

**Submission
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INQUIRY INTO THE DEFENCE INDUSTRY IN NEW SOUTH WALES

Name: Defence Materials Technology Centre (DMTC) Limited

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The Defence Materials Technology Centre (DMTC) is an independent, not-for-profit company that operates in the Australian defence and national security context.

Our programs enhance Australian Defence Force capability through collaborations that boost Australian industry capability and capacity and are underpinned by Australia's world-renowned research expertise.

DMTC programs and projects operate on a co-investment model, an approach that allows each partner to leverage the expertise, investment, human resources and capabilities of the other partners.

Our work is differentiated from other organisations who operate in the defence sector in a couple of key ways – in what we do (spanning many of the traditional 'domains' within the defence sector, not just constrained to one) and in how we do it (truly collaborative programs built on a co-investment model, not grants-based or third-party investor).

DMTC projects would not succeed without active contributions from each project partner. This genuinely collaborative model provides the pathway to creating industrial capability by solving complex challenges articulated in the defence and national security context.

DMTC continues to play an important role in building a more capable and defence-ready industry sector. DMTC has a strong focus on engaging small to medium enterprises (SMEs) in its research and development activities and equipping them to participate in prime contractors' supply chains. This industrial knowledge and capacity is underpinned by the best of Australia's cutting-edge research expertise.

DMTC contracts with Defence and national security customers, industry and the research sector, and applies a [consistent and proven model](#) for project definition, management and delivery. DMTC projects apply focused research, targeted towards areas of high industrial and Defence relevance. The early identification of capable industry partners ensures that technologies and capabilities have a clear path to adoption and commercialisation. The involvement of the Defence customer ensures ongoing relevance to the Defence end-user.

DMTC has built a strong reputation with its Defence customer for solving complex technological challenges. DMTC was initially selected through a competitive process to deliver on an initiative announced in the 2007 Defence Industry Policy Statement (DIPS) and has since entered into additional contracts, one of which confirms our role as a key partner in the new Defence Innovation Hub.

In addition to its partnership with the Hub, DMTC continues to work within and across the broader Defence Integrated Investment Program to deliver beneficial outcomes to Defence's capability managers through its collaborative model. The Defence Science & Technology (DST) Group, as the primary science adviser to Defence, is a DMTC participant and directly supports a number of DMTC's research projects.

DMTC's approach to Intellectual Property aligns with the Defence Innovation Hub's IP Strategy. IP is controlled at the individual project level. Ownership of all background IP remains with the relevant partner and all project partners retain automatic rights, within agreed fields of use, to practise IP that is developed (or advanced) during the project. Fields of use for IP developed through DMTC projects are negotiated with partners at project commencement.

DMTC is uniquely positioned as an industrial capability partner of choice to work with Australian industry to address technology challenges and pursue capability enhancements in areas identified as priority innovation needs by Defence.

Presence in NSW

Despite being headquartered in Melbourne, DMTC is a national endeavour and works with a range of industry and research partners across NSW. An indicative analysis of DMTC expenditure for the 2015-16 financial year suggests that around 20 per cent of DMTC expenditure for the period was connected to activities in NSW¹.

DMTC activities currently underway or envisaged to commence in 2017 involve work located in Sydney and surrounds, as well as the Hunter, the Illawarra and Monaro regions.

The *New South Wales: Strong, Smart and Connected Defence Strategy 2017* acknowledges the DMTC's significant presence in the Illawarra region, principally through our long-standing partnership with the University of Wollongong (UoW).

The success and proven track record of the DMTC is largely attributable to the excellent research undertaken by research teams provided through our research partners, including UoW. The University was a founding member of DMTC on its inception in 2008 and is represented on the DMTC Higher Education Advisory Panel which exists to canvas a range of strategic and engagement matters of mutual interest, and provide advice to the CEO of DMTC

¹ This is an indicative figure only and reflects cash expenditure (ex capital and depreciation costs). More detailed analysis would be required to take account of the full range of DMTC revenue and expenditure, including both cash and in-kind contributions from industry and research partners as required by DMTC's co-investment model.

on relevant matters including issues associated with the identification and ongoing development of DMTC research priorities.

DMTC's partnership with UoW has focused on advanced materials development, fabrication and manufacturing technologies with a focus on land and maritime platforms.

NSW Government grant funding enabled a technology demonstrator – the Lean Automation and Fabrication Facility – to be built at UoW for use by DMTC participants, including BlueScope Steel, the Australian Nuclear Science and Technology Organisation (ANSTO), Bisalloy and several other NSW-based SMEs.

Within DMTC, UoW conducts research into alternative armour materials for defence platforms and personnel protection. The team at UoW have been responsible for the development of an innovative automated offline programming systems for robotic welding of the complex hull of the Bushmaster vehicle, which has protected Australian troops in some of the most challenging combat environments. This work included Thales Australia, DST Group, ANSTO, BlueScope Steel and Bisalloy Steels and UoW researchers and has paved the way for application of the same technology on Thales Australia's production line to supply the ADF with more than 1,000 Hawkei light protected mobility vehicles.

BlueScope Steel, in conjunction with Bisalloy Steels, successfully supplied the steel plate for the Collins Class submarine fabrication and are drawing on that experience to work with DMTC on high strength steels with a view to supplying Australian steel for the shipbuilding and submarine programs announced by the Australian Government and confirmed in the recently released Naval Shipbuilding Plan. DMTC's expertise has contributed to Defence's evaluation of the capabilities of Australian industry in relation to all aspects of the supply chain for the production and fabrication of naval ships and submarines².

In April 2017 [DMTC announced](#) a new partnership with leading international shipbuilder DCNS, involving collaboration on developing technical expertise and building industrial capacity within Australian maritime sector supply chains, with a focus in the first instance on naval shipbuilding and repair. Work has already commenced on a project involving, research partners from UoW, DST Group and ANSTO, and is focused on reducing levels of distortion experienced in naval surface ship construction.

Maximising Opportunities from Defence investment

Strong partnerships with our industry and research partners have underpinned the DMTC's very successful collaborative research program which has achieved significant and well-documented recognition including:

- A Eureka Prize in the National Security stream for DMTC's work in improving protection and manufacturing efficiently levels in Australia's fleet of Bushmaster protected mobility vehicles;

² The evaluation commissioned by Defence and produced by DMTC is not publicly available but broad themes could be discussed with the Committee.

- A CRC Excellence in Innovation Award for protective technologies that have been acknowledged by senior Defence personnel as life saving for troops in Afghanistan;
- National Innovation Awards at the premier Land, Sea and Air defence conferences (respectively Land Forces 2014, Pacific 2015 and the Australian International Air Show 2015);
- Young researcher awards at the Land, Sea and Air defence conferences; and
- A case study on best practice defence innovation in the 2016 Defence Industry Policy Statement.

The 2016 Defence Industry Policy Statement (DIPS), released alongside the 2016 Defence White Paper, identified DMTC as a strategic partner to Defence in the rollout of the new Defence Innovation Hub. The First Assistant Secretary, Defence Industry Policy Division, Ms Kate Louis, has written to DMTC to formally confirm that DMTC will continue to have a vital role to play in undertaking world-class research and translating the outcomes of this research to create industrial capability.

DMTC is currently engaged in discussions with a number of current and prospective new industry and research partner organisations regarding proposals for Defence Innovation Hub funding, and is separately working to identify research and industry partners for a number of new programs in technology fields spanning medical countermeasures, multispectral sensors and manufacturing & sustainment technologies relevant to the F-35 “Joint Strike Fighter” that was unveiled at this year’s Australian International Air Show at Avalon.

Encouraging defence industry innovation and research

As a not for profit public company, DMTC exists to build deep expertise and intellectual property in Australia that can be exploited beneficially for our Defence customer and for Australian industry.

DMTC is actively engaged in building both the capacity and capabilities of Australian defence industry through a growing program of activities to benchmark and advances in key areas of knowledge within Australian manufacturing and defence industry.

DMTC’s Industry Capability Development Program aims to create a network of ‘Defence-ready’ companies with benchmarked, globally competitive capabilities. The program aims to foster collaboration between local small- to medium-sized enterprises (SMEs) and also build a critical mass of local capability that can be presented to prime contractors for major Defence projects. This is ultimately about enhancing Defence capability but, significantly, is also about building industrial capacity in regions across Australia.

Building on previous capacity-building successes in areas such as CNC machining and additive manufacturing (3D printing), current efforts focus on enhancing the welding capabilities of companies wishing to enter defence industry supply chains. Participants gain exposure to innovative technologies, best practice techniques and processes and insights into quality, safety and certification standards expected by Defence.

The welding and fabrication program, which began in Victoria's Latrobe Valley, has been extended into new programs in the Illawarra (NSW) and Mackay (Qld) regions – thanks to funding commitments from the respective State Governments – and enhanced by a recent Memorandum of Agreement with the Welding Technology Institute of Australia.

DMTC is planning future activities in other specific manufacturing techniques and technologies, for example to enhance Australian industrial capability in areas such as corrosion management, composite materials and additive manufacturing.

Encouraging education, including developing the future workforce

DMTC invests in and supports the development of future leaders and technical experts for the defence industry and research sectors.

Through our partner Universities, DMTC offers full, half and top-up Masters and PhD scholarships to students based on alignment with future defence capability requirements and industrial opportunities for Australian industry.

Masters and PhD projects are utilised to investigate specific areas of research within larger collaborative projects involving Defence, industry and research partners. Due to the often-sensitive nature of Defence projects, applicants must be either Australian or Permanent Residents and some may be required to obtain a Defence Security Clearance.

Since 2008, DMTC has supported more than 40 Postgraduate candidates through scholarships and professional development courses. To date, more than 20 DMTC-sponsored PhD candidates have successfully completed their studies. DMTC has a demonstrated record of accomplishment of transitioning postgraduates into successful careers within the defence or related industry sectors.

DMTC's Education Program:

- Provides professional development workshops for broader sector-relevant skills development that align with the needs of DMTC industry and research partners (e.g. Presentation Skills, Writing Workshops, Careers Workshop, etc.);
- Hosts an annual Student Conference where students present their research work to academics, industry partners and their peers;
- Encourages involvement in project reviews and research utilisation discussions with industry partners;
- collaborates with the Research Training Centre for Naval Design and Manufacturing (RTCNDM) and Defence Science Institute (DSI) by involving students from these programs in DMTC workshops and annual Student Conference; and
- invests in developing early stage science, technology, engineering and mathematics skills through its established Vacation Student program in which final-year engineering and science students are sponsored to complete 12 weeks of vacation employment with DMTC partners.

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