

Chapter 8

Conclusion

Introduction

8.1 The committee's terms of reference direct consideration of the 'potential use' of unmanned platforms by the Australian Defence Force (ADF) which invites speculation about an area of defence technology which is rapidly evolving. A degree of caution is warranted. Nonetheless, it is clear that increasing utilisation of unmanned platforms by military forces, including the ADF, will be an important trend in the next decades.

8.2 The development and utilisation of military unmanned platforms can be viewed as a 'megatrend'¹—the result of improvements in a number of areas of technology including computing, automation, communications, sensors and precision munitions. Unmanned platforms appear well suited to Australia's defence and strategic circumstances. Australia's vast land mass, distant population bases, offshore assets and remote terrain, as well as its history of joint overseas operations with allies, align well with the features of unmanned platforms. Unmanned platforms have proven they can extend the reach of the ADF as a highly skilled but numerically small military force. Their range, persistence and additional functionality can provide the ADF with improved capabilities.

8.3 Unmanned platforms will also enhance the ADF's ability to contribute to the response to emergencies and national support tasks such as the regulation of Australia's borders through Border Protection Command. In a budgetary environment where additional efficiencies are always being sought, unmanned platforms can also be cost-effective alternatives to manned platforms in some circumstances. There is the potential for unmanned platforms to contribute to ADF operations in a broad range of areas beyond aerial surveillance. These could include as undersea sensors, emergency battlefield medical assistance and as key parts of the ADF's logistical operations.

8.4 However, despite the advantages of unmanned platforms, there is a risk in viewing any new technology as a panacea. While their capabilities have proven their value in permissive areas, it is unclear how these capabilities will perform in a contested environment. Further, it is unclear how identified vulnerabilities such as communications will be resolved. Manned platforms will remain the key ADF assets for the foreseeable future. As new unmanned platforms are adopted, the ADF should also be cautious not to diminish existing manned capabilities due to these acquisitions. As the Minister of Defence has acknowledged 'the ADF's reliance on high-technology

1 CSIRO, *Our future world: Global megatrends that will change the way we live*, 2012, p. 2.

enablers to undertake modern operations is also a potential vulnerability that needs to be managed'.²

Perceptions

8.5 The management of perceptions in relation to ADF unmanned platforms was highlighted as a significant issue in relation to their deployment. As the Heron and Triton commence operations in civilian airspace, Australians may be concerned due to misconceptions about their capabilities and functions. In order to counter the 'dark mystic' of unmanned platforms, Defence should assess its public communications strategies to ensure Australians are able to receive accurate and timely information about the use of unmanned platforms by the ADF. The reliability of unmanned platforms, their operation in populated areas and interaction with civilian aviation should all be addressed.

Recommendation 1

8.6 The committee recommends that the Department of Defence strengthen its public communications in relation to military unmanned platforms.

Armed platforms

8.7 The acquisition of armed unmanned platforms by the ADF (particularly MALE UAV) was seen as inevitable by several contributors to the inquiry. However, in the view of the committee, the increased integration of UAV into ADF operations will lead to a number of changes planning and deployment procedures. There are some areas where the committee understands the characterisation, made by some during the inquiry, that an unmanned armed aircraft simply removes the pilot and cockpit to a different location. There are other areas where the situation more complex. For example, while unmanned platforms have been perceived as removing risk and stresses for operators, it is worth noting studies from the US military which have indicated some 'drone pilots' have suffered elevated levels of mental health disorders.³ Further, the committee considers that the use of armed unmanned platforms will change the risk profiles of missions, a fact which would have to be considered by commanders and politicians. Australia would also need to clearly articulate its intentions in acquiring armed unmanned platforms in public documents that may be considered by other nations.

2 The Hon Kevin Andrews MP, Minister for Defence, *Speech to Australian Member Committee of the Council for Security Cooperation in the Asia Pacific*, 22 May 2015.

3 For example, Jean Otto and Bryant Webber, 'Mental Health Diagnoses and Counselling Among Pilots of Remotely Piloted Aircraft', *MSMR*, March 2013, pp 3-8; Wayne Chappelle, Tanya Goodman, Laura Reardon and William Thompson, 'An Analysis of Post-Traumatic Stress Symptoms in United States Air Force Drone Operators', *Journal of Anxiety Disorders*, June 2014.

8.8 It is likely that the forthcoming Force Structure Review will contain an option for the acquisition of unmanned platforms which are capable of being armed. In the view of the committee, this option should be taken up by the Australian Government. The committee has not identified any reason to negatively assess the capabilities of armed unmanned platforms solely due the fact they are unmanned. Any decision to acquire armed unmanned platforms for use by the ADF should be accompanied by the normal review of inputs to capability (such as training, operating procedures and doctrine).

8.9 A policy statement governing the deployment of armed unmanned platforms should be clearly articulated by the Australian Government. This should reinforce Australia's longstanding commitment to use military capabilities of any kind in accordance with Australia's international legal obligations, including processes for review under Article 36 of Additional Protocol I to the Geneva Conventions. In making this policy statement, the Australian Government should recognise it has the opportunity to contribute to the shaping of international norms and practices in relation to the use of armed unmanned platforms.

8.10 The committee notes that the United Kingdom's adoption of armed unmanned platforms provides valuable guidance for Australia. In line with this approach, appropriate transparency measures regarding the use of armed unmanned platforms by the ADF could also be outlined in the policy statement on the use of unmanned platforms. However, the committee also recognises these transparency measures will need to be balanced against the operational requirements of the ADF.

Recommendation 2

8.11 The committee recommends that the Australian Defence Force acquire armed unmanned platforms when the capability requirement exists and the Australian Government make a policy statement regarding their use. This policy statement will:

- **affirm that armed unmanned platforms will be used in accordance with international law;**
- **commit that armed unmanned platforms will only be operated by the Australian Defence Force personnel; and**
- **include appropriate transparency measures governing the use of armed unmanned platforms.**

Civilian support of unmanned platforms

8.12 Arguments were made during the inquiry regarding the potential benefits expanded use of civilian operation and support of military unmanned platforms. In the view of the committee, the direct operation of unmanned platforms must continue to be undertaken by the optimal mix of uniformed ADF, public servants or contract personnel taking into account maintenance, training and operational requirements. Considerations of the status of civilians and the laws of armed conflict should also be taken into account. In terms of other civilian support, there will need to be a careful

balance between the cost-effectiveness of civilian support to ADF unmanned platforms (such as maintenance) and the potential risks of civilian involvement with military operations. This includes the risk that those civilians involved in the support of ADF unmanned platforms may lose protection under the law of armed conflict. However, this is not a new challenge for the ADF and the committee expects it will be managed appropriately.

International humanitarian law training

8.13 Australia's military has a recognised record of compliance with the law of armed conflict and international humanitarian law. The committee was pleased to receive evidence from the Australian Red Cross regarding the high level of engagement in Australia in relation to international humanitarian law.⁴ The introduction of armed unmanned platforms will need to address the law of armed conflict and international humanitarian law in the context of managing fundamental inputs to capability (such as training and doctrine).

Recommendation 3

8.14 The committee recommends that the Australian Defence Force notify the Australian Government of measures taken to address any identified gaps training and dissemination programs regarding the law of armed conflict and international humanitarian law when armed unmanned platforms are acquired.

Rapid acquisition

8.15 A mixed/hybrid fleet of manned and unmanned platforms is likely to be the future force structure model of modern military forces, including the ADF. In this context, some manned platforms acquired in the near future which will have long operational life-cycles will need (where appropriate) to be capable of supporting, controlling and deploying unmanned platforms. For example, a future manned submarine may need the capability to store, deploy and control maritime unmanned platforms which may be developed in the future. The committee notes that it appears this sort of capability integration is already being undertaken by the ADF. For example, the recently demonstrated advanced satellite communication and imagery display system for the C-17A Globemaster which is capable of receiving live ISR video from the Heron UAV.⁵

8.16 Defence has a demonstrated capacity to rapidly acquire, deploy, adapt and sustain new unmanned platforms where they may be needed. The committee notes that the First Principles Review calls for the integration of the Defence Materiel Organisation into the Department as well as a change in philosophy to see the defence industry as a fundamental input to capability. Defence must therefore engage with the

4 Dr Phoebe Wynn-Pope, Australian Red Cross, *Committee Hansard*, 14 April 2015, p. 31.

5 Department of Defence, 'New advanced Air Force capability demonstrated in Canberra', *Media release*, 20 May 2015.

Australian industry to provide the maximum opportunity for industry to be involved in both sustainment of unmanned platforms as well as research development and, where possible, production of components or in some cases, entire systems.

8.17 In relation to unmanned platforms, the Defence Capability Plan may need to be structured flexibly to allow for technological developments. Sufficient additional technical, engineering and scientific resources in Defence will also be required to assess, adapt and sustain new unmanned platforms acquired by the ADF.

Research and development

8.18 The valuable Australian research and development being undertaken in relation to unmanned platforms was highlighted during the inquiry. Further opportunities for research and development activities important to Australia's defence needs were also identified, in particular in the area of maritime unmanned platforms. However, in the view of the committee many of these research activities could be improved through enhanced collaboration and a focus on defence priorities.

8.19 Given the importance of unmanned platforms to future defence capabilities, the committee considers that a cooperative research centre should be created to support research and industry in this area. The committee's view is that the Australian Government should establish an organisation modelled on the existing Defence Materials Technology Centre. This is a proven approach for effective collaboration in defence technology research and development. A Defence Unmanned Platforms Centre (DUPC) would collaboratively bring together Defence, industry, academic and government research resources to develop new unmanned platform technologies which will support Australia's defence capabilities. The education program of the DUPC would provide opportunities for specialist skills development in relation to defence-focused unmanned platforms.

Recommendation 4

8.20 The committee recommends the Australian Government:

- **increase funding for innovation in the relation to unmanned platforms; and**
- **establish a Defence Unmanned Platforms Centre as a cooperative research centre in the area of military unmanned platforms.**

Defence and the unmanned platform industry

8.21 Australia's industrial base has a demonstrated capacity to design and manufacture a range of sub-systems and components for complex unmanned platforms. There are a large number of specialist and niche opportunities in relation to unmanned platforms for Australian industry in both the civil and military areas. In many cases the structure of an unmanned platform is less important than the associated software, communications, sensors, payload or integration with other defence systems.

8.22 Australia has a range of existing defence industry supports and programs. Many of these existing programs (such as the Priority Industry Capabilities and Strategic Industry Capabilities) have not proven effective despite being identified in the Defence and Industry Policy Statement. It is likely that all three services will be operating a significant number of unmanned platforms in the future. As the importance of unmanned platforms for the ADF increases, the associated industrial requirements will need to be reflected in the new Defence Industry Policy Statement. In particular, the committee considers there is merit in the ACUO proposal for the creation of an unmanned platforms national industry strategy as a part of the new Defence Industry Policy Statement.⁶

8.23 In recent years immediate operational needs have dictated the acquisition of unmanned systems from overseas. However, there is scope for improvement in Defence's industry engagement in undertaking major foreign military sales acquisitions of unmanned platforms. A number of issues were raised during the inquiry in relation to the local unmanned platform industry's relationship with Defence and the communication of future capabilities needs. In the view of the committee, resolving these issues should be a priority in the next Defence Industry Policy Statement.

Recommendation 5

8.24 The committee recommends that strategic engagement with the Australian unmanned platform industry be addressed in the forthcoming Defence Industry Policy Statement.

Deployment within Australia

8.25 On 13 March 2014, the Prime Minister, the Hon Tony Abbott MP, confirmed Australia's commitment to purchase a number of Triton UAVs which would operate alongside the manned P-8A Poseidon marine surveillance aircraft at RAAF Base Edinburgh. Additional works to prepare the base for maintaining and operating the Triton were also announced.⁷

8.26 However, the committee notes that there will be benefits in the establishment of forward operating facilities for these unmanned platforms in the Northern Territory. This recommendation is consistent with the Australian Government's recent White Paper into the development of Australia's north. It recognised that Australia's north is the 'gateway for our defence and security cooperation into the Indo-Pacific region and supports Australia's ability to project and sustain forces into the region for surveillance, humanitarian assistance and disaster relief'.⁸ It is also in line with the

6 *Submission 11*, p. 12.

7 The Hon Tony Abbott MP, Prime Minister, 'Joint Remarks at RAAF Base Edinburgh', *Transcript*, 13 March 2014.

8 Australian Government, *Our North, Our Future: White Paper on Developing Northern Australia*, June 2015, p. 2.

recommendation of the Defence Force Posture Review in 2012 for upgraded facilities at RAAF Base Tindal to support maritime surveillance aircraft.⁹ Further consideration of how ADF unmanned platforms are deployed and supported in Australia's north should also be undertaken.

Recommendation 6

8.27 The committee recommends that the Australian Government:

- **consider establishing additional support facilities for the Triton in the Northern Territory; and**
- **review the future deployment and support needs of Australian Defence Force unmanned platforms in the Australia's north.**

Autonomous weapons systems

8.28 Autonomous weapons systems (AWS) were associated with the potential use of military unmanned platforms during the inquiry. The use of force by AWS, which could identify and attack a target without human supervision, raises a variety of ethical, legal and public policy issues. The rapid pace of technological change in this area demands policy-makers consider these issues. It is a truism that the law rarely keeps pace with the development of technology. However, in this case, there is the opportunity for international arms regulation to keep pace with an obvious trend in military technology.

8.29 The committee notes that there are significant moral and ethical questions about any situation where human lives could be ended by a determination made by software. However, the committee acknowledges that contrary arguments exist. Sufficiently advanced AWS may potentially have a higher level of compliance with international humanitarian law than military personnel. In situations where a stressed combat pilot may make incorrect judgements, an AWS deployed on a UAV could potentially be programmed to exercise greater restraint in the use of force. Nonetheless, until there is sufficient evidence that AWS are capable of rigid adherence to the law of armed conflict their development and deployment should be appropriately regulated.

8.30 The committee is not convinced that the use of AWS should be solely governed by the law of armed conflict, international humanitarian law and existing arms control agreements. A distinct arms control regime for AWS may be required in the future. The Convention on Certain Conventional Weapons (CCW) was intended to serve as an umbrella for protocols dealing with specific weapons in order to be capable of dealing with new technologies applied to military circumstances. This is illustrated by Protocol IV, adopted on 13 October 1995, which restricts the use of blinding laser weapons. The development of an additional protocol to the CCW is

9 Department of Defence, *Defence Force Posture Review*, 30 March 2012, p. 43.

likely to be the most appropriate multilateral avenue to regulate the use of AWS, including those on unmanned platforms.

8.31 Australia continues to have an important role in international disarmament and arms controls regulation to promote global peace and security. In the view of the committee, Australia should form and advocate a considered position which supports the eventual establishment of international regulation on the use of lethal force by AWS. However, the committee acknowledges that any international regulation of AWS will take significant time as the technology evolves and definitional issues are clarified.

8.32 The committee notes that the US Department of Defence has issued a policy directive in relation to AWS. This directive covers a range of matters including those related to '[s]emi-autonomous systems that are onboard or integrated with unmanned platforms'.¹⁰ In this context, the committee considers the ADF should review its own policy directives to assess whether a similar policy directive on AWS, or amendments to existing policies, are required.

Recommendation 7

8.33 The committee recommends that the Australian Government support international efforts to establish a regulatory regime for autonomous weapons systems, including those associated with unmanned platforms.

Recommendation 8

8.34 The committee recommends that following the release of the Defence White Paper 2015 the Australian Defence Force review the adequacy of its existing policies in relation to autonomous weapons systems.

Air regulation

8.35 The committee appreciates that CASA and Defence are working together to safely integrate ADF UAVs into Australian civilian airspace. In a response to a question on notice, Mr Mark Skidmore, Director of Aviation Safety at CASA, outlined he had written to the Chief of the Defence Force, 'seeking his views on options for closer cooperation between CASA and the Defence Force on regulatory development for UAVs'.¹¹ The committee agrees with Air Vice Marshal Gavin Davies that Australia has an opportunity to lead in integrating UAVs into civilian airspace.¹² While the ADF may be the pioneer users of large UAVs in Australian airspace, Australian commercial UAV operators will also benefit as the regulatory environment is clarified.

10 US Department of Defence, *Autonomy in Weapons Systems*, Directive 3000.09, 21 November 2012, p. 3.

11 CASA, responses to question on notice to questions on notice, p. 1.

12 *Committee Hansard*, 14 April 2015, p. 50.

8.36 Currently, the RAAF has two Heron UAV which have been retained following the ADF's Afghanistan operations. The estimated cost of the Heron is \$120 million over six years, including portable ground control stations, maintenance, logistics, training and renovations to facilities at RAAF Base Amberley.¹³ While the Heron platform is limited and consideration of air safety is clearly paramount, the committee believes that greater utilisation of the Heron within Australian civilian airspace could assist to build practical expertise and to test capabilities for emergency response and national support operations.

Recommendation 9

8.37 The committee recommends that Defence, the Civil Aviation Safety Authority and Airservices Australia increase their cooperation to facilitate the safe use of unmanned platforms in Australian airspace.

Conclusion

8.38 Australia faces a growing number of strategic and defence challenges which extend beyond the scope of the committee's inquiry. These include changing strategic circumstances in the Asia-Pacific, long-standing issues about major defence acquisitions and the appropriate force structure of the ADF. However, it is clear that the effective use of unmanned platforms by the ADF will play an increasingly important role in the response to all of these challenges. The committee hopes this importance will be appropriately reflected in the forthcoming Defence White Paper 2015, Force Structure Review, the Defence Capability Plan and the Defence Industry Policy Statement.

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Chair

13 Senator the Hon David Johnston, Minister for Defence, 'Heron to be retained to keep Australia's unmanned aerial capability', *Media release*, 28 October 2014.

