Working towards a globally competitive manufacturing sector

Tasmanian Advanced Manufacturing Action Plan 2024







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Message from the Minister for Advanced Manufacturing and Defence Industries



Prior to the COVID-19 pandemic the Tasmanian Government had begun to review how to best support the advanced manufacturing sector into the future, acknowledging its crucial role within our economy, and the upcoming conclusion of the inaugural Tasmanian Advanced Manufacturing Action Plan, launched in 2016.

In the lead up to COVID-19, which is undoubtedly one of the largest major industry disruptions we have encountered, it was inspiring to review and reflect on the remarkable changes in the sector during the term of the original plan. The pace of change, the opportunities and challenges presented by domestic and global market fluctuations, skill and workforce requirements, and the conversation with industry around their future has evolved considerably.

Compared to five years ago, markets, services and products have changed. There are Tasmanian companies now operating, and new products being offered, that did

not exist at the time of the original plan. There has been a growing convergence between traditional and digital technologies, creating a more complex environment to navigate.

Throughout all this change, the Advanced Manufacturing Action Plan has been in lockstep with industry and has delivered on its commitment to build a stronger, more resilient and more sustainable Tasmanian advanced manufacturing sector.

This year has delivered unique challenges as governments and industry have responded to the COVID-19 pandemic and the consequential local, national and international disruptions to markets and supply chains. The impacts of COVID-19 on manufacturing have been considerable, and while most manufacturers have been able to continue operating in Tasmania, there have been major challenges. Business disruptions have increased costs, unreliable global distribution and supply channels have caused delays and added complexities, and there is increased uncertainty about longer term buyer decision-making. While the repercussions of these influences on business were immediate, the long term and full impact is potentially still to be played out.

I am immensely proud of Tasmania's manufacturing sector which has continued to adapt and demonstrate to the world its exceptional capabilities across a range of differing areas. This government is committed to continuing its support of the sector in the immediate and longer term to ensure it continues to evolve and adapt through innovation, and become more resilient and sustainable.

The COVID-19 situation has also reinforced the importance of the advanced manufacturing sector, not only as a contributor to the overall national economy, but also in ensuring Australia has the necessary sovereign capability to remain buoyant and independent.

Whether it is food and beverage processing, smart technologies, forestry, maritime, mining and transport equipment, the defence industry or the many other manufacturing subsectors, our manufacturing industry continually proves itself to be among the best in the world.

Tasmania has always played a key role in supporting national capability, yet it is often under recognised and understated. The year 2020 has allowed Tasmania to clearly demonstrate some of these capabilities when it mattered most, as companies stepped up, pivoted operations and markets, and responded promptly to supporting national needs.

It is now time to build on the foundation of the previous Tasmanian Advanced Manufacturing Action Plan and implement actions to underpin the current realities of the sector. To achieve this we will support companies willing to embrace change and adapt to new technologies, and work with the world's best in order to increase business intelligence and remain competitive.

Skills and labour will be a key component of any future success. Industry has been clear that they want to work collectively with government to strive for a competitive and skilled workforce as this will be a prerequisite to support future growth. Activities will also include encouraging greater diversity within the sector, and recognising the exciting and diverse range of career options that advanced manufacturing provides.

The benefits from increased industry collaboration are widely acknowledged and there is broad support for more action that can lead to the sharing of knowledge and collaboration to grow the sector.

We will continue to focus on greater market access in line with our current Tasmanian Trade Strategy and work with industry to develop and diversify markets that can benefit from our Tasmanian manufacturing capability.

This new four year Advanced Manufacturing Action Plan 2024 was developed in collaboration with industry, and builds on previous work, recognising the rapidly evolving environment moving forward. It outlines 20 actions, across four key priorities that will support growth within the sector.

The Plan will complement the Australian Government's own four year Modern Manufacturing Strategy, that will invest around \$1.5 billion to support Australian manufacturers to become more competitive, resilient and able to scale-up to better compete in global markets. For any future success to be realised, it will require an agile and collaborative government and industry approach, in all that we do.

The year 2020 has been a stark reminder that circumstances can change quickly and that we need to work together to ensure we can take advantage of opportunities as they present, and to overcome obstacles.

I take confidence in the fact that our manufacturing sector once again, through adversity, demonstrated its resilience in 2020 and I firmly believe that the best is yet to come. I look forward to working with the sector to support it through the next phase of its innovation and development.

The Hon Jeremy Rockliff MP

Minister for Advanced Manufacturing and Defence Industries







Executive summary

The Tasmanian Advanced Manufacturing Action Plan 2024 (the Plan) provides a framework of actions that the Tasmanian Government will undertake to provide support to the state's advanced manufacturing sector to enable the industry to grow its capability and to become more successful and sustainable.

The Plan will build on and further promote the state's existing manufacturing strengths, and work with industry to address constraints and pursue new opportunities. While acknowledging the many challenges and unknowns arising from the current COVID-19 pandemic, the Plan will utilise the strong outcomes and learnings from the 2016 Advanced Manufacturing Action Plan.

Government support under the Plan will be delivered through actions centred on four priority areas:

- I. The development and attraction of a highly skilled workforce
- 2. Supporting the adoption of leading edge design, innovation, technologies and practices to deliver growth and improved business capability
- 3. Supporting increased collaboration and advocacy for the sector
- 4. Supporting greater market identification and access, and industry promotion

These key priorities and their associated actions were identified through a review of the previous Tasmanian Advanced Manufacturing Action Plan and extensive consultation with industry, industry associations and other stakeholders.

The Advanced Manufacturing Growth Centre (AMGC) notes that advanced manufacturing is less about what a manufacturer makes but more about how they make it - through advanced knowledge, advanced processes and advanced business models.¹

This notion of advanced manufacturing reflects what is already occurring in the manufacturing sector in Tasmania, which is that more businesses will transition in the near term to identify as an advanced manufacturer.

Advanced manufacturers typically are more able to respond to changing global market environments, have good business systems and processes, and better meet customer needs than other manufacturers. With the impacts of the COVID-19 pandemic affecting individuals and enterprises at all levels, these capabilities are more important than ever.

Tasmanian enterprises already share many of the characteristics of successful advanced manufacturers. They are focused towards managing customer relationships and problem solving; have a strong culture of process and continuous improvement; and successful local manufacturers are adept at working in supply chains, whether they are local or further afield.

Recognising that the medium to longer-term impacts of COVID-19 are unknown, the Plan will be reviewed in 2022 to ensure the actions are delivering as intended, and that the Plan is still relevant and responsive to industry needs.

The Plan has been designed to build on and leverage other government initiatives, support programs and activities including but not limited to the Tasmanian Renewable Energy Action Plan; the Tasmanian Trade Strategy 2019-2025; the Tasmanian Defence Industry Strategy 2023; and the strategic priorities of the Premier's Economic and Social Recovery Advisory Council, established to lead the state's COVID-19 response and recovery.

Advanced Manufacturing: a new definition for a new era, by the Advanced Manufacturing Growth Centre 2018

Objective

The Tasmanian Government, through the Department of State Growth (State Growth), will work with the manufacturing sector to encourage growth and development through advanced practices and technologies, and leverage its strengths and relative advantages to thrive and expand in an increasingly complex and competitive global market.

This includes supporting the industry through the immediate challenges of the COVID-19 pandemic.

Global context

The global manufacturing sector has changed rapidly over the last 40 years. Large developing nations emerged as primary manufacturers, a global recession reshaped the sector and manufacturing employment fell in advanced economies as other sectors grew in importance.²

In 2019 global manufacturing was growing but has more recently contracted in the face of a slowed global economy. In addition, the COVID-19 pandemic has caused cost, supply chain and market volatility that can be expected to continue for the foreseeable future.³ A renewed focus on sovereign capability across key supply chain partner countries is also expected to impact on the global marketplace.

Rapid evolution of manufacturing technologies and their applications, as a part of the fourth industrial revolution (Industry 4.0), are reshaping the industry once again. The comparative advantage that developing nations have of low-skill and low-cost production is being eroded with the emergence of new technologies that demand high-skilled operators and efficient, up to date infrastructure. This is opening up opportunities for higher cost countries as the improved productivity delivered by new technologies offsets higher wages.⁴

The pace and impact of Industry 4.0 is pushing manufacturers across the world to increase their digital understanding and use of technology. It is being used to build business productivity, increase business flexibility and responsiveness, improve customer service and manage risk.⁵

The digital evolution is driving increased cooperation through supply chains and partnerships to accelerate change. There is significant value to be found through the value chain in areas such as design, research and development and embedded services post sale.

The push for increased corporate responsibility is also a trend for manufacturing. As consumer tastes become more sophisticated and expectations change, business investment decisions are being informed by social responsibility as well as cost effectiveness. As an example, renewable energy adoption and sustainability planning is growing in importance.

In the United States, as of 2017, nearly two thirds of Fortune 100 and nearly half of Fortune 500 companies had set renewable energy or sustainability targets. Seven of the world's largest companies are aiming to be powered by 100 per cent renewable energy in the medium to long term. ⁶



 ^{2 &#}x27;The future of global manufacturing' Wednesday, 4 March 2020 by Brahima Sangafowa Coulibaly and Karim Foda. Brookings Institute
3 2020 Manufacturing Industry Outlook: A midyear update – Exploring manufacturing trends and the impact of COVID-19 Deloitte, 2020

at www2.deloitte.com/us/en/pages/energy-and-resources/articles/manufacturing-industry-outlook.html

 ^{4 &#}x27;The future of global manufacturing' Wednesday, 4 March 2020 by Brahima Sangafowa Coulibaly and Karim Foda. Brookings Institute
5 2020 Manufacturing Industry Outlook: A midyear Update – Exploring manufacturing trends and the impact of COVID-19 Deloitte, 2020

at www2.deloitte.com/us/en/pages/energy-and-resources/articles/manufacturing-industry-outlook.html.

⁶ The business of renewables: A report into renewable energy take-up by large corporations in Australia, by the Australian Renewable Energy Agency, 2017 at www.arena.gov.au/assets/2017/07/AU21476-ARENA-Corporate-Report-REVISED-vI-I.pdf









Manufacturing in Australia

Approximately two thirds of all world trade consists of manufactured products. Australia captures a small part of that trade and has scope to grow its activity internationally as well as becoming more self-sufficient at home.

The Advanced Manufacturing Growth Centre (AMGC) estimates that manufacturing directly supports 867 400 jobs and an additional 360 000 through the supply chain.⁷ It is Australia's seventh largest industry for employment, sixth largest for output, and accounts for 11 per cent of annual export earnings. It remains one of Australia's largest full-time employing industries with 85 per cent of the workforce in full time employment.⁸

Australian manufacturing has become increasingly reliant on export markets and international supply chains. Higher-skilled and technology intensive product exports have more than doubled in 20 years.⁹ Advanced manufacturing accounts for around half of Australia's \$100 billion plus annual manufacturing output and is one of the country's fastest growing export sectors.

The sector has contracted as a percentage of the nation's Gross Domestic Product (GDP) over the last 40 years in response to a competitive global market place, production cost pressures, periods of unfavourable exchange rates, shifting manufacturing practices and the emergence of other sectors as key contributors to the new economy. Nevertheless the sector is worth about 5.5 per cent of national GDP and accounts for 6.4 per cent of total jobs.

As a nation we produce less manufactured goods in comparison to other Organisation for Economic Cooperation and Development (OECD) countries, generating about two thirds of the manufactured output that we consume. The Australia Institute's Centre for Future Work estimates that increasing Australia's manufacturing to the point of self-sufficiency could add another \$180 billion a year in new manufacturing sales.¹⁰

The impact of COVID-19 on international supply chains, the global economy and availability of goods has focused attention on Australia's manufacturing capability and the potential to make Australia more self-sufficient for some manufactured goods.

The July 2020 Australian Industry Group Australian Performance of Manufacturing Index noted that there is already an increased interest in locally made manufactured products.

The Australian Government's National COVID-19 Commission Advisory Board (the Commission) has identified the sector as one that could be crucial to securing sustainable jobs and supporting a profitable supply chain.¹¹

The Australian Government, recognising the advice of the Commission and importance of manufacturing to the country's ongoing success, will invest around \$1.5 billion over four years in a Modern Manufacturing Strategy to make Australian manufacturers more competitive, resilient and ready for growth. The strategy will support projects across six national manufacturing priorities:

- Resources technology and critical minerals processing
- Food and beverage
- Medical products
- Recycling and clean energy
- Defence
- Space.

The strategy's priority areas and its programs geared towards individual manufacturers' present opportunities for Tasmanian enterprises and complements the priorities outlined in this Plan.

10 A Fair Share for Australian Manufacturing, by Dr Jim Stanford, the Centre for Future Work at the Australia Institute July 2020 11 What Does the future of manufacturing look like?, AI Group with Andrew Liveries from the National COVID-19 Commission, 4 June 2020 at www.aigroup.com.au/business-services/covid19-coronavirus/watch/what-does-the-future-of-manufacturing-look-like/

⁷ Advanced Manufacturing: a new definition for a new era, by the Advanced Manufacturing Growth Centre 2018

⁸ Australian Manufacturing in 2019: Local and Global Opportunities May 2019, by The Australian Industry Group

⁹ Australian Manufacturing in 2019: Local and Global Opportunities May 2019, by The Australian Industry Group

Manufacturing in Tasmania

Advanced manufacturers operate across all of the state's manufacturing subsectors including food and beverage processing, smart technologies, forestry, maritime, mining equipment technology and services, renewable energy, transport equipment and the defence industry.

Impact on employment and the economy

Manufacturing is the fifth largest industry in Tasmania by Gross State Product (GSP) generating \$1.8 billion and a turnover of over \$7.3 billion in 2018-19. The sector employed 18 000 people directly and is a key provider of high paying and skilled jobs. It is Tasmania's largest industry for interstate and export sales combined.

In line with national trends, manufacturing as a contribution to GSP has declined over the last 20 years. However, the sector continues to deliver a disproportionate benefit to the economy through high value employment opportunities, regional wealth generation and its role in supporting supply chains within the state.

Prior to the COVID-19 pandemic manufacturing in Tasmania was performing well and experienced three per cent growth in 2018-19. This was in contrast to the national situation where manufacturing continued its contraction.¹²

Manufacturing is an important contributor in both metropolitan and regional areas. Hobart and the south east contributed 42 per cent, Launceston and the north east 34 per cent and the north west and west 24 per cent of total GSP. On a per capita basis, Launceston and the north east had the highest contribution to GSP at \$4 509 per resident. The west and north west is second at \$4 242 per capita, and Hobart and the south east third with \$3 104 per capita.

Per annum contribution to GSP by region (2018-19) (\$ millions)



Source: ABS National Accounts, ABS Manufacturing Census and SGS Economics & Planning Manufacturing also supports numerous supply chains throughout Tasmania, underpinning thousands of jobs in other sectors including services, primary production and raw material production, such as forestry.

It is estimated that there was a \$3.2 billion flow-on impact to GSP in 2018-19, generating an additional 31 400 non-manufacturing jobs, building on the 18 000 direct jobs already created. It is understood that most major manufacturing subsectors generate more indirect employment in the supply-chain than direct jobs.

Direct and flow on impacts of manufacturing to Tasmania 2018-19

	Direct impacts	Flow on impacts	Total impact
Gross State Product (\$ million)	\$1 878	\$3 211	\$5 089
Employment	18 000	31 400	49 400
Turnover (\$ million)	\$7 318	\$6 600	\$13 918

Source: SGS Economics & Planning

Note: Flow on impacts have been estimated using ABS Input Output Table Source: ABS National Accounts and SGS Economics & Planning ¹³



¹³ Economic Value of Manufacturing – COVID Update, SGS Economics and Planning August 2020

¹² Economic Value of Manufacturing – COVID Update, SGS Economics and Planning August 2020



What we produce

Tasmanian manufacturing is incredibly rich and diverse and consists of a wide range of companies across many different subsectors including food production, primary metal and metal product manufacturing, wood product manufacturing, transport equipment manufacturing, and beverage product manufacturing.

In 2018-19 the largest manufacturing subsector in terms of GSP was food product manufacturing which contributed \$759 million to GSP, 40 per cent of the total manufacturing industry. This includes dairy product manufacturing, meat and meat product manufacturing, fruit and vegetable processing, seafood processing, bakery product manufacturing and other food production.

Primary metal and metal product manufacturing contributed \$230 million to GSP, 12 per cent of total manufacturing.¹⁴

Other major sectors include:

- wood product manufacturing (\$134 million)
- transport equipment manufacturing including ship/boat building (\$113 million)
- food and beverage and tobacco product manufacturing (\$101 million)
- machinery and equipment manufacturing (\$95 million)
- fabricated metal production (\$78 million)
- non-metallic mineral product manufacturing (\$76 million)
- basic chemical and chemical product manufacturing (\$66 million)
- pulp paper and converted paper product manufacturing (\$54 million) among others

The size and scale of various subsectors can be highly variable in Tasmania, particularly in areas where the substantial scale of the products made can significantly impact the data. For example ship building, where the sale of one or two large vessels means the value of manufacturing in this subsector can vary from year to year.



Trading and business environment

The isolation that comes with Tasmania being an island state drives innovation, with local manufacturers able to turn their hand to a variety of tasks and products, and to find solutions to difficult problems. This has become a defining characteristic of the Tasmanian sector and a strength in a competitive marketplace that is increasingly looking for responsive contributors in complex supply chains.

As a sector, manufacturing is recognised as one of the most innovation-intensive parts of our economy. It is a critical component of the state's economic prosperity. To remain competitive and to be successful, high performing businesses have become leaders in adaptation through investment in new technology and practices, and through providing exceptional customer service.

Successful manufacturers implement continuous improvement practices, enhanced skills development, and invest in design and systems integration. By adopting these principles and practices, businesses are entering the arena of advanced manufacturing.

The sector is already geared towards off-island markets and many local producers are adept at working within national and international supply chains. Manufacturers produce a full range of products and components focused on high-quality, lower-volume goods designed to meet individual customer needs. These and other strengths and opportunities can be leveraged to capture domestic and international markets in niche, high value sectors, where the state has strong capabilities.

¹⁴ Economic Value of Manufacturing – COVID Update, SGS Economics and Planning August 2020



Renewable energy

Electricity in Tasmania is almost 100 per cent renewable, and is predominantly derived on-island from clean, renewable sources such as hydro and wind energy. The state has the lowest per capita greenhouse gas emissions in Australia. Tasmania also offers a secure energy supply through the Basslink Interconnector to the National Electricity Market and a natural gas pipeline to the Australian gas market.

The Tasmanian Government is committed to building on the state's renewable energy potential.

Tasmania is already on track to meet the Tasmanian Renewable Energy Target to be self-sufficient in renewables by 2022, making it the first state in Australia with 100 per cent renewable power generation.

Additionally, Tasmania is aiming to be a net exporter of renewables by 2026 with a focus on innovation and will double renewable energy production by 2040.

Current assets suitable for development include wind power, pumped hydro, hydrogen and bio-energy. These opportunities are outlined within the Tasmanian Government's Tasmanian Renewable Energy Action Plan, which outlines some key focus areas including:

- Project Marinus an additional Bass Strait interconnector (Marinus Link)
- Increased renewable energy production and storage Battery of the Nation, wind and solar
- Hydrogen production to store and transfer energy
- Increased adoption of bioenergy

These focus areas include significant project opportunities for manufacturing with total investments estimated to achieve up to \$7.1 billion and lead to 1 400 Tasmanian jobs during peak construction, while also unlocking up to 2 350 jobs from broader renewable energy projects.

The opportunities around renewable energy are many, including:

- Supporting Australia to scale up in renewable development through the Battery of the Nation plan which is one of the most achievable and competitive solutions to Australia's looming energy challenge. The Battery of the Nation is a suite of projects being developed by Hydro Tasmania to examine how Tasmania's hydroelectric power system can be redeployed and augmented with pumped hydro energy storage to meet the needs of the transitioning national power system.
- By using a combination of renewable energy sources, the state's manufacturers will be able to use 100 per cent renewable energy in their manufacturing operations. This is a significant point of difference in some markets and will be attractive to businesses that seek to benefit from the international recognition of being part of an environmentally sustainable economy.
- Providing completely new manufacturing opportunities through new or adapted products and processes.

A domestic renewable hydrogen industry offers an opportunity to leverage value into the state's well-established and successful advanced manufacturing industries including in the marine, heavy vehicle and mining sectors and to further support regional growth and employment.

Hydrogen is already used as a feedstock in a range of industrial applications, although at the moment most of this does not occur from renewably produced hydrogen. There are opportunities for renewable hydrogen to be produced as a carbon-neutral feedstock for Tasmanian industries.

There may also be opportunities for the use of renewable hydrogen in industrial processes such as chemical manufacturing, food production, the production of synthetic fuels and metals manufacturing (replacing high carbon processes involving fossil fuels), or the local construction of hydrogen buses, ferries and other vehicles.

The Tasmanian Renewable Energy Action Plan also notes that options are being developed to support the bioenergy sector which provides significant opportunities for Tasmania given our abundance of underutilised wood waste and other feedstocks.

Bioenergy provides a number of possibilities including a renewable energy option for transport fuel and stationary energy. One opportunity is likely to include combined heat and power for industrial processes and large space and water heating. Bioenergy also benefits a range of policy priorities with the capacity to assist with forestry, agriculture, carbon and climate change, waste management and regional employment.

Overall, the potential investments are significant, and Tasmania is well placed to benefit as large corporations across the world shift towards renewable energy use and customers take into account corporate responsibility as part of their purchasing decisions. There are exciting opportunities for Tasmanian manufacturers to use the state's growing renewable energy resources to differentiate their business and products to access new domestic and export markets.

Water

The demand for fresh water is increasing in the global manufacturing sector. Manufacturing accounts for almost 25 per cent of global freshwater withdrawals, and by the middle of the 21st century, projected demand is expected to increase significantly. Tasmania has an abundant fresh water supply, and while the state is less than one per cent of Australia's land area it holds approximately 12 per cent of Australia's fresh water resources. Tasmania also benefits from an extensive irrigation system that has been developed across the state increasing the accessibility and efficiency of agricultural water use. With ready sources of water available, Tasmania presents an opportunity for manufacturers.

Brand

Effective branding provides opportunities for individual businesses and entire sectors. Tasmania's Brand Tasmania Authority (Brand Tasmania) was formed to develop Tasmania's place-brand and to utilise our points of difference to attract talent, investment, trade and visitors to the state.

The Tasmanian brand has identified what it is to be Tasmanian and what makes us unique. In essence, we are renowned for *the quiet pursuit of the extraordinary*. Tasmanian manufacturers, as inventive problem solvers and quiet achievers fits well with this narrative.

The Tasmanian Government recognises the importance of brand to Tasmanian manufacturing business and through Brand Tasmania, will work with industry to ensure that:

- I. An authentic brand, which differentiates and enhances Tasmania's appeal as well as its national and international competitiveness, is developed, maintained, protected and promoted. This will include the development of a manufacturing industry brand 'story' developed in partnership with industry stakeholders. It will be available to businesses to use to develop their own brand stories and promote their points of difference in target markets.
- 2. Tasmania's image and reputation locally, nationally and internationally are strengthened.
- 3. The Tasmanian brand is nurtured, enhanced and promoted as a key asset of the Tasmanian community.

Consumer expectations are constantly evolving. There is a growing market for products that are more sustainable, safe, ethically produced, high quality, and with strong traceability. This is particularly true of the food processing sector. Tasmania is already known as a producer of safe, high quality products and these consumer trends are expected to continue and lead to enhanced opportunities for the state.





Southern gateway

Tasmania's location makes it a natural access point to Antarctica and the state is one of five recognised Antarctic gateways around the world. Hobart has operated as the Antarctic and Southern Ocean gateway for the Australian and French Antarctic programs for over 40 years, with research and supply vessels from other nations making regular visits. Hobart's deep water harbour provides dedicated services for vessels and Hobart airport is a key air link to east Antarctica. Hobart is home to Australia's icebreaker Nuving and the main hub for many international vessels.

Tasmanian businesses support Antarctic missions and related activities with locally based scientific research and education organisations central to maintaining the sector for service seafarers, researchers and adventurers. Tasmanian businesses have developed the capability to make strong, durable products able to withstand Antarctic conditions. This includes providing maintenance and supplies to vessels, the provision of services, and the manufacturing of products ranging from pre-fabricated buildings and structures to scientific and technical equipment and traverse equipment.

The Tasmanian Antarctic Gateway Strategy, released in 2017, is aimed at strengthening Tasmania's position as an international Antarctic gateway and to increase the value derived from this status. Manufacturers are well placed to contribute to the state's gateway infrastructure through innovation in product development and expertise.



COVID-19 impacts

Tasmanian manufacturers are known for their resilience and adaptability, characteristics that are increasingly important as the impacts of the global COVID-19 pandemic play out now and over coming years.

COVID-19 has caused severe economic disruption. It has upended supply chains across sectors and affected freight and movement of goods around the world. There is widespread uncertainty across business and government. The impact within manufacturing subsectors is highly variable and influenced by reliance on international trade, supply chain risks and other industry and business specific factors.

The Australian Bureau of Statistics (ABS) Business Indicator Survey (July, 2020) shows that COVID-19 is having a relatively large impact on manufacturers in Australia. It showed that 27 per cent of manufacturing businesses surveyed in July 2020 expected their revenue to fall over the following month with 13 per cent expecting an increase.15

The Covid-19 pandemic has highlighted the need to better understand and address Australia's supply chain issues and opportunities and the importance of manufacturing to our country's sovereign capability and economic well-being.

The disruption by COVID-19 on global supply chains could result in an altered production and supply chain structure for some businesses. We may see changing government policy priorities towards supporting Australian manufacturing and more local supply chain development.¹⁶

State Growth is also aware from extensive consultation that the downturn for some manufacturers will not happen until existing contracts are complete, with businesses already reporting a drop off in forward orders.

The Tasmanian Government recognises that the private sector is critical to rebuilding and growing our economy and this includes manufacturing as a key contributor. To stimulate and support Tasmanian businesses to develop and transition to sustainable operating models post COVID-19, the Tasmanian Government committed \$60 million to a Business Growth Loans Scheme. The scheme will provide concessional loan funding over the first year of this Plan to support:

- I. The state's businesses to recover, adapt, grow, and develop enhanced business models that support employment retention and business growth.
- 2. New projects that contribute towards employment and growth of the Tasmanian economy.

¹⁵ Economic Value of Manufacturing – COVID Update, SGS Economics and Planning August 2020 16 Economic Value of Manufacturing – COVID Update, SGS Economics and Planning August 2020

The Plan

The Tasmanian manufacturing sector is focused on pursuing activities and opportunities that will enable it to adapt and grow. Government will assist by:

- I. Encouraging a framework and environment that supports advanced manufacturing enterprises.
- 2. Providing targeted assistance to tackle identified issues and encourage behaviours, knowledge and skill acquisition to accelerate growth.
- 3. Seeking new opportunities for the sector in export markets through investment attraction.

In the 2016 Advanced Manufacturing Action Plan, advanced manufacturing was defined as:

Those manufacturing businesses that utilise continuous improvement, enhanced skills, new technologies, and design and systems integration in order to drive innovation and growth throughout the value chain. Advanced manufacturers ensure that customers receive the best quality, cost and delivery (QCD) in products and services. Small to medium advanced manufacturers aim to deliver high value, niche and customised premium products and services in low to medium volume supply chains.

This is still the case and reflects the findings of the AMGC, which noted that advanced manufacturing is less about what a manufacturer makes but how they make it - through advanced knowledge, advanced processes and advanced business models.

This Plan has been developed in consultation with industry and outlines 20 actions across four priorities that are designed to support industry to adapt to the rapidly changing manufacturing environment, pursue growth and resilience and address business constraints over the next four years. The key priorities in the Plan have been informed by numerous individual meetings, roundtables and workshops.

The actions included in this Plan are expected to help support industry through to 2024 as the business and economic environment evolves. In particular, the immediate and longer term impacts of COVID-19 will continue to create significant uncertainty and many Tasmanian businesses have been and will continue to be significantly affected. The Plan is intended to provide flexibility and will adapt to support businesses over the next four years. Additionally, State Growth will undertake a biannual review to ensure the actions and priorities in the Plan remain relevant.



The Plan is one of many mechanisms that Government has available to support the sector and to improve the overall Tasmanian competitive environment. For example:

- A COVID-19 related established loan facility to support response and development activities.
- Consideration of projects of strategic value and individual business assistance will be considered on a case-by-case basis through the Tasmanian Development and Resources Board.
- The Office of the Coordinator-General will continue its work in attracting and securing investment in major development projects.
- Business information and assistance is available via Business Tasmania.
- Enterprise Centre Tasmania offers individual business advice.
- The Digital Ready for Business program helps make strategic use of online tools and resources to benefit from the digital economy.
- Tasmania has a growing innovation ecosystem with an increasing number of providers that provide education, mentoring, events and spaces for innovative start-ups.

The Plan will be delivered to industry alongside other relevant publications such as the Tasmanian Defence Industry Strategy 2023, the Tasmanian Business Growth Strategy 2019-2023, the Tasmanian Trade Strategy 2019-2025, and the final Tasmanian Renewable Energy Action Plan.

The Plan will be implemented concurrently with the Australian Government's \$1.5 billion Modern Manufacturing Strategy. The strategy's strong focus on research and development, supply chain transformation and business capability building complements the priority initiatives within this plan. The Tasmanian Government will support industry to access the strategy's actions wherever possible to support Tasmanian enterprise and development.

The Plan will also leverage the services offered through Skills Tasmania, the Office of the Coordinator-General, the Australian Government and other state agencies, to deliver a comprehensive suite of support across industry.



Priority I: The development and attraction of a highly skilled workforce

Key focus areas:

- Develop a skilled workforce.
- Support increased skill levels of the sector.
- Improve opportunities for quality trade training.
- Raise the profile of the advanced manufacturing industry.

Outcome

The advanced manufacturing industry is underpinned by a reliable, diverse and appropriately skilled future workforce.

This will be measured by achieving the following actions:

Action I	Develop and deliver an Advanced Manufacturing Workforce Development Program to assist with non-accredited training activities.
Action 2	Appoint a Project Manager within Tasmanian Minerals, Manufacturing and Energy Council (TMEC) to focus on state wide initiatives in the resources and advanced manufacturing sectors to deliver industry led workforce development activities, including developing pathways to promote gender diversity.
Action 3	Form an Advanced Manufacturing Workforce Development Committee to assist in identifying emerging workforce challenges and recommending strategies to address them.
Action 4	Develop a Workforce Development Plan, informed by an independent skills and training audit for the advanced manufacturing sector and its subsectors.

Context

Businesses face an increasingly complex and changing operating environment and the ability to adapt to new technologies and circumstances has never been more important.

Digital and smart technologies are playing a critical role in product and service design along with production and downstream processes. With all aspects of the manufacturing workplace undergoing transformation increasing the skills of the advanced manufacturing workforce is a key dependency for industry.

Developing a skilled workforce remains at the core of industry concerns. They recognise that upskilling staff is critical for the sector to be responsive and experience success in the modern economy.

Successful workforce development involves addressing a range of related issues including skills availability, skills development and the shifting needs of the sector. Many issues are likely to be exacerbated by increasing competition for labour as a result of competition from other sectors and major project activity such as the National Shipbuilding Plan, Battery of the Nation and other renewable energy initiatives.

It is also important that we continue to work with education providers to promote a modern image of manufacturing and ensure that educators, students and parents understand the opportunities and pathways that exist in the sector. This is exemplified through the partnership between the Department of Education, TMEC and key industry stakeholders to develop the pilot 'Packages of Learning' curriculum framework that has been tailored to priority industries in Tasmania, including advanced manufacturing.

The Vocational Education and Training (VET) system, including the role of apprentices and trainees, remain a key skills development platform for the sector. At the same time there are other training needs identified by businesses that VET cannot address.

Industry are increasingly looking outside the traditional training system for solutions to current and future workforce development needs. This means we need to develop innovative, flexible and fit-for-purpose training solutions to accommodate new and high-demand skills requirements.

Government, industry and other relevant stakeholders will work collaboratively on a range of initiatives, recognising that a coordinated approach will enhance the likelihood of delivering positive outcomes relevant to emerging workforce needs.

Science, Technology, Engineering and Mathematics (STEM) skills are increasingly important as we develop advanced manufacturing environments and adapt to modern workplace requirements.

Initiatives such as the University of Tasmania's Original Equipment Manufacturing (UTAS OEM) facility at Burnie, the government's investment in the Trades and Water Centre of Excellence at TasTAFE's Clarence Campus, and TMEC's increasing utilisation of its welding simulators are all excellent examples of initiatives that provide very different, but equally important, mechanisms to support the emerging needs of the advanced manufacturing sector.

Manufacturers will also be key beneficiaries of the Energising Tasmania project. The \$16 million, four year commitment supports the development of a workforce equipped with the expertise needed for the Battery of the Nation initiative and the renewable energy and related sectors in Tasmania. Funding through the program supports training, industry engagement, workforce planning and development, and building training sector capability.

The Tasmanian Government recognises that the training system needs to be flexible and responsive to the evolving needs of industry. Focus areas through this plan will include:

- Supporting increased levels of sector-led education and training
- Improving opportunities for quality trade training, incorporating modern skills required by advanced manufacturing organisations
- Increasing the diversity of the manufacturing workforce
- Raising the awareness of the diverse career opportunities that exist within the advanced manufacturing sector.

Through Skills Tasmania, the government is focused on supporting training that meets the needs of industry and enhancing trainer and training delivery capability.

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Priority 2:

Support the adoption of leading edge design, innovation, technologies and practices to deliver growth and improved business capability

Key focus areas:

- Provide access to relevant information and capability building.
- Support growth through targeted assistance and incentives.
- Work with industry to develop programs and services.

Outcome

The advanced manufacturing industry base is innovative, capable and responsive and recognised for its products, capability and quality.

Action 5	Deliver a Manufacturing Business Improvement Program to support activities that drive business growth, efficiencies, improve competitiveness and enhance sustainability.
Action 6	Deliver a Manufacturing Quality Assurance Program to support businesses to complete quality assurance accreditation to help secure customers and new markets.
Action 7	Deliver introductory Industry 4.0 activities to demystify and encourage greater take-up to support industry transition.
Action 8	Work with the Tasmanian Cyber Security node and other stakeholders to raise cyber security awareness in the manufacturing sector.

Context

It is well understood that manufacturing enterprises need to embrace relevant innovation, technology and process improvements within their organisations to be globally competitive.

A manufacturer is more advanced when it uses advanced knowledge, advanced processes and advanced business models with transformation occurring through a combination of one or all of these traits.¹⁷

The pace of change is increasing rapidly and we are seeing global implementation of a wide array of new digital technologies including: sensors and data analytics; advanced materials; additive and subtractive manufacturing; artificial intelligence and machine learning; augmented and virtual reality; and, increasing levels of robotics and automation.

Industry 4.0 is a term used to describe the connection of devices and machines with digital technologies to enable the use of data enhanced with smart and autonomous systems to improve products and processes. However, it is a term that often means little to businesses. Research into current manufacturing capability has found that there is varied understanding or application of Industry 4.0. This will potentially constrain growth for some businesses.

Tasmanian manufacturers are already recognised for innovative products and processes and a strong culture of continuous improvement. We have an increasing number of companies that are readily embracing these emerging technologies and newly emerging advanced manufacturing enterprises are a direct result of new opportunities, markets and products.

At the same time there are capability gaps, including overall investment in research and development and new technology application. An increasing number of companies are working on their own product development and are seeking expertise in problem solving, research and design, prototypes, product development and management, commercialisation and marketing.

The Tasmanian Government will work to assist applicable enterprises build on their strengths and address areas for improvement in this space. This may include assistance to access:

- finance
- information and advice to help understand and access technologies
- support to improve processes and systems
- business planning and management skills development like governance and succession, and
- product development and commercialisation support.

The government will also work with industry to develop expertise in problem solving, research, design, prototypes, commercialisation and marketing.

Customer and market expectations are also driving technological change and companies are now required to comply with mandatory levels of specialised accreditation in order to access some markets.

Technologies are converging and companies are grappling with requirements to embed smart technologies within their products to meet customer expectations and an increasingly connected Internet of Things (IoT) system.

An unfortunate by-product of the increasingly interconnected world means that cyber security threats are increasing and all organisations are at risk of being targeted. The Australian Government's latest cyber security strategy notes that between 1 July 2019 and 30 June 2020, the Australian Cyber Security Centre responded to 2 266 cyber security incidents at a rate of almost six per day. It suggests that "Businesses should take responsibility for securing their products and services and protecting their customers from known cyber vulnerabilities."¹⁸

Overall, industry awareness of programs, services and capabilities available to improve business operations, product development and productivity is mixed. This priority will put a focus on the Tasmanian Government actions that will support businesses to access advice and information that will enable them to adapt to the current and future environment, as well as protect their interests online.

¹⁷ Advanced Manufacturing: A Definition for a New Era, by the Advanced Manufacturing Growth Centre 2017 18 Australia's Cyber Security Strategy 2020, p19

Priority 3: Support increased collaboration and advocacy for the sector

Key focus areas:

- Continue to support industry representation.
- Support increased partnerships and collaboration.
- Support opportunities for knowledge acquisition and sharing.

Outcome

Improved awareness of peer capabilities within the advanced manufacturing industry and increased partnerships and collaboration.

Foster greater collaboration between industry, research and commercialisation stakeholders.

These outcomes will be measured by the number of activities and opportunities supported and organisations participating in the following actions.

Action 9	Deliver 'Insights into Excellence Activities' to further develop Tasmania's manufacturing capacity and capability including through exemplar local, national and international firms, research and development institutions and best practice examples of products, processes and procedures.
Action 10	Engage with key research and commercialisation stakeholders and programs.
Action II	Work with industry to plan and execute activities that will promote the manufacturing sector to attract a more diverse workforce.
Action 12	Work with educators, industry and the community to encourage greater take up by women of manufacturing related trades.
Action 13	Support industry led engagement and collaboration activities.
Action 14	Improve access to relevant industry information.

Context

The Tasmanian manufacturing sector covers a diverse range of activities and is spread across all regions of the state. Until the previous Advanced Manufacturing Action Plan, released in 2016, there was no industry association in Tasmania to represent the sector and assist it to collaborate. TMEC was supported under the plan and established a single state wide, industry led association to address this issue. Stakeholders have since expressed strong support for the work of TMEC and the value of having a representative body to advocate for and support capability building in the sector.

TMEC has been critical in the implementation of industry and skills development initiatives as well as the establishment of the Manufacturing Centre of Excellence in Burnie. TMEC is building its membership base to attract new members and become a more representative state wide industry body. One ongoing activity is to continue to raise the profile of trade skills in schools, using the Advanced Welding Training Centre's portable welding simulators to develop welding skills and encourage a more diverse range of students to consider trades as a career option.

There is limited understanding across the broader community of what modern manufacturing looks like and of the range of manufacturing that is done in the state. The perception of many is that manufacturing has remained an exclusively traditional 'smokestack' industry that is dirty and dangerous. There is also very little public awareness of the strong career pathways and exciting employment opportunities that are available. This often prevents business from attracting suitable people into manufacturing related trades and qualifications.

The Tasmanian Government will work with industry and organisations like the Beacon Foundation to promote manufacturing and its related trades to educators, students and parents as a positive career choice.

The Department of Education will be engaged for their advice on how best to share this information in schools and with education providers at all levels. Industry and government efforts will also be dedicated to promoting, engaging and encouraging young women to seek careers in manufacturing.

As well as raising the profile of manufacturing, industry stakeholders have highlighted the importance of having the opportunity to engage with colleagues across the state and through the supply chain, including research specialists. Ongoing contact with other industry members provides opportunities to examine best practice examples, identify synergies and build relationships which creates opportunities for collaboration and cooperation.

This is also important for emerging manufacturers and new entrants into the sector. The state has a rapidly evolving innovation ecosystem and it is important that both existing and emerging companies are connected to resources including other advanced manufacturers so that they can leverage and capitalise on existing experience and expertise.

The Tasmanian Government will facilitate industry engagement and information sharing. It will support industry to pursue initiatives like public-private networks, sector-wide research and skills development, and other measures to better connect public research assets like the University of Tasmania and Commonwealth Scientific and Industrial Research Organisation (CSIRO) with industrial applications.

Building connections and points of cooperation with industry and innovative research and development specialists will support industry innovation and change. It will support businesses with the technical aspects of technology including business development, entrepreneurship and industry collaboration leading to business model change resulting from applying technologies to achieve business outcomes.

Priority 4: Support greater market identification and access and industry promotion

Key focus areas:

- Provide assistance to access market opportunities.
- Showcase the industry for a domestic, interstate and international audience.

Outcome

Tasmania is recognised in Australia as a key provider for advanced manufacturing solutions in key product sectors.

Action 15	Establish the Industry Capability Network (ICN) in Tasmania.
Action I6	Help to promote Tasmanian manufacturing capabilities, products and services to increase domestic and international opportunities.
Action I7	Develop and implement a maritime campaign to promote Tasmania as a leading and preferred provider of niche maritime capabilities and services.
Action 18	Support collaborative industry projects through the Trade Alliance program with the potential to generate immediate and ongoing trade outcomes.
Action 19	Support companies through the Government's Accelerating Trade program with market development activities.
Action 20	Support industry stakeholders to access brand development advice through Brand Tasmania and build on the Tasmanian story.

Context

While many businesses have a well-established customer base, most still want to diversify their operations or target new opportunities in domestic and international markets. Market access and diversification is particularly important to those businesses selling into markets vulnerable to the impacts of COVID-19.

The Tasmanian Government has provided market development support through the previous Tasmanian Advanced Manufacturing Action Plan. This included a funding program for entering new markets; promotion of the state's capabilities via a Manufacturing Portal ¹⁹; development of a promotional video for use in trade shows and other events; and support for discrete projects likely to lead to increased jobs and contract opportunities, such as those funded under the Advanced Manufacturing Transition Fund and the \$45 million Metro Tasmania bus replacement project.

Advanced manufacturing is recognised as a key sector within the Tasmanian Trade Strategy 2019-2025. Manufacturers are supported to participate in relevant trade events and programs that build capability and market access. The Tasmanian Trade Strategy has also identified a range of markets which provide key opportunities for all sectors, including advanced manufacturing.

Manufacturers are able to access funding for their market development activities under the Accelerating Trade Program and Trade Alliance Program which has been designed to support Tasmanian industry and regional associations to facilitate collaborative trade related projects. Manufacturers can also leverage assistance from the Australian Government through agencies such as Austrade, Department of Foreign Affairs and Trade and the Defence Export Office.

The Tasmanian Defence Industry Strategy 2023 is also relevant to a number of Tasmanian manufacturers. The Tasmanian Government and the Tasmanian Defence Advocate have been working closely with industry to grow the state's profile and access contract opportunities. In particular, Tasmania is aiming to contribute towards the Australian Government's \$270 billion domestic defence spend.

Since its commencement the Tasmanian Defence Industry Strategy has made strides in changing the perception of Tasmania's capability in domestic and international defence circles, meaning that more Tasmanian companies are looking towards defence as a viable market for their products and capability.

We will continue to work with businesses to ensure that our trade activities are aligned to those of industry and together with our partners, in particular Brand Tasmania, and will promote Tasmania's unique capabilities and products.

The Department is already working with Brand Tasmania to present a Tasmanian Maritime Brand Campaign. The campaign will leverage Tasmania's brand story and tell Tasmania's maritime story to promote Tasmanian companies and organisations as preferred providers of maritime products and services. Tasmanian maritime companies and organisations will have the opportunity to work with Brand Tasmania to develop their stories.

Programs and activities that have already been delivered have been well received, but more recent industry consultation has found that businesses want industry support that builds on branding and market development efforts. They also want help to understand where and how to access supply opportunities, particularly for larger contracts, and help in overcoming policy and regulatory barriers.

Alongside the existing grant programs for individual businesses and organisations to build the skills and resources to access new markets and launch new products, the Tasmanian Government is building the state brand. State Growth is already working with Brand Tasmania and will continue to develop and promote the Tasmanian Manufacturing Brand story.

¹⁹ www.tasmanianmanufacturing.com.au



The Tasmanian Government is supporting local business to access government and government business enterprise contracts with its revised Buy Local policy, released 31 July 2020.²⁰

An Economic and Social Benefits Test will replace the Local Benefits Test and Local SME Industry Impact Statement. The new test will allow for a greater weighting on Tasmanian social and economic factors when government agencies evaluate competitive procurements. The Economic and Social Benefits Test will increase its weighting from 20 per cent to 25 per cent of the total procurement evaluation criteria. The Economic and Social Benefits Statement will also collect additional information about supplier engagement with the Tasmanian business sector.

To further increase opportunities for Tasmanian businesses, the Government is also raising the low value procurement threshold from \$50 000 to \$100 000. This is important because it gives agencies discretion to choose the method of approaching the market for procurements. Below this threshold, including for low value procurements, where there is local capacity, capability and value for money in local offerings, agencies should approach Tasmanian businesses first.



The Tasmanian Government will also support businesses to target new work opportunities across the nation and has taken the decision to join the ICN. The ICN is an Australian and New Zealand business network that introduces companies to projects and offers large project proponents a validated source of suppliers. The ICN is an important mechanism for some sectors and large contractors to share information about major projects and work packages. It matches the needs of large project proponents with local suppliers who have the capacity and capability to deliver.

State Growth will work with industry associations to engage with Tasmanian businesses and ensure they are aware of the ICN and the opportunities it can bring and encourage them to join the network.

Where possible State Growth will engage with proponents of large projects to establish smaller work packages making them attainable to smaller Tasmanian enterprises. These smaller work packages will also be promoted to those relevant Tasmanian businesses. Access to the ICN will help Tasmanian businesses to identify opportunities and raise their profile as suppliers to potential customers.

²⁰ www.purchasing.tas.gov.au/Documents/Buy-Local-Policy.pdf

Governance and reporting

State Growth, through Business and Trade Tasmania is responsible for the implementation of this Plan. The unit will be supported by the broader department and other Tasmanian agencies. Industry will contribute to the actions within the Plan and provide advice.

State Growth will conduct a biannual review of the Plan and refine it in light of emerging opportunities and issues where appropriate.

This is particularly important as the impacts of the COVID-19 pandemic continue to evolve. Given the uncertainty of the business and health environment across the globe, it is necessary for any strategic planning done now, to be adaptable for the future.

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