

... it is more important to have materiel 'in being' than to have unequipped forces in being ...¹

Technology, Equipment and Supplies

Introduction

- 8.1 Since 1987 the Department of Defence has emphasised the need for the Defence Forces to maintain capability through a technological edge. This chapter looks at the suitability of the equipment, supplies and technology underpinning the Army's capability. In previous chapters we have discussed the desirable force characteristics for the Army. In this chapter the suitability of the Army's equipment is evaluated against these characteristics. These include a capability to be scalable, sustainable, credible, and optimised for operations within Australia's Area of Critical Security Interest (ACSI). The Army also needs equipment capabilities that complement and are balanced by equipment capabilities within other services.
- 8.2 The subjects addressed in this Chapter include:
- Strengths and Limitations of Current Equipment
 - New Equipment Programs
 - The Army's Acquisition Strategy

¹ Quoted in O'Neill, R, and Horner, D, (Eds), *Australian Defence Policy for the 1980s*, University of Queensland, St Lucia, 1982, p. 187.

- Stocks and Supplies
- Industry, Technology and Self Reliance
- Conclusion

Strengths and Limitations of Current Equipment

Introduction

8.3 No submission or witness provided a detailed critique of the equipment situation within the Army. Comments were received on specific issues or types of equipment. There was throughout 1999–2000 significant public comment within the press concerning both Army and Defence equipment. Evidence from both the public news media and submissions have been used in our consideration of the Army's equipment and technological base. In addition, our visit to East Timor in late 1999 and discussions with soldiers at Robertson Barracks in mid-2000, provided useful information on how soldiers deployed on operations viewed their kit. This section discusses evidence received on:

- Personal and Crew Served Weapons
- Personal Clothing and Load Carrying Equipment
- Helicopters
- Vehicles

Personal and Crew Served Weapons

The Steyr Rifle

8.4 The basic personal weapon in the Army is the 5.56mm Steyr rifle. This rifle has been produced under licence in Australia. As a consequence of East Timor, we were aware of complaints about the Steyr. At the time of the inquiry the Army was conducting an investigation into unauthorised discharges in East Timor. By April 2000 a total of 65 accidental discharges had been reported in East Timor.² A commentator for the Army claimed that there was no evidence that the discharges had occurred as a consequence of a design fault with the Steyr.³ Despite this defence, others

2 Horan, M, 'Australian rifles miss the mark' *The Sunday Times*, 30 April 2000, p. 11.

3 Logue, J, 'Press maligns Steyr', *Army*, No. 1003, 8 June 2000, p. 3.

criticised the Steyr on the basis that it is expensive, lacks range and is not sufficiently robust.⁴ One journalist considered that the purchase of 32 million dollars worth of United States M4 assault rifles was an embarrassment for the Army. The purchase suggested that the Australian-made Steyr was not as adaptable as the Army intended.⁵ We received no firm evidence during hearings or in submissions to support these suggestions or to question the current effectiveness and utility of the Steyr.⁶

Non-Lethal Weapons

- 8.5 A perceived deficiency in the Army's ability to participate in peacekeeping included the availability of non-lethal weapons. It was suggested to us that the Army needed non-lethal firearms and portable, rapidly erected barricades for riot control.⁷ The need to procure non-lethal weapons was not widely pursued by the respondents to the inquiry.

Crew Served Weapons

- 8.6 Besides individual small arms, the Army uses heavier weapons. A crew of two or more usually operates these weapons to provide fire support to attack a target or to permit movement of troops. Some examples of crew served weapons include the 105mm direct fire gun of the Leopard tank; the 106mm recoilless rifle, and the 81 mm mortar.
- 8.7 The Australian Defence Association noted that, with some exceptions, the 'Army's fire support equipment is largely obsolete'.⁸ Professor Dibb testified to the us that:

... Army's submission is entirely correct to argue that their kit is ageing, becoming obsolescent. ... if you look at air defence weapons, or some of the other equipment, ... they are old.⁹

On visiting soldiers in Darwin Professor Dibb's comments were reinforced. Some soldiers pointed out to us that much of their equipment was older than they were.

4 Mr R Downey, Submission 3, p. 18.

5 Horan, M, 'Australian rifles miss the mark' *The Sunday Times*, 30 April 2000, p. 11.

6 The Committee was aware of the accidental death of a soldier in East Timor from the discharge of a Steyr rifle. The Committee's inquiry concluded before the results of the Board of Inquiry into the death were released.

7 Mr Gardiner, Submission 45, p. 673.

8 Australian Defence Association, Submission 46, p. 689.

9 Professor Dibb, Transcript, p. 197.

Personal Clothing and Load Carrying Equipment

8.8 East Timor also highlighted deficiencies within the Army's field uniform. The specific complaints centred on its lack of suitability for hot tropical climates.¹⁰ The issue of the suitability of the Army's clothing and field equipment was brought to the attention of the Minister for Defence in December 1999 while visiting East Timor.¹¹ The Army had noted a range of concerns arising from the East Timor experience. At the time of the inquiry the Army had already initiated procurement action for:

- A field uniform with a higher cotton fibre content.
- A light weight sleeping bag.
- Chest webbing. (ie, the personal harness worn by soldiers to carry ammunition and water)
- Modified boots to reduce the risk of blistering¹²

8.9 In 2000 the 2nd Battalion was trialing chest webbing prior to the Army developing the item in quantity. The Army was also looking at new wet weather clothing and a multi-purpose combination tool to replace the traditional pocket knife issued to soldiers.

Helicopters

8.10 The Army operates four different helicopters. These include the UH1H 'Huey', the Blackhawk, the Kiowa and the Chinook. The UH1H is a utility helicopter used in Vietnam for troop lift and fire support. It is now used primarily to provide fire support. The Blackhawk is used for troop lift while the Chinook is used for heavier lifting. The Kiowa is a small helicopter used for reconnaissance.

8.11 The commissioning of the HMAS Manoora and Kanimbla amphibious vessels has raised concerns about the helicopter fleet. These vessels are designed to use in-service helicopters to move troops and equipment to and from the shore. One submission implied that the Army's fleet of helicopters needed to be marinised to do this task. It was thought

10 The Committee was made aware of this problem during their visit to East Timor on 2 December 1999 and from evidence received during a public hearing (see Dr J Cunningham, Transcript, p. 125).

11 *Cairns Post*, 'Troop gear change urged', 22 December 1999, p. 13.

12 Army, Submission No 73, p. 1096.

necessary that they be capable of withstanding a corrosive sea environment and have folding rotors to allow storage on ships.¹³

- 8.12 Concern was also expressed about the acquisition of new helicopters. Professor Dibb thought that the new armed reconnaissance helicopter for the Army might be targeted at an unrealistic threat. He noted that the helicopter project, known as AIR87, began life as a reconnaissance and troop lift helicopter. He claimed that it now seemed to be seeking additional capabilities beyond requirements.¹⁴ That the specifications for AIR87 had shifted to include 'higher end' capabilities was reported within a defence industry magazine.¹⁵
- 8.13 The point was made to us that the helicopter was an important piece of equipment for the Army. The helicopter was seen as being particularly useful in the Australian and regional environment. The ruggedness of the terrain, the paucity of roads and climate were cited as reasons for using helicopters.¹⁶ We shared the Australian Defence Association belief that:

... the Army has under invested in helicopters, helicopter transport and helicopter fire support, and that is something they really need to deal with.¹⁷

Vehicles

Introduction

- 8.14 The vehicle types operated by the Army range from standard commercial trucks and cars to General Service (GS) four-wheel drive field vehicles and tracked and wheeled armoured vehicles. No significant evidence was presented on the commercial or GS fleets. Most evidence centred on the mobility, protection levels, weapons, age and associated costs of the armoured vehicle fleet. We were advised that armoured vehicle design is always a compromise between the competing factors of mobility, protection and firepower.¹⁸

13 Mr C Gardiner, Submission 45, p. 668. The Committee was under the impression that the inability to hold the rotors of the Blackhawk was a factor that contributed to them not being sent to Somalia with the Australian battalion group.

14 Professor P Dibb, Transcript, p. 197.

15 Bostock, I, 'Lift-off at last for Australian Army's Air 87', *Janes International Defense Review*, 1/1999, p. 84.

16 Messrs B & S Cooper, Submission 19, p. 149.

17 Mr M O'Connor, Transcript, p. 170.

18 For discussion on these three factors see Colonel J Lenehan, Transcript, p. 264.

- 8.15 Different nations have tended to emphasise different design philosophies with armoured vehicles. The Leopard I main battle tank, when it was introduced, had relatively low protection but good mobility and adequate fire power. The good mobility was achieved by reducing the weight of armour protection. The concept in this case was that armour could be sacrificed as good mobility provided a degree of protection by itself. Other tanks are designed using a different philosophy.

Figure 8.1 The Leopard Main Battle Tank (Courtesy Department of Defence)



- 8.16 Some tank designs have tended to emphasise protection and so were heavier and less mobile. There are no absolutes in vehicle design. These issues were borne in mind as the limitations in the Army's armoured vehicles were pointed out. As explained by the Chief of Army:

... the Army is in the business of relativities. It is not so much the absolute capability that you field as the relative capability to everyone else ... You model, you test and you evaluate.¹⁹

19 Lieutenant General F Hickling, Transcript, p. 323.

Vehicle Mobility

- 8.17 The mobility of vehicles centred around a debate on the merits of whether vehicles should be wheeled or tracked. Tracked vehicles appeared to apply less ground pressure than the equivalent wheeled vehicle.²⁰ This gives them an advantage in difficult terrain or soft soils. On the other hand we were aware that wheeled vehicles use less fuel and logistics support; are less fatiguing on the vehicle occupants and are able to deploy quickly along roads.²¹

Figure 8.2 The Bushranger Infantry Mobility Vehicle (Courtesy Department of Defence)



- 8.18 The Bushmaster wheeled armoured vehicle appears to be optimised for the Defence of Australia (DoA) tasks assigned to the Army since 1987. One press article noted that:

The Bushmaster ... is a vehicle that fits well the Army's stated main role in defence of the Australian mainland ... the purpose-

20 See Submission 45 by Mr Gardiner.

21 Ogorkiewicz, R, 'Weighting up the infantry's armoured vehicle options', *Janes International Defense Review* 3/1999, p. 35.

designed ability to traverse highways, second-class roads and bush tracks, and its limited cross-country capability auger well for operations across Australia's north during the dry season.²²

- 8.19 The concern is how effective will such a vehicle be if the majority of the Army's tasks are not conducted in northern Australia or in the dry season? The Australian Defence association was concerned that the new wheeled vehicles, ASLAV and Bushmaster, will not be effective in some of the terrain the Army will be forced to operate in.²³ This concern did not appear to be shared by the Army. The Army's Director General of Land Development noted that:

The northern Australian environment is very similar to most of the other areas in our region in which we might operate. So if we can operate in that environment, generally speaking we can operate offshore – as long as we can support operations offshore.²⁴

Troops in the field, including personnel who had served in East Timor, expressed a view contrary to this.²⁵

Vehicle Protection

- 8.20 The levels of crew protection in Australian armoured vehicles were raised in both submissions and public hearing. The Army Armoured Personnel Carrier (APC), the M113, was considered to provide inadequate protection for modern combat.²⁶ It was pointed out to us that the M113 currently provided protection against now outdated small arms ammunition. The Australian Light Armoured Vehicle (ASLAV) and the Bushmaster appeared to be vulnerable to 50 calibre machine guns bullets and by armoured piercing bullets from standard infantry rifles.²⁷ Even the Leopard tank was said to be vulnerable to heavy machine gun fire using armour piercing bullets.²⁸

22 *Asia-Pacific Defence Reporter*, 'Fielding the Bushmaster family', April/May 1999, p. 60.

23 Mr M O'Connor, Transcript, p. 170.

24 *Australian Defence Monthly*, 'From the Source', March 2000, p. 41.

25 Committee discussions with soldiers at Robertson Barracks, 8 August 2000. The Committee was also concerned that the Bushranger vehicle, as of mid-2000, still appeared to be undergoing trials. If this was true it suggests that the Army equipment acquisition process needs to be improved to introduce equipment sooner.

26 Colonel D Chalmers, Transcript, p. 105.

27 Colonel J Lenehan, Submission 27, pp. 305–311.

28 *ibid.* p. 306.

Figure 8.3 The M113 Armoured Personnel Carrier (Courtesy Department of Defence)



8.21 On the issue of vehicle protection we were disappointed by unnecessary obfuscation by the Department of Defence. When asked whether the M113 and other armoured vehicles needed to be resistant to 14.5mm calibre weapons we were told, amongst other things:

The M113 protection upgrade is a sensitive area, and has a Secret classification. The Defence Sub-Committee can be provided the actual requirement through classified reporting if required.²⁹

The Department of Defence's response to our questions then went on to discuss how the Army's armoured vehicles fulfilled different roles. Our questions were not effectively answered. We felt that more concise and factual statements on armour protection levels were being provided to us through magazines. These included *Janes Defence Weekly* and the *Australian Defence Magazine*.

29 Department of Defence, Submission 73, p. 1095.

8.22 The most graphic example provided of the limitations within Australia's armoured vehicle fleet involved a United States Army computerised wargame. It was claimed that during Exercise Cascade Peak 96, an American, British, Canadian and Australian (ABCA) Army wargame involving 1 Brigade, that:

The Brigade was shown to be hopelessly ill-equipped, taking some 900 casualties before getting into battle.

8.23 The scenario used in the wargame represented a 'high end' conflict for which the Army is not being prepared. However, in a defence force which is founded on the concept of maintaining a capability edge through technology, it does require explaining. The lives of 10 personnel in an armoured vehicle should be as important as the life of a single pilot in a high technology jet. Having said this, heavy armour, while useful in intense conflict on the Eurasian landmass, may have less utility within Australia and the region.

Figure 8.4 The Australian Light Armoured Vehicle (ASLAV) (Courtesy Department of Defence)



8.24 The transition from the Cold War had affected the force structure and equipment decisions of many nations. We thought it notable that the United States was investigating an armoured vehicle which was:

C130 transportable ... capable of sustained hard surface speeds of 60 miles per hour, travel up to 400 miles without refuelling, and swim at 10 miles per hour without prior preparation.³⁰

The investigations undertaken by the US appeared to be driven by a need to be able to deploy forces in large numbers and quickly. It was apparent to us that the debates on equipment often focused on only one aspect that impacts on capability. A high level of protection for vehicle crew is important – however it should not be obtained at the cost of the vehicles becoming undeployable within Australia's ACSI.

8.25 Action was being taken to address deficiencies in vehicle protection. The upgrade of a limited number of the Army's M113 fleet was in progress at the time of the inquiry. This upgrade unfortunately ran into controversy. This controversy appeared to be linked to the cost associated with giving the M113 a level of protection against 14.5mm armour piercing rounds. Apparently the original costing for the upgrade were not based on such a high degree of protection. The heightened specification increased the weight of the vehicle with a resultant need to upgrade other aspects of the vehicles power plant and transmission.³¹

Weapon Fire Power

8.26 The third factor in assessing the performance of a vehicle is the weapon system it carries. This is not simply a matter of the calibre of the gun. The gun control, sighting and stabilisation systems affect the performance of a weapon. The Army's Leopard tank was said to be lacking in modern fire control and sight stabilisation. It was also claimed that its 105mm gun had been superseded by a 120mm gun and would soon be superseded by a 140mm gun.³²

8.27 The adequacy of the firepower provided by the M113 was questioned following the withdrawal from service of the variant carrying a 76mm low velocity gun. It was suggested that the M113 could be improved by the fitting of an ASLAV type turret. In general the armoured vehicle fleet

30 Seffers, G I, 'US Army eyes Hybrid Aircraft for Heavy Lift' *Defense News* Vol. 14, No 45, 15 November 1999.

31 La Franchi, P, 'Cost blowout cloud over APC upgrade' *Financial Review*, 24 March 2000, p. 66.

32 Colonel J Lenehan, Submission No 27, p. 306.

appeared to be somewhat dated in the weapon, sighting and control systems available to it.

New Equipment Programs

Introduction

- 8.28 Army equipment is procured under two funding programs. For equipment in excess of 20 million dollars, funding is drawn from major capital procurement. Equipment in the process of being procured is recorded within a publication known as the 'White Book'. Equipment intended for procurement is catalogued separately in a publication known as the 'Pink Book'.³³ For equipment worth less than 20 million dollars funding is through a minor capital procurement system and is recorded in a 'Yellow Book'.
- 8.29 This section looks at present and planned Army major equipment projects. It also discusses some of the issues surrounding Army's key vehicle and helicopter projects.

Equipments Being Procured

- 8.30 In financial year 1999-2000, the Army was in the process of introducing range of new equipment. These included:
- Project Ninox equipment to facilitate night fighting and observation and surveillance.
 - A Tactical Engagement Simulation System to train soldiers in infantry minor tactics
 - A medium recovery vehicle (ie, a military tow truck).
 - Ongoing introduction of the Project Wagtail combat net radio.
 - A Global Positioning System Navstar to enhance navigation.
 - Complete the introduction into service of counter terrorist capabilities under Project Bluefin.

33 Department of Defence, 'Defence Forward Procurement Plans for Major Capital Equipment 1999-2004, *The Pink Book*'. June 1999.

- DSTO support for the operational analysis procedures associated with the tender evaluation of the armed reconnaissance helicopter.³⁴

Future Procurements

8.31 The key projects planned within the period 2000 - 2004 time frame include:

- Reconnaissance and Aerial Fire Support Helicopters – Project Air 87.
- Project Bushranger – new infantry mobility vehicles
- A life-of-type extension to the fleet of GS vehicle – Project Overlander.
- A very low level air defence weapon system
- A life-of-type extension to the Rapier air defence system
- Enhanced electronic warfare for the Army

8.32 In the same period, a range of joint projects will also deliver capabilities to all three services. This includes communication projects such as High Frequency Radio Modernisation (HF Modernisation) and a military satellite communications project, MILSATCOM. In addition, the intention to improve both airlift and amphibious lift capabilities will also benefit the Army.

8.33 Some current and planned Army projects had generated controversy during the period of the inquiry. These projects included the Reconnaissance Helicopter, the upgrade of the M113 Armoured Personnel Carrier (APC) and the purchase of the Bushranger infantry mobility vehicle. Professor Dibb intimated that the approach to the Armed Reconnaissance helicopter looked like overkill or gold plating.³⁵ The other public criticisms have surrounded the upgrade of the M113 and the purchase of the Bushranger vehicle. These are discussed further below.

Equipment Types and Cost

8.34 It was suggested to us that the Army maintained too many ‘one-off’ units.³⁶ For a small Army this also seems to be reflected in too many ‘one-off’ armoured fleets. The Army explained this situation by stating that the:

34 *Defence Portfolio Budget Statements 1999–2000*, pp. 86–92. Note – these equipment projects relate to Defence outputs 10, 11 and 12. (ie, Special Forces, Land Task Force Operations and Logistics Support to Land Forces). Projects linked to other outputs also impact on the Army, although less directly.

35 See Professor P Dibb, Transcript, pp. 205-206.

36 Colonel D Chalmers, Transcript, p. 103.

M113 was acquired in the sixties, Leopard in the seventies, ASLAV in the nineties and Bushranger is about to go into production. Acquisition was not guided by a comprehensive combat vehicle development plan. Nevertheless, piecemeal procurement has produced a combination of vehicles able to meet the broad range of land force capability requirements.³⁷

8.35 The recent procurement of the Bushranger vehicle was partially justified on cost grounds. It was claimed to be one-third the cost of the ASLAV, although less capable. The Army also pointed out that savings, by reducing the numbers of vehicle types, would have to be substantial to offset initial investments and capability disadvantages.³⁸

8.36 To a suggestion that the M113 fleet should not be upgraded but replaced with Light Armoured Vehicles the Army replied that:

The cost of the M113 upgrade will be less than \$350m... [to upgrade as many as 350 vehicles to two different standards] ... the ASLAV Phase 3 project is planned to acquire 150 vehicles ... at a project cost of \$550m; ..The LAV III, a larger and more protected LAV derivative, would cost in the order of \$800m for 150 vehicles. The M113 is a cost effective solution to the close combat requirement to 2015–2020.³⁹

8.37 **Against the stark reality of these up-front purchase costs there was no discussion of life cycle costs and total fleet sustainability costs. By the Army's own calculations there may have been a cost-benefit case for replacing rather than maintaining the Leopard tank.** An Audit Report noted evidence from the Army that:

... an analysis showed that the cost of replacing current Leopard tanks would be similar on a life-cycle cost basis to retaining the current tanks. However, the ANAO was advised that LCC estimates were not the basis for the decision to retain the current tanks.⁴⁰

8.38 In general we were concerned about the philosophical underpinning of Army capability acquisition strategy. Evidence was not provided that the Army had a set of acquisition principles that it was uniformly applying.

37 Department of Defence, Submission 73, p. 1096.

38 *ibid.* p 1095.

39 *ibid.* p 1096.

40 Auditor General 1998, Audit Report No 43, 1997–1998, *Department of Defence: Life Cycle Costing in the Department of Defence*, AGPS, Canberra, p.19. This observation was further reinforced in Committee discussions with soldiers at Robertson Barracks on 8 August 2000.

There did not appear to be a discernible approach dealing with the issues of expansion and sustainability for more intense or protracted operations.

- 8.39 Finally, we assumed that the Army now conducts equipment life cycle costing before acquisition of any new equipment. We were disappointed that the Army did not answer our questions on vehicle procurement with life cycle cost data. Instead the Army used initial purchase price as a way of justifying the Bushranger purchase. Because the Army did not provide life cycle cost data on maintaining a homogenous vehicle fleet we were not convinced that the Bushranger purchase was necessarily well thought through. We expect that during any future inquiry we would be able to revisit the issue of life cycle costing within the Army.

Army's Equipment Acquisition Strategy

- 8.40 The Chief of the Army, General Hickling, explained the Army's approach to acquiring new equipments in the following terms:
- ... Army is reluctant to rate procurement priorities by equipment project. Rather Army seeks to identify capabilities, such as 'gaining the knowledge edge', which are then associated with a range of projects. In this case the 'knowledge edge' capability is supported by projects such as airborne surveillance, DEFNET, narrow-band secure voice equipment etc.⁴¹
- 8.41 This seems like a more logical approach than simply replacing equipments for the sake of replacing them. We were impressed by the Army's aspiration to use an 'experimental framework' to address structural and equipment shortfalls.⁴² However, we felt unease about the Army's approach to acquiring equipment on the following counts:
- We did not receive concrete evidence on how the Army's experimental framework⁴³ was actually guiding the expenditure of funds and the acquisition of capability. Given the recent development of this framework we accepted that it may need more time to mature before concrete results are seen.
 - The Army equipment projects were not planned to equip the total force. It appeared that equipment projects were being approved to only fully equip some units. Most units were either partially equipped with new equipment or, in some cases, not equipped at all.

41 Australian Army, Submission 61, pp. 925-927.

42 Department of Defence, Submission 73, pp. 1095-1096.

43 This framework appeared to have originated in 1999.

- 8.42 The Department of Defence estimated that to bring the Army's nine brigades up to their required level of operational provisioning would require the expenditure of 4.5 billion dollars.⁴⁴ This capability gap can be partly explained by the fact that the Army's Mobilisation Plan (AMP). The Department points out that:

If a large contingency occurs commensurate with a requirement to expand the Army's higher readiness organisations, then cross-levelling of equipment, Army stocks, and training pools from lower readiness organisations will occur. Remediation of any shortfalls would then be follow on action. Remediation is an acquisition program of Commercial Off the Shelf (COTS) equipment, designed to backfill/replace equipment used to mobilise for a contingency.⁴⁵

- 8.43 The difficulties associated with equipment remediation during East Timor and the sheer size of the shortfall make this approach questionable. When discussing the likely impact on 7 Brigade, if it had to provide two additional battalions to East Timor, the point was made:

... we would have had to look to see whether equipment holdings throughout Defence would have been sufficient for us to be able to raise the units that were necessary.⁴⁶

There was clearly uncertainty on the availability of equipment for a total army deployment of no more than four battalions. This uncertainty should be a cause for national concern. We could not help but form the impression that equipment procurement was not being done with any serious consideration for the needs of prolonged sustainability, supportability and force expansion.

- 8.44 A final area of concern about the equipment acquisition strategy for the Army centred on performance standards. The Departments Public Discussion Paper noted that:

Airforces beyond Southeast Asia are outclassing our capability. Within a few years we will not be able to operate against such units in front-line air-combat roles at an acceptable level of risk to our pilots and aircraft.⁴⁷ ... the F-111 is capable of operating throughout our nearer region and could be deployed on coalition

44 Department of Defence, Submission 73, p. 1015

45 *ibid.* p. 1094.

46 Brigadier P McIntosh, Transcript, p. 258.

47 Department of Defence, *'Defence Review 2000 – Our Future Defence Force. A Public Discussion Paper*, Defence Publishing Service, Canberra, 2000, p. 36.

operations in demanding threat environments.⁴⁸ ... The Collins class has been designed to be one of the best conventional submarines in the world.⁴⁹

In the same paper it was noted that the Army armoured platforms provided an ability to 'augment light forces' and that the Army's 1st Brigade provided a seed capability for higher intensity conflict.

- 8.45 It was apparent, even from the Discussion Paper, that the technical performance baseline being used for air and sea platforms was different from that being applied to the ground platforms. Under existing defence strategy the Army has logically not received the priority for equipment funding. It is difficult to see how this resourcing priority should mean the Army should be designed for a lesser standard of technical threat. **In all cases Australian lives and operational outcomes are at stake. In blunt commercial terms it becomes a matter of occupational health and safety. Soldiers should be afforded the safest possible work environment commensurate with the inevitable risks of combat.**

Stocks and Supplies

- 8.46 Armies maintain reserves of ammunition, repair parts and other consumable. These are known as operating and reserve stock. Operating stock is used to satisfy peacetime levels of consumption usually associated with training. Reserve stock is for the surge in consumption associated with the activity levels of a force on operations.⁵⁰ In 1992,⁵¹ and again in 1996,⁵² concerns were raised in reports by both this Committee and the Auditor General about the ADF's stockholding and sustainability.
- 8.47 These previous concerns were reinforced by evidence received during the inquiry. The Army noted that it was under pressure to meet ammunition training requirements. This stemmed from the increased preparedness of the 1st Brigade and the needs associated with East Timor.⁵³ We were led to believe that the allocation of ammunition for training on heavy and crew

48 *ibid.* p. 38.

49 *ibid.* p. 40.

50 Australia, Parliament, *Stockholding and Sustainability in the Australian Defence Force*. Joint Standing Committee on Foreign Affairs, Defence and Trade, 1992, pp. 1-2.

51 *ibid.*

52 See Australian National Audit Office, *Management of Australia's Defence Preparedness*, Audit Report No 17 1995-1996, AGPS, Canberra.

53 Department of Defence, Submission 73, p. 1115.

served weapons was very limited. **In one instance we were informed that there was no training ammunition available for the Leopard gun for the next year. Instances like this inevitably impact heavily on training standards, morale, job satisfaction and ultimately retention.**⁵⁴

- 8.48 The Army also noted that aspects of ammunition production were critically dependent on overseas sources of supply. This included items such as propellant and fuzes. Other items were sourced completely from overseas. This included air defence missiles and anti-tank ammunition.⁵⁵
- 8.49 We were not advised what the ADF Reserve stockholding policy was and so were unable to assess what impact this would have on the Army's readiness or sustainability. Under a strategic concept of credible deterrence it would seem desirable that this policy was known and was publicly declared. Not declaring the policy and reporting on its performance may undermine the credibility of the Army to deter.

Industry, Technology and Self Reliance

Self Reliance and Force Expansion

- 8.50 The relative simplicity of many of the Army's basic equipment has allowed it to benefit from either local production or assembly. The Steyr rifle, artillery pieces, four wheel drive vehicles and armoured infantry mobility vehicles have all been manufactured or assembled in Australia. The apparent success of the Australian ballistics company Metal Storm in developing weapons indicates the potential of Australian Industry to support the Army.⁵⁶
- 8.51 In 2000, the Defence Science and Technology Organisation (DSTO) developed a new material for wet weather clothing. This was to be introduced into East Timor. The material was reported as having been developed in under 18 months in association with a Melbourne based company. The material was considered as effective as the industry's leading wet weather cloth, Goretex, but substantially cheaper.⁵⁷ Unlike the Air Force, where expansion of the force through local aircraft

54 These issues were discussed with the Committee by soldiers at Robertson Barracks on 8 August 2000.

55 *ibid.* pp. 1115-1116.

56 For an example of one of the companies developments see *Adelaide Advertiser*, 'Grenade system storms ahead', 4 July 2000, p. 24.

57 *The Canberra Times* 'Soldiers will now stay dry in new gear', 3 June 2000, p. 9.

production maybe cost prohibitive, the Army may be largely supportable from local industry.

- 8.52 In previous discussions on the Army's required capability and force structure, we concluded that:
- The Army needs a force-in-being of at least four brigade sized organisations. This force would be able to deal with a concurrent and sustained commitment to one major and one minor force deployment.
 - The Army, for reasons of deterrence, needs a demonstrable force expansion capability. This capability needs to generate at least eight additional brigade sized formations within two years of activation for the deterrence to be credible.
- 8.53 There are two options for guaranteeing force expansion can be achieved in times of defence emergency:
- Equip the force-in-being and purchase and store sufficient equipment for the expansion process.
 - Equip the force-in-being, but defer acquisition of equipment and stocks for the force-in-planning until the need arises to activate it.
- 8.54 Realistically, pre-purchasing, based on Army's current estimate to equip its current nine brigades properly, would cost in excess of five billion dollars. As this force would also have a low probability of being used the equipment would deteriorate, and become obsolescent. The alternative is to:
- Have a national support base capable of satisfying critical equipment and stores demands within the planned expansion time frame.
 - Plan overseas supply in such a fashion that multiple sources of supply can be drawn upon in times of international tension or defence emergency. For any critical item, Australia should not risk dependency on one point of supply.
- 8.55 To adopt the above approach may require a review of current policy. The Government's strategic guidance issued in 1997 stated that it would usually make decisions about military equipment purchases on a 'strictly commercial basis'. The Government saw this as important as a means of ensuring that the national support base remains efficient.⁵⁸ This policy also recognises that some elements of our national industrial capability

58 Department of Defence 'Australia's Strategic Policy' 1997, Defence Directorate of Publishing and Visual Communications, Canberra, p. 48.

may have defence significance. The Government's current policy is to keep these as small as possible.

- 8.56 The Army needs to have an affordable but credible capability for force expansion. This suggests that there is a need to define and resource the relationship of defence with Australian industry. To some extent the Defence Industry Investment Recognition (DIIREC) scheme allows this to happen. In early 1999, Army signed an agreement with the helicopter supplier, Sikorsky. This was reported as the first such agreement to be signed by Defence. The Sikorsky agreement is intended to establish a long term relationship which will include the provision of technical engineering data.⁵⁹
- 8.57 While the DIIREC appears a worthwhile scheme criticism of the Defence–Industry relationship was evident during the inquiry. A lobby group consisting of a confederation of Australia's six major defence industry groups expressed concern about the existing defence industry policy. It sought a system whereby communications between Defence and Industry were improved and actions more predictable.⁶⁰
- 8.58 Ross Babbage expressed concern that:

ADF attitudes towards defence industry contrasted markedly with past government policy statements emphasising the role of the sector as the “fourth arm” in national security planning.⁶¹

He went on to point out that if commercial industry was now driving a lot of technological change then Defence must talk to industry – not simply expect industry to come to Defence.⁶²

Technology and the Revolution in Military Affairs

- 8.59 The advent of the ‘Information Age’ has impacted on the military as much as business and government. The impact of information and other emergent technologies on the world's militaries is known as the Revolution in Military Affairs (RMA). Unlike industry and government, the military has no guarantee, until engaged in a conflict, if it has invested in the right technologies.

59 Bostock, I, ‘Australia signs closer co-operation with Sikorsky’ *Janes Defence Weekly*, Vol 31, Issue No 8, 24 February 1999, p. 21.

60 Barker, G, ‘Defence industry takes the Government to task’ *Financial Review*, 18 May 2000, p. 9.

61 Quoted in La Franchi, P, ‘Warning on industry relationship’ *Financial review*, 26 May 2000, p. 85. The concept of a ‘fourth-arm’ was derived from a concept articulated by the Hon L R S Price, MP, when reviewing Defence Industry in 1992.

62 *ibid.* p. 85.

- 8.60 In 2000, the Government released a discussion paper on technology under the theme of the Revolution in Military Affairs (RMA). One major newspaper was cautious about the paper. It felt that, without clear strategic guidance it will be difficult for the defence forces to choose the best mix of technology. It urged that 'The acquisition of new defence technology cannot be an end in itself. It must serve well defined national objectives'.⁶³
- 8.61 In the same paper, an article on the RMA pointed out that even partial adoption of the concepts of the RMA would not be sustainable under the present defence funding levels. It also highlighted the deficiency of RMA approaches when prosecuting jungle or urban operations against unconventional forces.⁶⁴
- 8.62 The temptation to pursue the RMA might be facilitated by the US easing defence export controls to selected countries, including Australia. The move was announced by the US Secretary of State in late May 2000. The US State Department stated that the move would not only facilitate the sale of weapons but also technology transfer and cooperation with US firms.⁶⁵
- 8.63 There may be a tendency to overstate some advances being made in high technology. We were aware that US plans for 'digitising' its Army units were not progressing as rapidly as hoped. The vehicle for digitisation of US ground forces centred around equipment known as the Force XXI Battle Command, Brigade and Below (FBC2B2) system. In February 1999 the US was experiencing difficulty with this system and was unlikely to expand its use until 'a digitised force demonstrates FBCB2 is operationally effective and suitable'.⁶⁶ Of the twelve divisions within the US Army only one is experimenting with digitisation. Two other divisions were intended to be equipped by 2004 although this may not be achieved.⁶⁷
- 8.64 It is possible that the degree of modernisation with other militaries is being overstated. Based on the US experience the RMA is arriving more slowly and less comprehensively than press articles would suggest.

63 *The Australian* 'Revolution raises policy questions' Editorial, 4 January 2000, p. 10.

64 Garran, R, 'Battle too costly to wage', *The Australian*, 4 January 2000.

65 *The Canberra Times* 'Australia to benefit as US eases exports', 27 May 2000, p. 8.

66 Bender, B, 'US Army digital force plan stalls' *Janes Defence Weekly*, Vol 31, Issue No 7, 17 February 1999, p. 4.

67 *ibid.* p. 4.

Conclusions

- 8.65 We considered the suitability of the Army's technology, equipment and supplies against a series of preferred force characteristics. These characteristics are used as the basis for forming our conclusions.

Force Credibility

- 8.66 The Army's performance in lower level conflict and peacekeeping would suggest that the current equipment contributes positively to the credibility of the force. Deficiencies identified in equipment during East Timor were being rectified. Despite criticisms of the Army's armoured vehicles and their weapon systems, they appeared to perform credibly on a low-level operation. No substantive evidence was provided that there was a problem with the Army's rifle, the Steyr.
- 8.67 Against this assessment, there was evidence to suggest that a concurrent deployment of four battalions would have been difficult to equip. We also were aware that recent threats in Somalia, Rwanda, Cambodia and East Timor have been of a low order. In other words the Army appears to have good equipment for the deployment of a limited number of troops (no more than four battalions) against a low-level threat. This situation means that, of an Army of approximately 20 battalions, one fifth of it can provide a credible force for low-level operations at short notice.
- 8.68 The lack of equipment and stocks was the single most serious criticism received by us during the inquiry. It underpinned much of the dissatisfaction and lack of capability within the Reserve.⁶⁸ One submission sums up this situation as follows:

The basis of provisioning for new equipment, including vehicles, weapons, radios, and night vision devices is so slight that many units will be 'fitted for but not with' these basics. This is a principle which defence now admits was wrong when applied to ships. Like ships, Army units need to be treated as complete capabilities. One consequence of equipment deficiencies is low morale and consequent difficulty in retaining trained soldiers.⁶⁹

68 The Committee also found this to be a significant source of dissatisfaction amongst Regular soldiers. For both the Reserve and Regular elements of the Army lack of equipment appears to affect all aspects of training, job performance and ultimately job satisfaction and retention. (Information on this issue was obtained from soldiers during a forum at Robertson Barracks on 8 August 2000).

69 Colonel D Chalmers, Submission 50. See also comments by Dr J Cunningham about vehicle provisioning in GRes units – Dr Cunningham, Transcript, p. 130.

- 8.69 The limited troop lift capability within the Army reiterated the paucity of necessary equipment within the Army. Based on the conclusions reached by us in considering Force Structures, the Army, as a minimum, should have a capacity to lift three companies. This lift capacity should also be supported by a corresponding capacity for aerial reconnaissance and fire support.
- 8.70 The manner of the intended acquisition of approximately 25 armed-reconnaissance helicopters requires further investigation. There did appear evidence that the specification had been altered to favour a 'higher-end' platform. Analysis may indicate that this shift in specification was sensible. We were concerned that procurement of such limited numbers of highly expensive platforms may:
- Impact on the readiness and sustainability of the capability.
 - Lead to a situation where, because of their cost and sophistication, there is a reluctance to use them in risk situations.⁷⁰
- 8.71 Finally, the future credibility of the Army will also rest on it identifying and absorbing appropriate new technology. The Army should not be excluded from developments within the RMA. We felt however, that the overall credibility of the Army will only be maintained if new technology is scalable and sustainable in line with overall capability objectives.

Force Scalability

- 8.72 We did not receive evidence to indicate that there were verifiable systems in place to expand the equipment base of the Army within any specified time frame. A mobilisation plan exists that considers the backfilling of equipment deficiencies with commercial equipment. This may be appropriate in many cases. The size of the deficiency – 4.5 billion dollars – would indicate the shortfall is large and diverse. Commercial equipment may not be able to rectify all deficiencies, assuming it is available in the first place.
- 8.73 The absence of evidence on a verifiable system for equipping the current force of nine brigades is of serious concern. Our preferred force model is not to maintain such a large under equipped force-in-being. If this preference is accepted there will remain a need to equip a force-in-planning should the need arise. The credibility of the Army as a deterrent rests on access to equipment.

70 Goodyer, M, 'Land warfare in the 21st Century' *Australian Defence Magazine*, Vol 8, No 6, June 2000, p. 46. This article noted that 95 per cent of aircraft shot down in the last twenty years were at low altitude. The weapons used were hand held missile systems.

- 8.74 **The need to procure equipment in times of defence emergency is not an incidental aspect of defence planning. It is central to it. It needs planning and resourcing commensurate with its importance. It does not appear to be getting this.**

Force Sustainability

- 8.75 Sustainment of the force appears to be affected by:
- The number of ready and interoperable units/formations that are available to be rotated through a prolonged or intense operation.
 - The ability to store and acquire stocks to replace those consumed during training and operations.
- 8.76 For a small Army we have already indicated that the current force structure has too many 'one-off' units. We also believe that too many 'one-off' equipment types or variants also affect the Army's equipment sustainability. The absence of evidence on life cycle costings and the admission that armoured vehicle procurement was not to a coherent plan should be of concern.
- 8.77 Wherever possible, the Army should be seeking common platforms and weapons. This will limit the ability for the Army to provide niche capabilities for one-off activities. It will also mean that it does not have equipment optimised for every conceivable climate, terrain or tactical situation. It will, however, mean that the Army is telegraphing its intent to be a serious fighting force.
- 8.78 We felt that the limitations of Australian industry to support the Army's ammunition and equipment requirements should be re-evaluated. A capability to produce locally key ammunitions and equipment represents a component of deterrence. Any regional or territorial aggressor must factor this capability into their assessment of what the Australian Army may do.
- 8.79 If this is not done then the issue of the Army's operating and reserve stockholdings needs to be thoroughly and publicly reviewed. Not declaring stockholding and equipment policy does not benefit deterrence. It may in fact be taken as a sign of weakness which will contribute to risk taking by an aggressor. Of all the three services, the Army is probably most amenable to being underpinned by the national support base.

Optimisation for Our Area of Critical Security Interest

- 8.80 There appeared some disagreement as to whether the Army's equipment was optimised for the conditions in which it must operate. There appeared a clear need to marinise the Army's helicopters. The Army indicated that it would like to purchase more helicopters and that these were intended to be marinised.⁷¹ There was also disagreement on the utility of some vehicles within parts of Australia's ACSI, in particular, the Bushranger infantry mobility vehicle.
- 8.81 To some extent the Army will have to live with the equipment decisions of the past. This situation may have to be accepted for the short to medium term. In the longer term, it is necessary, if the Army is to remain credible, that all equipment decisions be made with a view to optimising the Army for successful performance within the environment of the Australian ACSI.

Balancing Equipments Between the Services

- 8.82 We have previously noted that the force structures of the three services should complement and balance each other. The approach of using in-service helicopters on the HMAS Manoora and Kanimbla was very positive. It indicated that sensible and common equipment solutions can be found to problems affecting two Services. We would like to see this approach extended to other areas.
- 8.83 We were concerned, however, that the three services do not appear to be equipped using a common baseline of threat. Under our concept of increased complementarity between the Services this would have to stop. If they must be optimised to be capable of fighting as a unified force, then they must be working against a common technical baseline of air, sea and ground threat. To do otherwise is divisive and would threaten the coherence, balance and depth of all three Services as a fighting force. It would not lead to the three services being structured as a totally integrated fighting force.

71 Department of Defence, Submission 73, p. 1088.

