

Signs of movement for medium-range GBAD

Australia looks set to begin the acquisition process for a mid-tier IAMD system. *Robin Hughes* reports.

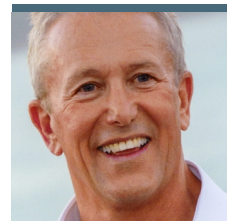


ON 9 JULY the Australian Department of Defence disclosed the successful intercept and defeat of a simulated airborne missile threat in what it described as a landmark “prototype” missile live firing during Exercise Taipan Strike 2026 at the Woomera Test Range in South Australia the previous month.

Led by the Royal Australian Air Force, in collaboration with the Royal Australian Navy (RAN), Defence’s Capability Acquisition and Sustainment Group, US Government agencies, and US and Australian industry partners, Taipan Strike 26 was, according to Defence, “an integrated air and missile defence activity designed to explore medium-range air defence capability options to inform capability acquisition decisions”.

The prototype ground-based air and missile defence system demonstrated during Taipan Strike 26 represented a first-of-type integration of Australian and US technologies, pairing a CEA Technologies trailer-mounted active electronically scanned array (AESA) radar with the Lockheed Martin

ABOVE: An SM-2 is fired from the trailer-mounted Derringer Expeditionary Launch System during Taipan Strike 26 at the Woomera Test Range, South Australia. Image: Aust DoD



Robin Hughes

Missiles & Munitions Correspondent

ABOUT THE AUTHOR

Virtualised Aegis Weapon System (VAWS) – a software-centric implementation of the US Navy’s (USN) Aegis combat system decoupled from proprietary shipboard hardware and hosted on compact commercial servers.

While Defence has not identified the specific radar employed, imagery suggests it may have been the CEAFAAR2 multi-

function active phased-array high-power radar developed for the Woomera Range Remediation Project under Project Air 3024 Phase 1.

During the live-fire component, the integrated sensor and command and control architecture detected, tracked and cued the engagement, enabling the launch of an RAN-supplied Raytheon Standard Missile 2 (SM-2) Block III variant medium-range surface-to-air missile from a Lockheed Martin 'Der-ringer' Expeditionary Launch System (ExLS) configured with a twin-cell launcher architecture, to intercept a USN-supplied Northrop Grumman BQM-74E subsonic target drone. The range and altitude of intercept were not disclosed.

■ Enter Land 6504

The Taipan Strike 26 live-fire test was the culmination of what Defence described as "a close period of collaboration, innovation and engineering to produce this prototype", and appears to have effectively reduced technical and systems integration risk while validating the performance of a possible candidate architecture for a future Australian medium-range, ground-based air defence (MRGBAD) capability.

The demonstration also aligns closely with the policy direction articulated in the 2026 *National Defence Strategy* (NDS) and 2026 *Integrated Investment Program* (IIP), which call for the accelerated introduction of integrated air and missile defence (IAMD) capabilities through new investment in an MRGBAD system. The 2026 IIP establishes a dedicated missile defence investment stream valued at between AUD\$21 and AUD\$30 billion, positioning MRGBAD as a funded investment priority alongside active missile defence, Joint Air Battle Management System (JABMS), counter-small uncrewed air systems, airborne early warning and control replacement aircraft and the Jindalee Operational Radar Network. Together, the NDS and IIP envisage the MRGBAD program commencing as a priority from 2026 to provide protection against advanced aircraft, cruise missiles and ballistic missiles.

Speaking at the National Press Club in April, Australia's Defence Minister Richard Marles stated: "We will accelerate the introduction of air and missile defence capabilities, including new investment in a medium-range, ground-based air defence system, recognising the increasingly contested air and missile environment. This program will commence as a priority from 2026 to enhance protection against advanced aircraft as well as cruise and ballistic missiles". Defence reinforced this position in its 9 July release, stating: "The Albanese Government has directed the acceleration of a medium-range, ground-based air defence capability to protect against long-range and high-speed missile threats. The [Taipan Strike 26] live fire engagement directly supports this priority, demonstrating performance of this potential capability option".

Central to Australia's future MRGBAD capability and broader IAMD architecture is Project Air 6500 Integrated Air and Missile Defence Command and Control, formerly Air 6500 Phase 1 JABMS, currently under development by Lockheed



ABOVE: A CEA Technologies AESA radar at the Taipan Strike 26 activity. Image: Aust DoD

Martin Australia. Delivered through an agile, spiral development model, the program has progressed to its first capability increment under Tranche 2A, while the sensor component, provided by four CEA Technologies CEAFAAR hybrid phased array radar systems acquired under Tranche 1, continues to be integrated into the evolving Air 6500 architecture. Against this backdrop, Taipan Strike 26 arguably demonstrated capabilities conceptually aligned with Air 6500's envisaged operational architecture – integrating advanced sensors, command and control and missile effectors into a coherent air and missile defence architecture – even though Air 6500 itself has yet to reach operational maturity.

The increasingly contested Indo-Pacific strategic environment – underscored by China's reported test-firing of a submarine-launched intercontinental ballistic missile, possibly the latest Julong-3, into the Pacific Ocean on 6 July – has amplified the requirement for resilient IAMD capabilities.

In parallel, the policy direction set out in the NDS and IIP, the associated funding commitment and the successful Taipan Strike 26 demonstration have prompted speculation among



ABOVE: Kongsberg is working to integrate future long-range missiles into the proven NASAMS architecture. Image: Norwegian MoD



industry observers that a solicitation for MRGBAD solutions could be forthcoming in the near term. However, the Commonwealth has yet to disclose either a procurement strategy or a timeframe for an industry solicitation under what *DTR* understands is now designated Project Land 6504. In the absence of a formal solicitation, industry has nevertheless continued to mature relevant technologies and solution concepts in anticipation of Australia's future MRGBAD requirement and the broader IAMD capability.

Given the urgency of the requirement and the need to rapidly establish an operational capability, mature military-off-the-shelf (MOTS) solutions, incremental integration approaches and allied interoperability are likely to be central considerations in any future MRGBAD acquisition strategy.

Unsurprisingly, prospective industry participants remain reluctant to publicly disclose or confirm their preferred hardware offerings or teaming arrangements ahead of any formal procurement process. However, aside from the unique prototype demonstrated during Taipan Strike 26, several plausible candidate solutions can be identified from existing capabilities and ongoing industry developments.

Arguably, one the fastest, low-risk and cost-effective pathways to a near-term Australian MRGBAD capability would be to build upon the Army's existing Kongsberg National Advanced Surface-to-Air Missile System (NASAMS), extending its engagement envelope through the integration of longer-range effectors such as the AIM-120 Advanced Medium Range Air-to-Air Missile – Extended Range (AMRAAM-ER). While NASAMS was originally conceived as a short to medium-range air defence system, its modular architecture and proven interoperability provides considerable scope for capability growth through the integration of more capable

ABOVE: The US Army's 3rd Multi-Domain Task Force conducted the first live firing of its mobile Typhon MRC weapon system (and inset) outside the continental United States during last year's Exercise Talisman Sabre in the Northern Territory, on 16 July 2025. Despite being a surface-to-air missile, the SM-6 successfully struck and sank a maritime target out to sea.

Images: US Army, Lockheed Martin

sensors and longer-range effectors.

Although acquired under Land 19 Phase 7B as a short-range GBAD capability by the Australian Army, NASAMS is widely regarded internationally as a medium-range system. The Australian configuration – comprising the Kongsberg Mk 2 canister launcher, Fire Distribution Centre and CEA Technologies CEAOPS S-Band surveillance and cueing radar – is based on the modular NASAMS architecture, capable of accommodating a mix of short and medium-range effectors, including the AIM-9X Block II, AMRAAM and AMRAAM-ER. The system's scalable architecture also supports the future integration of additional long-range interceptors and associated launchers to address tactical ballistic missile threats, providing a pathway to what Kongsberg describes as 'full spectrum air defence'.

Combat-proven, NASAMS has demonstrated its operational effectiveness in Ukraine, where it is credited with more than 1,000 successful intercepts of cruise missiles and drones. Since its introduction in 2022, the conflict has provided valuable operational feedback for NASAMS, confirming the system's high degree of survivability, largely attributable to its distributed architecture, compact equipment footprint and ability to rapidly relocate following engagements. *DTR* understands that NASAMS batteries in the Middle East fired AMRAAM-ER during Operation Epic Fury earlier this year.

One of the most compelling aspects of NASAMS for

THE DERRINGER LAUNCHER

The apparent public debut of the 'Derringer' ExLS platform during the Taipan Strike 26 demonstration is of particular interest, as imagery suggests it incorporates a twin-cell Mk 70 launcher configuration. A land-based derivative of Lockheed Martin's Mk 41 VLS, the Mk 70 serves as the launcher component of the US Army's Mid-Range Capability (MRC) Typhon weapon system, as well as Lockheed Martin's containerised Payload Delivery System (PDS). The assessed use of the Mk 70 during Taipan Strike 26 is noteworthy because the launcher had previously been demonstrated in Australia during Exercise Talisman Sabre 2025, when a US Army MRC Typhon battery conducted its first live-fire deployment (in a surface-to-surface role) outside the continental United States.

Lockheed Martin confirmed to *DTR* earlier this year that it had previously offered the Mk 70 Mod 1 PDS containerised launcher for Australia's MRGBAD requirement under Project Air 6502. This proposal envisaged leveraging existing RAN missile stocks – including the SM-6 Block I, the SM-2 Block IIIC and the RIM-162 Evolved SeaSparrow Block 2 – and utilising the VAWS for command and control.

However, under the provisions of a 2024 IIP program reorganisation, both Air 6502 (MRGBAD) and Air 6503 (High-Speed Missile Defence) – representing two major Australian IAMD capability gaps – were formally shelved

Australia is the depth of domestic industry involvement. A NASAMS production line – the only one outside Norway – was established in Adelaide to deliver the system to the Australian Army, creating an established sovereign manufacturing and sustainment base. Beyond sovereign manufacture, Australia's existing industrial base would also simplify systems integration, in-service support and future upgrades, reducing both program risk and time to field. According to a Kongsberg Australia spokesperson, these factors position NASAMS as a low-risk and rapidly deployable solution: "The combination of an existing Australian production line, an established local supply chain and a system configuration that is already in service means that NASAMS can be delivered quickly and sustained locally. It would provide an immediate capability to defeat air-breathing targets at both short and medium range through a combination of AIM-9X, AMRAAM and AMRAAM-ER, whilst a longer-range effector for non-air-breathing targets is identified and integrated".

While NASAMS represents a logical evolutionary pathway, Australia's MRGBAD requirement could equally be met by a number of mature MOTS systems, each presenting a different balance of operational capability, integration complexity, interoperability and industrial participation. However, any assessment of these alternatives must also consider production capacity, delivery schedules and competing domestic procurement priorities in vendor nations, all of which may influence availability and delivery times.



ABOVE: The trailer-mounted Derringer Expeditionary Launch System during the Taipan Strike 26 firing demonstration.

Image: Aust DoD

and consolidated into a broader Air 6500 framework. The requirements remain, but are now structured around a phased, layered IAMD acquisition strategy.

US-sourced solutions could also feature prominently in any future MRGBAD competition. One potential contender is Lockheed Martin's Typhon architecture, centred on the mobile but large Mk 70 launcher and capable of employing a growing family of Mk 41 Vertical Launching System (VLS)-compatible interceptors. The company is also understood to be working with European missile manufacturers to expand the range of compatible effectors available for the Mk 70 Payload Delivery System (PDS), including MBDA's Common Anti-Air Modular Missile (CAMP) and Aster families of surface-to-air missiles.

Beyond the Standard Missile family, efforts are continuing to evolve the architecture to support additional air and missile defence interceptors. In May, Lockheed Martin, working with US Department of War organisations, successfully launched a PAC-3 Missile Segment Enhancement (MSE) interceptor from an Mk 70 containerised launcher under the control of the VAWS, with the interceptor successfully engaging and destroying a live cruise missile target. The demonstration highlighted the flexibility of the Mk 70-VAWS architecture and its potential to evolve beyond SM-2 and Standard Missile 6 (SM-6) to incorporate hit-to-kill interceptors optimised for tactical ballistic missile defence. At the upper end of the missile defence spectrum, Lockheed Martin could also propose its Terminal High Altitude Area Defense (THAAD) system should Australia's future requirements extend beyond the currently-envisaged MRGBAD capability. Lockheed Martin's new PAC-3 Adapted Capability Effector (ACE) – a reduced-cost,



ABOVE: Rafael's Iron Dome may be one solution that can be acquired quickly to fulfill Australia's MRGBAD requirement under Land 6504. Image: Rafael

high-performance interceptor for the Patriot air and missile defence system – may also prove of interest to Australia.

Based on the demonstrated operational performance of Israel's layered air and missile defence architecture during recent high-intensity regional operations, Rafael Advanced Defense



ABOVE: CAMM-ER (and inset) is entering service with the Italian Army as a truck-mounted SR/MRGBAD system known as Grifo. Images: MBDA

Systems could emerge as another credible contender to fulfill Australia's MRGBAD requirement. One option would be the lower-tier Iron Dome system, employing either the Tamir interceptor or the US-produced SkyHunter variant, jointly developed by Raytheon and Rafael. As a US-manufactured, export-oriented derivative of Tamir, SkyHunter could offer advantages in terms of supply chain resilience, production capacity and interoperability with US and allied defence architectures.

The US Marine Corps deployed its Iron Dome-derived Medium-Range Intercept Capability air defence system to Guam in late June in support of Exercise Valiant Shield 2026, during which it undertook successful firings, the service reported.

Alternatively, Rafael could propose its mid-tier David's Sling system, which employs the Stunner (SkyCeptor) hit-to-kill interceptor to defeat tactical ballistic missiles, cruise missiles, medium and long-range rockets and unmanned aerial vehicles (UAV).

Israel Aerospace Industries (IAI) is understood to have partnered with Australia's Daronmont Technologies to pursue a Barak MX solution for the MRGBAD requirement. A unified, modular and networked IAMD system, Barak MX is a land-based evolution of the Barak 8 family and is designed to provide layered defence through a family of interceptors, including Barak SR, MR, LR and ER variants, against aircraft, helicopters, cruise missiles, UAVs and tactical ballistic missiles. The system features an open architecture capable of integrating a range of radars, sensors and battle management systems. The IAI-Daronmont collaboration is reportedly intended to support Australian industry capability objectives through local manufacturing, maintenance and technology transfer opportunities. Barak MX's ability to combine multiple interceptor types within a common architecture allows the system to be tailored across the short, medium and extended-range air defence spectrum.

Aside from the more remote possibility of its effector being offered as part of a US/Lockheed Martin Mk 70 launcher or Typhon-based solution, European missile manufacturer MBDA could offer a medium-range option based on its mobile Enhanced Modular Air Defence Solution (EMADS), employing the supersonic CAMM – Extended Range (CAMM-ER) missile. According to MBDA, the 4.2m-long CAMM-ER effector weighs 160kg and has a range in excess of 40km.

The EMADS/CAMM-ER combination represents another potential pathway to meet Australia's MRGBAD requirement. Designed as a mobile, modular and network-enabled medium-range air defence system, EMADS employs the CAMM-ER medium-range interceptor to engage air-breathing threats, including aircraft, cruise missiles and UAVs, while operating either as a stand-alone capability or as part of a broader IAMD architecture. The system's open architecture enables integration with a range of surveillance sensors and command and control systems, supporting distributed operations and interoperability with allied IAMD networks. **OTR**