Susan Cardell
Committee Secretary Joint Standing Committee on Foreign Affairs, Defence and Trade
PO Box 6021
Parliament House
Canberra ACT 2600

Thursday, 30 March 2023

Dear Committee Secretary

Thank you for the opportunity to provide a submission to the Defence Subcommittee's inquiry into the Department of Defence Annual Report 2021-22.

As an Australian space company, Gilmour Space's contribution to the inquiry will focus on the ***Space Command and capability*** component of the terms of reference. However, I would note that space capabilities can make significant contributions to national resilience and disaster response, and I would be pleased to offer more information to the Subcommittee upon request.

DEFENCE SPACE COMMAND

The establishment of Defence Space Command in January 2022 was a crucial step for securing Australia's interests in an increasingly contested and unpredictable domain, and giving Australian industry the confidence to invest in developing the next generation of space capabilities. Since then, Defence Space Command has undertaken important work establishing the Australian Defence Force's (ADF) space requirements and plans, and achieving greater visibility around the importance of space for Australia's national security.

In Gilmour Space's view, the next stage of Defence Space Command's work should focus on delivering a rapid acquisition and technology development strategy, with a view to securing a sovereign fleet of low earth orbit (LEO) satellites for communications and intelligence, surveillance and reconnaissance (ISR) missions. Pursuing this strategy would require an elevation of Defence Space Command's resources and mandate.

This submission outlines how adjustments to Defence Space Command's structure and capability priorities could assist in meeting the challenges involved in embarking on its next phase, while significantly improving Defence's overall sovereign capability, and Australia's national security and resilience more broadly.

EMPOWERING SPACE COMMAND TO ELEVATE ALL ASPECTS OF DEFENCE

Following a successful first year of operations, there is value in assessing Defence Space Command's place in Defence's structure, and considering whether adjusting this position could help in achieving its mission of establishing the plans, priorities, people and capabilities for assuring access to space.

To this end, Gilmour Space recommends **establishing a pathway for Defence Space Command to become a stand-alone Service in the next 3 to 5 years.** In the short-term, Gilmour Space also proposes immediate action to grant Defence Space Command the **authority to direct and control all space activities and programs on behalf of the entire ADF**.

This approach would deliver three key benefits for Defence Space Command and the ADF more broadly:

- Streamlining command structures to accelerate Defence Space Command's part in capability delivery and further centralise mission tasking and control.
- Further enhancing the profile of space as a separate Defence domain with implications for all Services.
- Ensuring the independence needed to establish trust and interest in space technology across all elements of Defence.

Launching Defence Space Command within Royal Australian Air Force (RAAF) was a sound decision, allowing the new command to develop and mature with the support and oversight of a well-established service with a strong interest in space technology. However, as the space domain and related technology rapidly evolves, the ADF's command structure must adapt, so it can identify, field and control cutting edge technology in a strategically relevant timeframe.

Gilmour Space recognises that continued integration with the RAAF is important as Defence Space Command continues to build workforce capacity, experience and cross-service links. Nevertheless, we view greater long-term independence for Defence's space leaders — following a similar model as the elevation of US Space Command — as a productive and feasible ambition.

With the authority and prominence of a stand-alone service, Defence Space Command would be in a position to advocate independently for funding and capabilities, while managing the introduction of assets into service more rapidly and effectively than in its current state. Meanwhile, a central mission command would result in more effective short notice tasking of capabilities, such as sovereign satellite constellations and tactical launch.

The entire ADF stands to benefit from the effective acquisition and tasking of these capabilities, but this may not be fully appreciated outside the RAAF. Space-based communications, threat detection and tracking have as much utility for armoured vehicle or ship formations as fighter squadrons; however, these applications or use-cases may not be as visible to Army and Navy leaders as they are to Defence Space Command leadership or their RAAF counterparts. This limits cross-domain understanding of emerging space technologies and their ability to enhance, replace and add redundancy to existing terrestrial assets.

Further, while Defence Space Command resides in the RAAF, other services could be concerned that their needs would be de-prioritised across capability design and mission tasking. Without trust that their requirements will be given sufficient consideration, Army and Navy could understandably avoid dedicating time to exploring the value that space technology can bring to their domains.

In the short-term, Gilmour Space would advise the elevation of Defence Space Command's authority be combined with **an education campaign on the application of space technology across ADF services.** The first stage of this campaign should be an urgent meeting between service chiefs and space technology leaders about how launch and satellite capabilities can help ADF achieve its mission.

PRIORITISING A SOVEREIGN LOW EARTH ORBIT SATELLITE CAPABILITY

Capability priorities will be a key consideration for Defence Space Command regardless of its future command structure. Gilmour Space's position is that **a sovereign LEO satellite constellation should receive precedence over other space capabilities** because it offers:

- Alignment with Australia's strategic circumstances and existing capability mix.
- Benefits across all ADF domains and Australia's broader security and resilience.
- Unique implications for Australia's sovereignty.

Defence has formally listed **space as a Sovereign Industrial Capability Priority (SICP)** since August 2021, however as yet there are no detailed industry or implementation plans. These plans would provide additional investment confidence for the Australian space sector, and the government has an opportunity to address this in its upcoming Defence Industry Development Strategy, to be developed following the release of the Defence Strategic Review (DSR).

Public discourse around the DSR and AUKUS processes has re-iterated two themes: Australia's geography is a central factor in our security, and we have a short window to prepare for conflict. For a small population occupying a large landmass from likely theatres of conflict, the ability to monitor and draw support from space is

indispensable. A sovereign LEO satellite constellation offers the greatest control over wide-area spaced-based ISR and communications support for the lowest cost. Meanwhile, the 2 – 3 year timeframe Gilmour Space anticipates for developing and launching LEO satellites means — if Defence acts quickly — this capability could have an impact within a strategically relevant period.

LEO satellites can also fill many of the emerging gaps in Australia's capability mix, while enhancing emerging assets. For example, public discussion around the DSR has identified long-range strike as a key capability requirement, a lack of uncrewed aerial systems (UAS) as a notable capability gap, and the security of Northern Australia as a continued cause for strategic concern. A sovereign LEO satellite network offers the wide-area detection, tracking and targeting capability to enhance long-range strike, mitigate for a lack of UAS, and provide redundancy for monitoring Northern Australia. While other capability solutions can address these gaps and priorities, few offer the flexibility, cost effectiveness and broad application of LEO satellites.

As Defence occupies a growing proportion of the overall budget, and the ADF's role in supporting civil crisis response appears unlikely to abate, the utility of defence technology for Australian society in general remains an important consideration. An LEO constellation is particularly suited to this role, offering long-range visibility that could be invaluable during fires, floods, cyclones and a range of other crises.

The case for Australia to acquire its own LEO satellite constellation could be challenged by the assertion that Defence has access to data from the networks of our international allies and partners. While true, this view overlooks the true value of a sovereign LEO satellite network: the ability to gather and access crucial data in times of conflict and crisis, when foreign controlled satellites may not be tasked to Australian priorities. During an international conflict, the demand for space-based assets would be high and existing networks could be damaged by anti-satellite weapons, severely limiting Australia's access to relevant data. In the case of a natural disaster in Australia or our region, timely information is critical and working through international partners could be impractical.

The ability to launch, operate, task and repair LEO satellites would represent a significant, sustainable, and long-term strengthening of Australia's sovereignty. Tasking its own satellites would make Defence a responsive force in a more uncertain environment, a resilient actor with a critical layer of redundancy, and a valuable source of data to our partners, particularly Pacific countries which share many of our geographic challenges.

Given the importance of a sovereignty and resilience in an LEO satellite constellation, Defence should consider combining any future LEO satellite network with a short notice tactical capability and the ability to reconstitute damaged satellites within, say, 24 hours. This will ensure the constellation can be enhanced and maintained according to strategic requirements.

ABOUT GILMOUR SPACE TECHNOLOGIES

Gilmour Space Technologies is a venture-funded Australian space company with over 190 employees in Queensland. We are an emerging Australian space prime that's developing and building sovereign-made rockets and satellites on the Gold Coast; and launching them from the Bowen Orbital Spaceport in north Queensland from late 2023.

Since starting our rocket program in 2015, our team has test launched a suborbital hybrid rocket, executed more than 300 successful rocket engine tests, constructed an orbital launch site in North Queensland, introduced a new 100-kilogram-class microsatellite bus, and paved the way for a globally recognised and commercial Australian Space Industry.

In 2022, we qualified our 110-kilonewton main engine (the most powerful rocket engine ever developed in Australia); and we are tracking to launch the nation's first commercial orbital launch vehicle in the latter part of 2023.

Our mission is to provide affordable and reliable space launch services for civil, commercial and defence customers globally. We have experience working on Australian Department of Defence projects — including with the Defence Science Technology Group (DSTG) and Australian Defence Space Command — and we are priming an extensive global supply chain, including over 300 local SMEs and foreign primes.

Gilmour Space has raised over $88 million to date in venture capital funding and is supported by Australian and international investors, including Blackbird Ventures, Main Sequence Ventures, Fine Structure Ventures, QLD Investment Corporation, HESTA, Hostplus and more.

I hope the Committee finds this submission valuable and stand ready to provide insights to this and other inquiries.

Yours sincerely

Adam Gilmour

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Gilmour Space Technologies