

Australian Military Textiles Supply Chains

The Case for Improved Sovereign Capability

Background

During previous world wars and the Vietnam conflict Australia was largely self-reliant for the military textiles, clothing, uniforms, footwear, and personal combat equipment required to fit out the nation's soldiers, sailors, and airmen. This sovereign capability supported mobilization of millions of young men and women and enabled the First and Second Australian Imperial Forces (AIF) and our forces in Vietnam to deploy swiftly, without dependence upon foreign multinational companies and overseas governments to clothe and equip our fighting force.

Over the past thirty years successive governments have allowed the Australian Defence Force (ADF) to become dependent upon overseas suppliers and foreign governments mainly in China and East Asia for the textiles and uniforms needed to equip our forces. Strategic change in the Indo-pacific and the rise of China have resulted in government issuing new strategic guidance which lifts the risk of medium to high level conflict and reduces mobilization warning times. Current ADF clothing and textile procurement policy appears to be out of step with these new developments. This proposal makes the case for an urgent review of military textile and clothing supply chains and for government intervention to establish new settings for sovereign control of our military textile needs.

The Problem

Australian manufacture and control of the ADF's demand for military uniforms and advanced textiles has been in steady decline with significant loss of a local skilled workforce and a decline in infrastructure investment since the late 1980's. ADF purchases uniforms for the Defence service personnel through Australian garment manufacturers. These garments are manufactured locally and overseas in China, Vietnam from fabrics produced either locally or overseas principally from China.

Industry advice suggests the total purchase from Australian manufacturers of fabric to produce Defence personnel Uniforms is presently from 325,000 metres per annum to 760,000 metres per annum (40-52%) from a total recent ADF spend of between 800,000 metres per annum to 1,465,000 mt per annum. Overseas garments and fabric are sourced principally from China and third parties like Taiwan and Vietnam and other markets, some of which have secondary supply chain connections to China.

Australia is presently unable to independently manufacture the ADF's peacetime uniform and advanced textile needs. The ADF's standing operational capability is consequently dangerously exposed to foreign supply chains and to foreign governments at a time when revised strategic guidance from government is warning of an increased likelihood of medium to high level conflict and reduced warning times in an increasingly uncertain region. Government policy settings on Australian sovereign control of the ADF's military textile supply chain has not kept pace with government's defence and strategic risk assessment.

Discussion

Strategic Change

In a 2020 Defence Strategic Update released on 1 July 2020 the Australian Government made it clear that Australia's relationship with China and our security outlook in the Indo-pacific have deteriorated. The ADF and the Australian people have been warned that the risk of a high-level conflict has increased. Australia has withdrawn from Afghanistan and from the middle east area of operations to focus on the Indo-pacific and the rise of China. Defence spending has been increased beyond 2% as a proportion of GDP, the AUKUS agreement has been entered, the QUAD has been invigorated and new life has been put into the US- Australia military relationship. The ADF has been directed to focus upon the Indo-pacific and government has highlighted that national supply chains and cyber capabilities and exposed and vulnerable.

A form of trade war has developed with China involving Australia and the US. China is increasingly defined by the Australian government and in the commentariat as an unreliable trading partner. China's political leaders have demonstrated that by government decree, Chinese companies will either stop buying from or stop supplying to Australian customers. China is experiencing renewed tensions with its ASEAN neighbours including Vietnam, Taiwan and others who are part of Australia's military textiles supply chain. China has made clear its intention to control maritime routes in the South China Sea through which much of Australia's trade moves putting at risk our ability to rely on imports for essential needs in a crisis.

The Covid-19 pandemic exposed supply chain weakness from face masks, personal protective equipment (PPE) and medical devices to vaccines and pharmaceuticals. This health crisis put a focus on the need for the nation to be able to produce its own essential manufactured needs. Equipping the defence force with all its clothing needs without dependence on foreign companies or foreign governments would appear to be a vital national requirement. Given the governments clear messaging on the rise of China, a less secure Indo-pacific and the pandemic the public would likely be astonished to know we remain dependent on China and other foreign countries to equip the men and women of our ADF.

Mobilisation

ADF Staff Colleges regularly conduct planning exercises dealing with the administrative and operational challenges of rapidly expanding the ADF to a force of around one million personnel, a feat the nation accomplished in two previous world wars. A government decision to mobilize or rapidly expand the ADF by only 100% or 200% in response to a crisis in the indo pacific would leave the ADF dependent on a surge in new orders for textile supply chains in China and the likely area of operations. Australia needs a textile and manufacturing base which can independently surge during a crisis or conflict without dependence upon overseas supply chains controlled by foreign governments.

Although workforce can be hired to meet increased demand a base level of essential skills, proven science-based fabric R&D and investment in capital equipment is needed to provide for rapid expansion. This can be funded by increasing the textiles deal flow to Australian government-controlled manufacturers to enable companies to reinvest in expansion capacity within supply lines. Alternatively, government can hold locally manufactured deal flow at current levels but contract and fund suppliers to build and standby the necessary plant, infrastructure and skills capacity required to expand supply rapidly and sustainably to the ADF in a crisis.

Lethal Risk

RMIT White Paper. Research carried out by Royal Melbourne Institute of Technology (RMIT), and others has identified several risks created by overseas manufacture of fabrics involving the manipulation of materials to enable targeting and acquisition of ADF personnel by an enemy. This 'grey zone' danger from foreign hostile governments falls under three main categories:

Compromised camouflage and identification technologies. Clandestine incorporation of quantum dots or other narrow wavelength colour pattern's identity procedures to overcome the effects of adding spectrally narrow identifiers. Potential methods for compromising the textile suggested by research participants were to compromise construction or performance, or to release of a substance that could injure or identify the wearer.

Compromised protective apparel/textiles. Scientists identified potential methods for compromising the textile including compromised construction or performance, or the release of a substance that could injure or identify the wearer. Compromising construction or performance could be implemented by incorporating an agent that could be triggered, e.g., by breaking a microcapsule containing a reagent, that could degrade the seam sewing threads or other yarns, or that could disable a chemical repellent finish.

Compromise built in sensors and actuators. Research identified a risk from redundant yarn level sensors and actuators that require multiple sensors or actuators to be compromised simultaneously. The largest number of suggestions centred around compromising sensors and actuators. Although the comments did not state how one might do this, the primary technology discussed was through electronics, not textiles. However, if fibre level sensors or actuators were embedded into yarns, high levels of redundancy (many yarns) might be able to protect against this type of attack. For example, if ten yarns were used to detect a signal, each could be polled, and the aggregate response used to decide rather than a single yarn or sensor.

Research Findings: RMIT identified these emerging threats due to smart and wearable textiles, which could result in compromised soldier security, and identified that further research work would be required to develop counter security measures against each specific threat. RMIT recommended that a simple counter security measure would be to ensure that all defence clothing and textiles are manufactured in secure facilities with appropriate security checks of all employees involved in the production process. Only fabrics manufactured in Australia under Australian sovereign control eliminate these risks. It is possible that foreign manufactured textiles may already have been interfered with. The RMIT findings stand in stark contrast to recent government warnings that 'grey zone' and clandestine intervention in Australian affairs by hostile foreign governments including ADF textile manufacturer China, is at 'unprecedented' levels.

Sovereign Risk

There are at least three circumstances whereby Australia's textile supply chain from overseas manufacturers may be broken. First, in a mid to high level conflict Australia's sea and air lines of communication and supply may be cut by an adversary's actions in the grey zone or through direct kinetic action. Textile suppliers to the ADF include China, Taiwan and Vietnam and other countries likely to find themselves geographically located in the middle of an indo pacific conflict. Overnight our ability to clothe the ADF could break down.

Second, a foreign government of a nation where textiles are made for the ADF may decide it disagrees with the Australian government's participation in a conflict with China in partnership with the US under ANZUS. An ASEAN government may choose to remain neutral or send a message by banning by executive order, its companies from exporting defence clothing and equipment to Australia. In the 1960's the French government indicated it would not support the Mirage aircraft if it was used in Vietnam and the Swedish government threatened to end support for the 84mm Carl Gustav anti-tank weapon for the same reason, thus preventing the weapons deployment by the ADF to Vietnam.

Third, a foreign government like the US which is also a supplier of textiles and equipment to the ADF may prioritise its own defence materiel needs in a mid to high level conflict and cancel our orders. This occurred during the pandemic with PPE and vaccines when foreign governments refused to allow Australian orders to leave their shores. During the Falklands war the British government now an AUKUS ally chose not to support the RAN Oberon Class submarines prioritising their own maritime needs.

Social Licence

Australian taxpayers fund the purchase of military uniforms and textiles through the defence budget and provide their sons and daughters for service in the ADF. The Australian Government has been warning the community of increased strategic risk emanating from China including cyber-attack, the need for an inquiry into the causes of Covid-19, the banning of Chinese communications giant Huawei from the Australian market, the elevation of the QUAD grouping (India, Japan, US, and Australia), the creation of AUKUS and the acquisition of nuclear submarines and through a tightening of trading relations with China. The Prime Minister, senior ministers and public officials have speculated about the prospects of war with China and as a result public sentiment has moved towards China as an unreliable trading partner and a security threat. In response public opinion has moved decisively against the China relationship.

In stark contrast the Australian Government has an active policy of dependence on China and Indo Pacific manufacturers for military textiles and clothing essential to dress and equip the men and women of our ADF. Other supply chain dependencies have been perpetuated with Vietnam, Taiwan and other countries who have first and second tier textile supply chain connections with China and whose ability to guarantee supply through the South China Sea in a conflict is questionable. These conflicting and contradictory messages from the federal government risk creating confusion and a loss of goodwill within the electorate. The Australian people and the media might be shocked and confused to have this policy conflict put before them.

Current Policy Settings

Government policy documents dealing with military textile supply chains are out of date and fail to reflect current strategic guidance. A plan titled "*Sovereign Industrial Capability Priority Implementation Plan: Combat Clothing Survivability and Signature Reduction Technologies*" and a further policy document titled the "*Sovereign Industrial Capability Priority Industry Plan; Combat Clothing Survivability and Signature Reduction Technologies*" are both dated December 2019, they overlap, and they do not make clear what was to be done, how it would be done, where it would be done and how much investment would be made to get results.

On 18 August 2011, the Chief Executive Officer of the Defence Materiel Organisation (DMO, now CASG), approved the Standard Combat Uniform worn by the ADF as exempt from paragraph 5.2 of the Commonwealth Procurement Guidelines (CPGs), thereby mandating Australian manufacture. This means the fabric must be woven, dyed, printed, and finished in Australia and the garment cut, sew

and trim undertaken in Australia. This exemption from the non-discrimination clause of the CPGs against country of manufacture was done as a "measure necessary for the protection of essential security interests" at the time, but it did not go far enough leaving multiple military clothing and textile lines in foreign production.

On the 16th of November 2021 the Australian Government launched its 'Blueprint and Action Plan for Critical technologies' which specifically identified advanced composite signature reducing materials, and high-tech clothing manufacture to protect defence personnel as critical technology of interest.

The ADF cannot function with the standard combat uniform alone. A range of general combat clothing lines are not exempted from procurement guidelines as 'Australian made' priorities with some aviation flying suits, wet weather gear, groundsheets, dress uniforms, underwear, and certain personal combat equipment's still manufactured overseas. The government acknowledges the need for surety of supply and uniform development, as well as the protection of technology leakage in relation to fabric production and garment assembly but has no evident plan to guarantee it in the event of a defence emergency.

The Australian Government stated two years ago that it did not intend to extend this commitment beyond the Standard Combat Uniform but since these policy documents and settings were produced international events have moved quickly and governments strategic guidance has changed dramatically. The risk the nation faces, and its defence positioning has changed, so must government policy on sovereign clothing and textiles used by the ADF.

A Proposed Plan of Action

Policy

The government should review its policy settings on military textiles, uniforms and personal equipment to ensure they reflect current strategic guidance and publish new guidance which deals with sovereign control of the ADF's peacetime and mobilization needs during a conflict.

Supply Chain Assessment

A line-by-line examination of the Defence textiles, uniforms, and equipment supply chain should be undertaken to identify those lines deemed essential for local manufacture and control to guarantee the ADF's operational capabilities.

Enabling Australian Sovereign Control

Gaps in the ADF's operation textile supply chains need to be plugged with a shift in manufacturing onshore for our vital needs. Investment in the Industrial, infrastructure and skills capacity needed to expand production to support mobilization in a major defence crisis needs to be built through a funded plan of action.

Reorganizing Textile Production to Build Homeland Sovereign Capability

Many companies are involved in defence clothing, equipment, and textiles. In Bruck Textiles specific circumstance, Defence, with full cooperation of Bruck, commissioned a full Defence FIS (Financial Investigation Service) report, to independently determine the throughput required by Bruck to stay viable, recognizing that, unlike in many other industries, with regards to Defence and Fire retardant Textiles, Bruck is essentially the last man standing with any serious Defence production, innovation and development capability.

The conclusion was that, at 415,000 metres per Annum, Bruck would break even, but would not be able to invest in upgrading its (in part 40year old) machine park, and further, not be able to invest in future Development capability. At 700,000mtrs per annum, Bruck would show a reasonable return, which was deemed as the minimum to allow shareholders to further invest.

Sadly, after having undertaken this extensive investigation, Defence seem disinclined to make any changes to its internal procurement policy, citing that the change needs to be a political, rather than a commercial one. Bruck enjoys an excellent relationship with both Defence and its Prime Contractor, and this letter is in no way intended to be a criticism of Defence - on the contrary- they have been upfront in saying that this is a policy matter, and although it is generally acknowledged that there is a major disconnect between stated Government Policy, as articulated by yourself, and the Prime Minister, vs. actual practice, their (Defence) attitude is that they need a clear change in policy, instructing them to change."

Australian Government could build resilience by legislating along the lines of "Berry amendment" in USA that all Defence related production of textiles would be undertaken in Australia that would ensure Sovereign capability and supply chain resilience thus ensuring vital supply of the Defence requirements is sustained for the future.

Summary

Australia cannot at present equip the men and women of the ADF with their uniforms and textile needs in either peace or war because the government has chosen to remain supply chain dependent on foreign manufacturers under the control of foreign governments. Existing national policy settings on Australian Sovereign control of military textiles is out of step with government policy on defence and strategic guidance relating to the Indo pacific and China. The ADF's operational capability is at risk and our troops are potentially exposed to danger. Doing nothing is not an option if the Australian government is to be retain sovereign control of clothing and equipping the ADF to expand and fight in a defence crisis.

Recommendations

It is recommended that government take action to;

- Legislate or re-order military textile policy to align with sovereign strategic guidance and defence policy
- Complete a supply chain analysis to identify critical textile lines needed to secure capability.
- Close ADF capability gaps by onshoring all critical textile lines for local manufacture
- Ensure key local manufacturers can surge to support ADF mobilization

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