

# Structural inefficiency belies the growth of military funding



DEFENCE PHOTO

The 2007/08 Defence Budget brought down 8 May will see the Department of Defence funded to receive \$24.802 billion in total resourcing, comprising \$21.999 billion for departmental funding and \$2.802 billion for administered appropriations. Excluding administered appropriations (as is usual), the 2007/08 Defence budget as submitted represents an increase of \$1,197.3m (or 5.8%) from the previous estimates published in the January 2007 Portfolio Additional Estimates Statements.

■ Trevor J Thomas/CANBERRA

**B**efore the cheers go up too loudly, however, the new Budget also contains a number of adjustments agreed by the Government, and include, a substantial re-programming of capital investment, and significant price and exchange rate variations. These total \$4.111 billion over 10 years, and together with the \$14.043b provided in new budget measures, means an additional \$18.154b is now being promised in additional Defence Budget allocations over the next 10 years.

However, the promise of additional funding - and the realisation of additional expenditure - are two quite different concepts. In short, and adding up withdrawals from the original White Paper allocations attested by Defence to be the result of underspends, slippages, opportune out-of-schedule payments and Defence Capability Plan (DCP) re-programming, some \$2,718m has been extracted from White Paper funding allocations over the years 2001/02 to 2007/08, with \$3,131m dumped back into the program over the years 2008/09 to 2016/17, for a net gain of \$413m.

Whilst Defence is at pains to emphasise such funding was not 'foregone' - just pushed forward - there is little consideration given in the Budget text as to the opportunity costs (or risks to personnel) worn by the Australian Defence Force (ADF) as a whole due to projected capability not being delivered as first expected, let alone the impact on industry in gearing up for \$1,113.3m of business opportunities first promised to occur one decade, and then subsequently evaporating, only to be re-promised to occur in another decade.

Expressed from another perspective, Defence's total Departmental funding proposed for 2007/08 of \$21,999m comes in at 10.6% more than

## Key Points

- **Continued growth in military funding will see** Department of Defence-own expenditure in 2007/08 breaking \$20 billion per annum, and - on current estimates - will have surpassed the \$25 billion level by 2010/11.
- **Defence's capital investment program for 2007/08** totals \$6,162.9m, and comprises: 'unapproved' Major Capital Expenditure (MCE) of \$512.5m, 'approved' MCE (\$4,294.9m), Capital Facilities (\$643.6m), and Other Capital (\$768.8m).
- **The Defence Materiel Organisation will manage** over the coming year some 215 'approved' MCE projects, with planned expenditure of \$176.4m set to advance over 159 'Minor' projects with an average value of \$6.6m.
- **An attempt will be made by Government to push through** 'second pass' decisions on up to \$9,885m projects over the coming year, a number of which will involve high profile public launch events during the course of the election campaign.

the forecast outcome for the current year (2006/07) of \$19,898.6m, representing 9.3% of Australian Government outlays, and 2% of Gross Domestic Product. The increase provides for: \$1,843m for new budget measures; -\$707.4m for other budget adjustments in including Capex re-programming; and \$61.2m for additional own-source revenue.

Lead Defence budget measures include: a package of recruitment measures and retention initiatives that are designed to increase recruitment intakes and reduce military separation rates (\$585.3m); and an additional \$1,278.8m to sustain defence operations. An extra \$703m has been funded to keep the ADF in Afghanistan until 2009/10 (including \$32m for costs incurred in 2006/07), along with the previously announced return of the Special Forces, CH-47D 'Chinook' helicopters and a RAAF Mobile Control and Reporting Unit.

ADF numbers in Afghanistan will peak in 2008 to 1,000, with \$389m allocated to maintain the current deployment to Iraq and the Persian Gulf of about 1,575 ADF personnel. A total of \$134.8m has been committed to maintaining the ADF presence in Timor Leste, and between \$12.6m and \$13.3m will be spent each year on border protection through to 30 June 2011.

**HOLLOW FORCE, FILLED OUT FOR NOW:** Given the above, principal initiatives in the 2007/08 Defence Budget relate to funding extensive packages to address shortfalls in uniform personnel recruitment and retention (\$2.1 billion), and the provision of extra monies (an additional \$1.8b over 10 years) to boost logistical sustainment of the ADF to underpin short-notice deployment preparedness.

The logistics funding boost has been greeted by ADF leadership as being particularly important in sustaining the force, as it enables a high level of operational readiness to be maintained through providing sufficient funds to guarantee adequate training can be undertaken.

Such philosophy counter-points inherited views from the 1991 Force Structure Review and subsequent efficiency measures, which saw Defence managers repeatedly cutting-back on personnel and training expenditure in order to raise additional funds for new capital acquisitions.

The cost of sustaining ADF operational capability (operational control and the three Services outcomes, not including personnel costs) is put at \$10b in 2007/08, of which the overall logistics boost (including previous budget allocations for a total of \$4b over the next 10 years), equates to roughly 4% of annual non-personnel operating costs. The additional funding will go to boosting inventory/stock holdings of consumables like fuel and ammunition, and improvements in inventory management and accounting practices (such as more efficient bulk orders), thus leading to a more functional and efficient inventory management system.

As this money is being targeted towards readiness in key combat capabilities – including the 'Anzac'-class frigates, 'Collins'-class submarines, Naval aviation, Army mobility and surveillance, Air Force airlift, the Boeing F/A-18A/B 'Hornet' and BAE Systems 'Hawk' 127 Lead-In Fighter (LIF) aircraft – the overall 4% boost will most definitely provide a higher increment to these frontline capabilities.

Yet with increments in ADF operational tempo now seen as being likely but 'unforeseeable' in the near and long term future (*see JO21C article, page 27*), the question remains as to why Defence goes on sustaining high levels of operational readiness being sought by the Government in response to contemporary threat changes, by resort to annual supplementation initiatives?

Surely the Department – after close to 20 years of experience since East Timor – is in a position to readjust the baselines underpinning annual military expenditure requirements in a fashion as to properly serve the currently required level of readiness, rather than resorting to annual top-ups of funding from artificially reduced baselines that remain built 'into the books' from an earlier period of national governance that saw lesser need for the ADF as an instrument of national power, and thus deserving of reduced funding.

**TIME TO REFORM FUNDING BASELINES:** By retaining a sustainment norm based on the legacy period of the early 1990s, Defence repeatedly instils under-funding into its budget estimates, thus compounding the infamous 'hollow' force as the de facto budgeting standard.

While current Governments reap the public relations benefit of announcing substantive logistics funding increases in each subsequent budget, they nevertheless also run the long term risk of reverting to a 'hollow force' in future circumstances where tighter financial pressures might require leaner allocations to be effected in a manner that does not raise public perceptions of a 'cut' in defence funding.

The fact that the Budget Statements indicate logistics funding remains a movable feast – with resource levels "under review by Government" – sustains the deception that ADF readiness is actually being built up to meet changes to the contemporary threat environment, as well as sustaining a baseline structure for logistics funding that remains below that prevailing during the 1999 East Timor crisis, which was subsequently shown to be inadequate.

Structural logistics funding deficiencies also magnify the challenges upon the ADF in budgeting for the support of new additions to military

capabilities already in the pipeline - such as the Air 5402 MRTT refuelling aircraft, Air 87 'Tiger' ARH helicopters and Air 5077 AEW&C aircraft - let alone upcoming decisions on multi-mission UAVs (see story page 21), air warfare destroyers, amphibious ships and battlefield airlifters.

**57,000 IN UNIFORM AT ANY COST:** Subsequent to previous government decisions, the ADF's objective strength has now been set at 57,000 uniform personnel by 2016 to man and support a huge log of new equipment coming from full implementation of the 2006-16 DCP. Current strength is 51,000.

The \$2.1b of new recruitment and retention measures in the Budget come on top of \$1b announced in December 2006, with new measures including: home loan assistance, flexible pay structures, marketing, career advice, expanded cadets and Navy 'SeaChange', new apprenticeships and professional development of medical officers.

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intensity of human operator support required to sustain the system. So how these issues will flow down to inform the down-select of BAMS solutions, when compared to Australian requirements and differing flight performance, will be of particular interest.

NAVAIR has now begun formal assessment of BAMS proposals with the 3 May passing of the deadline for receipt of proposals from industry. Final source selection of a preferred solution is due to be announced by end-November 2007, with Australian Government inputs (from the 'intermediate pass') set to drive a contract award soon after. Officials have indicated the exact contract award will not be announced until the contract is actually signed.

The BAMS program will then enter the development and demonstration phase at 'Milestone B', and subsequent to competitive system integrator selection process, the System Development & Demonstration (SDD)

phase will begin in Fiscal Year 2008 (FY08) with Low Rate Initial Production (LRIP) planned for FY11, and deliveries supporting an Initial Operational Capability (IOC) in FY14. Development of BAMS is expected to cost approximately US\$2 billion.

BAMS missions are envisaged as including: maritime surveillance; collection of enemy order of battle information; battle damage assessment; port surveillance; communications relay; support for maritime interdiction and surface warfare (including targeting); battlespace management and targeting of carrier launched maritime and strike missions.

The rough US Navy plan is to acquire around 40 UAVs to be based at five sites: Hawaii; Diego Garcia; NAS 'Jacksonville' (Florida); NAS 'Kadena' (Japan); and Sigonella (Italy), to provide coverage of ocean and littoral areas of interest.

BAMS will only be one element of the US Navy's planned Maritime Patrol and Reconnaissance Force (MPRF), which seeks the

The 2005 Defence Attitudes Survey (DAS) found that conditions of service which generated the most negative responses were associated with ADF postings policy, a strongly perceived (70%) decline in military values, and - in the Navy and Army - a strong belief that the workplace did not promote a healthy balance between work, home and family. Continuing similar perceptions amongst the ADF's workforce is thus liable to sustain high levels of turnover that are above sustainable norms.

It remains to be seen, in the longer term, if retention bonuses and other incentives can counter these negative conditions of service. The cost of addressing the negative elements of Defence postings (remote locations and high relocation frequency), restoring military values and allowing more flexibility in intensive service periods remains to be quantified, but apart from Defence management pushing for a significant basing realignment, is unlikely to be substantial.

The buoyant economy is often seen in a purely financial sense, as stiff competition for the ADF workforce. But the psychological attrac-

provision of persistent maritime Intelligence, Surveillance, and Reconnaissance (ISR) data collection and dissemination as an adjunct to the manned Maritime Patrol Aircraft (MPA) capability of the legacy Lockheed Martin P-3C 'Orion' and new Boeing P-8A 'Poseidon' Multi-mission Maritime Aircraft (MMA). Australia will consider the MMA under phase 2 of project Air 7000.

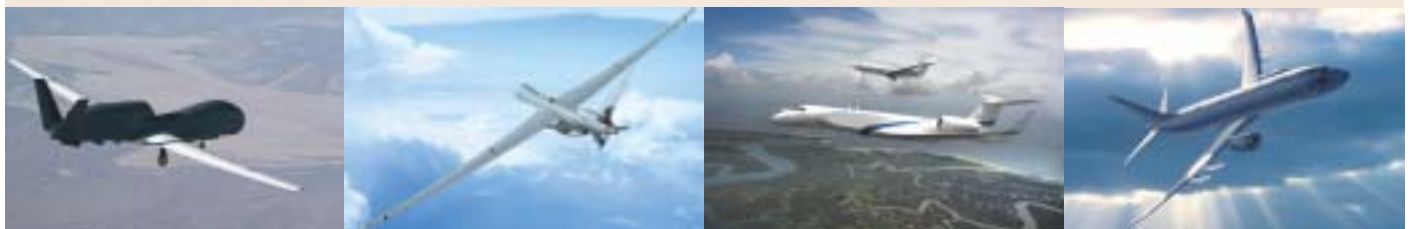
**CHALLENGE TO LEGACY MUAS CONCEPTS:** The emergence of a third BAMS contender via Boeing/Raytheon and Gulfstream (a General Dynamics subsidiary) with the offer of an 'optionally unmanned' 'Gulfstream RQ-37' has upset the hitherto comfortable High Altitude Long Endurance (HALE) versus Medium Altitude Long Endurance (MALE) UAV debate previously dominating the MUAS choice. Boeing's offering thus adds a third dimension - an Intermediate Altitude High Speed (IAHS) UAV customised towards the sea surveillance role.

With the IAHS air vehicle offering three times the gross takeoff weight of the RQ-4N, and nine

times that of the RQ-9, the RQ-37 offers plenty of space and weight to carry sensors and fuel combined with its higher speed deployment performance. Final endurance performance in the unmanned configuration remains to be determined, depending on operating weight with sensors and how much additional fuel can be carried by the aircraft utilising space in the fuselage.

However the RQ-37's increased cruising speed at altitude, up to Mach 0.87, will clearly allow it to cover more ocean per unit in a set time period than the competing systems. In a 12-hour mission, an RQ-37 can cover 36% more surface area than a Block 20 'Global Hawk', and 3.6 times more than a 'Predator B' - with the performance advantage being sustained even in the face of strong headwinds at operating altitudes.

Being primarily a naval surveillance platform, BAMS mandates surface area coverage as the priority, not the long loiter times over fixed locations initially canvassed in the original 'Global



**FOUR KEY PLATFORMS HUNTING DOWN BAMS:** Northrop Grumman's RQ-4N will utilise the Block 20 UAV platform (far L) that is a significant improvement over legacy 'Global Hawk' air vehicles in terms of reliability. Lockheed Martin's enhanced GA-ATS 'Predator B', or new 'Mariner' (L), offers much lower acquisition costs than competitors, whilst Boeing's 'optionally-manned' Gulfstream 550 UAV will leverage its huge commercial success and growing military take up, like these G550s in Airborne Early Warning and ELINT configurations (R). The preferred BAMS solution will be partnered with Boeing's P-8A 'Poseidon' multi-mission maritime aircraft (far R), which is a lead contender to replace the RAAF's AP-3C 'Orion' fleet via phase 2 of project Air 7000.

VENDOR PHOTOS & IMAGES

tion of military service (ie: its 'esprit de corps'), provides a significant edge to ADF recruitment and retention. It is only when personnel lose confidence in the military system, or family pressures become too high that the civilian world beckons.

The buoyant economy simply means that those who would stay in uniform despite dissatisfaction, for fear of being unemployed, are now readily departing the service for civilian work. So without addressing key concerns - as expressed in the DAS - Departmental managers might expend a lot of taxpayers money and still fail to achieve personnel numbers, or resort to meeting requirements countering turnover via filling positions with personnel with skills below the experience level required.

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Hawk' and 'Predator' requirements. The term 'optionally unmanned' also needs some explaining, as the intuitive response is to assume that G550 UAVs could or would fly long endurance missions with a pilot onboard.

While the RQ-37 would retain a cockpit configuration, this would presumably be used in only two circumstances: flight in controlled airspace requiring a pilot to meet civil air traffic control dictates (particularly for short-notice deployments); and in post-maintenance test/checkout flights. Unmanned flight through congested continental USA and European airspace faces demanding civil certification requirements.

The very high altitude 'Global Hawk' solves this dilemma by flying above all other air traffic, but other lower flying aircraft like the RQ-37 and the 'Predator' need special US Federal Aviation Administration (FAA) certification to fly above 18,000 feet in 'positive control' airspace.

Further, restrictions are imposed on small planes operating below 18,000 feet (due to the danger of collisions) within the basing areas of these aircraft. By providing optional manning, the G550 UAV could avoid the need to secure special certifications and satisfy flying restrictions in congested airspace.

The option for a pilot onboard is also significant for post-maintenance test/check flights, which are an area of considerable management difficulty for UAVs (ie: if faults persist through maintenance cycles). Further, and unlike the small-scale production military-specific UAVs,

the G550 is not a derivative of an Advanced Capability Technology Demonstrator (ACTD) program, but rather, a commercial business aircraft in-service in comparatively large numbers with high levels of parts support, reliance and a global sustainment system.

Accordingly, the G550 is said to maintain a 98% dispatch rate for commercial operations, and Gulfstream provides a within 24 hour guaranteed global spare parts supply chain. The large airframe also provides plenty of space for growth in sensor payload, and the swept wings are resistant to take-off and landing turbulence effects that can ground the very high aspect ratio (length to width) and loaded wings of the other BAMS competitors.

The downside is cost, with commercial G550s retailing at around US\$40m in the business jet version (without any mission systems), and the much higher consumption of fuel to achieve the impressive range/speed performance.

**'HEAD START' VIA RQ-4N:** Northrop Grumman has chosen a testing and risk reduction approach for BAMS (called 'Head Start'), and involving development of the RQ-4N in a 'lowest program risk' manner with the eventual solution optimised for low developmental and life cycle costs. The 'Head Start' pitch is said to create a significant schedule margin in favour of the RQ-4N to provide BAMS IOC well ahead of the 2014 deadline.

To aid this outcome, Northrop Grumman has proposed the utilisation of a Gulfstream business jet - in the form of a flying test-bed - to perform end-to-end communi-

Some elements of Defence are already seeing this, with ADBR having come to understand that the average time in uniform for Sergeants is now as low as four years (down from around ten), and for Corporals, as little as one to two years. Certain junior Lieutenants are observed to have been moved upwards so quickly they spend as little as six months commanding their first appointment (a platoon or troop), far below historic norms, and the amount of time considered as prudently needed to adequately develop as a junior commander.

**SWINGS & ROUNDABOUTS OF EQUIPMENT SPEND:** Defence Budget materials indicate that \$622m has been reprogrammed

for cation functionality testing equipped with the RQ-4N's radar sensor, the Advanced Mission Management System for network, bandwidth and sensor control linked to a prototype of the BAMS specific Mission Control System (MCS).

The prototype MCS contains off-the-shelf commercial software and hardware components to yield a modern control station that can be upgraded as technology evolves. This will be used to demonstrate the effectiveness of the proposed services oriented architecture, and can receive sensor data from either simulated sources (or from the Gulfstream testbed), and will display and exploit that data in the same way as BAMS sensor data will be used.

The MCS communications system is to be equipped with an unmanned aircraft pilot workstation that can fly a virtual 'Global Hawk' being simulated within Northrop Grumman's Cyber Warfare Integration Network (CIWN) - a virtual, real-time combat environment used to customise, implement and analyse operational scenarios - and used for the Australian NWS UAS Trial in October 2006.

The RQ-4N air vehicle is based on the RQ-4B Block 20 'Global Hawk' that conducted successful first flight on 1 March. Unlike previous 'Global Hawk' airframes, the Block 20 is designed and built to production standards with enhanced performance, payload capacity for variable sensor loads and significantly improved maintainability.

Northrop Grumman claim the RQ-4N will meet all of the threshold and more than 90% of the BAMS objective requirements, including providing 80% Effective Time On Station (ETOS) at a ra-

dius of 3,600km (2,000 NM). The RQ-4N will also meet the BAMS requirement with the fewest air vehicles, Main Operating Bases (MOBs) and Forward Operating Bases (FOBs), thus providing the lowest total ownership cost.

While Northrop Grumman has not revealed the nature of the maritime surveillance sensors offered with the RQ-4N, Raytheon Space and Airborne Systems confirmed at the Avalon air show their development of a new 360° field of view Enhanced Integrated Sensor Suite (EISS) preliminary design for Block 20 'Global Hawks'.

The 360° EISS combines a spinning, dual array (back to back) MSA radar and the MTS-B rotating sensor ball turret. The MTS-B is a repackaged legacy 'Global Hawk' optical sensor subsequently used by US Air Force General Atomics MQ-9A 'Reapers' ('Predator B').

Raytheon says it will also offer their Distributed Common Ground System (DCGS) and DCGS Integrated Backbone (DIB) as Intelligence Surveillance & Reconnaissance (ISR) product management tools to the successful ICP, for integration as part of the ADF's new MUAS. DCGS/DIB is a software, secure net-based product that utilises commercial search engines and customised applications to allow exploitation of huge amounts of ISR data.

The system will be tested in July 2007 by the Defence intelligence agencies of the American, British, Canadian and Australia (ABCA) nations in the international Exercise 'Empire Challenge', designed to provide a single ISR picture across all four countries.

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from approved major equipment projects (post-'second pass') from both the 2007/08 budget (\$354m) and through the forward estimates for 2008/09 to 2010/11 to later years, and subsequently offset in the next four years by aggregate positive reprogramming in 2010/11.

This reprogramming is said to be primarily the cause of project slippage and subsequent delays in payments to contractors: such as Tenix for the Land 106 M113AS4 upgrade; and Boeing for the Air 5077 'Wedgetail' AEW&C program. Such slippage, along with that of other delayed projects, equates to 15% of approved project expenditure when added to the 2006/07 budget's reprogramming of \$543m – meaning a total of \$1,055m has been pushed back to the 2010/11 forward estimate.

Most alarming for Defence industry, is the \$518m of reprogramming from the 2008/09 to 2010/11 forward estimates for unapproved major equipment projects that have yet to progress to 'second pass' or the Request For Tender (RFT) phase. The Budget papers claim the reprogramming is due to "industry capacity" issues, rather than the difficulty of Defence's administrative processes in quickly progressing proposed acquisitions (including the progressively increasing complexity of project definition and acquisition business case preparation).

As evidenced by the public responses of various acquisition officials, Defence has been keen to promote the capital reprogramming as primarily the effect of slippage in 'legacy' approved projects, and while the delays in some projects have kept particular workforces occupied longer than initially envisaged, it appears the competitive nature of the Australian defence industry has coped in tapping alternative sources of workforce growth, including immigration and temporary visas.

Unfortunately, the 2007/08 reprogramming pushes the log of unapproved projects into an already saturated post-2010/11 period, in which industry will have to shoulder the lion's share of DCP work if acquisition plans are to be kept on-schedule. This 'Super Hump' will see major capital equipment expenditure in 2010/11 topping almost \$7b, up from the almost \$5b first planned for in 2007/08. The much higher expenditure levels will similarly be sustained through to the end of the current DCP (2015/16).

Clearly, Defence industry will face significant problems in delivering on a 40% increased rate of effort through the next decade, that will only be exacerbated by reprogramming of work in the following three financial years from 2007/08. Potential solutions are for the Government to opt for more off-the-shelf solutions (as with the 'Abrams', C-17s and Super Hornets), or more seriously consider industry 'omnibus' proposals that seek to cut through delays and waste associated with a succession of Defence stove-piped new capability acquisition projects (see article page 21).

**VALUE FOR MONEY A REAL CONCERN:** Continuing problems with a series of legacy upgrade and acquisition projects defined and progressed before the government's adoption in 2003 of Malcolm Kinnaird's Defence Procurement Review (DPR) reforms are leading to huge distortions in Value for Money (VfM) calculations, as delays in delivering anticipated capabilities begin to butt-up against the next round of proposals to replace such equipment.

The Budget papers indicate the upgrade of 350 legacy M113A1s to an improved M113AS3/4 standard by Tenix Aerospace & Defence - under project Land 106 - has been delayed again from an expected in-service target date of November 2007, to the second half of 2008. Brake and other technical issues are cited as issues which have led to an unrecoverable delay of six months, though some crew training has commenced and the first maintenance course (for the new Tenix turret), is scheduled for mid 2007.

The new initial operating capability (IOC) date means that the Land 106 endeavour will provide less than seven years (half of the original planned 15 years) of frontline service in return for an investment of \$617m, given the upgraded capability is also due for replacement in 2015 by the Infantry Fighting Vehicle (IFV) component of Land 400 Phase 1. Further, the unavailability of such vehicles for active service has meant higher usage rates for other defence assets, thus feeding into higher cost structures and driving an earlier replacement of such assets than first envisaged.

The DMO has similarly admitted to "known deficiencies" in the underwater warfare systems, electronic support system and the Australian Distributed Architecture Combat System (ADACS) software on-board the project Sea 1390/Phase 2.1 upgraded 'Adelaide'-class frigates (FFGs). Thales Australia is said in the Budget papers to be continuing work to rectify deficiencies in the lead upgrade FFG, HMAS 'Sydney', before acceptance scheduled for late-2008, with initial operational release due in mid-2007.

The key capability sought via the FFG upgrade was the addition of the more capable Raytheon SM-2 air defence missile (under phase 4B of project Sea 1390), in place of the legacy (and obsolete) SM-1. This quest has now been divorced from the original FFG upgrade, with the new missile IOC now planned for 2009, despite the influence of a relatively low risk US Foreign Military Sales (FMS) acquisition of the actual missiles.

Budget papers indicate this has now become Sea 1390's fate because the Critical Design Review (CDR) and contract award for the actual SM-2 configured Guided Missile Launching System (GMLS) is not due until late-2007. With IOC in 2009, project Sea 1390 will only provide four years of frontline service return on an investment of \$2.1b, as the capability is due for replacement in 2013 by the project Sea 4000 Air Warfare Destroyer (AWD).



**CAPEX GROWTH CRISIS LOOMING:**

Defence's capital investment program for 2007/08 is estimated to total \$6,162.9m (including \$652.8m in operating funds), as part of plans to spend \$30.416b across the Budget and Forward Estimates period (running up to 2010/11). Breaking down the 2007/08 figures, the 'unapproved' Major Capital Equipment (MCE) provision for the coming financial year is \$512.5m, approved MCE is \$4,294.9m;

Capital Facilities are \$643.6m; and Other Capital (including Repairable items) is \$768.8m.

Each of these elements is expected to grow substantially over the next few years, with total Capex to reach \$8.012b (cf 2007/08s \$6.163b) by 2016/17. Built-in MCE slippage is 15%. Having already received 'first pass' and 'second pass' approval, but unpublished until Budget night, is project Sea 1779, Phase 1 - 'Ship Self Defence Capability', and relating to a rapid acquisition' for the Navy's principal amphibious assets, HMA Ships 'Kanimbla', 'Manoora' and 'Tobruk'.

Building upon weapon system acquisitions for the project Sea 1444 'Armidale'-class patrol boats (as well as self-defence systems for Navy frigates deploying to the Persian Gulf), Defence has acquired Israel-based Rafael 'Toplite' targeting systems, 'Typhoon' Remote Control Weapon Stations (RCWS), each armed with a ATK 'Bushmaster' 25mm cannon, and 'Mini-Typhoon' RCWS' armed with 12.7mm machine guns.

The first ship is to be fully armed with the new systems by August 2008, with all three by February 2009. Apart from providing an improved self-defence capability against asymmetric threats rife in Persian Gulf and regional waters, the new guns will enable amphibious ships to halt vessels found suspiciously operating in Australian waters with 'shots across the bow'. To this effect, HMAS 'Manoora' is currently deployed with patrol boats (under direction from the Border

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Protection Command) to the far north of Australia in support of Operation 'Resolute'. Proposed projects scheduled for 'first pass' approval (and valued in 2006-16 DCP terms at \$8,950m) over 2007/08 include:

- **Air 5428, Phase 1 - Pilot Training System:** A \$600-750m replacement for the currently outsourced (via BAE Systems at Tamworth) elementary training program and the PC-9/A aircraft. Air 5428 is expected to possess a high degree of integration with phase 9 of project Air 9000, the 'Helicopter Aircrew Training System' (HATS) which received 'first-pass' approval earlier this year.

- **Air 7000, Phase 1B - Multi-mission Unmanned Aerial System (MUAS):** The \$1,000-1,500m program is focused on achieving 'interim' first-pass approval to guide selection of a Capability Development Partner from Australian industry, and to endorse cooperation with the US Navy as part of their similar Broad Area Maritime Surveillance (BAMS) system, itself set for a solution down-select by end-2007 (see story page 21).

- **Air 8000, Phase 1 and Air 8000, Phase 2:** Relates to the \$1,000-1,350m C-130H 'Hercules' tactical transport refurbishment (or replacement) and selection of a Light Tactical Fixed Wing Aircraft DHC-4 'Caribou' replacement. 'First pass' consideration is due in first quarter 2008 for both projects, and will not be influenced by separate CH-47D 'Chinook' helicopter fleet refurbishment and/or supplementation.

- **Air 9000, Phase 3:** Relates to the \$350-450m Sikorsky S-70B-2 'Seahawk' helicopter mid-life upgrade (MLU) and life extension in accordance with the ADF's Helicopter Strategic Master Plan, which is set on driving maximum commonality with other ADF platforms and other major 'Seahawk' fleet operators.

- **Air 9000, Phase 5B:** Is focused on the \$325-450m CH-47D 'Chinook' MLU in either of two components - phase 5B.1 to ensure operational viability until 2018 (end of current life), and/or phase 5B.2 to progress a significant upgrade to the new CH-47F standard, the latter of which may be progressed as one single initiative. Also under consideration is a fleet expansion from the current six units, to twelve.

- **Defence 224, Phase 3:** Involves \$150-200m of incremental improvements to the project 'Bunyip' Force Level Electronic Warfare (FLEW) capability.

- **JP 2008, Phase 4:** Relates to the \$1,000-1,500m implementation of the next generation of Military Satellite Communications (MILSATCOM) capability, involving both space and ground segments, and could include a move to purchase a dedicated ADF communications satellite.

- **JP 2048, Phase 3:** Relates to \$150-200m of amphibious watercraft replacements required to operate alongside the new fleet of landing ships (helicopter & dock) for ship-to-shore movement without the need to utilise fixed ports or prepared landing areas. The new watercraft will replace current LCM-8s, LCH and LPA watercraft.

- **JP 2072, Phase 2:** Involves the \$450-600m rollout of the Battlespace Communications System (Land) modern communications infrastructure to achieve the 2007 NCW Roadmap milestone of a Networked Brigade.

- **JP 2097 Phase 1B:** Relates to \$350-450m of project 'Redfin' enhancements to Special Operations capability. Elements under consideration include: further acquisition of 'Nary' Special Operations Vehicles (SOV) for 4RAR(Cdo); light transport roles and logistics for land mobility; and enhanced force projection through helicopter (or fixed wing) air-to-air re-fuelling, light utility helicopters and maritime insertion vessels.

- **Land 125, Phase 4:** Relates to the \$250-350m Version 3 soldier enhancements set to deliver additional mobility and sustainability, plus further acquisition of the Battle Management System - Dismounted (BMS-D). >>> page 30

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- **Sea 1439, Phase 6:** The 'Collins'-class submarine sonar replacement. DCP 2006-16 estimated expenditure is \$350-450m.
- **Sea 1442, Phase 4:** Relates to \$200-250m of maritime communications modernisation initiatives seeking to extend the Maritime Tactical Wide Area Network (MTWAN) into fleet units not previously provided for.
- **Sea 1448, Phase 4A/4B:** Relates to \$350-450m of 'Anzac'-class frigate air search and further capability enhancements, combined with Phase 2A/2B as detailed above.

**PUSH FOR ELECTION YEAR APPROVALS:** The Government will also attempt to push through 'second pass' decisions on up to \$9,885m of major projects over the coming year. Significant projects within this list include: design down-select and build go-ahead for the project Sea 4000 (Phase 3) Air Warfare Destroyers (AWDs), and selection of the build/design team for the new amphibious ships (Joint Project 2048, Phases 4A/4B), otherwise known as the LHDs. High profile public event decisions on both these project outcomes are expected around the middle of the year. Other projects scheduled to receive 'second pass' approval over 2007/08 include:

- **Air 5276, Phase CAP 1:** Gives effect to the \$20-30m Capability Assurance Program Block 1 for the AP-3C 'Orion' Maritime Patrol Aircraft (MPA), which received partial second-pass approval in 2006/07. CAP 1 includes elements of the previous phases 5B, 6 and 9 of project Air 5276, and includes: new FLIR sensors and high-speed data links. Project consideration may also include updating the AP-3C's Systems Engineering Laboratory (SEL).
- **Air 5440, Phase 1:** A new project not previously listed in the public 2006-16 DCP, this initiative aims to provide the Block Upgrade (BU)

Program 7 for the Lockheed Martin C-130J 'Hercules' tactical airlifters. The BU Program has been part of the C-130J's ongoing development since entering service, and includes several modifications to avionics software and hardware.

- **Joint Project 2044, Phase 3A.1:** Project 'Eagle Eye' is the \$50-75m upgrading or replacement of Defence's space-based surveillance capability. The security classification of the system to be provided under JP 2044 precludes Australian industry from providing upgrade or replacement.
- **Joint Project 2085, Phase 2/3:** Covers \$500-700m of explosive ordnance 'warstock' to satisfy work-up requirements for current high tempo operations, plus the ability to sustain concurrent contingency operations. Also, warstocks for newer weapons are to be addressed through this project, including the requirement for a 155mm Precision Unitary Munitions (PUM) and 155mm Sensor Fuzed Munitions (SFM).
- **Joint Project 2089, Phase 2:** Involves a \$100-150m implementation of the Tactical Information Exchange (TIE) solution for Link 16 and Variable Message Formats (VMF) for the 'Anzac'-class frigates, and Boeing F/A-18A/B 'Hornet' tactical fighters. The project will also conduct further definition studies seeking to incorporate TIE into Eurocopter's Air 87 'Tiger' Armed Reconnaissance Helicopters (ARH), new tactical airlifters and ground-based systems.
- **Land 40, Phase 2:** Relates to the \$150-200m acquisition of night sights for existing Saab Bofors M2/M3 'Carl Gustav' 84mm recoilless, single shot Medium Direct Fire Support Weapons (MDFSW), and a new high rate of fire suppressive Direct Fire Support Weapon along the lines of a 40mm Automatic Grenade Launcher or new 25mm low velocity cannons - both firing smart fused, air burst ammunition.

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## Asymmetric vision - Ctd from page 28

As potential enemies learn to embed their communications amongst the civilian communications flow - to provide both ready access to intelligence, as well as hide from intelligence gathering systems - a comprehensive understanding of the nature of civil communications will become just as important to Defence as its current understanding of military communications, in order to sort and dismiss innocent communications whilst targeting threat traffic.

The growth in ADF capability to wage its own asymmetric warfare will also require considerable capability to manoeuvre and 'reach' to exploit identified weaknesses in the enemy where they exist, rather than challenge more obvious enemy capabilities that may be within ready reach.

Engaging in asymmetric strikes is not purely the domain of Special Forces type operations, though they will be required for a range of more complex asymmetric targets.

Strike aircraft and naval forces can also engage asymmetric targets with conventional weapons, such as bombing or sinking targets not usually found on a conventional warfare targeting list, or considered as achieving other military-related effects.

For example, coalition forces in Iraq are said to have made considerable use of high speed passes by tactical fighters to achieve the psychological effect of disuading locals from engaging in attacks on security forces.

Increasing demands for Special Forces type operations (or SF effects across the wider Land Force), will require transportation systems of very long range, high survivability and high infiltration and exfiltration versatility. The positive of possessing such reach is individual deployment forces rarely have to be much larger than a combat team, though a capability for multiple simultaneous manoeuvres is generally required.

The Air Force's intent to establish a 'Special Tactics Squadron' is

thus an important step in providing air support to these types of operations. Increasingly, all forms of tactical airlift - be it battlefield utility helicopters through to even Boeing C-17A 'Globemaster III'-sized heavy airlift - will be conducted as deep penetrations into hostile airspace. Such airlift platforms will need to be armoured, and be equipped with increasing abilities to protect themselves and engage anti-aircraft threats, both ground- and air-based.

The high likelihood of asymmetric targets of opportunity arising without easy access to un-defended airfields will thus require the ADF to establish a long range vertical take-off and landing (VTOL) capability, in the form of either long-range VTOL aircraft like the Bell/Boeing V-22 'Osprey' tilt-rotor, or the development of a helicopter in-flight refuelling (IFR) capability such as the short-fuselage C-130J. In the long term, the realisation of a long expressed desire for a C-130-sized, stealthy, VTOL aircraft by the United States (known as MC-X), would provide a ready asymmetric airlift capability.

Of principal utility for Australia and its littoral dominated region, will be maritime asymmetric manoeuvre. Vessels will thus be required that are able to support combat team-sized special operation forces - and deploy them from ship to land by both air and sea - yet still be highly discrete and survivable.

It appears likely such a vessel could be developed using Australian multi-hull ferry technology, such as the US Navy's 'Independence'-class Littoral Combat Ship (LCS), and their newly defined Joint High speed Support Vessel (JHSV).

These classes of ships possess the appropriate size to support deployments of combat team-sized forces, as well as the flexibility to be tailored to the right mix of amphibious support and self-defence capability.

While the ADF currently possesses a range of kinetic and conventional effects that it can apply in asymmetric ways, the progressive development of new effects - in particular a Psychological Warfare (PSYWAR) >33

• **Land 75, Phase 3.4 & Land 125, Phase 3:** Involves the \$525-700m further rollout of the Saab Systems Battlefield Command Support System (BCSS), and acquisition of soldier systems for increased lethality (weapon sights) and survivability (body armour). This initiative also includes the acquisition of the Battle Group and below Command, Control, Communications (BGC3) system, formerly and colloquially branded 'Land 200'.

• **Land 144, Phase 1:** Relates to the \$20-30m acquisition of initial counter-mine capabilities, including a Personnel Explosive Lane Clearance Charge (PELCC) System, Improved Handheld Detectors (IHD), and 6-12 'protected hazard reduction systems' in the form of armoured vehicular mine-flails for rear area mine destruction.

**CAPITAL FACILITIES PROJECTS:** The 2007/08 Federal Defence Budget also provides \$643.6m for major and medium capital facilities projects, with the Department of Defence planning to spend \$3.270m on such facilities over the Budget and Forward Estimates period.

Having shrunk from previous highs in earlier years, the Capital Facilities Program is now forecast to grow quite considerably reflecting the need for reinvestment in the Defence estate, the construction of new facilities to accommodate equipment emerging from the Major Capital Expenditure program, and other new initiatives announced over the previous year by the government, such as the Hardened and Networked Army, and the Enhanced Land Force.

Defence bases around Australia, including a number in key electorates, are set to receive an injection over 2007/08 of \$1,039.9m in the form of: capital infrastructure (\$499m); estate upkeep (\$405.5m) and continued base security (\$135.4m).

ADBR

## ASC sale - Ctd from p19

launching of the first AWD in 2013 - ADBR has been able to build a simple picture with which to aid valuation of the company.

In short, and over the decade between Government disposal of ASC in 2007/08 and delivery of the third AWD (as well as expiry of the first 15-year tranche of the TLS contract), the company could be expected to generate over \$6 billion in revenues.

Based on averages of the previous three years' financial results to set the base for 2006/07 and converting them to ratios (as arguably, ASC has honed its submarine support activities to a high level of efficiency) - as well as expanding Total Assets to reflect the \$135m investment (and depreciation) in upgraded facilities in WA and SA - and adopting the 60% fully-franked dividend policy of the existing management, ASC would deliver around \$250m in dividend over the period to 2019/20.

Return on equity would progressively expand from the \$16.2% recorded in 2005/06 and would concentrate in the order of 35%pa in the years 2010/11 through to 2012/13, before falling as the construction program matured, and revenues began to fall back onto substantive reliance on the submarine TLS contract.

ADBR emphasises that the above projections come from simple spread-sheet modelling of historical ASC financial outcomes, moderated by some of the better known fundamentals that will drive future corporate performance, and assuming the financial directives of the current management are sustained by the company's new owners.

ADBR's estimates will be subsequently revised following the company's release of its 2006/07 Annual Report, expected around October. The above analysis also recognises that revenues from submarine support and capability enhancement activities will be substantially boosted in 2007/08

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