Executive Summary

This paper is presented in response to the request by the Department of Defence for Submissions to the 2015 Defence White Paper, and is intended to address Force Structure and Preparedness.

The Royal Australian Navy is currently introducing two Canberra Class Amphibious Assault Ships (LHD), the largest vessels ever operated by the RAN, and will provide Australia with the ability to deploy military personnel in sophisticated air-land-sea operations anywhere the Government deems necessary. These vessels are without organic air defence and are only able to intercept an aggressive air attack with anti-air missile equipped escort ships. Pre-assault preparation land attack capability is with relatively light weapons from helicopters or ship's guns. As the distance to any amphibious operation from a large, secure airfield increases, the difficulty for the RAAF to provide a combat air umbrella increases exponentially.

Australia, as an island continent and maritime nation, does not need a separate military service in the form of an Air Force. The aviation capability currently provided by the RAAF should be merged into the RAN and the Australian Army. Basing the nation’s air defence around the Fleet Air Arm and two operational aircraft carriers would mean that there would be a more flexible air defence arrangement. All fighter-bomber aircraft would be carrier-capable, deployable at any time, be based on both the East and West coasts and, more importantly, be able to be part of a Task Force supporting LHD operations. During operations far from the Australian mainland, large air-refuelling and/or airborne early warning aircraft may not be needed at all.

With nations in the Indian and Pacific Ocean areas investing in sophisticated aircraft carriers and aircraft, it is recommended that Australia:

- Slowly move the ADF to a Navy and Army based Defence Force.
- Join with other Allied Nations in developing a mutually acceptable, suitable conventional aircraft carrier.
- Have the ability to project Australia's influence and forward defence outside land-based aircraft.
- Abandon currently developing Vertical Take-off and Landing aircraft until they are operationally superior and affordable.
- Assess carrier-capable aircraft from all nations, to select the type with the best range, performance and weapons capability for Australia.

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4 September 2014
Submission to the 2015 Defence White Paper
Force Structure and Preparedness

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1.0 **Introduction**

The purpose of this submission is to propose changes to the Force structure of the Australian Defence Force (ADF) and in doing so change the preparedness of the Force(s) to defend Australia and any area in the world that an Australian Government deems necessary.
## 2.0 Abbreviations and Acronyms

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>ADF</td>
<td>Australian Defence Force.</td>
</tr>
<tr>
<td>AEW&amp;C</td>
<td>Airborne Early Warning and Control – RAAF E-7A “Wedgetail”</td>
</tr>
<tr>
<td>ASW</td>
<td>Anti-Submarine Warfare. Also to include Anti-Surface Warfare</td>
</tr>
<tr>
<td>CV</td>
<td>Conventional aircraft carrier utilising an angle deck, arrestor wires and launch system.</td>
</tr>
<tr>
<td>EEZ</td>
<td>Exclusive Economic Zone. In Australia’s case 200 n.m. (except where less by agreement) covering approximately 6,048,681 square Kilometres (1,763,513 sq n.m.)</td>
</tr>
<tr>
<td>FAA</td>
<td>Fleet Air Arm of the Royal Australian Navy</td>
</tr>
<tr>
<td>FAA(RN)</td>
<td>Fleet Air Arm of the Royal Navy (UK)</td>
</tr>
<tr>
<td>FAA(USN)</td>
<td>In this submission this refers to the Fleet Air Forces of the United States Navy and is used in this context to show similarities and differences as the case may be.</td>
</tr>
<tr>
<td>LHD</td>
<td>“Canberra” Class Amphibious Assault Ships.</td>
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<tr>
<td>LHD/VSTOL</td>
<td>“Canberra” Class LHD, but operating vertical take-off and vertical/short landing.</td>
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<tr>
<td>LRMP</td>
<td>Long Range Maritime Patrol/Antisubmarine Aircraft – RAAF P-3C “Orion”</td>
</tr>
<tr>
<td>NGS</td>
<td>Naval Gunfire Support. Fire support for troops landing or onshore from ships at sea.</td>
</tr>
<tr>
<td>RAAF</td>
<td>The Royal Australian Air Force</td>
</tr>
<tr>
<td>RNAS</td>
<td>Royal Naval Air Service. Formed pre-WW1 it was the precursor to the Fleet Air Arm(RN)</td>
</tr>
<tr>
<td>UAV</td>
<td>Un-manned Air Vehicles. Drones etc.</td>
</tr>
<tr>
<td>USMC</td>
<td>The United States Marine Corps</td>
</tr>
<tr>
<td>V/STOL</td>
<td>Short Take-off and Vertical Landing fighter aircraft. e.g. AV-8 Harrier, F-35B</td>
</tr>
</tbody>
</table>
3.0 Historical Background

Voltair
"Is there anyone so wise as to learn by the experience of others?"

Naval Aviation in the British/Australian context stretches back over 100 years to when, in 1908 the Royal Navy appointed a Naval Air Assistant.

Naval Aviation was developing to the point that on Christmas Day 1914 the RN carried out history's first successful ship-mounted strategic raid and by 1915 the Naval lighter-than-air (LTA) patrol craft were keeping the North Sea U-boat danger in check. By this time the RN had proven the integration of Naval air forces using the (then) new wireless transmission (W/T). The idea of a flush deck carrier, first proposed in 1914, were rejected on cost grounds.1 By April 1917 the RN was sufficiently impressed with the potential of naval air power to order the first conventional aircraft carrier HMS "Hermes".

In 1916 the Royal Naval Air Service (RNAS), criticised for its failure to stop the German Zeppelin raids over England, devolved responsibility for home air defence to the Royal Flying Corps.

On 1 April 1918 the Royal Air Force (RAF) was formed and took from the RN 55,000 personnel and 2,500 aircraft.

Having to rely thereafter on the RAF to provide pilots and maintenance the Fleet Air Arm (FAA) languished, with the RAF providing the Navy inferior or unsuitable types. In the re-armament leading up to the Second World War this situation, proven not to work, led to the RN regaining control of the FAA by 1937.

Japan appreciating the growing potential of naval aviation. Between 1918 and 1938 eight aircraft carriers equipped with modern aircraft commissioned into the IJN.

Australia's reaction to developments in naval aviation were framed by comments of Marshall of the RAF Sir Edward Ellington, who in 1938, was invited to Australia to inspect the RAAF.

1 John D Rawlings - “Pictorial History of the Fleet Air Arm” p.29
Considering the then state of the IJN it is remarkable that he was heard to say:

“I do not believe that any power can invade another country until it has established some measure of air superiority, and I do not believe this can be done by ship-borne aircraft”.

To compound the uncomprehending manner with which the RAAF viewed the IJN, Air Vice Marshal Goble, (Chief of the Air Staff on three separate occasions during the inter-war years) even went so far as to say that the Sunderland maritime patrol aircraft would be able to defend against the Japanese A6M Zero. As late as January 1939 Air Commodore William Bostock RAAF stated that, with regard to a carrier raid on Sydney or Newcastle, the Air Force needed a fighter:

“because the objective of the raid may remain in doubt until the last few minutes before the attack is delivered, e.g. an enemy ship 80/100 miles east of Sydney may launch aircraft to attack Sydney, Newcastle or Port Kembla with equal facility. Our best plan is therefore to endeavour to intercept as close to the launching ship as possible”.

Bostock was giving a tactical appreciation of the type of fighter required for the RAAF. The conclusions he reached – that a short range, single-engine type was unsuitable and must be able to intercept an enemy “as close to the launching ship as possible” - is as true today as it was in 1939.

The history, capability and ability of carrier forces from both main combatants in WW2 is well known. From 1947 to 1983 the RAN had a carrier capability.

It is important to note that no country's land-based aircraft have ever successfully defended against a determined carrier-based opponent. The most relevant example from Australia's point of view was the 19th of February 1942 attack on Darwin.

4.0 RAAF Background

Although the RAAF has a large and diverse structure, there is nothing specific to an “Air Force” that can not be accomplished by Naval and/or Military (Army) units. Indeed, before the formation of air forces in WW1, all types of air operations were being carried out by both the Royal

2 Ewers, Dr. Peter - “Wounded Eagle” p117 and National Archives UK AVIA 2/1919

3 Ewers, Dr. Peter - “Wounded Eagle” p 136
Naval Air Service and the British/Australian Armies. The RNAS was at one stage operating armoured cars in raids on the Germans in Belgium.

Public disquiet over the German aerial bombing campaign, and a personal feud between an Army Colonel, (Trenchard) and the First Lord of the Admiralty (Churchill), both wishing to control their own air power - came to a head in 1917. The result was that a South African General (Smuts) was brought in as an advisor to break the deadlock. General Smuts had no Naval experience and so advised the Government to form an Air Ministry and consequently the RAF was formed on the 1st April 1918 from mainly political motivation.

In Australia, both Navy and Army made determined attempts to win approval for their own independent air service. Given the shortage of funding the Government, by 1918, “accepted that a single air service serving the needs of both the Army and Navy represented the only viable way forward.”

Both other services accepted the situation, however they continued to argue as to question of control, “agreeing only that it should remain subservient to both of them”. As Australia usually followed the “Mother Country” at that time, the RAAF was formed on 30th March 1921.

5.0 Overall Situation

From the time of the first European explorers, Australia has been dependent on the sea for transportation and defence. After the six colonies federated on the 1st January 1901, maritime defence was entrusted to firstly the Royal Navy, and after October 1911, the Royal Australian Navy. With some 25,700 kilometres of coastline to protect, the “tyranny of distance” was never so true.

By 2016 the Navy will have two Canberra Class Amphibious Assault Ships (LHD) in Commission capable of operating anywhere from the Middle East to the West Coast of the USA and beyond. Alongside a crew complement of around 360, these ships may carry up to 1600 Australian Army troops. The ships have a range of 9,000 nautical miles, further with replenishment at sea.

In purchasing these ships, it would be strange indeed if the Government intended that they only operate under a fighter air umbrella. When loaded with troops, these ships will need extensive air cover as well as surface and sub-surface defence.

In time of conflict this means 24 hour a day cover, so as the force moves further away from an established land air base, the problem for the RAAF – and it's air refuelling assets – becomes exponentially difficult. In a very short time it could reach the limit of it's ability in terms of aircraft availability, aircrew fatigue and fuel.

4 Australian Air Publication AAP1000-H The Australian Experience of Air Power, Sec 1:25
5 Ibid – my italics
5.1 **F35 “Lightning II”**

Assuming the RAAF takes delivery of the intended 72 F35A fighters, and has them operational by 2021, this aircraft has a quoted combat radius of just on 600 nautical miles. Until that time the current F/A-18 Hornet/Super Hornet aircraft will be required for Fleet air defence. Examples of the F/A18's 400n.m. combat radius are:

RAAF Base Curtin to the Southern tip of Timor,
RAAF Base Darwin to Dili.

The distance from RAAF Base Learmonth (WA) to Christmas Island is approximately 870 n.m.

None of these aircraft are capable of operating from a ship at sea, so will be operated from fixed geographic locations on land. There are a limited number of airfields in Australia that these aircraft can use, so even dispersed to camouflaged locations within those airfields, the latitude/longitude of these positions is known. The locations of RAAF Bases Sherger, Curtin, Learmonth and all southern bases are well known. Dispersed locations may be found through satellite surveillance, human intelligence and/or the use the internet. Once located they are easily targeted. Of course they may be deployed to other bases (an aircraft “shell game”), but this situation uses fuel and flight hours for the sake of it.

If employed to cover the Fleet at sea, then costly deployment around the country, possibly using air-to-air refuelling, will be required, as will dispersal/camouflage again being required at the new base.

The present situation is akin to the “Atlantic Gap” during WW2, where the German Air Force was free to watch over Allied convoys and feed the information to their surface and sub-surface forces. RAN ships deploying in any “aggressive” manner can easily be shadowed by any other nation's Patrol aircraft. With no organic air defence there is no way to “deter” the intruder unless Australia was actually at war.

5.2 **Deployment**

Should the International situation require the deployment of RAAF fighters to Singapore, the Indonesian Government may close it's airspace to Australian Military aircraft. To skirt this airspace, the distance from Darwin to Singapore via the Papua NG border is approximately 4000n.m. and via the Western side of Indonesian airspace, 3900n.m.

The Indonesian Air Force currently operates 26 F-16s, 5 Su27s and 11 Su30s

6.0 **Shipborne Fighter Aircraft**

Shipborne fighter aircraft are perfectly capable of performing exactly the same roles as an Air Force fighter. Additionally, when required to deploy ashore they do not need to land at a known
location. For example, if a carrier is required to dock for maintenance in Sydney Harbour, it is able to fly off its Air Wing in the dead of night somewhere off the NSW coast and by sunrise these aircraft may be under cover at either/all of East Sale, Nowra, Canberra, Sydney, Richmond or Williamtown.

On the other hand land-based – not ship capable – aircraft are restricted to the scenarios laid out above. In summary, Naval aircraft are able to achieve all that a land-based fighter can, but are also able to defend its carrier, other ships in the fleet/convoy and provide ground attack support.

7.0 Force Structure

Given the way in which the ADF is evolving there is a strong case for the integration of the RAAF into the other two Forces. Australia has never used Strategic Bombing as a national Defence policy\(^6\) and this is usually the reason-for-being in foreign countries.

A breakdown of a “merge” into two forces is given at Appendix 1.

Done with some forethought, there would be no additional cost to the Commonwealth. Any additional costs for extra uniforms, etc. will be more than offset by the deletion of one “Force” unit. In the short term there will be duplication of some – mostly senior and/or technical – positions, however natural attrition will allow this “merging phase” to settle down over time.

It is entirely possible that some personnel may not wish to join the other Service(s). Noting that there will be some duplication of jobs, and allowing plenty of notice, major disruptions can be avoided.

7.1 A Marine Corps?

Should this integration proceed, then noting the table at Appendix I, it can be seen that there is a viable reason to form an Australian Marine Corps.

Where a “Combined Navy-Army” is noted above there is already the makings of an integrated

\(^6\) The RAAF operated the B24 Liberator during WW2. These were intended for strategic bombing but American policy did not allow the unrestricted use of them in that role.
Navy-Army force, especially in the Maritime sense from the Army perspective. There would be no suggestion of changing the specialised units of either Service – for example ASW helicopters for the Navy.

It would allow personnel from aviation units a specialised career path. From a Naval perspective it would be much the same as the current Royal Navy, where specialised Squadrons are designated to the Royal Marines, ASW or AEW duties.

8.0 Aircraft Carriers – An Australian CV

By the end of WW1, the RAN was well placed and experienced in naval aviation activities, particularly HMAS “Australia”.

The question of “aircraft carriers” for the RAN has been brought up time and again since 1918, when the RAN, observing the Royal Navy and defending an island continent, desired its own Air Arm. Naturally the bickering started with the Government short of funds and the newly formed RAAF also needing funding.

Meanwhile, the Admiralty (UK) were putting pressure on the RAN for limited seagoing aerial reconnaissance and gunnery spotting for ships. Orders were placed for six Fairey IIID float-planes for the RAN and these were in service by November 1921. On the 16th June 1925 the Government promulgated a FAA for the RAN and Naval Officers began training as pilots. The Navy, not knowing the future, stated that it was happy with embarked RAAF flights and so a situation developed where the RAAF provided pilots and the Navy provided Observers. The first FAA was officially disbanded on 14th January 1928.

It was when the Marshall of the RAF Sir Hugh Ellington was in Australia to inspect the RAAF, and he made his notorious quote, IJN had eight carriers either in commission or under construction.

So concerned was the RAN that the Naval head, Admiral Sir Guy Royle – an experienced RN Aircraft Carrier Captain – advocated for the RAN to operate an aircraft carrier. Royle had been

7 HMAS Australia launched the first aeroplane from the deck of a ship on 18th December 1917. Previous launches were from a deck over a gun turret. Official History of Australia in the War of 1914-18. Vol 9. p 281
8 HMS Furious. Laid down 8 June 1915, launched 15 August 1916. Modified to full flush deck early 1920s.
9 See Section 3.0 above
intimately involved with the re-acquisition of the FAA(RN) from the RAF in the late 1930s.

In early 1942 a request was put to the British for some sort of naval air capability. Although the results of this request are ambiguous, it seems the elderly carrier HMS *Hermes* may have been offered to Australia. Any hopes that the RAN would acquire *Hermes* were dashed when she was sunk at Colombo on 9 April 1942 whilst in transit to Australia. *Hermes* was attacked and sunk by the same carrier aircraft that the RAAF easily dismissed only a few years earlier.

In March 1944, having observed the effectiveness of carriers from all combatants, approaches were made to the RN and so HMS *Ocean* (later changed to *Vengeance* and completed in 1944) was considered. On 21st July the carrier – along with two cruisers – were offered to Australia, but this was not accepted on the grounds that the RAN was unable to man them.

A 1946 Department of Defence study found the Naval Aviation was a specialised job, and it would be unfair for junior RAAF officers to perform Naval duties without long and thorough training. Perhaps the whole argument is best summed up by David Hobbs:

> *The failure of the RAAF to recognise that aviation forms an important and legitimate part of it's sister service's operational capability left a political legacy that has been difficult to eradicate. It was the more surprising that men who believed themselves to be proponents of 'air power' actively sought to limit the RAN's ability to deploy tactical air power in the national interest from the sea.*

Wiser heads prevailed and as part of the Five-Year Defence Plan in 1947, the RAN was authorised to form a FAA and operate two carriers.

As noted above, no country in history has been able to repulse a determined aircraft carrier attack. Even those being attacked were not able to severely damage the carrier group, and except for Japan in the closing stages of WW2, the land base was only able to survive because the carrier force withdrew.

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10 *Flying Stations; The Story of Australian Naval Aviation*; Naval Aviation Museum. p.29
11 The Navy and the Nation – Edited by David Stevens and John Reeve. Chapter 11, p.216
12 see 3.0 above.
8.1 Deterrence

The majority of the public, when asked about “aircraft carriers” automatically think of them in terms of offence and attacking foreign land and sea targets. The carrier's main value in time of peace (or leading up to international tension) is its ability to act as a deterrent.
Any nation that operates aircraft carriers, with the intent of intimidating Australia has only to sail their fleet to just outside the Australian EEZ and commence fleet war games. The Australian public would be, rightly, outraged. The RAAF could do little but “monitor the situation” using it's LRMP and/or AEW&C assets, neither of which could depend on round-the-clock fighter escort for days on end.

On the other hand an Australian carrier could sail into the same area as the opposition and commence it's own “war games”, closely monitor the “opposition", and at the very least provide continuous fighter cover for RAAF surveillance.

To further remind the other country of Australia's intent to not be intimidated, an RAN carrier may choose to undertake “war games” a couple of hundred miles off a major port of the other country. The RAAF would be totally unable to participate in this type of operation. In this scenario, it is unlikely that the "intimidation" off Australia would have happened in the first place.

Currently, countries in the Asia/Pacific/Indian Ocean regions that obviously do not think the CV is obsolete and are capable of operating large aircraft carriers are:

<table>
<thead>
<tr>
<th>Country</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>1 in Commission</td>
</tr>
<tr>
<td></td>
<td>1 Under construction(^\text{13})</td>
</tr>
<tr>
<td>India</td>
<td>2 In Commission</td>
</tr>
<tr>
<td></td>
<td>1 Under construction</td>
</tr>
<tr>
<td></td>
<td>1 Planned for 2025</td>
</tr>
<tr>
<td>Russia</td>
<td>1 In Commission</td>
</tr>
</tbody>
</table>

### 8.2 Carrier Operations

When a carrier is at sea it is a totally integrated unit, independent of any ties to its home country and relying on itself, escorts and it's afloat support for safety and security. It is not limited to remaining under land-based air cover, can travel to wherever the Government requires it to be and – provided it does not fly its aircraft without clearance – can operate in other nation's exclusive economic zones.

\(^\text{13}\) In 2009 it was reported China imported 4 sets of carrier landing systems from Russia - Bodeen, Christopher (March 6, 2009), *Speculation Grows on China Aircraft Carrier Plans*, Associated Press via abcnews, archived from the original on 7 May 2009
and is entitled to innocent passage in territorial waters.

Given the amount of money and resources already devoted to the LHD/amphibious capability, it would be foolish in the extreme to have the LHD force attempt to come ashore at locations where the opposition has even the most basic air/ground defence unless the force had its own organic fighter/ground attack aircraft. Naval Gunfire Support (NGS) would be diminished, as some of the escorts that would normally be used to support landing troops would be required to stand well off shore to provide a radar/visual “picket line” to ensure no interference.

The question is, can Australia's LHDs be sent in harms way without embarked tactical air?

If the answer is "no", then the Government would not be able to project power that entailed the most basic of risk, as determined resistance may result in a costly and very public failure. Dependence on land-based RAAF support Australia would only be possible within the combat radius of a suitably large airfield. Even this eventuality would mean the RAAF deploying substantial maintenance/support/logistics to the airfield, possibly using up valuable Naval assets. Outside RAAF air combat radius will entail a huge air and sea logistics operation. Vital assets would be needed just to support one amphibious landing, and not all being directly dedicated to the task.

The irony of the situation is that the security of our LHDs/escorts and the embarked troops would be better supported by 1950's era A4 Skyhawks on an "ancient" carrier such as “Melbourne”, than they are in the second decade of the 21st Century. This ability – plus the ASW force it carried - was lost to Australia in 1983.

8.3 CV vs LHD/VSTOL

If reports are correct[14,15] that the F35 “stealth” capability has been undermined by Russian/Chinese radar developments, the doubts of the Canadian and British Governments are having with the F35 and, with ongoing development/operational problems, it may be a safer path for Australia to follow.

to go with proven technology. Our order for the F35A model should be changed to the “C” model and await the final USN decision. It may not even be necessary (except perhaps politically) to take the F35 at all, if the CV/F/A18 option is pursued (see below).

Before the F35B (V/STOL) can be operated from Australian LHDs modifications are required.¹⁶

### 8.4 Carrier Aircraft

Since World War 2, Australia has been closely aligned with the United States in the purchase of military equipment. In past decades, this was usually the wisest choice in terms of performance and cost. Since the start of the F35 program, the cost has risen and the performance downgraded. It is time for Australia to consider other aircraft; aircraft that carry greater fuel, have greater range and larger weapons load.

Current generation carrier aircraft are:-

<table>
<thead>
<tr>
<th>Range(n.m.)</th>
<th>Unit Cost (AUD)¹⁷</th>
<th>Combat Rad.(n.m.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boeing F35A Lightning II</td>
<td>c.138.2m</td>
<td>600</td>
</tr>
<tr>
<td>Shenyang J-15</td>
<td>unknown</td>
<td>540</td>
</tr>
<tr>
<td>Mikoyan MIG-29K</td>
<td>23.0m</td>
<td>531</td>
</tr>
<tr>
<td>Sukhoi Su-33</td>
<td>c. 50.0m</td>
<td>405</td>
</tr>
<tr>
<td>Boeing F/A-18E/F Super Hornet</td>
<td>60.8m</td>
<td>390</td>
</tr>
<tr>
<td>McDonnell Douglas AV-8B Harrier II+</td>
<td>40.0m</td>
<td>230</td>
</tr>
<tr>
<td>Dassault Rafale M</td>
<td>100.0m</td>
<td>1000+¹⁸</td>
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</tbody>
</table>

Some lateral thinking on the part of the Government would result in a fly-off competition against as many of these types as possible. The ultimate aim would be to see the best possible aircraft for Australia, irrespective of political affiliations.

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¹⁷ As closely as can be determined USD 1.00 = AUD 0.93
¹⁸ Dubious claim
9.0 Maritime Force Composition

From publicly available sources it appears Australia will be committing somewhere between $12.4 and $16b for the 72 F35A aircraft with $1.6b being for additional ground facilities.

Figures available note the per-ship cost of the Queen Elizabeth 2 (QE2) class aircraft carrier at $5.6b (GBP 3.5b). There has been much discussion in the press regarding the ever-growing cost to the US Navy of its large carriers, or even if they need such large ships. Some sources are quoted as saying discussions have occurred between the US and UK Governments on collaboration to build carriers based around the 65,000 tons of the QE2 class.19

If this is correct, then the USN would, presumably, be happy to operate the F35C CV variant from a smaller tonnage carrier.

Taking all of the above into consideration, common sense would suggest that Australia should reintroduce aircraft carriers into the RAN. Australia should take the opportunity join in these discussions – or if the reports are not true, initiate discussions – with the aim being to design and build a “NATO Carrier” (for want of a better description) that allows for modules, or entire ships to be built anywhere. In time of major war, repairing shipyards would be familiar with the type and be able to repair damage and/or pre-build modules in a minimum of time.

On the assumption that one ship, built in a UK shipyard costs approximately $6.0b, then two carriers would cost less than the entire Australian F35 program.

The F/A18 Super Hornet is quoted as currently about $66.0m each. The purchase of 20 additional F/A 18 aircraft would cost about $1.4b. Although HMAS Melbourne only ever operated a maximum of eight Skyhawks the total purchase was for 20. For the same cost as the F35 program, Australia could purchase two aircraft carriers and a complement of F/A18 fighter/ground-attack aircraft to support the Amphibious Force. The RAAF already has technical support for the F/A18.

For over-water operations and combat damage, the F/A18 and most other carrier-based aircraft have the security of twin engines.

10.0 Electronic

For time immemorial, mankind has been fighting, either between individuals, tribes or nations. History is indisputably clear that as weapons technology advances, so did the counter to that weapon. From the bow and arrow came guns, then better guns, and so on. We (humans) would be arrogant in the extreme to think that our latest technology (electronics) will be the pinnacle of weapons development.

The fact that every advanced weapons system in service relies in some way – directly or indirectly – on electronics is a major problem should the next advance in technology develop the antidote. Manned aircraft in particular, are just one weapons system that can function and fight without the utter reliance on electronics. Even UAVs rely on some form of electronics, to remain airborne, effective, and to get the information back to an operator (the human mind) otherwise it is just expensive junk.

A manned aircraft (without fly-by-wire controls) has the human mind in the front line. He/she can make decisions based of the tactical situations and still function even if every modern piece of electronics is rendered useless.

*Misquote*\(^{21}\) of George Santayana's:-

"Those who ignore history are doomed to repeat it"

\(^{21}\) Also quoted as "Those who do not remember the past are condemned to repeat it."
Appendix I – Air Force Command Merge

As an example, the following Air Force Commands could be split as follows:-

Air Force Headquarters
Direct transfer Navy

Air Commander
Direct transfer to Navy but to include an Army element

Air Combat Group
78 Wing direct transfer Navy
81 Wing direct transfer Navy
82 Wing 1 and 6 Squadrons Navy
     FAC duties Army

Air Lift Group
- air logistics support Combined Navy-Army unit
- airborne operations Army
- special operations Combined Navy-Army unit
- VIP transport Navy
- air-to-air refuelling Navy
- search and survivor assistance Navy
- aero-medical evacuation Combined Navy-Army unit
- training Combined Navy-Army unit

Surveillance and Response Group
No 41 Wing (Air Defence) Navy
No 42 Wing (AEW&C) Navy
No 44 Wing (ATC) Combined Navy-Army unit
No 92 Wing (LRMP/ASW) Navy

Combat Support Group
Direct transfer Army

Aerospace Operational Support Group
Combined Unit Combined Navy-Army
| Training Group | Direct transfer | Navy |