



10 September 2021

Committee Secretary
Senate Standing Committees on Economics
PO Box 6100
Parliament House
Canberra ACT 2600

Dear Secretary

3ME Technology Pty Ltd (3ME Technology) welcomes the opportunity to contribute to Economic References Committee's inquiry into the Australian manufacturing industry.

Introduction to 3ME Technology

By way of introduction, 3ME Technology is an Australian-owned manufacturer of proprietary, large-format lithium-ion battery systems for the electrification of heavy-duty vehicles in the mining, military and marine markets. We are scaling up quickly by specialising in heavy vehicle electrification for 'tough' industries with challenging safety, certification and operating demands.

Headquartered in the Hunter Region, our business strategy encompasses three spheres of technology in this specialty market segment: power solutions, mobility, and digitisation.

We also provide a suite of services including electrical and mechanical engineering in support of customised components and battery systems. We provide remote monitoring (IoT), diagnostics and control of battery and e-mobility systems. 3ME are proud to be an Australian leader when it comes to developing and integrating battery systems.

3ME is positioning for the future with plans for expanded production facilities and an associated Battery System Operations Centre. This business expansion is expected to generate 200 skilled jobs (including 10 apprenticeships) in the Hunter region of NSW, as well as strengthen placement opportunities with 3ME's research partner, The University of Newcastle.

CLEAN TECH FOR TOUGH INDUSTRIES

Term of Reference (b.): the role that the Australian manufacturing industry has played, is playing and will play in the future

Heavy industry vehicle and equipment electrification represents a key opportunity for Australia. Electric Vehicles (EVs) have come a long way since they first entered the scene, with developers resolving the barriers that plagued their introduction such as limited driving range, battery volatility, high-costs and long battery recharging times. Subsequently, market opportunities have opened in Australia as EVs are increasingly being used in a wide variety of environments. 3ME Technology is partnering with Original Equipment Manufacturers (OEM) in vehicle electrification, including through retrofitting larger tonnage diesel mining equipment to battery electric, as well as producing fully integrated prototypes, such as the Bortana EV mining utility vehicle.

Our experience in electric vehicle systems and energy storage extends over a decade. Originally focussed in the on-road sector, 3ME Technology has continued to break new ground in electrification. Today, our core technology includes battery module design and assembly; battery management systems (BMS) and monitoring; vehicle control unit (VCU) software and hardware; EV power electronics design and supply.

Term of reference (c.): the drivers of growth in manufacturing in Australia and around the world

Since the COVID-19 pandemic began, Australia's dependence on offshore manufacturing has been made clear. This presents a problem when global supply chains are disrupted and Australia cannot access critical goods and materials which underpin our economy or serve our national interests. The discussion around sovereign manufacturing capability is particularly evident in the defence sector. The reliance upon foreign-sourced components in the supply chains of our key defence platforms and equipment is an added layer of risk. Australia must have key capabilities that are critical to meeting our defence and security needs developed or at least supported through an Australian manufacturing base.

The Australian Government has acknowledged the importance of defence sovereign capability through the inclusion of Defence as a key area of focus in its the \$1.5 billion *Modern Manufacturing Strategy* announced in October 2020. Another critical priority was Recycling and Clean Energy. 3ME Technology supports the articulation of national manufacturing priorities which focus investment on these areas of comparative advantage and strategic importance.

As outlined in the Recycling and Clean Energy National Manufacturing Priority road map, the global move to more sustainable solutions for materials and energy has gained traction. Companies committed to greener supply chains—including manufacturers and their customers—collectively wield over \$5 trillion in combined purchasing power.

The rapid move to decarbonisation is reshaping the manufacturing landscape across the world. As 3ME Technology is demonstrating, Australia is in a prime position to take advantage of our science, technology and engineering expertise, as well as our

abundant natural resources, to become competitive manufacturers and generators of high-value regional jobs in new industries such as battery development.

Term of reference (f.): identifying new areas in which the Australian manufacturing industry can establish itself as a global leader

The recently released report, Future Charge: Building Australia's Battery Industries estimates Australia's battery industries will contribute \$7.4 billion in GDP by 2030 if Australia invests in diversifying its battery industries beyond mining raw materials, and supports development in the downstream value chain. With demand for batteries projected to grow nine-fold by 2030, the report identifies multiple avenues for Australia to expand its presence across the battery technology production chain and realise substantial economic value. The report notes that while Australia dominates in mining of battery materials – with around half the global lithium market, we do not compete in the value-added chain, despite access to raw materials. 3ME Technology's business focus is centred on one of the main growth avenues — battery pack manufacturing, assembly and systems support for specialised use cases.

We support the Australian Government's *Recycling and Clean Energy National Manufacturing Priority Road Map*, with 3ME particularly focussed on the growth opportunity of EVs and clean tech. Indeed, the predicted value of the global electric vehicle market by 2027 is \$802.81 billion USD. Last year (2020), despite the COVID-19 pandemic, the world committed around \$640 billion to clean energy technologies. This was a record amount, 9 per cent higher than 2019.

As stated in the road map, co-investment is critical for each step of this solution pathway. It will complement a broader policy environment supportive of manufacturers in clean energy.

3ME Technology has plans to significantly expand our manufacturing operations to include the onshore production of large format copper core printed circuit boards. As the capability does not yet exist in Australia, this introduction would bring a new sovereign capability to Australia and ensure domestic access to large format lithium-ion batteries.

Term of reference (g.): the role that government can play in assisting our domestic manufacturing industry, with specific regard to: research and development; attracting investment; supply chain support; government procurement; trade policy; and skills and training

3ME Technology welcomes the *Modern Manufacturing Strategy* and the renewed focus on Australian industrial base, with increased government support for key sectors mentioned above.

Regarding supply chain support and government procurement in Defence, 3ME Technology are proud to be a member of the *C4 EDGE (Evolutionary Digital Group Environment)* communications program. Bringing together the technology and expertise of 17 Australian companies, *C4 EDGE* is a sovereign defence industry cooperative model

which aims to demonstrate a secure communications environment for an Australian Army battlegroup. By the end of 2021, the program will have delivered a proof-of-concept demonstration that shows the capability of Australian industry to further develop a protected, integrated and supportable Australian-owned and controlled system. Initiatives such as *C4 EDGE* demonstrate Australia's depth of technical innovation, along with the importance of developing and maintaining domestic industry linkages to maintain Australia's security and sovereignty. It further demonstrates the ability of Australian SMEs to work together in a prime-model consortium, proving that Australian companies do have the project management and sustainment capability to deliver trusted and reliable services to Defence. *C4 EDGE* demonstrates that foreign-owned offshore primes are not the only effective Defence service model.

Other industry-led initiatives in which government can play a supporting role include the *Innovation for Cleaner Safer Vehicles* (ICSV) programme, which has been instigated by the International Council of Mining & Metals and the Electrification Consortium in Australia. The ICSV and the Electrification Consortium have set some ambitious targets around the decarbonisation of the mining industry to achieve fully electrified zero CO2 and zero particulates mines. Clearly, the introduction of EVs is a key contributor towards achieving ambitions for the future of Australian mining. Australia is a leader in mining innovation, and decarbonisation and electrification of mine sites will deliver on three fronts – performance, safety and sustainability.

3ME Technology are also participating in the '*Charge On Innovation Challenge*' founded by BHP, Rio Tinto and facilitated by Austmine. The challenge is a global initiative to develop large-scale haul truck systems. Vendors were asked to submit solutions that can safely deliver in the order of 400 kWh electricity to 220 tonne battery-electric trucks in a way that maintains or improves current productivity levels (without adding time to haul cycle).

By supporting similar initiatives, based on industry collaboration, the government would increase investment from industry into research and development whilst simultaneously staying at the forefront of global trends in manufacturing.

Term of reference (h.): the opportunity for reliable, cheap, renewable energy to keep Australia's manufactured exports competitive in a carbon-constrained global economy and the role that our manufacturing industry can play in delivering the reliable, cheap, renewable energy that is needed.

3ME Technology are proud to be an Australian clean technology manufacturer taking on the challenge of assisting Australia's mining industry to decarbonise.

Mining is one of the most energy intensive industries in the world, accounting for an estimated 6.2 per cent of the total global energy consumption. In response, one of the key areas 3ME Technology is targeting is the decarbonisation of mines to start turning the tide towards lowering emissions.

In the underground mining context, vehicle electrification not only supports mine sites' emissions reduction goals, but also delivers safer and more efficient operations by

reducing noise, heat and diesel particulate matter. 3ME Technology is the first company in Australia to integrate and deploy a battery electric 20-tonne loader into underground operations.

3ME Technology is actively partnering with mine vehicle OEMs to provide battery electric technology, from hardware and software through to full system integrations in support of diesel retrofits and new builds.

Despite the benefits surrounding decarbonising, battery adoption is still in its infancy, due in part to some misconceptions and lack of awareness of progress being made in both safety and performance.

Capital outlays on electrified systems are also increasingly being offset through savings in operational expenditure on maintenance and fuel, resulting in a lower total cost of ownership when compared to diesel operated vehicles.

The increasingly favourable economics in electrification will no doubt play an important role in accelerating emissions reductions into the future.

Once again, thank you for this opportunity to contribute to *The Australian Manufacturing Industry Inquiry*. Please do not hesitate to contact our public affairs adviser, [REDACTED] if you have any questions or require any additional information.

Yours sincerely



Justin Bain
Chief Executive Officer