the dust’ for financial reasons, although of course it has been taken up by other nations. One would be hard put to find a more striking example of failing to comprehend the message of the littoral. Here is a classic example of willing the ends without willing the means. Unfortunately, in this case the Royal Navy was really the guilty party, in preferring to give a higher priority to other more purely naval assets; it should have known a great deal better. Not least they should have known better because their priority decision undermined the joint requirement for the things they wanted. So struck was I by this, that I even tried to persuade the Royal Navy that the new raft of support ships were effectively modern capital ships at least in the littoral; you can imagine the response! But I was making a serious point. One can find examples of the same sort of thing in Royal Air Force program priority.

There is another area where this argument has force: the potential of robotics and unmanned vehicles. Here is another capability in which the ownership of vehicles is of less importance than their ability to deliver. It also requires a certain maturity of approach and trust in the ability of properly educated joint commanders to recognise overall combat priorities. It also requires commanders who earn that trust and confidence and can be seen as genuine ‘defence’ professionals and not simply as single environment experts, although, as mentioned, there is a need for those too. So, another proposition: a key issue in joint warfare is trust.

The last substantive point to be made regards command and control. When last working in the Ministry of Defence it was a common experience to be told regularly by different service commanders that they had to have ownership of particular equipment if they were to be sure of having a capability when they needed it - clearly this would have led to a number of duplicated demands, and to equipment performing at less than full efficiency and capacity. The problem was that these commanders could not think in terms of desired outcomes or if they did, had little confidence in the provider of such outcomes making them available when needed. This despite having established through the Permanent Joint Headquarters and the Joint Force Commander and their staffs the mechanisms to achieve this and even though they had not always bothered to test it. Once again the littoral area, with its high levels of activity and intermixing of all the elements and environments of combat shows us that we do not have the luxury of such debates or indeed of such duplication.

It is a big and risky claim to suggest that any one scenario might provide a universal paradigm and this paper does not go quite that far. It does, however, claim that the traditional way of doing things is no longer appropriate as force structures tend to shrink and capabilities overlap environments. This fact is implicitly recognised in the various steps different nations are taking to at least re-examine their acquisition and force planning processes. Further, the littoral area, as defined here, does indeed provide a new paradigm for the way in which we should set about building, deploying and commanding these future force structures and capabilities. This is not a new thought but we have yet to extract from it all the benefit and innovation that we might have done. Careful analysis and study of the demands of this very challenging theatre will teach us a great deal about preparing for the complex and interactive combat of the 21st century, wherever those conflicts actually take place.
The first aim of this paper is to define and describe what maritime irregular warfare might mean in an Asian context. In many ways Asia is the home of maritime irregular warfare; more examples have occurred in Asia than anywhere else. The second is to suggest it has a role along two continua: the first is a continuum of organised violence, which can vary from small scale hit-and-run attacks often for no reason other than robbery, to large scale political confrontations. The second is a continuum of competition, which involves the flexible use of all aspects of national power underpinned at crucial junctures by the threat of overt or covert violence.

Five Basic Propositions
This paper will be based on five propositions:

• Asia is a theatre that is experiencing massive economic change, which is perhaps a better description than growth because although rapid and substantial development has taken place it is uneven regionally and socially, and arguably fragile. Continuing economic growth is not pre-ordained.

• Asia does not have an overarching collective security structure. It is a theatre where states seek to balance each other. This is a challenging and dynamic undertaking because the disparities in power between Asian states are more marked than anywhere else in the world. In part this is because more of its powers are nuclear powers than anywhere else yet the historical correlation between nuclear and economic power does not hold true in Asia the same way it has historically.

• In Asia this correlation between nuclear weapons and economic power is weak, which means that two out of the continent’s four, potentially five, known nuclear powers (excluding Russia), lack the resources to fund a conventional military force capable of confronting a major power. In particular, they are unable to compete directly in the crucial areas of guided weapons, robotics and long-range sensors, which means that while they are able to secure their homelands against existential attack, their ability to enforce their will politically beyond their borders, other than through the use of unconventional power, is constrained.

• Asia is also a theatre with a substantial number of political non-state actors. This may not be a coincidence given the social upheavals that have accompanied economic growth or, in some cases, the lack of it. It also harbours well-resourced criminal non-state actors such as the triads, yakuza and gangs...
in India that have all demonstrated a willingness to serve state interests as well as their own. Many non-state actors in both categories employ violence regularly; others who use it less regularly can still do so in response to changing endogenous or exogenous dynamics. Some are in receipt of state support. Each one possesses skills that are easily transferable to others of their ilk. Each one, moreover, is a source of instability which in many cases mutates too rapidly to be amenable to either bargaining or state-system restraint.

- Asia is a maritime theatre. Although its land mass is vast, the foci of its political interactions occur around its periphery. Its surrounding seas are the principal highway of economic exchange and power projection.

**Maritime Irregular Warfare**

It is important to provide a sketch of what distinguishes irregular warfare and how it relates to warfare as a whole; where it has application; the trends that encourage its use; how it can support a wider pattern of political action and intimidation, which, when taken together, can fairly be described as war; and how it blends into criminal activity, an activity that can be both criminal and political at different times.

Arguably the simplest definition of irregular warfare is that it is all forms of warfare Western militaries do not wish to fight. However true that might be it is somewhat wanting in intellectual rigor. Therefore, the first step is to remind ourselves that war and warfare are not synonymous. Warfare is the act of fighting to achieve the overarching political objectives of war. Success in war, however, is not dependant on warfare; as the Cold War took 50 years to demonstrate, the threat of war may be enough.

Warfighters in any age have largely striven to obtain tools that are at the leading edge of what is technically feasible. Reaching for ‘Occam’s Razor’, this search for excellence can be broken down and analysed across three dimensions: range, information and firepower. Range, which is an expression of time and therefore includes speed, is of benefit militarily because more targets can be exposed to risk earlier and thus for longer, areas to the rear previously considered safe can be put at risk and follow-on operations disrupted. Target location, identification and tracking require information that is harder to obtain at range; greater distance naturally imposes longer response times. Historically, increased firepower has been used to compensate for information shortfalls, a trade off epitomised by the World War II strategic bombing offensive. A force with a range or firepower disadvantage seeks to nullify the opponent’s capabilities by denying it the information it needs to be able to seek and destroy targets accurately. It uses cover and deception to retreat out of range, to hide and wait for the enemy to move away, or close with the enemy to bring its own shorter-range weapons to the fight. All this is well-understood.

Irregular warfare in all its forms, including guerrilla and partisan warfare, insurgency and terrorism, when stripped of its political cloak, is a variation on this centuries-old three-dimensional move and countermove. Acquiring, targeting and destroying targets at range are the prerogatives of the powerful. Conflicts in which the weaker participant seeks to nullify the ability of its stronger opponent to destroy targets at range by using disguise, deception and camouflage to minimise the stronger force’s access to information and, by forcing it to reduce the range at which units engage, exploit surprise to mount close-in attacks need not be fought by irregulars. When these methods are adopted by irregulars - fighters - organised (however loosely) around a political motive (however weakly held) who then engage regular forces the resulting conflict is described as irregular. It is the motive and affiliation of one of the participants not the method of fighting that gives rise to the label irregular warfare. Because the political dimension of irregular war can be leveraged more readily on land, as this is where the audience that irregular fighters wish to influence politically resides, this characterisation of irregular warfare as part of the regular rebalancing between range, information and firepower is more obvious at sea. It is the risk of political entanglement, moreover, that explains the seeming contradiction in the use of irregular warfare - which seeks to lessen the range of engagement - as a method to keep naval forces well away from a coast.

**Its Application**

It is important to repeat and emphasise that this description applies only to the warfare portion of irregular war. It does not attempt to simplify or replace the formulations that aim to encapsulate the phenomenon in its entirety. It is an attempt to clarify the tactical characteristics of irregular warfighting. If this assessment is correct, there is little or nothing about it that is new; nothing so startling that fighters down the centuries would not recognise. In fact, little that distinguishes it tactically from any conflict between the weak and the strong.

In the maritime domain, irregular warfare is where a weaker actor seeks to achieve any one of five broad objectives:

- Where a state or non-state actor wishes to deny use of chokepoints or vital narrow seas to military or commercial traffic by increasing the risk of safe passage in ways that elude or exclude a conventional response.
- Where a state wishes to deny access to its coast or, in the case of a non-state actor, a portion of coast under its control as was the case with the Liberation Tigers of Tamil Eelam (LTTE). In these circumstances irregular warfare methods could be used to draw naval vessels into waters that even if relatively free of other traffic, are constricted and ‘noisy’ and where the coming together of land and sea degrades the performance of naval sensors; because the information gap between the antagonists is consequently narrowed this could permit the inferior force to impose unacceptable levels of loss on the superior.
Where coastlines are undefended or poorly defended and therefore vulnerable, attacks could be mounted on coastal targets and offshore infrastructure such as ports, commercial centres, isolated communities, beaches and hotels, power plants, and oil and gas platforms, pipelines and telecommunications cables either by raiding parties or by missiles and rockets launched from platforms disguised as civilian vessels.

Where coastal traffic and other vessel-based commercial activity such as fishing and tourism is unprotected and therefore exposed to disruption, intimidation and exploitation in ways that may be indistinguishable from piracy.

Wherever the sea can be used for covert logistical purposes including transporting weapons, equipment, cadres, money and information for land-based campaigns.

Pressures and Trends

The sea is coming under pressure. The volume of legitimate cargo and illegitimate goods, including drugs, arms and migrants, transported by sea has increased substantially since 1945. Over the same period the natural resources of the water column and seabed beneath it have been extracted in ever increasing quantities as reserves on land have been depleted. Pressure is mounting to open up new areas for exploration at the outer limits of the world’s continental shelf (around 150m of water) and even in the deep ocean (to a current maximum of around 2000m). Meanwhile, fish stocks have in many places been driven almost to the point of exhaustion. In a movement that might be described as a ‘migration’ or more ominously as a ‘scramble’, people, commercial entities and states have turned to the sea more than ever before for energy, either in the form of extracted oil and gas or as space to house structures to capture wind or tidal power; minerals; potable water distilled from seawater; aquaculture, which already accounts for around 17 per cent of the world’s supply of fish; and waste disposal including the dumping of toxic and nuclear effluvia.

The demands of more affluent and elderly populations keen to live, retire or vacation beside the sea have seen great swathes of coastline consumed by construction with concomitant strains placed on coastal waters. Greater economic activity creates more targets; more targets attract more criminals and insurgents. Coastal communities in the developing world that see their livelihoods stolen and the spawning grounds for the fish upon which they depend destroyed by foreign trawlers, and the inhabitants of coastal regions who have been sickened and distressed by energy and mining operations, either stay to become the ‘population’ that support or are targeted by insurgents, as has occurred in the Niger Delta; or they leave. Those who leave in some cases to join the steady stream of illegal migrants heading for already developed economies in numbers that often overwhelm the settled inhabitants while denuding their countries of origin of human capital. Others swell the numbers thronging to the mega-cities of the Third World amongst which Karachi, Dacca, Lagos and others

lie on or close to the sea. These vast littoral conurbations in turn offer the prospect of becoming launching pads for maritime-borne attack or its targets, as the 2008 massacre in Mumbai demonstrated.

Out on the ocean the pressures on the world’s sea lanes are growing. More goods will be transported on larger and larger ships that need to pass through a fixed number of geographical chokepoints, such as the Strait of Hormuz and the Malacca Strait, and dock in the limited number of hub ports that can accommodate their bulk. This concentration increases what the insurance industry refers to as the accumulation risk: that is to say when the loss of even a single ship could disrupt markets, while the closure of a major port could cause significant economic problems nationally and internationally.

Resource depletion offshore and the loss of productive fishing grounds, coupled to population increases on land and the environmental and political pressures to which these will give rise, will mean the littorals will become more contested and the risk of conflict will increase. When political control is lost onshore and states fail the resulting disorder can spread out to sea and even affect international trade as pirate groups along the Malacca Strait, off Somalia and politico-criminal groups in the Niger Delta have shown.

Stronger states could increase the possibility of conflict by attempting to enclose the oceans off their coasts or their island possessions by extending the area of the sea under their control using legally dubious measures such as ‘security zones’, ‘environmental protection zones’, ‘green seaways’ and traffic separation schemes. The United Nations Convention on the Law of the Sea 1982 (LOSC), the treaty governing many of the sea’s uses, sets the limits of territorial seas at 12nm and grants states certain economic rights over exclusive economic zones and areas of the continental shelf. The treaty, however, was a compromise between the competing interests of coastal states and maritime powers. As economic and environmental pressures increase it is possible that these differences will re-emerge to the point where the treaty is observed selectively, or fractures completely and the anarchy that has been the sea’s historic condition reasserts itself ameliorated once again by customary law and mediated solely by naval force.

Trends Become Threats?

These trends suggest a number of stresses will be placed on the world’s maritime spaces: between free trade and protectionism; between open and enclosed seas; between public and private economic activity; between resource exploitation and conservation. Critically, the binary distinction between peace and war, which is much favoured in the Western conception of political conflict, will yield ground to the ambiguous reality of ‘war-in-peace’ or ‘peace-in-war’ where war and peace are actually one elastic phenomenon. In this context, disruption and cost-imposition
Defining and Describing Maritime Irregular Warfare in Asia

need not be achieved militarily although the threat remains ever-present. As Sun Tzu is believed to have written, 'supreme excellence consists in breaking the enemy's resistance without fighting.' Consequently, we are likely to see four non-military threats to navigational freedom and coastal access emerging from this turbulence:

- Acts of depredation by criminals either directly (piracy) or pursuant to other criminal activity such as smuggling or resource theft that make entry into coastal areas sufficiently costly physically or financially that seafarers choose to avoid them or are forced to do so by their insurers.
- The use of domestic or international law to prevent, or limit, access to coastal areas, or to prevent or impede ships' passage through straits or archipelagic waters, for political, economic, security or environmental reasons.
- The exploitation of disputes over boundaries, resources and environment protection as a justification for excluding vessels from areas of political, economic or environmental interest or which force states to advise shipping over which they can exert influence to avoid (insofar that this is still a viable concept in an age of open registers), either because they are unable to offer them suitable protection or fear the political or diplomatic consequences of an incident.
- Concerted efforts by coastal states to use international fora and propaganda to make it politically or morally untenable for certain classes of vessels, naval vessels in particular but also nuclear waste transporters, oil tankers and gas carriers, hazardous material carriers and even fishing vessels, from making passage past their coasts or through their territorial waters even where those waters are also international straits.

These four threats may be precursors to, or substitutes for, eventual conflict that could be expressed initially in the form of:

Access denial

The use or threat of military force by state or non-state actors to exclude all vessels or selected vessels from entering a designated coastal area for political, economic or security purposes; these areas could extend beyond the waters or exclusive economic zone of one coastal state to embrace the territorial waters and exclusive economic zone of other states to effectively create what might be termed a ‘maritime sphere of influence’ such as Iran appears to be attempting to bring about in the Persian Gulf; or in the case of a non-state actor exploiting the sanctuary of a weak state, expanding its area of operations by exploiting the sanctuary provided by the territorial waters of neighbouring weak states, to strike at and exclude naval forces and commercial traffic from even larger areas of sea.

A land-based analogy for criminally-driven access denial is to be found in Mexico where criminal groups have enforced what are effectively ‘no-go’ areas for the country’s police and armed forces. The criminalised states of Africa provide more than one example of a political-criminal nexus using the mechanism of a state to exert legal and diplomatic pressure to protect their operations from interference.

As far as the maritime domain is concerned, none of these threats are hypothetical; all have happened. Although this paper focuses on the implications of access denial, it is important to recognise that they are all likely to be mutually reinforcing. For example, disputes are likely to provide the justification for legal exclusions and access denial; access denial is likely to involve legal and military measures; disputes might be triggered as a result of illegal economic adventurism by commercial organisations; criminals might unwittingly or unwittingly provide states or non-state actors with cover for covert activity; environmental protection might be used to camouflage the political reason for the de-legitimisation of naval or commercial passage. The threat made by the Burmese junta following Cyclone Nargis in 2008 to starve its people unless the US Navy ships carrying humanitarian supplies left its waters, demonstrates the potential power of non-military methods in an age of mass communication; this is only one step removed from the use of deliberate starvation or mass hostage-taking as weapons of exclusion.

Maritime irregular environments

Reality therefore demands that we look at the disruptive activity that lies outside the boundary drawn most often around warfare. Once we do this, however, the word is drained of meaning. Stripped of its political context, irregular warfare becomes an uncomfortable terminological catch-all that aims to find common themes between all the examples of threatened or actual conflict where an economically weaker (or apparently weaker) opponent exploits technical, cultural and informational differences almost without limit to attack and occasionally defeat a materially stronger adversary. Where violent conflict is occurring but is not political we can, instead, reasonably talk about irregular activity. Where motivations are ambiguous or mixed we can bring irregular warfare and irregular activity together as irregular challenges.

In many cases, however, situations are latent. No fighting, warfare or otherwise, has occurred such that the objective becomes one of prevention not confrontation. While the potential for violence hovers, as I have suggested, like a dark presence over everything that concerns us, warfare might never take place. In those the concept of irregular environments may be more appropriate because, while this is another somewhat uncomfortable term, it does convey the idea of areas that can become breeding-grounds for disorder because they lack security. These areas are generally states where internal security has collapsed, or areas within otherwise functioning states where a similar failure has occurred at a local or regional level. Why irregular environments concern navies is that many of these areas have coastlines and because the sea is the most open yet at the same time least transparent connective medium it is also the one by which disorder can be transferred first to the sea and then elsewhere.
Maritime irregular challenges in Asia

Maritime irregular challenges in Asia have, for the most part, been the preserve of non-state actors. Most of the episodes are well-known but nonetheless worth recapitulating briefly to bring out common themes and categorise them, as far as possible, in the naval and irregular warfare terms used in this paper rather than in the language of counterinsurgency or law enforcement. The purely criminal need not detain us but criminal activities carried out by politically-motivated actors will; as will examples where criminals have providing politically-motivated actors with useful, if unintentional, cover:

**Area denial:** the best example is then considerable success the Sea Tigers of the LTTE achieved against the Sri Lankan navy over nearly two decades; as with all historical examples of sea control and denial it was not able to exert this permanently but it was able to do so largely where and when it wanted to.\(^9\)

**Exclusion:** the clearest example was the effect criminal depredation had on the Vietnamese ‘boat people’ trying to flee across the Gulf of Thailand; whether or not the gangs that preyed on them benefited from state assistance it is not the purpose of this paper to examine but it is enough to note that many who set sail from southern Vietnam were preyed upon while most of those who fled from the north arrived in Hong Kong largely unscathed.\(^10\)

**Sea-basing:** the LTTE again proved an extraordinary example of what determined and well-organised non-state actors could achieve, using a fleet of cargo ships as warehouses to store supplies hundreds of miles offshore and calling them forward as required.

**Logistics:** backing up this effort the LTTE put together a worldwide purchasing and supply network that extended from the Black Sea and South America all the way to Sri Lankan home waters; Free Aceh Movement (GAM) ran supplies across the Malacca Strait to Aceh; a regular route still exists between Mindanao and Sabah; and clearly Hezbollah and Hamas are the beneficiaries of regular supply runs from Iran.

**Raiding and land attack:** ‘Moro’ groups in the Philippines raided coastal settlements regularly, usually to raise money; the largest scale events were the raids on Lahad Datu in 1985 and Ipil in 1995, although the most notorious were those to snatch kidnap victims from various beach resorts between 2000 and 2003.\(^11\) The 2008 Mumbai massacre took this form of attack to a new level.\(^12\) The LTTE even mounted full-scale amphibious assaults.\(^13\)

**Commerce raiding:** the example of the attacks on various Philippine inter-island ferries of which the worst was on Superferry 14 in 2004, suggest what effect a determined group could have on open-access transport even though, in these cases, the motivation was extortion.\(^14\)

**Piracy:** a purely criminal activity, which some have striven mightily to link to terrorism without a shred of concrete evidence, has, however, been used by insurgent groups, particularly GAM and various Filipino groups, to provide funds. Their presence, along with other criminals such as smugglers, can complicate the operational picture wherever they are active thus allowing more politically dangerous elements to go about their business undetected.

States can similarly exploit piracy, or more often its reciprocal, counter-piracy, to influence maritime behaviour. Around the maritime borders of China, state involvement remained a murky presence at least until the 1990s. It began with the Kuomintang’s apparent involvement in piracy following their expulsion from the mainland and which continued into the 1950s. It was matched over the period by China’s counter activity. In the 1990s the piracy baton, speaking metaphorically, passed to provincial governments in southern China and various state agencies which interfered with shipping as far south as the southern tip of Vietnam, over 1000nm from Chinese territory. The ostensible purpose was to counter smuggling but was in fact little more than extortion. Similar interference with shipping by government vessels, almost certainly Iran Revolutionary Guard Corps Navy, has occurred regularly in the northern Arabian Gulf.\(^14\) The difficulty with this, or put another way, its advantage as far as the perpetrating government is concerned, is that no-one wishes to talk about it. The outcome is that commercial vessels and even warships become reluctant to enter waters where they are legally entitled to go and the aggressive coastal power establishes a norm which it argues should be applied elsewhere. The temptation to close seas rather than to keep them open is ever present. Closed seas (mare clausum) as compared to open seas (mare liberum), appears to have found a new appeal and may have found a new home in Asia.

**How Might Non-State Actor Irregular Activity Develop?**

Experience suggests that only insurgent groups that have had an imperative to use the maritime domain have done so. There is no reason to believe that this fundamental will change. Operating on the water is expensive and demands specialist skills. The majority of violent non-state actors have not had to go to sea to achieve their objectives. However, it is noteworthy that all the competent maritime insurgencies that have taken place so far have done so in Asia: against Israel, in the Indian Ocean, and in the waters off Southeast Asia.

The most obvious explanation as to why this has happened is that Asia is a maritime theatre. Insurgencies cannot be conducted on islands unless the insurgent group is able to bring in supplies over the water or if the island, as it is in Ireland, is divided allowing smuggling to take place across a porous land border. Asia is currently enjoying something of a lull in insurgent activity but there is no guarantee that this benign state will continue. If it does it is because the level of economic activity will continue to rise and the distribution of the proceeds continues to be seen, broadly-
speaking, as fair by ethnic majorities and minorities. Both are tricks that stand a good chance of failure. Inadequate growth and inequitable distribution will be exploited by rejectionist groups to advance their own agendas.

Given the expense and specialist requirements of maritime activity, the degree to which an insurgent group can draw upon outside support may well have a significant impact on its maritime operations. The anti-Israel groups, from the PLO to Hezbollah, have relied on external support for funds, training and equipment. The LTTE achieved substantial success even after state support was withdrawn because money mattered to them more. With it they could purchase all the weapons and training they needed.

Geography will determine largely when and how Asia’s seas will be used and how insurgent groups will exploit them if at all. Supply is likely to remain the predominant activity. Disguise and deception will continue to be the first line of defence. For local voyages, any small vessel will serve even if fishing craft, because of their anonymity, will almost certainly remain the vessel of choice. Although ships over 500 gross registered tonnage must now display IMO numbers and carry synoptic records, these requirements are useful mainly for tracking vessels that have been stolen. Ships that are properly, albeit deceptively, registered will still slip through the surveillance net unless states know what they are looking for. In both cases land-based intelligence and detective work to prevent and disrupt cargoes reaching ships is likely to prove more productive than maritime interdiction. In the absence of sound intelligence, once an illicit cargo is on the water, the chances of preventing it reaching its destination declines dramatically.

The Sri Lankan navy’s experience would appear to support this judgment. Sri Lanka was only able to destroy the Sea Tiger’s logistics chain once it replaced years of largely fruitless coastal interception activity, relieved by the occasional tactical success, by a concerted, intelligence-led hunt which led to the sinking of the insurgent’s ocean-going freighters. The lesson from this is that all it takes for a similar maritime chain to operate successfully in the future is for states with access to the intelligence needed to identify the ships that are being used, and the surveillance assets to be able to pinpoint their whereabouts in real-time, is to deny this information to states that are at risk.

Insurgents, meanwhile, will have learnt that they need to disguise ship ownership and routing more carefully, and that they cannot assume that states will not mount attacks at range. What the Sri Lankan navy did was achieved at great risk. It was operating at the very limit of its range and experience. Without the benefit of surprise, and against an enemy that was armed, the various deep-sea interceptions it undertook might not have succeeded. Insurgents may well arm supply ships in the future, although this will avail them little against a competent navy.

It is therefore to be expected that insurgents will submerge. The price to be paid in speed and carrying capacity will be significant but as the Colombian drug cartels have demonstrated, semi-submersibles are not easy to detect and more often than not able to land their cargoes safely. The suspicion that the Sea Tigers and the Colombian cartels cooperated on vessels design is a development that demands attention as it provides another example of politically- and criminally-motivated actors working together to achieve a common outcome. That said, criminals are unlikely to move beyond cargo-carrying semi-submersibles; political non-state actors are equally unlikely to move beyond the use of similar vessels, midget submarines for short-range insertion and mine-laying missions, and swimmer delivery vehicles. However, if these groups are able to learn how to use midget submarine and swimmer delivery vehicles effectively, and there is certainly evidence that Hezbollah and the Sea Tigers did both, then this would give them a limited sabotage capability which if used judiciously could do serious harm to critical naval capabilities, high-profile maritime targets and port infrastructure.

The latter are viewed as presenting a significant potential risk because, as they can serve a wide range of civilian needs, are undergoing rapid development and becoming much more widely available. However a fully-submersible attack capability is unlikely to appear for 20 years or more because of the huge complexity of attack submarines and consequence maintenance and training demands, although as more states acquire them knowledge about how to operate them safely and effectively will undoubtedly spread.

What is less clear is the degree to which non-state actors might be prepared to engage in naval combat. The Sea Tigers did; they fought the Sri Lankan navy to a standoff for nearly 20 years. The PLO was moving towards acquiring a limited, surface combatant capability prior to the Oslo Accords that established the Palestinian Authority. Once the Accords had been signed it set up a legitimate coastguard instead. The Popular Front for the Liberation of Palestine - General Command and Hezbollah have both mounted suicide attacks against Israeli navy vessels.

Clearly circumstances determine what capabilities are developed. For the Sea Tigers the need was to be able to hold supplies offshore in warehouse ships and deliver items to the war zone as required, to deny the Sri Lankan forces the freedom to land their own supplies and move troops without loss, and carry out amphibious assaults. For the PLO it was to land supplies and insert raiding parties. When considering the maritime domain in much of Asia, it is this combination that would appear to be most likely in the future. Supplies will be landed surreptitiously; raiding parties will exploit deception. The concern about the latter must be especially acute; in fact, the surprise is surely that attacks on coastal targets have not occurred more frequently given that in most places the security forces would be unable to mount a timely and adequate response; by responding they might become targets themselves or, if their
response was disproportionate, could contribute to the carnage. As proved to be the case with Israel, states that are the victim of such outrages may feel they need to respond by striking the attackers’ bases even if they are located on the territory of another state. The risks of escalation in such circumstances do not need to be spelled out.

Anti-Access and the Role of States

The corollary of raiding is anti-access (A2) and area denial (AD). At the level where most insurgent activity takes place, these activities are more about maritime security. As the Indian government acknowledged after the Mumbai atrocity, its maritime security was inadequate to prevent the attack but while it may prove possible to construct security architectures that are adequate to defend specific nodes, such as Mumbai, Singapore and Hong Kong, the sheer scale of the Asian maritime theatre, the complexity of its coastline and the degree to which sovereignty issues inhibit cooperation raise questions about how the region as a whole can be secured at anything other than the most rudimental level; a question that admittedly applies with equal force to most littoral areas not simply those in Asia.

Maritime security, and its current handmaiden maritime domain awareness, can also fall into the category of policies that should carry a warning about being careful what you wish for. While there are substantial security benefits in knowing what ships carrying what cargoes are approaching a port, and even what might be passing through narrow waters close to a coast, the risk is that this principle could be used to limit navigational freedom. To affect, in other words, acts of legal limitation, exclusion and de-legitimisation of free passage highlighted earlier.\(^6\)

Recent history suggests that the use of legal and security levers to limit this freedom is a live issue in Asia. The incidents involving the USS Pueblo off North Korea in 1968 and the SS Mayaguez off Cambodia in 1975 were triggered ostensibly by differing interpretations of the extent of each country’s territorial sea claims. The most recent incidents in the South China Sea in which a US EP-3 reconnaissance aircraft was forced to land on Hainan Island and a surveillance ship, the USNS Impeccable, was harassed by Chinese fishing vessels, revolved around China’s unilateral interpretation of its rights in its exclusive economic zone.

The organised use of civilian vessels for this purpose is not new. In 1949, shortly after its triumph in the Civil War, the Chinese Communist Party established a maritime militia. What was interesting about it, as Bruce Swanson has pointed out, was that once it was formed it was much more active than its land-based counterpart.\(^7\) It played a role in the Chinese campaign to capture various Kuomintang held islands in the early 1950s and remains useful for a range of tasks such as mine laying and surveillance. It has also been used as an instrument of foreign policy: in 1978 large numbers of fishing craft gathered off the Japanese-controlled Senkaku Islands south of Okinawa, which China claimed, and remained there for four weeks taunting local fishermen as China and Japan prepared to sign a peace and friendship treaty.\(^8\) Indonesia also used fishing vessels in harassment and reconnaissance roles during its confrontation with Malaysia and the United Kingdom during the 1960s.

It is possible, however, that the most substantial increase in the threat presented by irregular maritime warfare will not come from the sea at all but from the land. The damage inflicted on the Hanit, an Israeli navy corvette that was patrolling off Beirut in 2006 by a C-802 cruise missile fired from Hezbollah-controlled territory, alerted observers to the likelihood that any state or non-state actors seeking a rudimentary maritime strike complex may well pursue a precision guided munitions capability centred on guided rocket, artillery, missile and mortar (G-RAMM) systems.

The adoption of such weapons is likely to be enabled by three concurrent developments: the proliferation of guided munitions; the wider availability of the components used in command and control, intelligence, surveillance and reconnaissance (C2ISR) equipment needed to acquire and track targets; and the rapid development of platforms such as unmanned aerial vehicles that can be used in a variety of support roles. Precision guided munitions have already begun to proliferate and, in addition to being sold to governments, are being supplied to non-state actors by supporting states. Hezbollah used simple ISR and command and control structures during the 2006 Lebanon War to target the Israeli Defence Force with demonstrable effect.\(^9\) It is therefore conceivable that states and non-state actors may be able to link radars with competent command and control and G-RAMM such that they could impose de facto exclusion zones, at least temporarily, over chokepoints and portions of narrow seas. The outcome could, through the massed application of short range weapons, be to frustrate or impose disproportionate costs on traditional forms of power projection and disrupt maritime trade. Like coastal raiding the surprise might be that these weapons have not been used more widely already.

The precision guided munitions that appear to present the greatest threat are the anti-ship cruise missiles. Their relatively small size permits them to be launched from a variety of land-, sea-, and air-based platforms. Cruise missiles operating from land could be placed in hardened firing locations or mounted on mobile platforms such as trucks. Mobile platforms could allow for ‘shoot and scoot’ tactics in which a mobile launcher moves into position, fires its missile and then moves again, possibly to a hide site to reload for its next attack. Similar tactics have been used by Hamas and Hezbollah in their rocket attacks against Israel. Cruise missiles could be an effective weapon for chokepoint interdiction as well as a close-to-shore ship killer. They could also be mounted on commercial ships, or even smaller vessels such as trawlers or coastal craft that could hide amongst the ubiquity of coastal traffic.
The *Hanit* was almost certainly operating within visual range of the coast, and this is where shipping is likely to be at greatest risk. However, while searching for and tracking targets over the horizon increases the complexity of the problem these are not insuperable. The two most obvious solutions in the near term are to place observers on civilian shipping or use unmanned aerial vehicles. The first option reinforces the utility of maritime militia and serves as a reminder about how successful groups such as Hamas and the Sea Tigers have been in organising fishermen to serve their purposes. The second option has become viable because small unmanned aerial vehicles are relatively hard to detect; they also have relatively low acquisition and operating costs which means that in the near future they may be acquired in significant numbers and expended with equal freedom in pursuit of high-value targets.²⁰

Guided missiles are not the only option. Guided artillery rockets could find a role in the maritime domain. They offer a cheaper alternative to anti-ship cruise missiles and could be modified to hit moving targets operating in high counter-measures environments including, potentially, ships.²¹ Mortars are, for most people, unguided munitions for use only against land targets. Guided versions do, however, exist and although their range remains limited, could be employed against naval vessels using laser targeting or GPS, in addition to infra-red or radio-frequency homing, either from shore or from a small vessel. Anti-tank guided munitions could also present a threat.

Guided weapons are likely to supplement not supersede other weapons. Older weapons such as torpedoes, mines and various types of surface craft are likely to be retained and employed synergistically alongside precision guided munitions to add a new layer of complexity to the maritime battlespace. Torpedoes fired from fast moving coastal craft, disguised and suitably modified merchantmen, and coastal locations will present a substantial and increasing threat. Like mines, older designs such as the Mk-46 torpedo can be up-graded using commercial-off-the-shelf technology to improve the weapons' sensors, homing and guidance. However highly-sophisticated weapons such as the Franco-Italian MU90 lightweight torpedo are likely to be acquired by a number of states as well.

Mines are the quintessential asymmetric weapon. They are easy to manufacture and deploy in large numbers. They are likely to become more accurate, ‘smarter’ (that is, able to discriminate and attack only programmed target types) and stealthier all of which can be achieved largely through the use of extant and relatively cheap technology. Deployment patterns are likely to involve low and high technology mines in combination which would make the mine countermeasures problem that much greater. In addition to moored and bottom mines which can be triggered magnetically, acoustically, by pressure or contact, or by a mix of these methods, greater use is likely to be made of drifting, remotely-controlled, mobile and rising mines in order to increase the sea areas where mines can be used and to delay and complicate clearance operations.

Conclusions: The Future for Maritime Irregular Warfare in Asia

Unfortunately for Asia, many of the factors that are likely to make irregular tactics at sea attractive, effective and, for some actors, necessary are all in place. A geography of narrow seas and straits, fringed in many places by bays, coves, small islands and mangroves - what the 19th century British pirate-hunter Admiral Henry Keppel described as ‘nooks and crannies’ filled with spiders - provides multiple hiding places and launching points for surprise attack. The persistence of piracy over nearly 2000 years from the Bay of Bengal to the East China Sea is no accident. The density of maritime traffic provides plentiful targets for commerce raiding and, at the same time, plentiful opportunities to disguise illegal shipments and movements by sea. Maritime security is poor, or at least no better than it is anywhere else in the world, apart from the obvious high spots such as Singapore where resources exist and can be concentrated in a small area.

The manipulation of all three dimensions of warfare - range, information and firepower - by irregular fighters has been observed on Asia’s seas. The Sea Tigers and Hezbollah nullified their opponents’ firepower advantages by using the presence of innocent (or not so innocent) fishing craft to reduce the range at which engagements took place. Conversely the Sri Lankan navy stripped away the range advantage the LTTE supply ships enjoyed by acquiring the information it needed to bring its superior firepower to bear. Similarly Hezbollah utilised its information advantage (or, perhaps more accurately the Israeli Defence Force/Navy refused to give credence to the reports available to them about Hezbollah’s capabilities) to lull them closer to the coast and therefore within range of their enhanced firepower.

It is, however, the political and strategic context that suggests maritime irregular conflict may not just break-out in Asia but continue. It bears repeating that all the notable irregular campaigns at sea have taken place in Asia. Moreover, many of the so-called conventional conflicts that have taken place around the continent’s maritime fringe over the past century demonstrated a noticeable ‘irregular’ dimension starting at the very least with the Philippine War, continuing throughout the Indo-China and Vietnam wars, and during Confrontation in the 1960s.

Asia is a maritime theatre. It is a region that is experiencing major economic change. It is one that lacks an over-arching security architecture. It contains multiple competing powers, some of which lack the resources to compete directly and must therefore find indirect ways in which to pursue their objectives, an imperative that places a premium on disguise, deception and deniability. It is home to a plethora of non-state actors that both complicate the strategic picture and can also serve as proxies for states, however much experience suggests such relationships are dangerous and generally counter-productive.
These conflicts, if they occur, will play out along diverse lines; sometimes political, sometimes legal, sometimes threatening, sometimes openly violent. The proliferation of technologies such as G-RAMM, unmanned aerial vehicles and smart mines will exacerbate the operational picture whenever fighting occurs but will not alter outcomes fundamentally. Those will be determined by economic growth, equitable distribution of the proceeds of growth, and sound political leadership.

In the same vein, addressing the challenge of maritime irregular warfare in Asia will primarily be about prevention, about using the risk of conflict as the basis for finding common ground between states. Asia is a maritime theatre; water is a common denominator. Literally and figuratively the lowest common denominator but one in which all the states in the region, along with external powers such as the United States and Australia, share an interest in keeping secure and free. Prevention will also extend to limiting the growth of irregular environments, to prevent areas that lack security or good governance from become breeding grounds for disorder. These areas concern navies because many of them have coastlines and once disorder reaches the sea it can be conveyed elsewhere with relative ease. Prevention, capturing good intelligence, exchanging information based on political cooperation, registers and a return to closed registers. This encourages an increase in guerre de course, which might in turn force navies to devote more resources to trade protection.

*Endnotes*

3 It is worth noting that the London police even suggested that they had credible information suggestion that the City, the British capital's financial centre, had become a target for a similar waterborne terrorist raid.
7 This pressure, coupled possibly by resurgence of mercantilism, a form of economic organisation that appears to be favoured by both Japan and China, might ironically lead to a decline in open registers and a return to closed registers. This encourages an increase in guerre de course, which might in turn force navies to devote more resources to trade protection.
9 Murphy, *Small Boats, Weak State, Dirty Money*, pp. 310-313.
10 Murphy, *Small Boats, Weak State, Dirty Money*, pp. 38-41.
PART 4

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Australian Amphibious Concepts
Australia, as a nation, owes much to great seamanship, courage and imagination. Captain James Cook led the European discovery of the east coast of Australia and charted its coastline. The founding of the British settlement of Australia was entrusted to the capable hands of another seaman, Captain Arthur Phillip. Indeed, the importance of civil-military relations for Australia was probably established on the First Fleet’s long voyage to Australia. As we know, most of these passengers were civilians, albeit neither volunteers nor in control of their own destiny, whose travelling companions were military. The first governors in the penal colony of New South Wales - captains Phillip, Hunter, King and Bligh - were all sailors. This proud naval legacy - a civil-military legacy - has been continued by succeeding generations of talented sailors from the RAN, testimony to the significant contribution that the Senior Service continues to make to Australia and to its international reputation.

Since Cook’s time, many things have changed for the better. Keelhauling and flogging are no longer approved forms of discipline in the navy, women not only serve in uniform but also in submarines, and some members of modern navies like the RAN are recruited because they possess specialist skills that have little to do with basic seamanship. What has not changed, however, is Navy’s historical subordination to civilian authority, and reliance upon civilian expertise and civil infrastructure - ports, wharves, cranes etc - and the genius of naval architects, civil engineers and scientists who design and build the smart ships and aircraft that now command the sea-air space.

These platforms and their professional crews provide Australia with great utility and flexibility by enabling the RAN to work with allies and regional neighbours, particularly in the shared littoral and complex operating environment. The Australian government has decided to increase the size and capability of its maritime capability to deliver “a more potent and heavier maritime force in the next decade.” The acquisition of new Hobart class destroyers (DDG) and Canberra class amphibious ships (LHD) in the next few years will undoubtedly enhance the Navy’s maritime capability as well as the nation’s civil-military utility for conflict and disaster management.

The decision to give pre-eminence to naval acquisitions over the next decade reflects the government’s strategic outlook in response to the complexity of contemporary operations and the necessity to adopt a broader, more comprehensive approach to regional and global security. At the strategic level, Defending Australia in the Asia-Pacific Century: Force 2030 acknowledges that, in responding to a crisis overseas,
regardless of whether a particular crisis is classified as conflict or a disaster, the response invariably involves the deployment of military assets. And in most cases, a military response alone is not sufficient in itself.

An enhanced ‘whole-of-government’ or ‘whole-of-nation’ response to conflict, disasters or humanitarian crises overseas has implications for the training, education and preparedness of the ADF. In the near future, joint and combined operations will mean more than combined and joint armed forces as the government intends to deploy contingents comprising civilians, police, and military personnel in response to calls for assistance from host countries. This enhancement of national civil-military capabilities demands new thinking, concepts, practices and organisational change for the Senior Service, while retaining standards and traditions that have stood the test of time.

Change management is both challenging and exciting. In my view, successful change management requires clear vision by leaders rather than managers, adequate resources, and bottom-up support from the rank and file in order to implement. From the outset, the RAN has supported the establishment and ongoing development of the Asia Pacific Civil-Military Centre of Excellence (the Centre) and fostered collaboration between itself and the Centre. However, more Navy support will be required if Australia is to be a leader in helping to promote civil-military engagement throughout the Asia-Pacific region, and globally beyond.

Key Message

With the acquisition of new platforms, the RAN can become a world leader in civil-military operations. The US Naval Postgraduate School has already positioned itself in such a manner, however, the RAN stands to capitalise from actively promoting civil-military engagement in the region, from a joint commitment of resources to this enhanced capability, and from further strengthening collaboration with the Centre.

Scope

This paper ranges across three inter-related themes that bear upon the roles and responsibilities of the RAN, other members of the ADF, and civilians currently being recruited through AusAID who will be deployed on future stability operations in accordance with the government’s vision for an integrated response to conflict and disasters offshore:

- First, what is meant by ‘regional civil-military cooperation’?
- Second, what contribution does the RAN make to regional civil-military cooperation?
- And third, how might the RAN and my Centre collaborate more effectively to promote and enhance regional civil-military cooperation?

It is important to begin by explaining what the Centre has been tasked to do by government in order to deliver an enhanced national civil-military capability, strengthen collaboration between the Navy and the Centre, and maximise opportunities for supporting regional civil-military cooperation through assisting other countries in the region to develop their national civil-military capabilities.

Centre’s Mission, Responsibilities and Achievements

The Centre’s mission is to support the development of national civil-military capabilities to prevent, prepare for, and respond more effectively to conflicts and disasters overseas. Located in Queanbeyan near Canberra, the Centre was opened by Prime Minister Rudd in November 2008. It is a small ‘whole-of-government’ centre with a multi-disciplinary staff comprising 15 civilians and five military personnel, administered by the Vice Chief of Defence Force Group in close liaison with International Policy Division. The staff comprises secondees from Defence, the Department of Foreign Affairs and Trade, the Attorney-General’s Department, AusAID, and the Australian Federal Police. The Deputy Director is appointed by the New Zealand government, and the Centre has a non-governmental organisation (NGO) adviser appointed by the Australian Council for International Development (ACFID). The Executive Director reports directly to the Chief of Defence Force (CDF) and the Secretary of the Department of Defence, and has authority to network with all component Department Heads and the National Security Adviser in the Department of Prime Minister and Cabinet. The Centre works at the strategic level to assist government departments, the United Nations, other countries and relevant external actors to achieve better outcomes through civil-military best practice in conflict and disaster management. On the government side, the Centre is assisting departments to develop a conceptual framework for conflict and disaster management overseas, and this document will soon be considered through the senior committee system. This is ground-breaking work aimed at overcoming agency stovepipes that have impeded whole-of-government outcomes.

The Centre gives priority to civil-military training and education, to commissioning and conducting research, and sharing lessons learned. The Centre’s work currently focuses on developing civil-military best practice in four key areas: conflict prevention; peace and stabilisation operations; disaster management and humanitarian assistance; and governance and the rule of law. These areas are themselves overlapping. An important requirement for the Centre is to contribute positively to Australia’s international engagement objectives, including with the United Nations. On the training front, the Centre conducts two civil-military courses each year - the first was conducted at HMAS Watson in December 2009 - and the Centre is delivering input into the civil-military pilot training program for the Australian Civilian Corps.2
On the education front, in 2009 the Centre conducted a successful pilot course for postgraduate students at the University of Sydney on Civil-Military Relations in Conflicts and Disasters. The course will be repeated in 2010 with the aim of extending it to other universities in 2011. It will also be delivered with relevant components to the new National Security College at The Australian National University and the Australian Defence College, both in Canberra. Commencing in 2010, the Centre will also run two Civil-Military Coordination Courses a year in partnership with the UN Office for the Coordination of Humanitarian Affairs, one in Australia and the other in the Asia-Pacific region.

The Centre’s annual operating budget is currently A$4.6m but additional funds can be leveraged from other sources, in particular Australian government and other state government departments and research organisations. The Centre can also partner with other centres and institutions to undertake projects or convene civil-military conferences, seminars or workshops.

The Prospects for Enhanced Regional Civil-Military Cooperation

When Australians think regionally, they tend to logically focus on the Asia-Pacific region, and closer to home on Southeast Asia and the Southwest Pacific, and the critical maritime area to Australia’s north, variously referred to as our sea-air gap, the arc of instability or the littoral. As noted by Dr Martin Murphy, the sheer scale of the Asian maritime theatre raises questions about how we could secure the region, even with the support of our coalition partners. He argued that the lack of an overarching security structure and under-developed infrastructure in many areas pose some important questions for the Centre to consider including conflict prevention strategies, for example, the promotion of good governance and rule-based behaviour, sharing of intelligence, and maximising opportunities for enhancing regional civil-military and disaster management capabilities.

Strategically, as Defending Australia in the Asia-Pacific Century acknowledges, the Asia-Pacific region is a high priority for Australia. The region comprises 20 countries, 3.5 billion people (half the world’s population), six of the world’s largest economies, eight of the world’s ten largest armies, 40 per cent of global arms deliveries, two of the world’s most urgent cases of nuclear proliferation (North Korea and Pakistan), and the world’s three most populous Muslim states (Indonesia, Pakistan and India). The region is characterised by some persistent tensions, intra-state conflicts, several fragile states, uneven economic development, and ideological and cultural differences. Small wonder that the United States has vowed to strengthen its engagement in the Asia-Pacific, as evidenced by US Secretary of State Hillary Clinton’s pronouncement that ‘the US is back in Asia.’

The Asia-Pacific region is also the most disaster-prone region in the world, prone to earthquakes, floods, fires and tsunamis. The region includes a number of the world’s mega-cities - those with more than eight million people. Such catastrophes are invariably beyond the capabilities and resources of affected states to mitigate.

The Australian government recognises the impact of disasters on development in the region, and has taken steps to enhance the humanitarian response, preparedness and capacity of our own agencies as well as that of partner governments.AusAID is one agency that plans and prepares for natural disaster response. Likewise, the Centre has been tasked to assist our neighbours to develop their civil-military capabilities in the region by providing civil-military training and education opportunities, for example, inviting regional participation at workshops, seminars and conferences. Of course, militaries - with their unique assets - are often tasked to respond to natural disasters, and it is pleasing to note an increasing willingness by many Asian and Southwest Pacific countries to countenance the use of foreign military assets.

Conflict in the region closer to home has required the Australian government to mount substantial operations in Bougainville, East Timor and Solomon Islands, with an expectation from the United States that Australia will do much of the heavy lifting. Ongoing conflict in the southern Philippines, military coups in Fiji, and the fragility of a number of other states remain of particular concern to Australia. Conflicts and disasters produce a stream of displaced persons and asylum seekers, another security challenge, one in which the Australian government and the Navy in particular contend with on a daily basis. These realities, combined with an increase in non-traditional threats and global terrorism, are driving the need for an enhanced whole-of-government civil-military approach, demanding increased synergy between departments and with international actors. Indeed, the creation of the International Deployment Group within the Australian Federal Police, the Australian Civilian Corps, Border Protection Command in cooperation with the Australian Customs Service, and increased diplomatic appointments to the field by the Department of Foreign Affairs and Trade all testify to Australia’s growing civil-military engagement in the Asia-Pacific region.

While the Asia-Pacific region remains a high priority for Australia’s national security, there is much to be learned from operating on a broader canvas. Through Australia’s bilateral and multilateral relationships, Australia is increasingly required to work with the United Kingdom, the European Union and NATO. Moreover, support is being extended to the African Union and country groupings in South Asia and the Middle East. In the wake of the devastating Haiti earthquake tragedy, Australia’s commitments have been extended even further afield.

Australia has a proud history of contributing to international order through the deployment of peacekeepers, both military and civilian police, to UN operations. More than 55,000 Australian peacekeepers have served in 50 UN operations conducted in the last 60 years. There are significant reforms taking place in UN peacekeeping and it is important that Australia remains actively engaged. However, the trend from...
traditional inter-state peacekeeping to complex and multi-dimensional intra-state peacekeeping has stretched the international community's resources. It is important to grasp that public opinion and public support for peace operations can exert considerable influence in shaping foreign policy and commitments to operations.

**Navy's Contribution to Regional Civil-Military Cooperation**

There is debate over whether tasking militaries to respond to humanitarian crises erodes their warfighting capability. There is also the view that participation in bilateral and multilateral exercises, and humanitarian assistance and disaster relief operations, maintains high-end operational capabilities. In addressing regional and international security priorities, Australia must find a balance between the 'hard power' of conventional deterrence and warfighting, and the 'soft power' of preventive diplomacy and peace building. This is what US Secretary of State, Hillary Clinton, has called 'smart power'. Conflicts and disasters are both characterised by chaos. While the requirements for conflict are different to the requirements for disasters and humanitarian assistance, the need for naval and military commanders to deal with the unexpected, and to make decisions that may determine the life or death of countless people, has equal resonance.

Other speakers at this conference have touched upon the importance of civil-military engagement during crises; however, it must be acknowledged that while the military effort is an important element for success in conflict and disaster management, it is not a panacea. There has been a growing acknowledgement of the need for civil-military coordination in response to disasters but it is still not widely acknowledged that there is an urgent need for more effective civil-military coordination in conflict management. The successes of the Marshall Plan in Europe, the US-led restoration of Japan after World War II, and the US-led support to Republic of Korea after the Korean War are examples. The subordination of the military to civilian-led grand strategy was the hallmark of General Templar's success in the Malayan Emergency and of the successful US approach by the Kennedy administration during the Cuban missile crisis. By contrast, the lack of a coherent and long-term civil-military strategy contributed to the allied failure in the Vietnam conflict; and more recently the absence of an agreed civil-military strategy constrained and delayed the achievement of an effective peace dividend in Iraq and Afghanistan. In fact, in persistent conflicts around the globe, the UN - despite its many limitations - has often provided the best or only option - more reason for Australia to continue to assist and promote UN civil-military coordination.

It would be surprising if Australian operational experts including the Navy - having been involved in Australia's response to recent conflicts in Solomon Islands, East Timor and Afghanistan, as well as to natural disasters such as the 2004 Asian tsunami and the 2006 earthquake in Kashmir - did not agree that there has been a lack of coordination or mutual understanding between government agencies and other actors, all supposedly working towards the same goals. Understanding and addressing the civil-military lessons from such operations is important, and we owe no less to all those who may be deployed to such crises. Successful outcomes in the future will depend upon greater integration in planning, preparedness and capabilities, and Australia must be prepared to be proactive to avoid or mitigate the impact of such crises.

According to a number of American studies, complex civil-military operations encompass six broad categories of missions with sixty associated tasks, forty-eight of them said to be best performed by civilians. No doubt this explains why so many countries are giving increased emphasis to civil-military relations and why the establishment of civil-military centres and offices, and the proliferation of international conferences on civil-military affairs, have been an important growth industry in recent years. The literature on complex civil-military operations has grown exponentially in the last decade and a plethora of think tanks and academic units have sprung-up, identifying challenges and gaps that justify an urgent need to rethink the way governments, international organisations and non-government organisations prepare for and respond to conflicts and disasters.

Key issues identified in the literature include:

- the lack of entry strategies (not just exit strategies) for operations
- inadequate integrated interagency training
- inadequate preparation of personnel selected for deployment
- unclear or unresolved civil-military command and control mechanisms
- a 'culture clash' between civilian and military personnel
- lack of shared understanding of mission objectives
- lack of agencies understanding one another's agendas
- inappropriate funding mechanisms
- failure to give 'ownership' to the host country
- lack of accountability frameworks
- inadequate cultural awareness of the local population and of the historical circumstances of the crisis
- lack of coordination and integration across sectors and programs
- lack of civil-military guidelines to enhance the protection of civilians in crises.

In the light of preceding discussion, Navy's contribution to regional civil-military cooperation might be classified under at least six broad categories: diplomacy and conflict prevention, maritime security, disaster management, border security, conflict management, and economic and social wellbeing. Each of these categories (and possibly others) demands more research to determine Navy's civil-military priorities. Consider how Navy might make a greater contribution to the national civil-military capability in these categories.
Diplomacy and conflict prevention. Through its port visits, exercises and exchanges the Navy makes a significant contribution to regional cooperation. Navy-to-navy collaboration plays an important role in building regional trust and cooperation. But more can be done to enhance civil-military engagement in Navy’s contribution to diplomacy and conflict prevention. These relationships have proved invaluable in promoting mutual understanding despite language barriers.

Maritime Security. Effective maritime security requires cooperation and information exchange between a range of civil-military actors, both domestic and international. Beyond the need to maintain safe shipping routes for seaborne trade, the more recent issues of sea robbery/piracy, pollution, illegal trafficking, and resource extraction in continental and international waters are of increasing security concern. There are significant civil-military issues to be considered and Navy might well consider a more active role beyond its current involvement in policing maritime trade routes.

Disaster Management. The Navy’s role in disaster response and humanitarian assistance is critical, as evidenced by its involvement in mega disasters, events likely to become more frequent as a consequence of global warming and climate change. More work is required in this area. Australian taxpayers will expect the Navy to assist in such emergencies. Disaster management also includes disaster risk reduction, but militaries around the world have done little work to confirm their contribution in this space. Clearly, preventing or reducing the risk from natural disasters is better than having to respond after the event.

Border Security. The Navy makes an important contribution to border security and does so as part of a coordinated civil-military effort. What lessons can be learned from this experience and can this expertise be used to strengthen civil-military relations with countries throughout the region? The Centre is keen to work with Navy to capture ‘lessons learned’, to conduct analysis, and disseminate this knowledge.

Conflict Management. Navy makes a significant contribution across the conflict spectrum, from benign peacekeeping to high-end warfighting. It can be tasked to sustain operations from the sea, to conduct coalition operations, to prosecute covert operations, to maintain exclusion zones, to train and equip the navies of other nations, and more. What are the civil-military interface requirements for each of these tasks?

Economic and Social Wellbeing. In recent years the RAN has partnered with the US Navy to conduct humanitarian civic assistance missions in the Pacific Ocean. Working with government aid agencies and non-governmental organisations, PACIFIC PARTNERSHIP missions have brought humanitarian relief and contributed to the economic and social wellbeing of those in need. Beyond the obvious diplomatic benefits from such missions, there are significant issues concerning the legitimacy of military forces conducting humanitarian activities. There is considerable scope in missions of this nature to include training and education in civil-military cooperation in an operational context.

RAN Collaboration with the Centre

How might the Navy and the Centre collaborate more effectively to promote regional civil-military cooperation? At present, collaboration has been limited to posting a few Naval Reserve officers to the Centre, permitting the Centre to use naval establishments to conduct civil-military courses, and the participation of Navy personnel on these courses. This is a good start for the first year of the Centre’s existence but below are four preliminary ideas aimed at strengthening future collaboration.

First, the Centre exists to support its stakeholders, of which Navy is a primary stakeholder. A good starting point might be for the Centre and Navy to conduct some focused workshops to confirm Navy’s priorities in the civil-military space, perhaps using the categories suggested above. The outcome of such an exercise, however, will depend on how serious Navy is, or wants to be, in developing a culture of civil-military engagement. Just as the single Services have, over time, developed a culture of joint planning and a common lexicon, so must they now embrace a broader civil-military focus.

This means understanding the civil actors involved in conflict and disaster management - government and non-government - and being prepared to share and learn.

In some situations the military may lead, but in most situations they will be required to support. And even when the military does lead, it will need to transition responsibility to civil actors as soon as practicable. Understanding the different civilian cultures and organisational responsibilities requires time and effort, and this effort may not always be reciprocated. For Navy, the key question remains: to what extent does it want to advance its civil-military engagement?

Second, in prioritising its force development and acquisition programs the Navy could deliberately assess the utility of its platforms and systems for civil-military effectiveness. Capabilities will be required for high-end warfighting, but Australian taxpayers also expect their naval resources to be used effectively to meet the requirements of non-traditional threats and to assist in disaster relief. At the same time, the mix between uniform and non-uniform personnel will need to be constantly reviewed, and additional training may be required. While the relevance of amphibious ships and utility helicopters to civil-military disaster relief operations seems obvious, the importance of such civil-military considerations in platform acquisition may be less transparent. As well, the civil-military considerations of our submarine expansion (other than the civil economic benefits of local procurement) do not seem to have been explained. This omission leads to public criticisms - warranted or not - of force projection, offensive strike and promoting an arms race in the region.
Third, the Navy might consider reviewing its once famous coastwatch system, particularly throughout the Southwest Pacific and our northern archipelagic waters. Detailed knowledge of tidal and port conditions, and support of governments and local communities is now more essential than ever, particularly given the increasing incidence of natural disasters and the increasing threats of piracy, criminal activity, pandemics, and cross-border activity. A transparent ‘coastwatch’ concept might be reconsidered as part of our civil-military regional engagement strategy.

Fourth, the Navy might consider giving increased attention to promoting UN peacekeeping and to ensuring that naval personnel returning from UN service are not disadvantaged in career progression. The RAN has provided some excellent personnel to the UN but sadly their experience has not always been valued or used. This comment applies equally to the three Services, perhaps reflecting a lack of understanding of the UN by senior commanders.

Conclusion

The RAN has a long tradition in civil-military relations. Contrary to the belief of some military personnel who think of civil-military cooperation primarily as the domain of the Army, there are many relevant issues on which Navy can take a lead. Not least is the fundamental underpinning of Australia’s maritime strategy, as well as issues of national priority such as border protection, protecting seaborne trade, and the management of maritime resources. These issues require the highest levels of regional civil-military cooperation. The necessity of having capable naval assets to enable the conduct of peace operations, disaster relief and humanitarian assistance from the sea has been undersold.

Australia must find the balance between applying the hard power of warfighting and the soft power of diplomacy. It is true that preventing wars is as important as winning them, and that our capacity to respond appropriately to crises is a by-product of training for warfighting, however, smart power is the enhanced capability to deploy the right combination of civil-military skills in operations offshore. Working collaboratively, the Centre and the Navy might be able to address Australia’s present civil-military shortcomings, leveraging civil institutions such as the Australian National Centre for Ocean Resources and Security at the University of Wollongong and proactively engaging other engaging other countries on joint civil-military maritime projects. The Centre would be particularly interested in forging a close relationship with the US Naval Postgraduate School which has a world leading program on civil-military relations, and with countries in the region.

The arrival of the RAN’s new platforms will greatly enhance Australia’s civil-military capability at home and abroad. Nevertheless, there is much work to be done in training and education if Australia is to play a leading role in promoting and enhancing civil-military capabilities in the region.

Endnotes

2 The Australian Civilian Corps will be managed by AusAID, which is in the process of building an initial register of 500 civilian specialists who will deploy alongside military and police contingents in future stabilisation operations. The government has announced that the first contingent of ACC specialists will deploy to Afghanistan.
6 There is a direct link between capability constraints and a lack of public support for some operations, in particular civil warfare, ethnic cleansing and political violence. See Alyyna I Lyon and Mary Fran T Malone, ‘Where are the Good Samaritans?: Assessing Cross-National Support for Peacekeeping Operations’, Journal of International Peacekeeping, Vol 13, Nos 3-4, 2009, pp. 239-266.
7 See Till ‘Future Navy: Competing Trends in Development’, p. 48. An analysis of 376 RAN operations conducted between 1990 and 2005 categorised approximately 60 per cent as ‘constabulary’ and 40 per cent as ‘diplomatic’. The RAN lists operations under three main categories - military (combat), constabulary (International/multilateral including UN missions, humanitarian assistance, such as Rwanda) and diplomatic (in the national interest, such as RAMSI, Solomon Islands). These categories define relationships rather than roles or tasks. Nevertheless, most, if not all, incorporate civil-military components. See Vanessa Bendle (et al), Database of RAN Operations 1990-2005, Working Paper No 18, Sea Power Centre - Australia, Canberra, 2005.
11 A recent RAND Review described this dilemma as the contrast between how a police force and a fire brigade operate: ‘Civilian agencies operate on the police department model of continuous full employment and have little slack in the system whereas the military operates more on the fire department model of preparing for and responding to emergencies.’ See ‘Shifting Terrain: Stabilisation Operations Require a Better Balance between Civilian and Military Efforts’, RAND Review, Winter 2009, www.rand.org/publications/randreview/issues/winter2009/terrain1.html.
This paper is divided into two parts: first it outlines endorsed aspirational amphibious concepts and approved or intended capabilities that relate to them; and second, my personal opinions where some focal areas for further examination by the ADF are proposed. This paper will necessarily address many of the issues raised by earlier speakers albeit with an Australian perspective.

In early 2014, the ADF will commence operational testing of the first Canberra class amphibious ship (LHD). One ship will exceed the entire current amphibious capability of the RAN. By 2016 there will be two LHD and Defence will be working towards the final phases of Joint Project 2048 to complete a transformation in the ability of the ADF to respond rapidly and effectively to a broad range of contingencies with a robust expeditionary maritime capability.

The initial purpose of this paper is to discuss how this capability forms a crucial part of an ADF directive to have an expeditionary capacity.

**Joint Project 2048**

Joint Project 2048 is a multi-phased project aimed at delivering a number of different platforms that will operate as a ‘system’ to significantly improve the ability of the ADF to project maritime combat power.

Under Phase 3, 10-12 LCM-1E landing craft will be procured to provide an improved surface assault capability that is organic to the LHD. Eight LCM-1E along with the embarked aviation group will rapidly project the assault echelon of the amphibious battle group ashore then provide flank manoeuvre, tactical mobility and sustainment.

Phase 4A/B will see two LHD built and delivered. They will be physically imposing, and the largest vessels the RAN has ever possessed, and will present a range of challenges already highlighted at this conference. Their capabilities take Australia, in scale and functions, to the forefront of amphibious power projection and equate to US and UK platform capabilities. The LHD design represents a compromise between vehicle and aviation projection capabilities and also incorporates dedicated amphibious command and control as well as high-level surgical capability. While each capacity might be limited by the need to incorporate the others, their sum leads to a very versatile ship.
Under Phase 4C, a ‘strategic sea-lift’ ship capable of discharge over a beach in the same conditions as the LHD is being considered. It will be a simpler design optimised for cargo, and it may contribute to the initial amphibious operation and then become central to follow-on force insertion and wider sea-lift tasks. It also allows a third hull to fill gaps in LHD availability for short notice contingencies. This platform is tasked to support, as Chief of Army put it, ‘the rest of the Army’.

Phase 5 replaces the current Balikpapan class heavy landing craft with around six vessels with improved speed and ocean-going characteristics to support LHD operations, concurrent operations in other theatres, conduct limited tactical manoeuvre and contribute to sea-lift.

The wide utility of amphibious capability is well known, as is its complexity, and it becomes a key element of a maritime expeditionary capability. As *Defending Australia in the Asia Pacific Century: Force 2030* makes clear, the direction is to embrace both amphibious warfare and expeditionary capability.

Our expansive strategic geography requires an expeditionary orientation..., underpinned by requisite force projection capabilities. Amphibious and sea-lift ships... and other capabilities are required for strategic mobility for our forces and to provide us with the ability to project military power throughout our primary operational environment and, on occasions, beyond.

Australia’s operational environment encompasses archipelagos, dense littoral zones and vast tracts of open-ocean; and critically the majority of our seaborne trade transits these waters. These distances are significant, and oft forgotten is that Australian coastal distances are similarly large. Hence an ability to be ‘expeditionary’, that is, to operate effectively far from home support, is crucial no matter what the contingency or operation.

The Asia-Pacific littoral is very challenging as it includes extensive navigable waterways and many states comprise hundreds if not thousands of islands. This means we must see the littoral as a single, seamless environment, not as an interface to get ashore. Importantly we also cannot separate the riverine and coastal zone from amphibious warfare as is currently the case in allied doctrine.

The *Australian Amphibious Concept* addresses the ability to deploy a tailored joint force from the sea throughout our primary operational environment and, if required, beyond it by describing three core missions of: amphibious operations, military support operations, and sea-lift.

In the initial stages of amphibious or military support operations, when timeliness is essential, host nation capacity is low, and security environment is hostile or uncertain, an amphibious capability is the force of choice as it is inherently self-sufficient, agile and flexible across a range of possible missions. Doctrinally there is a distinction between combat operations and operations other than war, but the use of amphibious forces for humanitarian assistance and disaster relief operations increasingly blurs this distinction. For sea-lift, the administrative non-tactical movement of heavier force elements across austere beaches remains critical to reinforcing initial amphibious actions and to the build up of forces ashore. The ADF relies primarily on commercial shipping, with all the inherent risks this implies to cost, speed of response and ship types and their ability to embark heavy military loads and discharge in often poor or non-existent port infrastructure.

The future amphibious capability is also scalable. Its primary mission is built as a robust capability for warfighting as a joint amphibious ready group, based around an amphibious battle group with associated helicopter group, amphibious task force and landing force headquarters and other enablers embarked in two LHD and the sea-lift ship. A robust short-notice capacity is addressed by a high-readiness amphibious ready element centred on a single ship and a combat team.

At the heart of the amphibious concept is the overarching philosophy of littoral manoeuvre, defined as the exploitation of the sea as an operational manoeuvre space by which a sea-based or amphibious force can influence situations, decisions and events in the littoral regions of the world.

As both the chiefs of Navy and Army have highlighted, we must break the nexus between traditional maritime and continental strategies. If we see the littoral as only a place to land a force for conventional land manoeuvre we miss a strategic opportunity to control and exploit a wider area and expose ourselves to risk of dislocation. Our ability to adequately plan and execute a joint and integrated mission in the archipelagic environment is something that needs to be considered in much greater depth.

To meet the requirement of timely and agile maritime power projection, regardless of the mission undertaken, the ability to proceed directly and quickly to the objective becomes paramount. This is achieved by adopting the ship to objective manoeuvre philosophy; where avoiding or at least minimising the operational pause on a beachhead is both desirable and possible with our future capability. Sea-basing is also critical but is often misunderstood as a logistic effort or a hardware question. The key point is that it is not a naval operation, rather that land and air forces are intended to operate from and through a sea base in a joint and combined sense. Importantlly, sea-basing might be the ultimate expression of joint and combined operations from the sea.

What are the consequences of building this transformational capability in terms of new challenges, beyond the amphibious domain itself? There are four core challenges to the expeditionary approach and these are all apparent in amphibious warfare.
The first is the criticality of knowledge in the littoral. The ability to quickly gather intelligence and to set pre-conditions to an entry operation is critical whether it be for warfighting or for humanitarian assistance and disaster relief or warfighting.

Second, it is doctrinal dogma that we must ‘establish sea and air control as a prerequisite to an amphibious operation’, but what does this mean? This will challenge the reach and endurance of land-based aviation, particularly if it must operate from rudimentary expeditionary airfields outside Australia. What is required is a networked joint air defence capability; a missile targeted at the ships offshore and detected by a ground based air defence unit should not come as a complete surprise to a destroyer offshore, but are they linked?

We also tend to focus on control of the sea lines of communication, but those that lie within archipelagos and terminate in the complex littoral, riverine and inshore areas present a new zone that must be addressed. Hence we need to consider riverine and coastal warfare which has two perspectives. First, the ADF needs the ability to exploit the sea and riverine as manoeuvre space at small scales or low signatures, but second, it must also be able to dominate the littoral in a protective sense.

Third, whether it is from a sea base where ‘joint fires’ effects are held afloat and provided when required, or shore based assets which are mainly commanded and sustained from afloat, a joint tactical ‘common operating picture’ is essential, as are personnel trained in joint tactical level standard operating procedures.

Fourth concerns sea-lift and expeditionary logistics. The Gallipoli campaign in 1915, disastrous as it was, was supported almost entirely by sea-lift from Alexandria and a forward operating base in Mudros. Nonetheless it was highly inefficient because of vessels unsuited to the task and poor coordination and agreed procedures. Our logistic capability needs to be able to support a wide range of needs including those never originally designed to go on ships, into small craft or over a beach. This is needed regardless of whether or not there is a sea base. How will the ADF support the bulk fuel needs of the RAAF? Sea-lift remains the only way to move large quantities over large distances quickly.

Sufficient sea-lift, ship-shore distribution and logistics over the shore assets are therefore essential to expeditionary operations. Bridging the gap to shore is the final span of the expeditionary bridge and an area in which we have either limited or no capacity and looming obsolescence. Civilian capacity is limited, often unsuited to the environment, and is not timely. Sea-basing as undertaken by the United States seeks to solve a myriad of technical issues with at sea cargo transfer via stabilised cranes, mobile landing platforms and other technologies. Central to these are the theme of interoperability between Services, nations and civilian agencies and assets. How the ADF integrates remains a key interoperability question because this will not challenge the amphibious force but the remainder of the ADF is not yet prepared for this paradigm change.

How does this all sit with our conference theme?

If thinking of joint operations from the sea, then the level of joint integration required challenges existing models for force generation and certification.

If thinking of combined operations from the sea, then our ability to rapidly and effectively integrate with other amphibious forces is well served by our extant and developing amphibious doctrine, but as a defence force we must address sea-basing, if we are to maintain interoperability with major coalition partners. Our own capability to deploy will be significant but our ability to then sustain will stress our national sealift resources and logistic capacity.

And finally, at the heart of this are the people of the ADF who are able to develop and exploit an expeditionary maritime capability.
In 2005 the Chief of Navy, as the ADF amphibious ‘lead capability manager’, stated in his *Amphibious Capability Strategic Plan* that ‘by 2016 we will have a standing joint amphibious task force capable of contributing significantly to a wide range of military strategic objectives set by the Australian government’. His vision was underpinned by the pending introduction into service of an Amphibious Deployment and Sustainment (ADAS) system designed to replace and enhance the capability inherent in the current amphibious force ships, landing craft, aircraft and supporting assets.

For many observers, this vision could easily be accepted as a routine capability milestone, but in truth, it was enormously ambitious. Realisation of a fully integrated, networked and sustainable ADAS system is presenting unique new challenges to the Defence Materiel Organisation (DMO) and the three Services as they move to deliver and embed single-Service systems and platforms within a joint capability, all while concurrently implementing government reforms. What is more, the task is greater than Defence alone can manage. New and innovative solutions will be required to harness the full potential of Defence and industry in order to realise the full capability of a potentially world class amphibious system.

This paper briefly reviews the amphibious environment and threats to this ambitious vision, before analysing the potential for, and conditions under which, Australian defence industry may seek to assume a more expanded role in the development, delivery and sustainment of the ADAS capability. The analysis will consider opportunities for Australian defence industry to deliver platforms, systems and services that will either support the ADAS system or relieve the ADF of some burdens, risks and challenges associated with establishing and maintaining an expeditionary capability.

**The Littoral Environment**

Amphibious operations are inherently challenging as the littoral environment within which these operations are executed encompasses the confluence of water, land and air. The littoral is composed of two segments. The seaward portion is that area from the open ocean to the shore that must be controlled to support operations ashore. The landward portion is the area inland from the shore that can be supported and defended directly from the sea. This confluence is infinite in its variations.
The ADAS system is required to bridge these boundaries of water, land and air, or more specifically bridge the environmental domains that have long defined and separated Navy, Army and Air Force. It is true that the Australian amphibious capability in 1945 was world class, but in the intervening years the few amphibious assets were largely employed in sea transport and sea-lift roles, or in other non-amphibious navy functions. A few exceptions exist in the last 65 years, more specifically since the advent of Commander Australian Amphibious Task Group (COMAUSATG) in 2001, but mostly the forces committed to ADF amphibious adventures were adaptively created for the tasks. As a consequence there is no widespread level of ADF expertise in amphibious operations, and therefore a wide range of opinions exist about the form and function of the ADAS system.

The challenge of comfortably embedding the ADAS system within the ADF psyche is even more apparent when it is recognised that amphibious operations are far more than Army ‘entry operations’ from the sea. In fact, amphibious forces must be capable of continuously manoeuvring between and among locations afloat and ashore. In this context, the littoral must be viewed as a single domain best exploited and supported by forces and agencies intimately familiar with its unique challenges. Unfortunately none of the Services are adept or proficient at exploiting the sea as a manoeuvre space for persistent littoral operations.

Australian defence industry is also challenged in its efforts to assist Defence to realise its ADAS ambitions. Within the current industry engagement construct for ADAS projects, only a couple of companies have seen sufficient incentive to invest in amphibious expertise. These companies recognise the need for cooperation and mutually supporting roles to most effectively deliver fully integrated outcomes to Defence, but such measures are not normally encouraged by Defence. Therefore unless there is a significant shift by Defence in its engagement of industry in ADAS system definition, delivery and sustainment, then the full potential of Australian defence industry is unlikely to be realised.

The ADAS System

The purpose of the ADAS system is to deploy, manoeuvre, sustain and project forces ashore tactically from the sea into an environment ranging from permissive to hostile in order to accomplish the assigned mission. New elements of the ADAS system are planned to replace existing elements until the complete system is fully operational. During this transition period, which may last up to seven years, the hybrid ADAS system ‘should continue to provide an increasing interim capability for amphibious operations until the new system is fully fielded.’

The ADAS system activity breakdown structure includes:

- amphibious operations
- tactical logistic support (force sustainment)

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- military support operations
- command and control
- sea-lift
- long term sustainment.

The ADAS system boundary encompasses all elements that are primarily associated with provision of the ADAS capability. These include ships, landing craft, helicopters, people, data, policy, procedures and support infrastructure.

Joint Project 2048 is, in effect, the core component program of the ADAS system. It involves the acquisition of maritime platforms to replace current amphibious ships and craft as they are withdrawn from service. All other elements of the ADAS system are dependant upon and support the JP2048 platforms which are outlined in Table 1.

<table>
<thead>
<tr>
<th>JP2048</th>
<th>Platform</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phases 4A &amp; B</td>
<td>Amphibious Ships (LHD)</td>
<td>2</td>
</tr>
<tr>
<td>Phase 3</td>
<td>LHD Landing Craft (LCM-1E)</td>
<td>10-12</td>
</tr>
<tr>
<td>Phase 4C</td>
<td>Strategic Sea-lift Ship</td>
<td>1</td>
</tr>
<tr>
<td>Phase 5</td>
<td>Heavy Landing Craft Replacement</td>
<td>6</td>
</tr>
<tr>
<td>Phase 6</td>
<td>Army Independent Watercraft</td>
<td></td>
</tr>
</tbody>
</table>

Table 1: Joint Project 2048

Primary responsibilities for ADAS capability development, acquisition and sustainment are entrusted to Capability Development Group, DMO and Navy, the latter directs the Joint Amphibious Capability Implementation Team (JACIT) and Training Authority - Maritime Warfare (TA-MW). Table 2 details the contracts awarded as of January 2010.

<table>
<thead>
<tr>
<th>Sponsor</th>
<th>Contract</th>
<th>Prime</th>
<th>Sub-Contractors</th>
<th>Delivery</th>
</tr>
</thead>
<tbody>
<tr>
<td>DMO</td>
<td>deliver two LHD</td>
<td>RAE Systems Australia</td>
<td>Navantia, L3 Comms, Saab</td>
<td>2013/2015</td>
</tr>
<tr>
<td></td>
<td>LHD crew training needs analysis</td>
<td></td>
<td>Catalyst Interactive</td>
<td>n/a</td>
</tr>
<tr>
<td>TA-MW</td>
<td>LCM-1E crew training needs analysis</td>
<td></td>
<td>SMA</td>
<td>2009</td>
</tr>
<tr>
<td></td>
<td>amphibious warfare training needs analysis</td>
<td></td>
<td>Aurecon, MMC</td>
<td>2010</td>
</tr>
</tbody>
</table>

Table 2: ADAS Contracts
Capture of all future ADAS contracts is a more problematic task due to government policy and evolving consideration of amphibious requirements within Defence. A case in point is the TA-MW Amphibious Warfare Competencies Project (AWCP). Outcomes and experiences gained from the ‘amphibious warfare training needs analyses and Defence postings with the United States Marine Corps and the British Royal Marines are feeding reviews of amphibious requirements. Table 3 lists the primary projected ADAS contracts for the next decade. It should be noted that with the exception of the AWCP contracts, all projects are listed in the 2009 Defence Capability Plan, although in the current Strategic Reform Program environment no project due to be delivered after 2013 is guaranteed to remain on schedule.

<table>
<thead>
<tr>
<th>Sponsor</th>
<th>Projected Amphibious Contracts</th>
<th>Contract</th>
<th>Delivery</th>
</tr>
</thead>
<tbody>
<tr>
<td>TA-MW</td>
<td>AWCP: amphibious projects</td>
<td>2010+</td>
<td>2010+</td>
</tr>
<tr>
<td></td>
<td>Design &amp; deliver LHD crew training (2-3 crews)</td>
<td>2010</td>
<td>2013-15</td>
</tr>
<tr>
<td>DMO</td>
<td>Deliver 10-12 LCM-1E landing craft</td>
<td>2011</td>
<td></td>
</tr>
<tr>
<td></td>
<td>LHD through life support</td>
<td>2013</td>
<td>2013+</td>
</tr>
<tr>
<td>Industry</td>
<td>Aviation training vessel</td>
<td>2014-16</td>
<td></td>
</tr>
<tr>
<td>DMO</td>
<td>Deliver strategic sea-lift ship</td>
<td>TBD</td>
<td>NET 2019</td>
</tr>
<tr>
<td></td>
<td>Strategic sea-lift ship through life support</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Deliver six LCH replacement craft</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>LCH replacement through life support</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 3: Projected ADAS Contracts

Tables 2 and 3 serve to identify the magnitude of new platform challenges involved in introducing and integrating the full suite of ADAS system components to Navy, Army and Air Force. To a Defence organisation that does not possess standing amphibious forces like marines, nor an amphibious culture, needs to be added the enhanced ADAS system components of helicopters, vehicles, people, data, policy, procedures and support infrastructure. Upgrading all of these component elements over the next 10 years to safely and effectively employ the ADAS system to its full capability will be an enormous demand.

Specifically, the challenges to DMO and the Services include developing, building, integrating, introducing and sustaining:
- multiple new ADAS platforms and systems
- multiple new technologies in one platform like the LHD - twin 11MW drive pods, six aircraft spot flight decks, a four boat well dock and a high power electrical system capable of delivering 35.4MW
- a growing inventory of amphibious vehicles
- a new and rigorous amphibious training regime
- a robust library of Defence policy, concepts, doctrine and orders.

Developing Amphibious Capability: The Need for Greater Industry Engagement

Threats and risks specific to ADAS, which are difficult to mitigate in the short term, include:
- the lack of amphibious corporate knowledge within the DMO and ADF for what is a uniquely specialised capability
- the high number of unknowns resident in current and future program deliverables because of the limited understanding and effort that could be applied at the program front end
- Navy’s limited ability to avoid a significant, if not unacceptable, major fleet unit transition capability gap between 2013 and 2016
- underdeveloped amphibious skill sets, doctrine, tactics, techniques and procedures
- shortage of professional, technical and trade skills in requisite areas
- inadequate infrastructure to train, operate and maintain current and planned capabilities
- loss of the heavy landing craft capability for up to 10 years
- emerging requirements for government and non-government agencies to deploy on future military support and amphibious operations
- limited ability to seek Allied military assistance due to uncomfortably low knowledge and skill sets among Allied amphibious forces after eight years of operational deployments to Afghanistan and Iraq.

A dearth of amphibious expertise within the complete program is perhaps the single greatest limitation to developing a fully integrated, networked and sustainable ADAS system capable of reaching full potential in persistent littoral operations. This limitation, and Strategic Reform Program pressures, limits Defence flexibility to mitigate the risks inherent in the amphibious transition. Indeed, system efficiencies and effectiveness expected under the Strategic Reform Program will be difficult to realise as:
- the major fleet unit transition capability gap has the potential to impact on subsequent ADAS components
- there will be a significant number of retro-active fits and measures that will need to be applied to ADAS components post their introduction into service.

Finally, the ADAS system should not be underestimated as a succession of individual projects for which DMO and Navy are eminently qualified to deliver. Rather, both organisations may care to view the multiple new systems and technologies resident in ADAS as new project types, where many of the delivery requirements are as yet unknown. Reducing the many risks to the ADAS program is no doubt a high priority for Defence; the challenges are numerous and the short term solutions are few. But perhaps there are few examples that better illustrate the requirement for a comprehensive engagement of Australian defence industry.
Additional Australian Defence Industry Capacity

Within the limitations of potential changes to the 2009 Defence Capability Plan budgets and deliverables, Defence already plans to have industry deliver ADAS platforms and ships, as well as their integrated combat and command support systems. Already these specialised functions are the domains of industry where few opportunities exist for expansion. In this sense, industry engagement in these two fields is already at near saturation.

Earlier it was stated that Defence will be seriously challenged to generate its own mass and expertise required to mobilise and sustain the ADAS system through to its full potential. Therefore, in the short term at least, Defence may seek to relieve its uniformed personnel of non-core business demands and mobilise industry capacity and capability in these ADAS areas. This approach is already in place via AWCP contracts and may be envisaged in the future sustainment of the LHD. AWCP is particularly apt as it seeks to exploit ex-Defence amphibious expertise resident in industry. However significant additional opportunities exist for Defence to expand the role of the Australian defence industry within the ADAS domains of:

- materiel and logistic support, including training components
- program and project management.

Defence forces worldwide were downsized significantly after the 1989 collapse of the Soviet Union. Largely this was driven by governments seeking to achieve more outcomes with fewer resources. The direction and progress of this military transformation evolved with the support of rapidly emerging commercial technologies and global business practices. Together these forces drove a revolution in military affairs that continues to evolve and provide opportunities to worldwide defence industries to this day.

Aside from the contracts identified in Tables 2 and 3, capacity exists for industry transformation into those ADAS services detailed in Table 4. Together this list of deliverables is underpinned by the dearth of amphibious expertise within the ADF and the challenges of Navy personnel retention and recruiting. Consequently amphibious affairs is an environment where only an intellectual renaissance in Defence and industry thinking will realise the full ADAS potential envisaged within Defending Australia in the Asia Pacific Century: Force 2030.

<table>
<thead>
<tr>
<th>Potential Deliverables</th>
<th>Customers/Stakeholders</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amphibious education and training</td>
<td>Defence personnel</td>
</tr>
<tr>
<td></td>
<td>Government personnel</td>
</tr>
<tr>
<td></td>
<td>Non-government personnel</td>
</tr>
<tr>
<td>Amphibious facilities &amp; services</td>
<td>ADF</td>
</tr>
<tr>
<td>Crew training</td>
<td>LHD personnel</td>
</tr>
<tr>
<td></td>
<td>Navy and Army landing craft personnel</td>
</tr>
<tr>
<td>Crew for strategic sea lift ship</td>
<td>Navy and Army</td>
</tr>
<tr>
<td>Aviation training vessel services</td>
<td>Navy and Army pilot training &amp; deck landing qualifications</td>
</tr>
<tr>
<td></td>
<td>Other ADF tasking</td>
</tr>
<tr>
<td>Major fleet unit transition capability</td>
<td>Navy and Army</td>
</tr>
<tr>
<td>gap solutions</td>
<td></td>
</tr>
<tr>
<td>Pre-deployment service support</td>
<td>Defence personnel</td>
</tr>
<tr>
<td></td>
<td>Government personnel</td>
</tr>
<tr>
<td></td>
<td>Non-government personnel</td>
</tr>
<tr>
<td>Land-based LHD command centre</td>
<td>ADF, government &amp; non-government</td>
</tr>
<tr>
<td>Amphibious doctrine</td>
<td>ADF</td>
</tr>
<tr>
<td>Amphibious concept development</td>
<td>Government &amp; non-government</td>
</tr>
<tr>
<td>Amphibious consultative services</td>
<td>ADF</td>
</tr>
<tr>
<td></td>
<td>Government &amp; non-government</td>
</tr>
<tr>
<td>Program and project management</td>
<td>DMO and ADF</td>
</tr>
</tbody>
</table>

Table 4: Potential ADAS Deliverables

Amphibious education and training

Formal amphibious education and training is currently limited to the single amphibious operations planning course, which is little more than an introduction to amphibious operations. Less formal education and training comprises ‘on the job training’ and a limited amphibious exercise regime. Real capacity exists for a significant upgrade to the formal component of this education and training and a more regimented and formal approach to unit level amphibious training, exercises and readiness assessment.

Significant ADF effort is currently being applied to determine competencies applicable to the enhanced amphibious capability. In Army for example, any single year after 2014 could see at least three company groups or combat teams being trained for LHD deployments of approximately three to four months duration. As all regular brigades will need to be trained in amphibious tactics, techniques and procedures the scope of amphibious education and training will spread beyond the Townsville-based battalions and into other Army units and training institutions.
Smaller but similar demands will fall upon Navy and Air Force units contributing to the amphibious capability. As a result it may be conservatively calculated that 2-3000 ADF personnel will require some level of formal amphibious education and training annually.

Should any doubt exist about the growing role of government and non-governmental organisations in the enhanced amphibious capability, Defence Minister Fitzgibbon’s address to the Shangri-La Dialogue in Singapore on 31 May 2008 told a ‘Making Defence Policy in Uncertain Times’ plenary session that:

the role of military forces is changing - today, defence forces find themselves participating in a wide range of non-traditional operations, such as disaster relief and stabilisation and reconstruction ... increasingly our partners in disaster relief and humanitarian assistance operations are not government agencies at all, but non-government aid organisations.

A new range of government and non-government customers are now emerging as users of amphibious capability, and the impost imposed on Defence and these organisations by their duty of care training requirements should not be dismissed or underestimated.

In all likelihood the ADF, government and non-government gross training requirement will evolve to be in the order of 3000 personnel each year. Students will be spread throughout Australia. All of these personnel should be equipped and schooled in the theory and practical requirements of life and drills aboard amphibious platforms before they deploy. What ADF experts will develop courses and train the many Navy, Army and Air Force personnel required to undertake amphibious career courses or modules? What competent personnel will lead unit amphibious training? Who will train and prepare the government and non-government men and women required to deploy on amphibious exercises, defence emergencies, natural disasters and humanitarian operations? These are enormous demands of an ADF challenged to meet its own requirements let alone satisfy other amphibious training demands in the foreseeable future.

Amphibious facilities and services

Neither Navy nor Army possess facilities and services capable of being efficiently adapted for the ADAS system. The locations of HMAS Watson on Sydney’s South Head and Ross Island off Townsville are too small for expansion, or incapable of meeting the scope of amphibious needs. The Army watercraft facilities in Sydney’s Chowder Bay facility have been surrendered. Garden Island will be sorely tested to accommodate the ADAS platforms, particularly the two LHD at a time when the cruise liner industry is likely to be demanding wharf space from Navy for large cruise ship berths. HMAS Penguin also has capacity limitations. Randwick Army Barracks offers some instructional space opportunities. With the extant components stretched between Sydney and North Queensland the options for a ‘Centre of Amphibious Capability’ in either location are few, and any option for a collocated amphibious force would demand a significant ADF paradigm shift in the first instance. Few observers will see a need for an Amphibious Centre at this point in time, and fewer still would see opportunities or requirements for collocation. Rather these outcomes can only emerge from evolutionary decisions arising from future amphibious lessons and accidents.

With LHD and LCM-1E deliveries expected within the next four years and no ADAS facilities master plan on the table, Defence informal enquiries appear to indicate that industry may be expected to propose facility solutions. Australian industry normally welcomes opportunities of this kind. However in this case any solution developed solely for the LHD is at risk of being left an orphan. Until Navy and Army agree to the location of a centre of amphibious capability then appropriate benefits to Defence and industry are unlikely to be realised.

Crew training

Table 3 illustrates the established DMO process of engaging industry to deliver initial crew training for new ships and platforms being introduced into naval service. For the two LHD, industry will be contracted to deliver training to two crews and perhaps a third. In time, Defence may decide that such training should continue to reside with industry, although a wider military command and staff engagement may be envisaged. Provided that Defence decides to crew the strategic sea-lift ship and the heavy landing craft replacement vessels then contracts may also flow to industry for provision of initial and subsequent training of their crews as well.

Crewing the strategic sea-lift ship

Military sea-lift and sea transport operations are normally associated with the provision of ocean transportation of equipment, fuel, supplies and ammunition to sustain military forces during peacetime and in war. These tasks are non-tactical in nature and may be categorised with follow-on support tasks after an amphibious operation. Offloads may be via established shore infrastructure or logistics over the shore operations.

Capability demands and continuing challenges to RAN retention and recruiting over this decade may encourage Navy to seek Australian industry assistance to crew military sea-lift and sea transport vessels like the strategic sea-lift ship as well as fleet supply and oiler platforms, as is done by some of our allies.

The Royal Fleet Auxiliary (RFA) Service is a civilian-manned fleet, owned by the British Ministry of Defence. Its main task is to supply warships of the Royal Navy at sea with fuel, food, stores, and ammunition that they need to remain operational while
away from base. It also provides aviation support for the Royal Navy, together with amphibious support and secure sea transport for Army units and their equipment.

The US Military Sealift Command also undertakes these roles for the US Navy, and operates tankers for fuel transport and dry cargo ships that transport equipment, vehicles, helicopters, ammunition, and supplies. It has more than 10,000 employees worldwide, of which approximately 80 per cent serve at sea; and is the largest employer of merchant mariners in the United States and approximately 45 per cent of its employees are contractors.

These examples provide reasonable templates for a similar RAN venture. However a potential threat to this option may be emerging unwittingly within the amphibious battle group as its expanding footprint and weight means that residual elements not able to deploy on the LHD are likely to deploy via the strategic sea-lift ship and as part of the amphibious task group. In this scenario the strategic sea-lift ship would be relegated to a tactical role. In hostile and uncertain scenarios this role change may prevent it from being manned by non military personnel.

Aviation training vessel services

The Capability Development Group continues to examine the opportunity to provide the ADF with the services of an aviation training vessel in the 2014-16 timeframe. It may be acquired under Project Air 9000 Phase 7 and contribute to the ADAS system by training, qualifying and re-qualify Navy and Army pilots in underway deck landings.

Again Defence is seeking Australian industry proposals, more particularly for the services of an aviation training vessel, rather than the addition of a new platform type to the fleet. Such calls for proposals have existed for some years, but interested industries note the considerable differences of opinion that exist within Defence about the requirement for, functions of and ownership of such a platform.

If industry is to provide the services of an aviation training vessel then Defence may care to note that the financial viability of the platform will largely rest with it as the prime customer. Multi-role tasking of an aviation training vessel platform may be one solution to its viability. However a robust amphibious force structure must first exist in order to validate its functional role, configuration and capacity for other tasking.

Major fleet unit transition capability gap

Earlier it was noted that the hybrid ADAS system should continue to provide an increasing interim capability for amphibious operations until the new system is fully fielded. In truth, the Navy of 2013 will have limited ability to avoid a significant, if not unacceptable, major fleet unit transition capability gap. Options may exist to seek the assistance of allied countries like New Zealand, the United Kingdom or the United States, but such options should not be a preferred course of action for a sovereign nation state. Australian defence industry has developed potential solutions to the transition gap without altering component elements of the ADAS system. Early engagement of the Australian maritime industry to explore options is highly recommended.

Pre-deployment service support

Embarked forces personnel on an in-service amphibious major fleet unit are largely viewed as temporary human cargo waiting to be offloaded. They are not afforded the training and equipment appropriate to an integrated crew and landing force capable of persistent littoral operations. If this ‘entry operations’ mindset is to be laid to rest, then Defence personnel and the new range of government and non-government customers may need the services of a mobile support agency. Such an agency may be capable of not only delivering training, but also ensuring that pre-embarkation briefs and equipment issues are delivered as appropriate. In the first instance Defence may wish to assume responsibility for some or all of these embarking components. However these services could also be viewed as non-core services best delivered by an appropriate Australian industry.

Land-based LHD command centre

Army plans a broad base approach to using ADAS. Without a dedicated standing marine force it is unlikely that all Army formations and units will readily adapt to persistent littoral operations and exploit the full potential of the ADAS system. Military culture does not change readily with the introduction of new policy and doctrine. Rather it has a habit of requiring at least 10 years of constant application before new concepts and ideology become firmly embedded in the psyche of all levels of command. A similar effort will be required in the future amphibious capability.

The command capabilities resident in each LHD will be world class. Each LHD will be a strategic asset not easily made available for Army command work-up training. Therefore the potential exists for the services of LHD command modules replicating those found onboard the ships. With the aid of Australian industry, virtual ship and training systems that provide photorealistic interactive gaming capabilities, make it possible for Army units to not only plan amphibious operations, but also conduct virtual rehearsals and direct virtual amphibious operations from a land-based LHD Command Centre. Defence has already purchased some of the necessary simulation component elements. If the land-based LHD Command Centre was to be mobile, then its utility Australia-wide could be enormous.
Amphibious doctrine, concept development and consultative services

The further development of amphibious doctrine concerning operations and procedures, and associated doctrine, will be a significant undertaking for Defence as it seeks to capture information and guide employment of ADAS systems as they are introduced into service. This essential but easily overlooked responsibility of command would be well placed with industry provided that it possesses appropriate expertise in amphibious operations and is adequately engaged by the ADF during exercises and operations. Should either one of these requirements be found wanting then the real burden will fall back upon the ADF staff like those of COMAUSTAG. Such an outcome would realise little benefit for outlay.

Government and non-government personnel prepared to deploy on ADAS platforms should similarly develop concept and procedural documents relevant to amphibious deployments. Commonsense may suggest that consistency between these organisations and alignment with ADF doctrine would be most desirable.

Program and project management

Australian industry has the capacity to assume more effective management roles, which optimise the depth and flexibility of industry capabilities to support ADF requirements for ADAS system design, production, support and modification. Unfortunately the current regime of rolling contracts does not provide long term benefits to industry and Defence. As an increased role for industry is envisaged then industry management would require Defence to tender major ADAS projects, or series of minor projects, as long-term packages. An ADAS partnership with Australian industry has potential to realise and share significant productivity and performance benefits.

Defence Industry Policy

The government’s primary goal for defence industry policy is to ensure the cost-effective delivery of equipment and support to the ADF in line with Australia’s strategic circumstances. Current industry engagement in the ADAS program consists of rolling short-term contracts that lack efficiency and fail to encourage and support investment in specialist skills and technology. Consequently Australian defence industry lacks the incentive to commit to the realisation of the ADAS system’s true potential.

So far ADAS acquisition is a linear process involving the sequential definition and tendering for delivery of individual projects. As a consequence deliverables are likely to struggle to reach full potential or achieve efficiencies that may be expected from a system defined and designed from the outset. Some may conclude that this approach is also contrary to the direction of government policy:

…where it makes sense to do so, and it is cost effective and in keeping with the policy setting in this White Paper, capabilities and systems should be designed to be interoperable from conception, not as an afterthought in the capability development process.¹

The government intent for Australian industry engagement in Defence projects is for it to provide the maximum support possible to the ADF, while maintaining control of cost, schedule and quality. The above analysis suggests that in the ADAS context, Australian defence industry has not been engaged with a view to maximising support. Only an intellectual renaissance in Defence and industry thinking will realise the cost effective solutions sought by government. While no magic bullet exists, the following factors may underpin ADAS success:

• A close relationship between DMO, the ADF and Australian defence industry is essential. Such a relationship must share the benefits, while incentives for productivity and performance improvements should be considered the norm.
• The development of an ADAS ‘definition, delivery and sustainment strategy’ designed in consultation with Australian defence industry.
• Residual ADAS projects should be tendered early as long term packages and include the design, development, production, and sustainment components. In turn these will encourage and support investment in specialist skills and technology.

In order to deliver and sustain a mature ADAS system, Defence is encouraged to engage Australian defence industry in a whole of program capability relationship, and not just as disparate project contractors. An effective relationship between them, harnessing the full potential of Australian defence industry is needed to deliver the cost efficiencies demanded by government across the entire program. It is envisaged that this model will also provide appropriate mechanisms for industry to recommend capability solutions, greater efficiencies and adaptations.

The form and function of the Australian defence industry relationship is the significant question at hand. The specialised capabilities resident in ADAS, which have to be delivered in less than 10 years, would indicate that a balance must be struck between competition and capability delivery.

While the industry model for this proposal needs development, a performance based construct would appear to be the most appropriate contractual framework for the delivery of ADAS services. At the same time, industry services provided under such contracts would focus on key operational outcomes of ‘system readiness’ (availability), ‘mission success’ (maintainability) and ‘assurance of supply’ (supportability). Improvements to productivity, schedule and cost become shared goals resulting in shared benefits.
Incentives to innovate, improve performance and reduce costs would also be essential at all levels. Small to medium enterprises (SME) will underpin Tier 2 and 3 ADAS system delivery and therefore a competitive and sustainable SME sector will become an essential feature of ADAS services. In practice, many SME would continue to provide goods and services to Defence indirectly as sub-contractors to larger prime contractors.

Conclusion

In relative terms ADAS delivery has so far been successful but it is still in the formative years. On its current course, Defence will demonstrate that it does not have the mass or expertise required to mobilise and sustain the ADAS system to its full potential. Rather the raft of extant and emerging requirements has the potential to overwhelm Defence alone. Similarly the current engagement of Australian defence industry in the ADAS program consists of rolling short-term contracts that lack efficiency and fail to encourage and support investment in specialist skills and technology. Consequently Australian defence industry lacks the incentive to commit to the realisation of the true potential of the ADAS system.

The ADF amphibious capability is a highly specialised market, best supported and integrated by an Australian defence industry team capable of delivering the scale, depth and breadth of amphibious capability across the air, sea, land and joint environments. An effective relationship between DMO and the ADF involving industry is necessary to develop appropriate conditions for the successful creation, integration and sustainment of the future ADF amphibious capability. Provided that long-term contracts are integrated into this framework then industry may just be the keystone to realising the Chief of Navy’s vision for a standing joint amphibious force.

Endnotes

1 Department of Defence, Defending Australia in the Asia Pacific Century: Force 2030, Canberra, 2009, p. 68.
From a materiel sustainment perspective, what sets the LHD apart from other ships is its size, as it will be the largest ship ever to serve the RAN. Its flight deck is 0.5 hectares which is nearly 16 times bigger than that of an Anzac class frigate. In short, nearly all the flight decks currently in service in the surface fleet could fit into just one LHD. Its internal spaces are similarly vast; in terms of surface area, there are over 5 hectares of decks, bulkheads, and tanks to maintain. Collectively the two LHD will bunker more fuel than the current fleet tanker HMAS Success. The other key statistic rarely mentioned is the proposed operational life of the LHD, which is 40 years.

Unlike a frigate or a destroyer where combat systems can be the dominant cost driver, for the LHD it is the hull. This, of course, is not news to the US Navy or the Royal Navy, which have long recognised that hull maintenance, painting and auxiliary services associated with habitability are the dominant cost drivers for their major capital ships. Getting the planned maintenance right for these systems is a key priority for the sustainment team.

Therefore, one of the greatest challenges faced is transforming a RAN materiel sustainment culture, which is based predominantly on a frigate mentality, to one which will be capable of meeting the sheer scale and volume associated with a major capital ship - the likes of which the ADF and the wider Australian population has not seen for more than a generation.

As strategies, systems and products are developed for the LHD, another challenge faced relates to designing robust, cost effective, and enduring sustainment strategies to ensure the 40 year service life can be met. There will also be a need to ensure that the support infrastructure put in place possesses the agility and flexibility to readily adapt to any shifts in operational requirements throughout the service lives of the ships.

The project is on schedule and on budget, with the major project milestones outlined in Table 1. For the first ship, her hull is being built in Spain and construction of her superstructure (or the island) is due to commence at the BAE shipyard in Williamstown, Victoria in July 2010. A heavy lift transport ship has been booked for June 2012 to transport the LHD 1 hull to Australia for consolidation with the superstructure, and it should be handed over to the RAN in January 2014.

<table>
<thead>
<tr>
<th>Date</th>
<th>Activity</th>
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<tbody>
<tr>
<td>July 2009</td>
<td>whole-of-ship design reviews complete</td>
</tr>
<tr>
<td>September 2008</td>
<td>first steel cut</td>
</tr>
<tr>
<td>May 2009</td>
<td>preliminary design reviews completed</td>
</tr>
<tr>
<td>June-December 2009</td>
<td>detailed design reviews conducted</td>
</tr>
<tr>
<td>2011 (planned)</td>
<td>tenders for initial in-service support</td>
</tr>
<tr>
<td>July 2012</td>
<td>LHD 1 hull arrives Williamstown</td>
</tr>
<tr>
<td>December 2013 - January 2014</td>
<td>LHD 1 delivery/acceptance</td>
</tr>
<tr>
<td>February 2014</td>
<td>LHD 2 hull arrives</td>
</tr>
<tr>
<td>July-August 2015</td>
<td>LHD 2 acceptance</td>
</tr>
<tr>
<td>July 2016</td>
<td>final acceptance into naval service</td>
</tr>
</tbody>
</table>

Table 1: major project milestones
Sustainment Drivers

The key drivers which will shape the LHD materiel sustainment requirement over the next 40 years were distilled down to: availability, obsolescence, its commercial DNA, and the workforce - both Defence and industry.

Recent operational experience using the existing amphibious force indicates the LHD will probably be used to their maximum capacity, particularly in non-warlike operations. The LHD are expected to become the workhorse of the ADF and used in a variety of tasks as required by the Australian government, and thus availability will be a key driver. An effective maintenance program is a key element in achieving the required availability throughout its operational life. An appropriate balance between availability and materiel upkeep requirements will be necessary, so an effective 'maintenance requirements determination' process needs to be established and maintained throughout the life of the vessels to ensure the correct level of maintenance effort is applied. Over-servicing will result in an unnecessary higher maintenance workload, higher expense and loss of availability. Under-servicing will result in a higher rate of deterioration of the materiel state of the vessels, with the attendant loss of availability and increasing repair costs; leading to a reduced operational life.

The MOTS and commercial-off-the-shelf (COTS) acquisition means there will be support issues as well as significant obsolescence challenges. The commercial DNA (or cruise ship architecture) that includes podded propulsion at high voltages will influence the support concept, and information and support will be required from the commercial maritime sector for the maintenance and support of some of these systems.

Sustainment Strategies

Understanding these drivers led to the development of the LHD sustainment strategy. Commercial design, skills shortages, the need to make savings with smarter business practices, and the requirement for a sustainable industrial base all demand a new approach. The LHD sustainment strategy will shape and guide all future LHD sustainment activities, including contracts, support arrangements and the Defence Materiel Organisation (DMO) over the next 40 years, and is based on the following four pillars.

Pillar 1: availability through continuous external maintenance

Big ships come with big maintenance loads. Rigid, inflexible usage upkeep profiles with lengthy maintenance periods and refits will not be compatible with the LHD rate of effort and expected operational surge requirements. This will lead to cost blow outs, uncontrolled growth in work packages and loss of availability, as well as personnel impacts both within Defence and defence industry. Thus there is a materiel cost, a personnel cost and an availability cost in the way sustainment is currently managed, as this way of scheduling maintenance does not nurture long term and stable industry relationships.

Improved ship availability through continuous external maintenance is about scheduling maintenance differently by spreading the load and seeing maintenance not just as a capability investment but also as an availability cost. The aim is to achieve maximum flexibility in the conduct of external maintenance by having a balanced approach to maintenance planning that offers the most optimal availability profile. For the LHD, this means paying down a ship's maintenance debt whenever and wherever it is operationally, technically and logistically feasible to do so. Contracted maintenance cannot be allowed to accrue for years at a time and then be payed down in one large refit. In that sense, continuous external maintenance is an approach to maintenance that more closely mirrors the commercial shipping sector.

Pillar 2: obsolescence management through incremental component replacement/upgrade

COTS/MOTS solutions may be low risk in acquisition, but they can be high risk in sustainment. Smart procurement options will not provide protection from obsolescence issues in the future. Smart contracting will have to be examined; asset management through full service contracts is one option which could drive down inventory costs, and make sure systems do not become logistic orphans. Planning and financial management of obsolescence management is necessary at the beginning of the project and needs to be featured in contracts, so that it can be managed through incremental component replacement/upgrade.

Pillar 3: maintenance in class

Currently, DMO and the Navy have no knowledge or experience in operating and maintaining a high voltage integrated full electric podded propulsion ship. Maintenance in class is not just about a minimum level of third party assurance for materiel standards; but about gaining access to the knowledge, expertise and experience in the commercial maritime sector in order to support the ships.

Pillar 4: integrated teams for maintenance

RAN technical sailors need interesting and challenging technical work when ashore. There are many ways this might be pursued; for the LHD an option is to embed shore-based sailors within industry, to allow both to learn from each other, leading to integrated teams for maintenance.
The Way Ahead

Importantly these strategies will be meaningless if they are not implemented. In 2009, the strategy was developed and LHD Sustainment Office established within the JP2048 Program Office. During 2010 the LHD business model and preferred contracting option will be developed to achieve the sustainment objectives. Some 60 people will also be recruited to enable the growth of parent navy logistic skills and systems prior to January 2014.

Developing the business model and contracting strategy will require the correct balance between DMO and industry-provided support, as well as recognising 'parent navy' responsibilities that will require appropriate management and engineering arrangements.

Following the release and subsequent evaluation of tenders in late 2009, Booz Allen Hamilton was selected to assist with the development of the business model and contracting strategy. They are currently engaging internal stakeholders, and will be engaging with industry in the first quarter of 2010 to canvas ideas regarding the roles industry can best play in supporting the LHD. In the second half of 2010, the LHD sustainment team will be seeking further industry engagement prior to finalisation of the support structure and development of the required contractual arrangements.

Over 2011-12 the focus will be on developing statements of work and contract conditions for all in-service support arrangements, with a target date of June 2013 for all contracts and support arrangements to be in place; some six months before LHD 1 is handed over to the RAN.

Training Implications of the Canberra Class LHD

Daryl Bates

The RAN and indeed the ADF more generally are clearly at the point at which they must change course if they are to deliver future capability. The introduction of the Canberra class amphibious ships (LHD) from 2014 is a major part of that journey. The New Generation Navy program entails a range of initiatives designed to progressively change the RAN structure, leadership and culture, such that it is able to better deliver capability to government. It is a long term project and many of the aims and objectives will directly assist in the introduction of the LHD.

This paper outlines the journey, in terms of training, that we must take to ensure that we successfully introduce the LHD and realise their full capability. I believe that the centre of gravity in successfully integrating these ships into the RAN and ADF is training; backed by solid education. I will focus on the training requirements in bringing this capability into service; those major milestones that have already been achieved, or that are yet to be achieved, in order to successfully realise a first class amphibious capability by the middle of this decade.

Historical Background

Australia has a rich history in amphibious warfare but some of this history is infamous and is remembered for the wrong reasons. Gallipoli is one such story, where the initial landings were marred by bad planning and preparation, so much so that it has since realised significant military notoriety. The withdrawal from the Gallipoli peninsular, however, utilised all the lessons learnt from that disaster and proved very successful. So successful was this new form of warfare that the US Marine Corps developed their doctrine as a result of this campaign. During World War II, the RAN was at the height of its amphibious capability. Noting the specialised nature of this form of warfare, Australia set up, in conjunction with the United Kingdom and United States, a full time training base in Port Stevens, about 100 miles north of Sydney and that remained in existence until the end of the war. A parliamentary inquiry immediately post-World War II concluded that Australia’s strategic viability depended on the ability to influence its sea manoeuvre area. Whoever controlled the littoral and blue water areas would clearly have the upper hand; but sea control was impossible without the ability to effect control of strategic land areas within that region for as long as they remained relevant. Despite these findings, from the mid-1950s the focus on Cold War issues and counterinsurgency operations led Australian policy makers to adopt a continental philosophy for defence which ultimately lead to a decline in amphibious warfare capability.
During the intervening years, the flavour of amphibious operations was kept alive in the RAN with the amphibious lift ship HMAS Tobruk, and 6 Balikpapan class heavy landing craft, which provided sea movement and limited amphibious capability. Some 50 years later, geographic reality asserted itself when trouble erupted in East Timor and Australian mobility within this littoral region was found wanting at the strategic, operational and tactical levels.

This heralded the start of the rebirth of amphibious warfare within the ADF, moving from the more benign operations of humanitarian aid and non-combatant operations toward the more complicated amphibious assault operations, and the rejuvenation of amphibious training for the RAN. Australia procured two old Newport class tank landing ships from the US Navy. Reconfigured and modernised, the ships provided platforms which enabled this revitalisation to gather pace. HMA Ships Manoora and Kanimbla (LPA) have been extremely busy over the past decade, operating in the region, the Middle East and, of course, were instrumental in the successful insertion of the ADF during the second operation in East Timor in 2006.

To enable Australia to recover its amphibious capability we must also be cognisant that humanitarian assistance and disaster relief do not form the high-end of amphibious operations, but have provided an ideal test bed for our training. It is the ability to use the sea for manouevre and mobility, to land at a time and place of its own choosing and to re-embark and reconstitute that distinguishes an amphibious force from a mere ‘sea-transported’ force. Consequently, we have started the process of revitalising the ADF amphibious capability. Focused experimentation has determined the ideal size of the landing force in the ADF context and this has been backed by strategic guidance and the government’s support, with the purchase of new, state of the art equipment. Our aim is to ensure that single Service and joint training continuums are aligned, in order to maximise the effectiveness and efficiency of the capability that we will soon own.

### Strategic Guidance

Australian-specific amphibious doctrine did not exist until the turn of the century. Instead, it was based on best practise from around the world, especially the United Kingdom and the United States. We have taken the ‘world’s best practice’ and adapted it for the Australian environment and equipment and we now have detailed and practiced Australian amphibious doctrine, modified for our unique and evolving force.

Doctrine provides military organisations with a common philosophy, language, purpose and a unity of effort, which in the case of amphibious operations in Australia is exactly what is needed to drive forward the capability. This is even more important when we are trying to develop and improve on an ad hoc amphibious force. What I mean by the term ad hoc is not meant to be derogatory, but to classify Australia’s current amphibious capability in accordance with the Australian doctrine.

Amphibious forces have been classified into three main categories: purpose built, adaptive and finally ad hoc. The purpose built is an amphibious force with a high degree of both dedication and specialisation; examples include that of the US Marine Corps and the Royal Marines. The adaptive force is an amphibious force with a lesser degree of either dedication or specialisation than the purpose built force. Conventional units or materiel constitute a major part of the force, or even the entire force, but are ‘amphibiosed’ through the provision of certain standing adaptive measures, such as directed levels of capability, amphibious warfare staff officers and amphibious experience provided by exercises or past operations. The ADF is trying to achieve an adaptive force. Our present force is ad hoc, which is conventional forces with negligible degrees of either dedication or specialisation, especially in the form of equipment. Such a formation relies heavily on improvisation in the event of deployment. The present training continuum supports the Australian operational requirement but is hampered by the absence of a dedicated landing force, equipped for role.

### Australian Amphibious Doctrine

We do, however, have a good and extensive doctrinal base for operations, which has been proven both on exercises and subsequent successful amphibious operations, from disaster relief and humanitarian aid to amphibious assault. Australian Defence Doctrine Publication 3.2 Amphibious Operations provides the operational overview, while Australian Defence Force Publication 3.2.1 Amphibious Procedures contains the tactical level doctrine and procedures for the force. Another two publications 3.2.2 Amphibious Training Manual and 3.2.3 Littoral Environmental Analysis Procedures are still in draft form, but will provide us with the doctrine required when the first LHD is delivered in 2014. So we have the doctrine and the higher guidance; what are the present training continuum gaps and how are we to fill these?

### Utilising Amphibious Assets in the Correct Role

An amphibious capability has such great flexibility that it is tempting to disperse its effort on a range of tasks within its span, thus diluting its effect. The RAN has frequently employed the amphibious ships on other tasks due to the very heavy level of maritime operational commitments, but all too rarely in their primary role. By way of example, it was not until 2007 that we even exercised our three major amphibious ships together as an amphibious ready group. We need to educate our future commanders and staff officers in the use, and especially in the maintenance, of this emerging type of warfare, but perhaps our greatest challenge is the need for strategic level education inside and outside Defence.

We must ensure that our senior military organisation and government have sufficient understanding of the characteristics of this capability to get the best strategic return on its considerable financial investment.
Amphibious Warfare Training Roadmap

The present ADF amphibious capability represents a combination of ‘single-Service’ force elements and operational concepts, rather than an integrated force designed for amphibious operations. As already discussed it provides an ad hoc capability for limited objectives in fairly permissive circumstances. The elements of the amphibious capability must achieve their single-Service training requirements prior to conducting joint amphibious training. The Amphibious Warfare Training Roadmap, developed by the Commander Australian Amphibious Task Group and his staff, and endorsed by the Maritime Commander in 2004, requires a structured, joint amphibious training continuum for the capability that is rapidly being invigorated. This continuum was further refined in the 2005-06 Roadmap and again in 2008 as a result of an exercise review, but it was really only a Navy plan and therefore not joint and not necessarily supported. Clearly, amphibious operations are complex and we cannot hope to train the whole of the Australian Army in such operations. The Army now intends to permanently base a Company Group and an aviation element on an LHD whenever it deploys. This is a significant move forward in capability and one that I welcome wholeheartedly.

In the future, each element of the amphibious capability, from all three Services, will have to develop skills in parallel. We will then come together in the joint training continuum to enable the higher-end of amphibious operations to be achieved. Other landing force elements will be sourced from different areas in Army, some presently with little or no amphibious training or equipment. A challenge is that both surface and air assets will be allocated separately from other Commands and their individual and collective training regimes currently rarely coincide with maritime force availability. Helicopter aircrews have to be in date for deck landing practises and qualifications; landing craft crews are presently trained to conduct independent logistics over the shore operations rather than tactical manoeuvre from the sea; and the entire landing force needs to conduct helicopter underwater escape training, aircraft and landing craft drills, safety at sea drills and of course familiarisation with the amphibious ships. All of this training takes time, in what is already a busy training program and with the Army signing up to longer periods of deployment, their requirement to maintain their land fighting skills will require innovative training solutions.

There are many contributing factors behind the historical lack of attention to developing specialist amphibious skill sets but the major impediment appears to be that no single agency within the ADF has ownership of the whole amphibious capability. The RAN owns the ships and as already stated, Army provides the landing force but until recently no one owned the whole amphibious entity. In response to recognition by the Service Chiefs of the need for amphibious skills to be developed for the emerging amphibious capability, the Joint Amphibious Capability Implementation Team (JACIT) was formed in 2006 and their steering group, the Joint Amphibious Council was created. This is comprised of the deputy chiefs of Navy, Army and Joint Operations. One of their first tasks was to draft Australia’s Amphibious Implementation Plan and from that, produce the Joint Amphibious Capability Implementation Plan. This plan coordinates the fundamental inputs to capability: personnel (including individual training), collective training, facilities, support and command and management, with the delivery and trials programs for the new ships and their associated enabling capabilities, such as helicopters and landing craft. The team manages this plan through a number of working groups and reports regularly through the council and this work is progressing well. Navy owns the ships and Army owns the landing force. What we need to do, as with other competent amphibious forces across the globe, is to develop a holistic training package.

Training needs analysis

It is difficult to exaggerate the magnitude of change required in the ADF in developing a truly joint amphibious force. Importantly; an amphibious operation is not maritime warfare followed by land warfare, it is a single, integrated operation. In Australia’s case, without a dedicated landing force, there is an even more critical need for common understanding and close cooperation between the Services. In my opinion, we are well progressed in this respect, assisted by a number of key initiatives over the last decade or so, not least of which is the formation of Joint Operations Command. The current organisations and amphibious training regime are just adequate for the present level of capability, we know that, and an urgent review into the training and education continuum has already commenced. In 2007, Training Authority - Maritime Warfare was tasked by the Amphibious Council to lead an amphibious warfare competencies project training needs analysis for individual competencies in amphibious warfare, and to recommend a manager joint training for amphibious warfare. The aim of the project is to develop a training regime to enable the new capability. Part of this project is being conducted by private contractor, AURECON, and the first phases will be completed in February 2010. It has already identified many of the training gaps and shortfalls.

Phase 1 - Command and control for amphibious operations, which includes both the operational and tactical levels of command, is nearing completion and will be delivered within the next two months.

Phase 2 - The training needs analysis into aviation and well dock operations is at the training requirement specification phase; requirements have been forwarded to my various Training Authorities for comment and this study will continue and report later this year.

Phase 3 - Will be the continuation of Phase 2 which will design and develop the training courses required to fill the skill-set gaps, especially in multi-spot air operations and dock operations.
The training delivery and support study is an iterative document which identifies training delivery options.

Finally, an e-learning package is awaiting final download to the ADF on-line training portal. This package will provide initial lecture packs to educate the joint community on amphibious operations. The package will be expanded to provide education for the senior staff of both the military and government to ensure the full capability of the amphibious force is well understood, and employed to its maximum.

Where the need for new skills, knowledge and attitudes is identified, the training needs analysis process will consider how best to provide such skill sets. The impact upon the proposed scheme of complement for the ships will be outlined, particularly where it is expected that the required competency will not be permanently resident in the ship, but perhaps embark for specific periods or tasks. In February 2009, the Deputy Chief of Navy directed JACIT to examine options for supporting flight deck operations; specifically the requirement for a dedicated aviation department and its manning. The complex and demanding nature of multi-spot flight deck and hangar operations warrants a dedicated department. Furthermore, the levels of proficiency required to safely support these operations drove a requirement for specialist personnel; as opposed to the task being undertaken by non-aviation specialists as is the case for small ship flight deck operations within the RAN today. The most efficient solution to meet this requirement appears to be through the establishment of an aircraft handling category, similar to that employed in our aircraft carriers until the early 1980s.

The responsibility for all navy training now resides in Fleet Command. The Army has effected a very similar structural change and responsibility for their individual and collective training now resides in their Forces Command, also based in Sydney. My direct Army counterpart and I are already looking hard at the amphibious individual and collective training demand, and how best to achieve it. There is much to do, but I am confident that we are on track and that there is great will. As an aside, the fact that Army and Navy training commanders, and the Commander Australian Amphibious Task Group, are each located only a few kilometres apart in Sydney must auger well for improved liaison and cooperation.

Any training requirement will be delivered via the full measure of blended training delivery methodologies, including face to face instruction, computer based and self paced training, simulation, stimulation and emulation, and, importantly experiential or ‘on the job’ training.

To the greatest extent possible we will be delivering training to our men and women at the place and at the time that best suits them and their professional careers.

Some of our training, particularly in the early stages, will by necessity be provided through formal training courses and experience offshore.

Overseas training opportunities

JACIT has developed international engagement strategies, and identified the priority nations for engagement in developing the ADF training regime. In conjunction with this strategy, a review of overseas positions for ADF personnel was conducted with the aim of focusing these appointments towards enabling this new capability. The review proposes the establishment of short and long term exchanges in the United Kingdom and the United States in order to access amphibious warfare expertise. Exercise TAURUS, an exchange program with the US Marine Corps, already provides opportunities to help shape and inform the Australian Army in its understanding of future amphibious related requirements. Exercise LONGLOOK, a long standing exchange program with the UK Armed Forces will, in the coming years, be focused towards the amphibious warfare training continuum, with placements on amphibious ships and with related staffs. Australia has entered into a memorandum of understanding with Spain to ensure that lessons identified from their Juan Carlos, can be utilised by us, as she will be identified as ‘the first of class’ for our own LHD. While the Spanish concept of employment and command and control will be very different from the Australian concept, many similarities will be available, which will help to save time as we bring our new ships on line.

Conclusion

The Chief of Navy identified the need for Australia to have a modern, perhaps post-modern navy, with an ability to operate forward, be mobile, conduct offensive operations, be self reliant and adaptive. The reinvigorated amphibious capability helps to realise these requirements but poses a new training burden on the ADF. We should not underestimate the political utility of this new, potent littoral manoeuvre force within our region. Our force must continue to develop and attain the ability to provide response options across the range of potential domestic, regional and global scenarios. It must be versatile, robust, joint and integrated. In order to reap the benefits of this new, enhanced amphibious system and realise its full potential, we must meet the new training requirements head on or the ADF will inherit amphibious ships capable of conducting ‘ferry’ or at best ‘sea movement’ operations.

The process is well underway; the analysis of training has commenced and is nearing fruition. The training gaps have been highlighted; the requirements for new categories have been identified along with in-house training, contractor training and the requirement to go overseas to gain knowledge and experience. Meeting the training demand will see both routine and novel training approaches. Some of these solutions may come from our past and the requirement for a ‘centre of amphibious excellence’ is one that has been mooted and is being investigated. We have set the course to reinvigorate and regenerate the amphibious capability in the ADF. This is well under way, and has been progressing a pace for the past nine years. ‘Ground rush’ has now started, with the Australian government backing the regeneration
through the purchase of hardware which will enable this field of warfare to be matured. We are identifying the training and education issues, ensuring that by the time the first LHD comes on line in 2014 we are ready to realise the full joint capability.

For a relatively small military, joint operations are a key means to deliver decisive outcomes and training is central to the journey that will enable Australia to embrace the requirements of a modern navy.

I think it is quite evident that mounting a successful amphibious operation is orchestral in complexity. In delivering this capability, the embarked air group and the ship’s aviation department have a key role to play. From an aviation perspective, the new Canberra class amphibious ships (LHD) mark a significant step change in maritime aviation capability. Between the two of them, they add 12 new landing spots to the fleet and the ability to hangar 24 medium lift helicopters; they will exercise command and control for the maritime, air and land elements of the joint task force and support around the clock, simultaneous air and watercraft operations. Managing this change will be a challenge across both Army and Navy, not only in terms of getting to grips with the hardware, but also creating the personnel infrastructure to support the aviation aspects of this capability.

From my perspective, as Commander Fleet Air Arm (FAA), the key challenges will be to provide the support to amphibious operations while also managing significant internal changes in other maritime aviation capabilities. Following the release of Defending Australia in the Asia Pacific Century: Force 2030, the FAA will be introducing a new maritime combat helicopter to replace the Seahawk, to be in service by 2015 and a new training helicopter to replace the Squirrel, as part of the joint helicopter aircrew training system due to be established at the Naval Air Station, HMAS Albatross in Nowra. Concurrently, we will need to gain an understanding of multi-spot operations, accept and support operations involving multiple helicopter types, stand up a new aviation support category to man the ships’ aviation departments, manage the aviation test and evaluation and integrate the new maritime support helicopter into the mix. In addition, as the Fleet Commander’s operational airworthiness authority representative, I have an ongoing remit to manage and oversee all of the operational airworthiness aspects of these ships and the aviation support systems they carry, through design, in build and ultimately introduction to service. Given the size and complexity of the aviation facilities within the LHD, this has already proven to be a demanding, yet interesting piece of the jigsaw.

The aviation elements of the LHD will play a direct role in enabling and supporting the three operational concepts underpinning our amphibious capability: ship to object manoeuvre, distributed operations, and sea-basing. As Commodore Bates has noted, we will need to educate our people to ensure these concepts are as familiar to us as those underpinning how we fight submarines or engage hostile surface forces over the horizon. Whilst I am sure you are aware of the capabilities of these
ships, it is worthwhile at this point emphasising the scale of the challenge, which is proportional to the sheer size of the LHD. At 27,000 tonnes and 230 metres in length, they are big ships, bigger than the old aircraft carrier HMAS Melbourne and a single LHD is capable of carrying all the equipment and more aircraft than we currently put in HMA Ships Manoora, Kanimbla and Tobruk. Right now as a navy, we are good at single-spot embarked helicopter operations. The most complex aviation evolution, in terms of numbers, we currently undertake are those from our three spot platforms Manoora and Kanimbla and those evolutions are typically low tempo, sequential operations. The LHD will introduce the capability to operate from six spots concurrently, generating high tempo deck cycles; put two LHD in the same space and we have 12 spots, a highly complex airspace management picture that will potentially involve both civilian and military aircraft and require positive flow control. This is further complicated by the fact that there is a requirement to do this in the dark, without lights, in all weather conditions and environments.

The complexity of LHD aviation operations is also influenced by the number of different types of aircraft in the mix. Within the ADF alone we will bring to the LHD four different aircraft types: the MRH-90, Chinook, Tiger and Seahawk (or its replacement) helicopters, to which we must add the requirement to support partner or allied visitors. We will need to understand the different footprint of each type, the servicing requirements where even little things such as the mix of European and US aircraft design standards raise configuration issues as basic as whether we need a metric tool or an imperial tool to access the fuel cap. And this is before we start to think about bringing onboard aircraft with live forward firing rail launched weapons.

The complexity of running a large flight deck under these conditions will require firm direction, high levels of coordination and a great deal of cooperation. At least initially, the air department will be predominately Navy with embedded Army and Air Force personnel. Aviators, aviation engineers and seamen officers will most likely fill the key departmental leadership positions; with Navy, after carefully examining the issue and how other navies go about managing multi-spot deck operations, creating a new aviation support category to man and run the flight deck within this department.

The key roles for the personnel making up this new category will be to manage simultaneous multi-type operations in all weather conditions and at night in a night vision device compatible environment. They will manage the movement of aircraft on the flight deck and between the flight deck and hangar, the assembly and embarkation of the assault wave, the preparation and presentation of stores to and from the flight deck, coordinate arming and rearming, fuelling, flight deck emergencies and the maintenance of flight deck and hangar facilities, safety equipment and the ship’s aviation support systems. As I speak, my headquarters is working with other areas within Defence to identify the competencies required for such a role and the design of training systems to support them. In doing so, while we might seek support from our friends who are already in this business overseas, ultimately we intend to deliver this training here in Australia, with an expansion of the current top class facilities provided by Training Authority - Aviation, conveniently situated at Nowra.

The introduction of the LHD will generate a ‘test and evaluation’ bonanza across a whole gamut of specialised fields, aviation being just one of them. To fully exploit the capability we will need to quickly establish the boundaries for safe aviation operations and this task will fall directly to the Aircraft Maintenance and Flight Test Unit (AMAFTU) within my organisation. We will need to take each aircraft type required to operate from the LHD through the ‘first of class flying trial’ process. This is a huge task. The good news is that we are already mitigating some of the risks inherent in the test and evaluation process, and the early results for the MRH-90 conducted in Manoora in November 2009 demonstrate that the aircraft is capable of being operated at sea and with considerably larger operating envelopes than both the Black Hawk and Sea King helicopters. Given that all new aircraft and ships require this trial process, achieving all the first of class flying trial tasks will take resources and careful setting of priorities, a task that is already concentrating our collective minds.

Finally, Navy will also contribute an aviation presence onboard the LHD with a permanently embarked maritime support helicopter flight. Separate from the amphibious air group aviation elements, this helicopter will be a ship asset able to contribute to the full range of support activities required within a task force. Amongst others, it will provide the helicopter distribution system within the task force, provide maritime search and rescue and casualty evacuation, feeding back into the ship primary casualty receiving facility, and act as a force protection asset in higher threat environment, allowing the Army air mobile assets to concentrate on their primary tasking and provide amphibious planners the flexibility to husband key assault force elements. Generally, it will not disappear over the horizon as the assault wave moves inland however, given the commonality in airframe and training; it will be able to integrate into the Army aviation operation to some degree.

Looking into the future, the LHD also provides a number of platform options outside amphibious operations that, with the arrival of the new maritime combat helicopter, could see the ADF adopt the tailored air group concept, configuring an air group able to conduct a wider variety of maritime and amphibious roles, which could see the FAA dominating anti-submarine warfare threats in a whole new, old fashioned kind of way.

In summary, the challenges I face concerning the introduction of the LHD are many and varied. They encompass everything from regulatory oversight, manpower provision and capability development. Given the current constraints we in Navy and the ADF in general are working within, these challenges will be significant.
However, I am confident that, with a clear vision and firm direction, we will see Australia join the ever growing number of nations developing their amphibious forces and deliver a world class expeditionary capability.

Chief of Army noted that the Canberra class amphibious ships (LHD), whilst Navy owned, are the centre of a new joint force designed primarily to support Army. In a similar sense, the ‘floating airfields’ provided by these vessels facilitates the extension of 16th Aviation Brigade combat power to support the achievement of amphibious objectives.

That may seem a little audacious, but the introduction into ADF service of the new amphibious capability represents both a major opportunity and determiner for the future evolution of Army’s combat aviation force. The 16th Aviation Brigade and the broader Army stakeholder community face significant challenges preparing for, and ultimately integrating with, this major, joint ADF capability.

The complexity and breadth of these issues is substantial, with numerous projects delivering state-of-the-art technology and expanding the scope of operations. At the tactical level, the level of execution, in the combat aviation arena there is ongoing refinement of Army Aviation’s integration into the combined arms team, particularly as the armed reconnaissance helicopter (ARH) capability matures and introduces significant improvement in firepower and information sharing.

These developments are occurring concurrently with the development of the amphibious concepts, and are superimposed onto the complexity of embarking and operating on multi-spot ships such as the LHD. As Commander Fleet Air Arm mentioned, the management of eight to ten aircraft operating from six deck spots, possibly on each of two or three ships concurrently presents challenges regarding the specific allocation and management of airspace, deck space and hangar space - a significant change from the current two (or three) spot operations of the Kanimbla class amphibious ships (LPA). There is a similar volume of development required in areas such as maintenance, including personnel and spares management in this challenging environment; and the integration of the collective aviation training regime required by Army and Navy aviators and the ships complements. Then, as Chief of Army noted, there is the requirement to conduct the joint training necessary to prepare the amphibious ready group (ARG) and amphibious ready element (ARE) to live, deploy, operate in, and operate from the LHD in order to maximise government’s investment in this capability.

Before discussing the amphibious concepts, there is benefit in outlining the current combat aviation capability in 16th Aviation Brigade and what is in store for the very near future. The 16th Aviation Brigade is made up of the 1st, 5th and 6th aviation regiments, comprising seven flying squadrons, plus technical and logistic support
elements. In all, the capability, including the Army Aviation Training Centre, consists of around 120 aircraft, made up of the Black Hawk, CH-47(D) Chinook, ARH, MRH-90 and Bell 206 Kiowa helicopters.

By 2016, modernisation of the combat aviation force will have completed and delivered a substantially transformed force to 16th Aviation Brigade. It will comprise:

- 6 x ARH Troops assigned to 1st Aviation Regiment
- 6 x MRH Troops assigned to 5th and 6th Aviation Regiments
- 7 x CH-47F Chinook assigned to 5th Aviation Regiment

These new aircraft and their intrinsic weapons and sensor systems will offer an unprecedented level of firepower, networks and situational awareness to the ADF amphibious capability. The aircraft will be networked through a number of systems including variable message format thereby sharing information with the embarked and deployed forces. The bulk of the force will be the ARH and the multi-role helicopter (MRH-90).

The ARH will significantly contribute to ADF operations in the 21st century as a member of the combined arms team in joint and combined operations. Its strength is its ability to contribute to situational awareness and decisive manoeuvre in the battlespace. Its capacity to rapidly deploy, conduct reconnaissance and surveillance and deliver precision firepower while manoeuvring as a discrete combat system provides unique and flexible options for the ADF. The ARH will be able to suppress, neutralise and destroy targets in a range of operations, and will be capable of employing its integral weapons, or employing other offensive support systems such as naval gunfire, close air support and artillery.

In amphibious operations, the ARH will be required to provide information to the assault force, precision fire power to the land component commander, and to escort airmobile insertions. Notwithstanding, the ARH is not optimised for operations in the maritime environment. It lacks characteristics normally intrinsic to naval helicopters, such as rapidly folding rotors and reinforced undercarriages to facilitate deck landing capability in a variety of sea states. A lack of corrosion protection is also likely to manifest as increased through life costs if the aircraft are embarked for prolonged periods.

These challenges are manageable, as we have done with the non-marinised Black Hawk for 20 years, and we believe that the ARH will offer a potent capability edge to the future amphibious capability. That potency was recently demonstrated when an ARH from 1st Aviation Regiment conducted the first Hellfire missile shoot. Three missiles were fired for three hits!

The ADF is also in the process of receiving 46 MRH-90; the bulk of which will equip Army’s troop lift and medium utility capabilities currently performed by the Black Hawk helicopter. The MRH-90 is a unique aircraft in being fully ‘fly-by-wire’, with a completely composite crash-worthy airframe, as well as a heightened cabin providing superior accommodation for passengers.

In the amphibious context, the recent first of class flight trials activity for the MRH-90 is worthy of special note. All feedback on the performance of the aircraft in the maritime environment indicates superior performance over the Sea King and Black Hawk helicopters. Overall, the MRH-90 is shaping as an exciting new aircraft that is equipped with modern and capable systems that will increase the probability of achieving future mission success.

This progress in the MRH program complements much of the work that the ADF and 16th Aviation Brigade have been undertaking for some time to prepare for the future amphibious capability. Army was experimenting with range and payload models for various battlefield helicopters and larger amphibious ships in 2002 at the Chief of Army’s Annual HEADLINE experiment, and for the last two years, has undertaken a detailed exploration of the issues involved in preparing Army Aviation for its role in the future amphibious warfighting force.

As Chief of Army noted, the options for the ARE/ARG force generation construct are still being analysed. In line with the consideration of the broader Army force generation cycle, the combat aviation capability needs to balance its scarce resources, both human and materiel, in order to guarantee its sustainability for the embarked or operational environment noting that the specific demands of the amphibious commitment, coupled with the unique requirements of combat aviation may not necessarily adhere to force generation models adopted by others. Nonetheless, 16th Aviation Brigade expects to permanently embark a flexible combat team as part of the ARE, and to embark up to a battle group size task organised force as part of the ARG. Training for the amphibious role will require an additional layer on our existing training regime. As mentioned earlier, the complexity associated with concurrent operations involving 10-12 aircraft and 6 spots aboard the LHD versus the current capability of three to four aircraft from a maximum of three spots imparts a significant experiential and training delta.

The requirement to draw ‘force packets’ from the current homogeneous regiments will require lengthy detachments of aircraft, personnel and supporting echelons. This may pose negative ramifications for maintenance and logistic efficiency, morale and preparedness for other assigned roles. Additionally, achieving synchronisation between the force generation cycle and the annual posting cycle may present further challenges. The correct force generation process will ensure improved overall readiness of Army Aviation forces, closer alignment of Army Aviation with the broader Army and better training and recuperation opportunities for Army Aviation soldiers.
The expected payoff is that the competency and experience gained to fulfil any combat aviation role tasked, while assigned to the amphibious role, would be transferrable to land-based combat aviation roles. For example, it has been established that combined arms team airmobile operation basing from amphibious ships at night is one of the more difficult combat aviation tasks to successfully execute. It may be inferred therefore, that competency would exist for missions of subordinate complexity and/or force strength.

Implementing an appropriate force generation cycle also allows the aviation logistic support chain to operate with greater efficiency and flexibility, which will be necessary to adapt to the unique logistic challenges posed by amphibious forces. Joint agencies, such as the Joint Helicopter Management Agency, are progressing some of these issues in the joint arena, as is the current Army Aviation Maintenance Support Review. This review is likely to recommend far-reaching changes, such that by the time the amphibious capability is realised, the combat aviation capability will possess a multi-skilled workforce, essential to the maintenance of the integrated systems of modern aircraft in task-organised dispositions in the austere personnel environment afforded afloat.

The future amphibious capability presents a grand opportunity to embrace the key strengths of the rotary wing combat aviation capability. These strengths are most apparent when aviation effects are massed, to focus on mission objectives 100-200nm deep. This is the operational benefit for the combined arms team; aviation combat team capabilities that facilitate deep, swift and massed fires manoeuvre.

Of course, embarking the force is only half the puzzle. The roles and tasks will be defined by the concept of employment. Australia’s Amphibious Concept has been discussed in a number of papers and ship to object manoeuvre, distributed manoeuvre and sea-basing are being more clearly defined in an Australian context. Adaptive Campaigning 2009 - Army’s Future Land Operating Concept states that earlier distinctions between low, medium and high intensity conflict are no longer relevant, especially at the tactical level. Therefore, land forces will need access to an appropriate array of lethal and non-lethal weapons, be protected, equipped and structured to operate and survive in a potentially lethal environment while being capable of performing diverse concurrent humanitarian, counterinsurgency and peace support tasks to account for the adaptive nature of warfare. Many of these tasks will be required at short notice and offshore; reinforcing the need for flexible, adaptable and scalable amphibious forces. These amphibious forces may also include other government agencies as well as possibly non-governmental organisations.

At the operational level, Adaptive Campaigning 2009 identifies five interdependent and mutually reinforcing lines of operation: joint land combat, population support, indigenous capacity building, population protection, and public information. Executing the line of operations, particularly for an amphibious force, requires well equipped and prepared aviation forces as an underlying capability. But aviation is not just an enabler - balanced combat teams may be commanded by the aviation command element, particularly in the mobile and deep operations likely to be encountered when executing the lines of operation within Australia’s Amphibious Concept.

We should not underestimate the magnitude of the task ahead. The ADF has a number of significant major projects that provide significant components to the future amphibious capability. Each project alone is manageable; the coincident timing of these projects presents a challenge as we seek to maintain current operations and readiness, introduce these new systems and then develop, refine and train in the joint concepts and procedures required to realise the capability. We have much more to think about here and there are challenging times ahead, but in concert with our RAN brethren, 16th Aviation Brigade has a pivotal role to play in the continuing development of Australia’s amphibious capability.
Combined and Joint Operations from the Sea

Key Factors in Attaining the Future ADF Amphibious Capability
Stephen Woodall

Many navies possess amphibious ships in order to support transport or logistic activities. Relatively few, however, are capable of landing and sustaining a balanced military force on a potentially hostile shore.

The ADF does not have an integrated amphibious capability along the lines of the United Kingdom or United States where marines specialise in amphibious operations. Despite this limitation, the ADF amphibious capability has proven repeatedly useful in the last ten years, albeit in providing sea transport and logistic support to evacuation or humanitarian assistance and disaster relief operations. The main constraint to date has been the capacity of the amphibious shipping, however, this will change with the acquisitions planned under Joint Project 2048.

But it requires more than larger shipping to develop a truly viable amphibious capability and gain all the strategic, operational and tactical utility that the sea provides. A significant cultural and organisational shift will be necessary within the ADF if we are to realise the full potential of the amphibious shipping being acquired. Improved joint management processes, organisation, and training continuums are necessary to effectively grow and sustain the ADF amphibious capability for the future.

I am not going to talk about hardware, equipment or command support systems. Rather, I will focus on other key factors that are critical to achieving the future ADF amphibious capability at the tactical level; the ‘glue’ that brings it all together.

What is an amphibious operation?

First, there needs to be a clear understanding of what constitutes an amphibious operation as opposed to the operations that may be expeditionary in nature and are frequently supported by specialist amphibious shipping. The current ADF definition is that an amphibious operation:

Is a military operation launched from the sea by a naval and landing force embarked on ships or craft, with the principal purpose of projecting the landing force ashore tactically into an environment ranging from the permissive to hostile.¹

A further clarification contained in both NATO and ADF doctrine is that:

Combat operations which involve waterborne movement, such as inland-water, ferrying, and shore-to-shore operations in which the landing forces are not embarked in naval ships and/or assault craft; administrative disembarkation on friendly territory; and water terminal and logistics over-the-shore operations,
possess certain characteristics and employ some of the techniques of an amphibious operation. However, these are not amphibious operations.²

The ADF has only conducted military support operations such as peacekeeping and humanitarian operations since World War II. The ADF amphibious experience has therefore been limited to sealift or what was previously termed an ‘amphibious tactical lodgement’, essentially ship-to-shore movement in benign conditions.³ This has resulted in the incorrect perception amongst some that amphibious operations are essentially ‘support’ type activities.

The reality is that amphibious warfare is a complex form of maritime war that goes far beyond sea transport. Naval and ground combat units must work closely together in order to be effective. Ground forces projected from the sea are able to move rapidly and strike decisively over great distances while leaving a small footprint on the ground. This ability to dictate the place and nature of the combat comes at the price of being dependent upon sea-generated combat power and logistic sustainment. In addition, the wide dispersal and rapid movement of combat units provides significant problems in relation to command and control.

### Strategic Vision

The ADF joint, long term warfighting capability aspiration is much more than military support operations. Australia’s Amphibious Concept, future joint and single-Service operating concepts and the recent Defence White Paper Defending Australia in the Asia Pacific Century: Force 2030 make it clear that the ADF aspires to a true amphibious capability to conduct up to a brigade-size amphibious assault. It is in the littoral manoeuvre space that the ADF aspires to become proficient along similar lines to the United States concept of operational manoeuvre from the sea and the United Kingdom concept of littoral manoeuvre.

Additionally, current ADF amphibious doctrine is underpinned by the contemporary concepts of ship to objective manoeuvre, distributed operations and sea-basing.⁴ Developing these concepts into tactical techniques is very demanding and requires detailed joint planning, regular training with all contributing force elements, and effective command and control by a joint staff experienced in amphibious warfare.

So how do we turn this aspiration into reality at the tactical level?

### Doctrine

An effective amphibious capability can only evolve in a coherent manner if it is underpinned by appropriate doctrine from which to conduct operations and explore alternative practices. Amphibious doctrine, which by its very nature can only be joint, seeks to bridge the gap between the established warfare disciplines at sea, and land tactics, techniques and procedures. ADF amphibious doctrine provides a sound conceptual level for amphibious operations and is supported by amphibious procedures which have been produced in order to standardise joint procedures.

Strategic level amphibious concepts are also being developed in advance of the delivery of the Canberra class amphibious ships (LHD) and this important work is addressing many of the links between conceptual doctrine and actual application in the Australian context.

While the doctrine and related amphibious strategic papers are sound, these publications are not widely read by those outside the small amphibious community and therefore many of the concepts described within them are not employed. Further work on educating ADF personnel on joint amphibious doctrine is necessary and on aligning unit level standard operating procedures with joint doctrine and procedures.

### Education and Training

There is very little formal education or individual training in amphibious warfare, particularly at the tactical level, in either the Navy or Army training continuums. While it is encouraging to see an increasing inclusion of amphibious operations in some courses, there needs to be a coherent strand of amphibious education that runs through all ADF career courses.

The only amphibious staff course in the ADF is the Amphibious Operations Planning Course conducted by the ADF Warfare Centre (ADFWC). This five day course is designed to prepare attendees to conduct amphibious planning; however, the low baseline knowledge of amphibious warfare within the ADF requires that much of the course is limited to introductory-level lectures. And due to organisational and staff changes, the course is now reliant on my staff to lecture on it.

The current level of individual training and education will not support the future amphibious capability. This has been recognised and is being addressed in the amphibious warfare competencies project that was undertaken this year.

Education is the key and an improved understanding throughout the ADF of the complexities of amphibious operations is necessary. Until the ADF has the capacity to deliver its own amphibious training, overseas education combined with careful career management will be necessary to develop the pool of ADF personnel with amphibious training and experience.
The Landing Force

To achieve a credible amphibious capability, the landing force will need to be optimised for the amphibious role, fully integrated with amphibious shipping and regularly practise operating from the sea. 3 Brigade, a light infantry brigade, has consistently proven that it is quite capable in an amphibious role; however, this capability will remain limited without an increased scope and frequency of training.

In my view, a specific brigade needs to be allocated the amphibious role and given the responsibility to provide a landing force that is scalable from combat team to battle group. This brigade headquarters would provide the commander landing force (CLF) and staff. They would need to work closely with an established and experienced, joint amphibious staff in order to mitigate the limited experience levels in the participating force elements.

Amphibious Staff

The development of an experienced joint amphibious task group staff is fundamental to achieving the level of capability sought by the ADF as it is unlikely that any non-specialised single-Service organisation will have the detailed understanding to conduct amphibious manoeuvre operations.

The United States with its amphibious squadron staff and the United Kingdom with its commander amphibious task group (COMATG) have standing navy and marine staff organisations that, in conjunction with the landing force staff, are capable of planning and conducting amphibious operations.

The nearest equivalent in the ADF is my staff - Commander Australian Amphibious Task Group (COMAUSATG) which was established within Fleet Headquarters in 2001. Specific tasks for the Australian amphibious task group staff are to:

- develop and implement amphibious work-ups and assessments
- provide specialist advice to Headquarters Joint Operations Command staff
- provide a deployable amphibious operations planning team for operational level amphibious planning as required
- provide core staff for commander amphibious task force (CATF), commander task group or maritime component commander for a minor joint task force
- lead authority for amphibious doctrine and procedures
- provide subject matter expert advice for amphibious capability development
- conduct amphibious lectures and exercises for ADF courses.

COMAUSATG staff consists of eight personnel when fully staffed: 4 x Navy, 2 x Army, 1 x Air Force and 1 x US Navy liaison officer. As a size comparison, the UK COMATG has a permanent staff of 30 and requires augmentation by reserves of up to an additional 24 personnel.

A key lesson learned from recent exercises is that current staff numbers are insufficient to support specified tasks while planning and executing combined and joint raise, train and sustain amphibious exercises. There is also no capacity for staff to continue raise, train and sustain activities should a concurrent amphibious operation be necessary.

The ADF will need to expand the current amphibious task group as a joint amphibious staff capable of providing a standing amphibious component command. This will provide a focus for navy and army amphibious expertise and when embarked, would allow the landing force staff to focus on the land manoeuvre rather than the details associated with achieving the amphibious objectives.

While Chief of Army mentioned that a potential location for this staff might be Headquarters 1st Division, I propose that, perhaps as a medium term interim solution, it should be formed from both Fleet Command and Forces Command, as shown in Figure 1. My main reason is that we need to concentrate the small number of experienced amphibious personnel and because planning and executing raise, train and sustain exercises takes up much of our time. I am proposing a similar construct as the Joint Amphibious Capability Implementation Team (JACIT) which has been formed from both Navy and Army strategic headquarters.

Figure 1: Proposed Joint Amphibious Management Structure
The joint amphibious staff would need to be collocated, either in Fleet Headquarters, Forces Command or elsewhere, to leverage the single-Service skills and to work as a cohesive team. This will allow both the Fleet and Forces commanders to execute their respective raise, train and sustain responsibilities. A joint amphibious staff would also have sufficient personnel to develop an improved collective training cycle, joint certification regime and a joint amphibious preparedness management system based on capability rather than the current system of individual single-Service force elements.

This staff would provide the minimum command and control to form the commander amphibious task force (CATF) staff and support the CLF and his staff, for the full range of tasks from peace support to warfighting. The staff would plan and execute short notice contingencies and would be capable of supporting current and future operations simultaneously. This organisation, or a scalable portion of it, should be the first choice and ‘mission ready’ to support all short notice contingency operations involving amphibious force elements, either as an augmentation specialist staff to a joint task force commander or as a command staff in their own right.

Navy Reserve officers and sailors are currently used to augment the battle watch and supporting tasks within the amphibious task group staff. It would be worth exploring the feasibility of developing a Reserve Amphibious Warfare Branch, along similar lines as the United Kingdom model, and perhaps incorporating both navy and army reserves, to provide a trained pool of augmentees as part of the amphibious staff.

Either Fleet and Forces Command or Headquarters 1st Division are possible options, however, increasing the staff is more important than where they sit in the organisation.

Amphibious Collective Training

The ADF amphibious capability is based on a joint approach to training and readiness in the form of an incremental training cycle. The key feature is a progressive build-up of basic, intermediate and advanced training, on an annual basis. My staff are responsible for planning and conducting Navy-led amphibious exercises and also participating in the conduct of Army and Joint Operations Command-led exercises.

Basic training is focused on amphibious procedures at the unit level to familiarise participants in the basics of planning, embarkation, sea transit and disembarkation.

Intermediate training is aimed at a non-combatant evacuation operation or other short notice contingency tasks. Intermediate level exercises are more intensive at the tactical level and include land manoeuvre and increased demands on headquarters staff.

Advanced level exercises are the culmination of the amphibious training cycle. They are achieved through the inclusion of specific amphibious training objectives within programmed major joint or combined exercises. Advanced training includes warfighting, integration at the combined joint level and a high degree of complexity. These activities are focused on multiple amphibious ships and a battle group conducting amphibious operations with a significant maritime, air and land threat.

Participation in scheduled joint and combined exercises is also used as the basis of single-Service preparedness management. Single-Service elements need to complete a number of tasks routinely in order to maintain proficiency and currency. By completing the annual series of exercises, joint amphibious preparedness is maintained. Figure 2 illustrates how scheduled exercises are used to achieve unit readiness for the major amphibious ship, unit readiness for the amphibious ready element and unit readiness for the amphibious ready group.

![Amphibious Collective Training/Preparedness - current model](image-url)

This collective training concept remains sound however it is dependant on the same force elements participating each calendar year. This has not been consistently achieved due to operational and other priorities. The continuum has not been able to accommodate key single-Service requirements, such as ship’s maintenance schedules, Army rotation policy and training cycle and aviation training needs. Further work is also required to better articulate aims and outcomes in order to drive amphibious skill development and implement an assessment methodology.

The current training cycle is also inefficient with about four exercises conducted throughout the year. Due to the location of the amphibious ships in Sydney and the landing craft, aviation and landing force in Townsville, significant transit time
is required prior to and on completion of exercises. The short duration of around two weeks for each exercise also does not allow sufficient time to become familiar with living, training, planning and operating from ships. This foundation shipboard experience underpins all amphibious skills but currently has to be re-learned during each activity and thus limits the achievement of more complex skills. Consequently, the level of amphibious competency achieved does not meet the planned exercise levels and is constrained by the low level of basic amphibious experience of one or more of the force elements.

This is represented conceptually in Figure 3 where the dotted line represents the level of amphibious competency achieved - usually well below the conceptual exercise level.

Certification of the Amphibious Capability

The training continuum and resulting preparedness reporting would be enhanced by a joint certification activity to ensure all force elements are both individually and collectively prepared. The timeframes for the highest readiness requirements are unlikely to allow a mission specific work up and therefore this joint certification should be aimed at achieving required short notice tasks.

The primary joint ‘capability brick’ for amphibious certification and also preparedness purposes should be the amphibious ready element.

Joint certification would effectively align the training levels of the individual force elements while also providing trained joint packages prepared for short warning contingencies. Certification would remain valid for an agreed period providing that the component force elements are not rotated.

Joint certification would also allow reporting of joint amphibious preparedness vice the current single-Service force element preparedness. This will provide a more realistic assessment of the ability to deploy capable joint force packages at short notice.

Combining these suggested changes will improve the level of amphibious competence that could be generated. This concept is shown on in Figure 4 and culminates in a two-ship amphibious ready group activity although further work is necessary to determine the optimum length of time for the amphibious task force to remain together.
Conclusion

In conclusion, the ADF is approaching the time where decisions will need to be made as to how the amphibious capability will be generated, commanded, rotated and trained. The arrival of the *Canberra* class LHD and supporting amphibious shipping in the near future requires these decisions to have been made and the subsequent organisational changes and a collective training continuum to have been developed and established.

Improved education and individual training at varying levels across the ADF is a key enabler of the amphibious capability.

The second fundamental enabler is enhancing the current amphibious task group staff from both Fleet and Forces commands as a centre of amphibious experience in parallel with JACIT at the strategic level. This staff would be responsible for developing and executing an amphibious collective training regime and an associated certification process for the amphibious capability. Its main role, however, would be to provide a deployable, tactical level joint amphibious task group staff that would support the CATF to plan and execute amphibious manoeuvre in the littoral.

The third fundamental enabler is a brigade that is allocated the amphibious role. This force must be able to focus on developing amphibious skills by conducting longer periods embarked including regular more complex amphibious training and exercises. The brigade headquarters would also provide the CLF and staff to plan and conduct land manoeuvre in the littoral battlespace with the assistance of the joint amphibious task group staff.

Developing these fundamental enablers will improve our ability to achieve the demanding amphibious capability that is articulated in *Defending Australia in the Asia Pacific Century* and long term warfighting aspirational concepts.

Endnotes

3 Amphibious Tactical Lodgement. The landing of forces from the sea in tactical order to secure an area or reinforce forces already ashore. The landing forces are prepared to meet but do not anticipate opposition. Such operations require a favourable sea, air and shore situation.
4 Ship to objective manoeuvre emphasises the speed and agility of air and surface manoeuvre to strike directly at tactical objectives inland rather than waiting for a build up of combat power on a beach and then moving towards the objectives. Distributed Operations refer to discrete tactical activities in separate locations, which may be non-contiguous and dispersed throughout the area of operations. Sea-basing is not new but affords flexible, responsive support by virtue of the protection from land threats afforded by the sea while also reducing the need for host nation support. Ideally, it should reduce the overall force size by reducing the number of C2, CS and CSS elements exposed to land threats.
The purpose of this paper is to offer an operational headquarters’ perspective on expeditionary operations. It will bring a number of themes together to illuminate issues associated with the operational employment of future ADF expeditionary capabilities, and will also provide an outline on further work that is required to ensure the operational viability of these capabilities.

The paper will describe the role of Joint Operations Command (JOC), and articulate the Command’s approach to command and control and how it expects the future joint battlespace will shape the employment of expeditionary capabilities. Using the lens of an expeditionary operation, the paper will then outline a number of key challenges for the conduct of future expeditionary operations.

The Role of Joint Operations Command

For those not familiar with the ADF command and control arrangements, JOC is:

- commanded by a three star general officer
- an operational-level headquarters, with an integrated staff structure, that plans and conducts all ADF operations
- the single command for performing all ADF operations: from support to bushfires in Australia to high intensity expeditionary combat operations.

The Chief of Joint Operations approach to operations is influenced by the need to develop and maintain an Australian operational-level headquarters that is capable of conducting theatre-level campaigns. The conduct of this headquarters is shaped by ongoing developments in the political and military relationship particularly in terms of the requirements for the rapid provision of response options to the Australian government; the need for precision and flexibility in the delivery of military effect, and an increasing desire to incorporate interagency participation that leverages off each government departments’ capabilities.

Technological advancements also remain important, particularly the ability of individuals, organisations and adversaries to rapidly pass and share information to wide audiences. The impact of these capabilities influences the systems and processes for operational reporting, incident management and broad stakeholder engagement.
The Practice of ADF Command and Control on Operations

The JOC structure and the approach to the command of operations reflect two key elements:

• **The first is clarity and simplicity in the line of command.** This is achieved through a direct line from the Chief of Defence Force, to Chief of Joint Operations, to Commander Joint Task Force, to Commander Task Group.

• **The second is a clear distinction between the Service roles of raise, train and sustain forces and the JOC role for conducting operations.** In practice this involves JOC performing a cycle that commences with the development of military response options, progresses to the design of joint task forces for specific missions, requires the acceptance of forces that are certified ready for operations, employs the forces for an operation, evaluates performance, and then hands forces back to the Service Chiefs.

Operational command and control arrangements, which form the cornerstone of the headquarters structure, are reinforced by an approach that emphasises:

• **Mission Command.** Our expeditionary systems need to enable mission command, where subordinates understand a commander's intentions, their own missions, and the context of those missions. This promotes decentralised command, freedom and speed of action, and initiative.

• **Net-Enabled, Effects Based Capabilities.** Net-enabled, effects based capabilities need to provide for the coherent integration of sensors, decision makers and support capabilities to facilitate the flexible and responsive application of military and other national capabilities to achieve specific and desired outcomes.

• **Reach Back.** All these systems need to enable ‘reach back’ facilitated by communications that allow deployed forces to leverage off the capabilities that are maintained remote from their location.

JOC anticipates that the conduct of operations in the future battlespace will be structured around a coalition, joint and interagency framework. It will require commanders and staff to sustain a comprehensive understanding of the battlespace, informed through the coordinated provision of ISR support, which offers a commander the ability to decide and act more quickly than an adversary.

When circumstances require, the ADF will also need the ability to rapidly manœuvre in the battlespace, employ precision firepower to win the fire fight and field appropriate force protection to manage operational risks. The future expeditionary capabilities will be a key enabler to this outcome.

Expeditionary Missions and Recent Practice

The JOC perspective on expeditionary operations is informed by ADF experience gained in exercises and on operations. In recent times this includes operations in East Timor, in Aceh, off Fiji in 2006 and support to Padang, Samoa and Tonga in 2009.

We have also gained extensive operational and command experience in the Middle East Area of Operations over many years. Recent changes to the employment of maritime units in this region, particularly the broadening of our role to include counter-piracy and maritime security operations, continue to expand our experience base.

ADF concepts, tactics and capabilities are further tested in exercises conducted locally (SWIFT EAGLE and TALISMAN SABRE) and overseas (Five Power Defence Arrangements and RIMPAC). From these exercises and operational activities, our amphibious capabilities have become proficient in sea transport roles, humanitarian assistance and disaster relief, but have not established an equivalent level of expertise in all facets of expeditionary operations. Our exercises practice sea loading, sea transportation and landing, but do not adequately practice our commander or force elements in all the complexities within an amphibious operating area.

As the ADF seeks to improve skills, we continue to face the reality that the integrity of our amphibious training regime is subject to operational requirements and has been impacted by its high operational tempo. To address these issues, we will continue to review our program of major activities to ensure that our exercise structure provides the foundation for our expeditionary and amphibious preparedness requirements. More broadly, our single-Service and joint training regime needs to be sufficiently robust and flexible to absorb the consequences posed by operational activities, while continuing to deliver appropriately ‘ready’ forces.

Challenges for the Operational Employment of Expeditionary Capabilities

Having established the role of JOC, the strategic expectations in which future operations will be performed and the Command’s perspective on command and control arrangements, we need to consider the key challenges that lie ahead. These challenges can be illuminated by considering the requirements imposed by a generic amphibious entry operation.

As we think through the development of this system of capabilities, we need to consciously consider that amphibious operations cannot be thought of as a single, stand-alone activity. Our amphibious capabilities may be employed concurrently with airborne or air-land operations. Our doctrine, command and control, training and sustainment arrangements need to recognise and incorporate this possibility.

This review will not consider each stage of an entry operation, but will focus on key areas where further work is required to deliver capable, effective ADF expeditionary capabilities. Entry operations typically encompass the following phases: shaping,
The Execution of Expeditionary Operations by Joint Operations Command

preliminary operations, deployment, decisive manoeuvre, stabilisation and transition. For the purposes of this paper the review will focus on two phases; shaping and the deployment phases. These are the areas that require our attention.

Shaping Phase

In the shaping phase and during precursor activities the operational focus is on establishing situational awareness, planning, forming the joint task force establishing command and control arrangements, concentrating the force and operational rehearsals. Success on operations is heavily determined in this phase. The ADF needs to address a range of preparedness, planning and force preparation issues to create the conditions for success in expeditionary operations.

Preparedness

ADF operational preparedness requirements are developed by JOC and identify the necessary force elements to respond to a range of contingencies within an appropriate timeframe. JOC planning for operations assumes that forces are capable of reaching the required proficiency and competency level within the proscribed readiness notice. The achievement of this condition, which is a single-Service responsibility, requires ready platforms, trained people and, command elements at the established operational preparedness requirement.

ADF expeditionary capabilities must also be ‘available’. This statement, while self evident, necessitates close coordination in the management of platform availability, particularly for those platforms and enabling capabilities that are high value, but few in number such as our amphibious units. This complex problem requires an approach that balances notice to move for operational contingencies against raise, train and sustain activities including deployment and maintenance planning.

To achieve this outcome, JOC needs to strengthen the coordination mechanisms with the single Services to ensure that the ‘indicators and warnings’ for contingencies have parallel processes that trigger platform and people availability.

Force preparation

To satisfy operational training requirements, the ADF has developed high quality, mission readiness training and mission readiness evaluation processes within each of the Services that deliver combat effective forces. The new expeditionary capabilities demand the development of ADF collective training systems that also provide, at task force and task group levels, joint training and mission performance certification. This may comprise more than just amphibious units and will require an agreed approach to joint, mission specific training. Furthermore, the single Services will need to synchronise their training timelines to enable the conduct of phased, joint mission training.

ADF joint training outcomes then need to be validated through agreed certification processes that evaluate joint task forces, their commanders and staff. We can achieve significant improvement in our training effectiveness by further developing our virtual and live exercise frameworks with a corresponding, robust evaluation framework. We are making progress, but there is more work required.

The ADF needs to resume regular joint training that exercises expeditionary capabilities. This training would not just be an Army or Navy matter, but a tri-Service obligation. This will require leadership that brings together the doctrine, raise, train and sustain activities as well as capability development.

The conduct of joint training, as a routine activity, will also enable commanders and staff to establish personal relationships, build confidence and develop a comprehensive understanding of each Services’ capabilities and limitations. These relationships provide the strength and elasticity to cope with the inevitable stress points that are experienced in the planning and conduct of operations. This training would also expand the depth of understanding of military practitioners in expeditionary operations. We have many that understand aspects of amphibious operations, but few who have developed a holistic understanding.

The key training outcome is that the Chief of Joint Operations expects that he will be provided with forces that are trained, competent and ready to perform. JOC does not have the resources, or the ability to work up amphibious forces to the required level of effectiveness.

Planning

The availability of practitioners, skilled in expeditionary operations, is a fundamental input to successful operational planning. For operational planning to be effective the ADF needs to improve the availability of people with sufficient experience and knowledge in expeditionary operations and in particular, amphibious operations. This expertise needs to meet planning requirements at both the operational and tactical level.

The ADF also needs to further develop distributed planning tools that reinforce an effects based approach and enable the participation and contribution of people from other government agencies. A suitable operational risk management framework needs to be developed, for joint operations that enable the identification, analysis and aggregation of risks in a coherent manner. The resolution of these issues will require a response that incorporates adjustments to our training, technology, processes and doctrine.

JOC staff are acutely aware that the availability and integration of key enablers is another fundamental requirement for expeditionary operations. Our operational experience consistently reinforces the importance of: communications, health,
intelligence (including environmental data), and aviation capabilities. Logistics, sustainment and force protection (including anti-submarine, anti-surface and anti-air warfare as well as mine countermeasure operations) then form the foundation on which operational effects are achieved.

Any limitations in these enablers need to be understood, mitigated where feasible and incorporated within the operational design. This outcome requires a comprehensive approach to planning and wide, early engagement with relevant specialists, interagency and coalition partners.

**Interoperability**

Australian government direction requires the ADF to be able to lead military coalitions where we have shared strategic interests and make tailored contributions to coalitions where we share wider strategic interests. Our forces are also expected to contribute to ‘whole-of-government’ campaigns, which incorporate all elements of national power in an integrated joint interagency framework. During evacuation operations or humanitarian assistance and disaster relief operations we can also expect to work closely with host nation military and civil authorities.

These requirements reinforce the need for our expeditionary platforms to provide a high degree of interoperability with other military and civil capabilities. We need to be able to provide access to classified and unclassified workspaces and communications in a manner that is inclusive and enables our partners to be effective. The ADF is already moving down this path, personnel from other government agencies are participating in land force mission rehearsal exercises for Afghanistan.

To be available when you need it, we know interoperability needs to be practiced, tested and refined. Our exercise framework needs to enable this outcome.

**Entry Deployment Phase**

The other phase of an entry operation that deserves consideration is the deployment phase. This phase is focused on establishing an operational capability for decisive manoeuvre. Key issues include the establishment of appropriate command and control and logistics sustainment.

**Command and control**

The employment of military capabilities requires effective, tested and robust command and control arrangements. Given the potential complexity of expeditionary operations, the ADF requires commanders skilled in the execution of amphibious operations, supported by capable staff.

We need to grow joint task force commanders and staff who can operate from both sea or ashore, who are able to confidently exploit the operational opportunities of manoeuvre from the sea. These command elements need to be scalable in size and able to work either as an integrated or component staff depending on mission requirements.

To achieve this, we need to grow commanders and staff that can perform the key expeditionary and amphibious roles, using the Australian approach to conducting operations. Our current amphibious staff arrangements provide a kernel from which to develop these people. The size and permanency of this kernel needs to expand to meet our future requirements.

**Integration and sustainment**

When deployed, our expeditionary capabilities will need to integrate into the ADF network to exploit the capabilities resident within Headquarters JOC and other supporting agencies. This will be necessary to leverage ISR capabilities, air operations coordination and to satisfy command and control related information flows.

The sustainment of these capabilities will also be network-enabled. Our logistic support concept for these forces requires careful consideration to provide the foundation for our operational effectiveness. It is very important that we do not underestimate the criticality and complexity of this task - particularly when conducted over long distances. These linkages will need to be practiced and should become routine for embarked command elements.

**Conclusion**

In conclusion, the new equipment that will be introduced into the ADF over the next decade will provide significant expeditionary capabilities that are available to the Australian government. These capabilities will enable JOC to develop an increased suite of military response options for government consideration across the range of amphibious and military support operations.

From a joint perspective, much is being done in capability development and joint capability coordination to deliver these enhanced capabilities. In addition to the considerable work being undertaken in the Service Headquarters to ensure the successful introduction of the new equipment and platforms, JOC has a key role to perform to ensure the system of expeditionary capabilities is developed to enable operational effectiveness than waiting for a build up of combat power on a beach and then moving towards the objectives. Distributed Operations refer to discrete tactical activities in separate locations, which may be non-contiguous and dispersed throughout the area of operations. Sea basing is not new but affords flexible, responsive support by virtue of the protection from land threats afforded by the sea while also reducing the need for host nation support. Ideally, it should reduce the overall force size by reducing the number of C2, CS and CSS elements exposed to land threats.