

Amphibious manoeuvre:

On and off the water

Howard Anson

At a glance ...

- Recent operational experiences strongly indicate the ADF needs to significantly upgrade its capabilities for amphibious manoeuvre.
- Operational analysis and experimentation point strongly to the all-round efficiency of acquiring two medium-sized LHDs rather than 4 to 6 smaller vessels.
- The proposal has attracted a range of criticism, mostly ill-informed.
- Two medium-sized LHDs can be procured within current financial guidance even if built in Australia, but the latter will need further study.

The ADF is now thankfully well past the era when amphibiousness was regarded as a foreign and exotic form of warfare or as a capability that simply slipped between the cracks among the three Services. The nadir in this regard was when five of the six Balikpapan-class heavy landing craft were mothballed in the early 1980s because the capability was not valued as core business by either the Navy or the Army.

Fresh thinking at last

The relatively stolid 2000 Defence Capability Plan (DCP), still shaking off the intellectual aridity and professional introversion engendered by a generation of the *Defence of Australia* dogma, unimaginatively envisaged HMA Ships *Manoora*, *Kanimbla* and *Tobruk* being replaced by three similarly equipped and sized vessels of a more modern design. In contrast, last year's Defence Capability Review showed the result of much fresh and innovative thinking. It proposed instead the replacement of *Tobruk* and one of the two LPAs by two larger, medium-sized, multi-purpose amphibious ships of the Landing Ship Helicopter and Dock (LHD) type, and the other LPA by a large, strategic sealift ship (or ships) of an as yet unspecified type.

The revised DCP sheds a little more light on the strategic sealift capability under Joint Project 2048

(Phase 4C). This latter capability may or may not involve a capacity to deploy embarked forces across a beach, although various options are apparently being refined in a current ADF study into strategic and operational lift capabilities.

This outbreak of fresh thinking on amphibiousness and sealift is obviously a result of the deficiencies in the ADF's capability for strategic and operational manoeuvre that have been highlighted during operational deployments to Somalia, East Timor and Solomon Islands, and during numerous exercises around Australia and its offshore territories. The Chief of Defence Force and the Service Chiefs are to be congratulated on their considered professional advice to the government in this regard. It is also heartening to see a government listen to such advice and act on it.

The decision to significantly revitalise and boost the ADF's capabilities for amphibiousness and sealift has, however, been criticised from a range of viewpoints. Some critics have not appreciated the numerous advantages of a vessel with both helicopters and a well-deck for internal docking of landing craft. Other critics appear genuinely concerned on cost or decision-making process grounds, or because they wrongly assume the two ships sought are unusually large (they are in fact medium-sized LHD by world standards), and will need mollifying with more facts. Still further critics appear motivated more by academic or ideological fixations on how the ADF should be used rather than sound professional knowledge of the sea or military matters in general. Some of these latter critics, including the usual bevy of airpower theorist zealots, have reacted viscerally to what they perceive as a threat to their pet projects or pet national security outlooks. Finally, some attempted criticism of the revitalisation appears to be the result of simple mischief-making by retired Defence officials seeking to defend their increasingly discredited legacies from reform.

An example of criticism embracing several of these deficiencies is a recent pamphlet from the Australian Strategic Policy Institute (ASPI), *Capability of First Resort? Australia's Future Amphibious Requirements*. It contains broadly accurate and informative background

data but its attempted analysis of ADF capability overlooks, or is misinformed on, a number of key factors. Consequently, the pamphlet's principal assertions end up as a superficial discussion of a complex topic.

The broad problem involved is that a range of uninformed criticism of the LHD decision either ignores, or misunderstands, the financial, human resource and materiel constraints under which the ADF operates. Such critics also ignore the real challenge for defence capability planning, which is to get the greatest usable capability from the available resources—more bang for the buck. Accordingly, the conclusions drawn by most of these uninformed critics are flawed. In particular, claims that two medium-sized amphibious ships will provide an inferior capability compared to four smaller ones, are fundamentally incorrect.

The nature of amphibiosity

No credible commentator on Australia's defence now maintains that the defence force does not need a realistic capability for amphibious manoeuvre and sealift in our region. In Australia's case such capabilities must include a limited capacity for offensive amphibious operations but not (certainly for the foreseeable future) one for opposed amphibious assault. In other words, we need some capability to manoeuvre forces and land them in an actual or potentially hostile environment, but only in areas not actively or heavily defended by an enemy force at that time. Seizing points of entry and egress for the evacuation of Australian citizens from regional trouble spots, or as a base for subsequent regional assistance or peacekeeping operations, are two obvious contingencies based on recent ADF operational experiences.

Despite both Australian military history and current ADF doctrine providing clear guidance, the distinctions between amphibious manoeuvre, amphibious attack, amphibious assault and sealift are not well enough understood in some circles. There continues to be much silly comment on such matters, even among commentators in defence think-tanks and among alleged defence writers in the media. A good recent example occurred when the purchase of very limited numbers of new tanks was announced. The announcement was almost engulfed by a large number of simply stupid statements about where and how these tanks would supposedly be used, how they supposedly could not be deployed or used in our region, or that they were only being procured because the ADF allegedly harboured some secret fantasy about mounting opposed amphibious assaults.

Effective amphibiosity requires appropriate shipping for sea control, air defence, sea transport, ship-to-shore fire support, across-the-beach landings, logistic resupply and medical support tasks. It also requires versatile and marinised rotary-wing aircraft, well-equipped troops, flexible communications and logistic systems, and sound doctrine and training. In terms of specialised amphibious shipping the ADF currently has two transports, *Manoora*

and *Kanimbla*, and the heavy landing ship *Tobruk*. All are vessels of advanced age and due for scrapping between 2010 and 2016. *Tobruk* can land troops by helicopter, landing craft and, in some circumstances, by beaching. *Manoora* and *Kanimbla* (known by the unique Australian designation LPA) can carry larger forces, and more helicopters and landing craft, but cannot be beached.

An LHD lands its embarked forces by a mix of helicopters and internally loaded landing craft. Both types of ship-to-shore platform are carried on LHDs and such ships are capable of flexible use in a variety of tactical situations, weather conditions and sea states. Such vessels are therefore a significant improvement on the LPAs, which carry much fewer helicopters, can only launch and recover much fewer at once, have to lower their two landing craft by crane over the side before loading, and lack sufficient space to exercise or train embarked troops. The ageing LPAs are also famous for making embarked troops seasick, not least because of their relatively small size, modified hulls and generally cramped conditions. Smaller alternatives to the LHDs would simply perpetuate such disadvantages and faults.

If the ADF is to maintain a credible deterrent and actual capability in the region it really needs to be able to land, and then support, a land force big enough and capable enough for independent tasks. As a range of contingencies—from a possible evacuation in Fiji in 1987 to the initial phase of the regional assistance mission in Solomon Islands in 2003—has shown, a force of one or two companies is simply often not big enough even if it can be later reinforced by air.

On the other hand, the capability to land a brigade-sized force over a short period is beyond our current and foreseeable needs and would require a large number of amphibious and supporting vessels (and a bigger and better equipped army and air force). Recent operational experiences in East Timor, Bougainville and Solomon Islands, and general tactical commonsense, therefore point to a battalion group-sized, combined-arms force as the tactical grouping most likely to be required (and which is realistically affordable under current financial constraints). Such a force would also generally mean a company group could be inserted by helicopter in one lift for the range of tactical tasks most likely to be initially needed. This latter aspect is a key capability requirement as a company group is really the smallest force capable of semi-independent tactical operations even if only for short periods.

Experimentation and operational analysis

It is believed that recent experimentation and operational studies by the ADF back up these judgements. It is also understood that these experiments and studies clearly indicate that when the maximum-sized force is required it would be best deployed from two medium-sized LHDs rather than a larger number of smaller and individually less capable ships. This largely stems from medium-sized

LHDs offering the best compromise among the key factors, such as sustainability, preserving the effectiveness of embarked forces, overall load capacity, offload and force movement to objective by air and surface craft, affordability and crew numbers.

Some critics of the LHD decision appear either unaware of the results of this experimentation or reluctant to accept them. For example, the ASPI pamphlet criticising the decision to procure medium-sized ships makes several questionable assertions about capability development and wrongly claims 'our capability requirements cannot be satisfied by just two ships, no matter how large and capable...'. The further incorrect claim is made that 'Army and DSTO simulation, modelling and experimentation ... all pointed to a clear preference within Defence for a larger number (at least 4) of somewhat smaller 12,000 ton LPDs'.

Such incorrect assertions and claims reflect incomplete analysis or professional knowledge. All of the analysis done for this capability indicates that, with some practical changes to doctrine and tactics, two medium-size (around 25,000 tonne) ships will indeed meet all of Army's (and the ADF's) requirements, especially when sufficient helicopters can be carried and launched. The potential, but not frequent, higher-end requirements envisaged for some contingencies would be met using both ships—as they have to be with both LPAs under current arrangements. Given modern fleet management practices, two ships maximises the probability that at least one will generally be available at any particular time. Three ships would be required to guarantee it.

Getting fair dinkum about amphibious capability

The combined amphibious capability (both ships working together) sought from the new LHDs is thought to include:

- the ability to carry, lodge and sustain a combined-arms force of approximately 1200 combat troops and a further 800 personnel (aboard and ashore) providing helicopter operations, logistics, command, intelligence and other support, plus the ships' complements;
- sufficient space and deck strength to carry and tactically unload more than 100 armoured vehicles, including a small number of M1A1 Abrams tanks, and around 260 general service wheeled vehicles (totalling approximately 2000 lane metres of embarked vehicles);
- hangar space for at least 12 helicopters and six landing spots on each ship to allow a company group to be simultaneously lifted and lodged ashore over tactically effective distances (and the helicopters to be easily refuelled, maintained and secured);
- the ability to provide and sustain logistic, medical, rotary-wing air and operational maintenance and repair support to forces deployed ashore from the ship for up to 10 days at a time;

The trend to larger platforms

Based on currently known capital equipment acquisition plans, at around 25,000 tonnes the Navy's two new medium-sized, multi-purpose LHDs will, ship-for-ship, be the most capable amphibious platforms in the Asia-Pacific region. They will exceed the troop lift, vehicle carriage and helicopter operating abilities of any similar vessel now in regional service, or scheduled to be procured over the next 15 years, and give the ADF a much needed capability edge in the region.

But the ADF is not alone in seeking to exploit the considerable advantages that large, flat-top or through-deck ships of various natures enjoy over other types of warship. The old saying 'steel is cheap and air is free' still holds true when it comes to carrying big loads, lots of troops and supporting 10 or more aircraft. While no regional country intends to build amphibious ships the size of Australia's new LHDs, the regional trend toward big flat-tops for even wider purposes is clear enough.

India, for example, has for some years been developing plans for a new 'Air Defence Ship' (ADS) that will enter service in the 2010–2012 timeframe. The ADS will displace 32–35,000 tonnes and provide hangar space for some 15 MiG-29K fixed-wing combat aircraft and a mix of about 20 helicopters, for which at least six deck spots will be provided. The ADS will complement the Indian Navy's newest aircraft carrier—the 45,000 tonne ex-Russian Kiev-class carrier *Admiral Gorshkov*—when its refurbishment is complete in 2008–2009.

China also reportedly has a long-term goal to acquire at least two large aircraft carriers of up to 60,000 tonnes displacement. Construction of these has not yet commenced, although there is little doubt the growing bluewater capabilities of the Indian Navy will likely spur the Chinese on in this area.

Thailand already operates the 11,500 tonne helicopter carrier *Chakri Naruebet*, which can accommodate six S-70B Seahawk multi-mission helicopters and the same number of AV-8S Harrier short take-off vertical landing aircraft.

In outlining its 2004 Defence White Paper, Japan revealed vague details about its blueprint for a through-deck helicopter carrier. With at least four deck spots, the vessel is likely to be around 200m long and displace at least 15,000 tonnes.

South Korea will commission the first of two flat-top multi-purpose amphibious ships (known as LPX) in 2007. At 13,000 tonnes, the LPX will feature four helicopter deck spots, carry 700 marines plus armoured vehicles and support two air cushion landing craft.

—Ian Bostock

- the capacity to provide effective and sustainable command and control of a joint task force comprising land, maritime and air elements; and
- the ability to mount simultaneous helicopter and watercraft operations in weather conditions up to and including Sea State 4 (a windspeed of 11–16 knots and a wave height of 1–1.5 metres with numerous white caps on the waves).

These are not unrealistic requirements given recent ADF operational experiences and Australia's geo-strategic position. Despite varying levels of uninformed comment to the contrary, it is far more likely than not that such requirements can also be met in terms of cost, ship design and low-risk ship construction availability.

Finally, the third component of Joint Project 2048 is sealift capability. Among other uses, the sealift ship(s) will be designed to provide follow-on support in later phases of an operation. Studies into roll-on/roll-off versus high-speed vessels are apparently being scrutinised as part of the ADF Lift Study currently underway, but it is unlikely that either type will be procured under Phase 4C of the project given the inability of existing designs to adequately address the probable need to bring loads ashore via landing craft in the absence of port facilities. More likely is that further analysis will confirm the all-round capability advantages, operational flexibility, offload rate and cost-effectiveness (both acquisition and through-life) of purpose-built landing ship dock vessels and the like.

There is a connection between an actual amphibious lodgement and the follow-on strategic lift but it is not nearly strong enough to halt the definition of the amphibious ships while the sealift ship(s) decision is being made. The claim in the recent ASPI pamphlet that: 'It doesn't make sense to commit ourselves to the purchase of two large [sic] ships when we have no idea what the third ship will look like', is not valid.

Getting fair dinkum about the cost

Within the financial constraints of anticipated defence funding it is apparently intended that the additional cost of the two medium-sized LHDs will essentially be met by cutting the scale of the replacement afloat support ships under Project SEA 1654 (Phases 2A & 2B).

The current costings in the DCP are based on data publicly available from overseas construction programs. In terms of constructing such ships in Australia, any study into the feasibility of doing so would need tender-quality data from Australian shipbuilders. It is understood that Defence will undertake a risk reduction design study to provide the necessary data to enable the Government to make such a decision.

There are other classes of amphibious ship available (see Tables 1 and 2) but these do not provide the capability sought. The Wasp-class are too large and many of the others too small. In many of the latter

cases such vessels would also be more costly and less manpower effective to crew than two medium-sized LHDs. In general terms, the alternative of three or four smaller amphibious ships would increase dramatically the crew numbers, fuel costs and maintenance requirements involved.

This does not appear to be grasped by some critics. The recent ASPI pamphlet on Australia's amphibious requirements, for example, glossed over the total cost, in terms of crewing, capital and operating costs of several smaller vessels. In quoting the Chief of Navy that 'smaller vessels require similar crew sizes to that of the two large ships as well as additional fuel and maintenance costs and resources...' the pamphlet questioned whether the minimum of an additional 280 Navy personnel required for four smaller ships is such a major factor.

In fact, the size of the crew has a significant effect, around 30 per cent, on the total cost of ownership. A larger number of smaller platforms would place a heavy burden on naval manning. The Navy is not immune from the pressures of demography and will need to continue, as far as possible, to minimise its demands for scarce, valuable and expensive personnel.

In addition, after a brief early acknowledgment that a greater number of smaller vessels is most likely not affordable within the existing budget allocation, the ASPI pamphlet continued to press the case for more vessels while ignoring the further costs associated with additional crewing, capital and normal operations. From a systems perspective, four smaller vessels are simply not affordable. Most importantly, four small ships do not provide the number of deck spots and air mobility needed for successful amphibious operations. This would actually require six smaller ships. All in all, four small ships would be a lesser capability than two medium-sized ships but would cost markedly more, both to acquire, and throughout their 30-year life of type.

Finally, there have been claims that the LHD project costs could exceed the budget allocation by hundreds of millions of dollars. These are untested assertions at this stage. The risk reduction study being undertaken will examine the overall project and through-life cost of the candidate designs. This study will involve both the overseas ship designers and the Australian ship building industry.

That said, the raw data available now indicates that the Spanish Navy is building its 27,000-tonne LHD for approximately \$A610 million; while the French Navy will pay around \$A920 million for its two 21,500-tonne Mistral-class LHDs. There should be more than enough in the Joint Project 2048 Phases 4A and 4B budget (\$A1.5–2 billion is allocated) to provide two LHDs for the ADF complete with C4I fit, self-defence armament and several years worth of logistics support. As a comparison, the Royal Navy's new 17,000-tonne Albion-class LPD has a unit cost (including C4I suite) of about \$A640 million.

Design	Landing Force	Lane Metres	Landing Craft ¹	Helicopter Spots	Hangar Space	Crew
LHD requirement (based on two ships combined)	1200	2000	8	12	24	<500
Izar LHD	900	1060	4	6	12 ²	243
Mistral (lengthened)	650	950 ³	4	6	16 ⁴	~230
Wasp	1700	2000	3 LCAC	9	42	1108
Ocean	830	250	4 LCVP ⁵	6	18	285
Johann de Witt	547	475	4	2	6	165
Rotterdam	611	500	4	2	6	150
Galicia	543	316	4	2	6	150
Endurance	350	250	4	2	2	100+
Albion	305	450	4	2	3	325
San Antonio	720	773	2 LCAC	4	2–3	361
San Giorgio	400	–	3	3	3	168
LPX	700	100+	2	4	4+	400
Oosumi	330	100+	2 LCAC	3	4+	135+

Table 1: Design Characteristics

1. Landing craft numbers are for LCM8-type unless otherwise stated.
2. Reserved for helicopters only; not a mixed load space. Hangar volume is not included in totals for vehicle lane metres.
3. Available only with a commensurate reduction in hangar space.
4. Achievable only with a commensurate reduction in the number of vehicles carried.
5. HMS *Ocean* has no well-deck for internal docking but carries 4 LVCP on davits. It cannot carry tanks and carries only a limited number of wheeled general service vehicles (hence the larger number of hulls that would be required to meet the Australian requirement as shown in Table 2).

Design	# Ships Needed	Landing Force	Lane Metres	Landing Craft	Helo Spots	Hangar Space	Crew
ADF Requirement	2	1200	2000	8	12	24	<500
Wasp	1	1700	2000	3 LCAC	9	42	1108
Izar LHD	2	1800	2120	8	12	24	486
Mistral (lengthened)	2	1300	1900	8	12	32	~460
San Antonio	3	2160	2319	6 LCAC	12	6–9	1083
Johann de Witt	4	2188	1900	16	8	24	660
Rotterdam	4	2444	2000	16	8	24	600
San Giorgio	5	2000	–	15	15	15	840
Galicia	6	3258	1896	24	12	36	900
Albion	6	1830	2700	24	12	18	1950
Endurance	8	2800	2000	32	16	16	800+
Ocean (but with no heavy vehicles)	8	6640	2000	32 LCVP	48	144	2280

Table 2: Comparison of Hulls, Characteristics and Requirements

1. The key numerical column in this table is the first one. It shows the number of ships in each class needed to lift a battalion group-sized combined-arms force including troops and vehicles.
2. This table excludes the LPX and Oosumi designs because they do not meet the lane-metres requirement.

Strategic advantages and liabilities

Since announcement of the intention to procure two medium-sized LHDs there has been much discussion on the question of operational redundancy. Much of this has been uninformed. Some criticism, advocating larger numbers of smaller ships, has even used alleged redundancy problems as a stalking horse for ideological objections. The latter group of critics appear to believe that medium-sized LHDs are somehow 'aircraft carriers' and are being procured only so the ADF can operate throughout the world in company with our major allies. Apart from being wrong in terms of the practical operational requirement and intended strategic purpose, this claim is invalidated by the world-wide trend towards bigger aircraft carriers. The LHDs will, in fact, be around only one third to half the size of the smallest modern aircraft carriers entering service with the world's principal navies in the next decade.

Such red-herring criticisms raised against the LHDs indicate either poor research or wilful ignorance. It seems clear that the main reason underlying the LHD decision is to develop a better capability to operate in our immediate region rather than further afield. One obvious sign of this is that the sustainability requirements involved are much less than that specified by countries with an avowed global requirement. The French, for example, have specified that the Mistral-class have to be capable of operating on station for three months at a time.

In terms of strategic risk, many critics of the LHD proposal appear to forget that for most contingencies only one amphibious ship would be required. Each medium-sized LHD will, for example, be more capable than both LPAs combined. Furthermore, any operation that would require both LHDs is less likely to arise without sufficient notice being obtained so that both ships can be made available through varying their maintenance or operational programs.

In terms of overall strategic vulnerability, the project to replace *Tobruk* and one of the LPAs with LHDs is simply replacing two smaller ships with two larger ships. If this is somehow a strategic (or operational) vulnerability then it is one we have risked for a very long time already. In any event, should our strategic outlook worsen we would need additional ships of any class and a third medium-sized LHD, for example, would provide an optimal solution anyway.

Amphibious shipping class comparisons

Two ship designs appear to meet Australia's capability requirement: the Spanish Strategic Projection Ship (LHD) and the French Mistral-class LHD. Both versions are under construction for their parent navies, with the first Mistral-class LHD expected to commence sea trials next year. Tables 1 and 2 summarise the operational requirements and characteristics of various types and classes of amphibious vessel, and also include a wider

range of amphibious shipping for broader comparative purposes.

Conclusions

It is unfortunate that the planned revitalisation of the ADF's amphibious capabilities has attracted so much uninformed criticism. It is doubly unfortunate that the matter may become somewhat of a party-political football rather than one considered on its true strategic and professional merits. There is no doubt that the ADF needs significantly more capable amphibious platforms and little doubt that the current plan for medium-sized LHDs offers a better way forward than the alternatives proffered thus far.

In any event, the range of experimentation and studies being conducted will produce the optimal solution within the obvious parameters of operational need, cost and strategic policy—as long as the naval professional analysis involved is quarantined from the baleful influences of academic pet theories, ideology, party-political point scoring and knee-jerk criticism. ♦

Howard Anson is a pseudonym for a retired ADF officer with considerable experience in joint operations, strategic policy and capability development.

Homeland security

Advertisement