



LODDON CAMPASPE

REGIONAL ENGINEERING AND ADVANCED MANUFACTURING SKILLS ROAD MAP 2019



CONTENTS



| | |
|----------------|----|
| Foreword | 03 |
| Introduction | 04 |
| Advisory Group | 06 |
| Mission | 07 |

| | |
|------------------------|----|
| Global Industry Trends | 09 |
| Global Employee Trends | 10 |

| | |
|--------------------------------------|----|
| Regional Manufacturing Overview | 11 |
| Regional Strengths and Opportunities | 13 |

| | |
|-------------------|----|
| The Challenges | 14 |
| The Opportunities | 16 |

| | |
|---------------------|----|
| The Skills Road Map | 18 |
|---------------------|----|

WE ACKNOWLEDGE ABORIGINAL TRADITIONAL CUSTODIANS WITHIN THE REGION, THEIR RICH CULTURE AND SPIRITUAL CONNECTION TO COUNTRY. WE ALSO RECOGNISE AND ACKNOWLEDGE THE CONTRIBUTION AND INTEREST OF INDIGENOUS PEOPLE AND ORGANISATIONS IN THE DEVELOPMENT OF A PROSPEROUS REGION.

FOREWORD

Over the past three years, the Loddon Campaspe Regional Partnership – one of nine Partnerships across the state – has listened to the voices of this region, hearing what’s important to the local community, and has brought those voices directly to Government.

We’ve heard from the Partnership about the need for a healthy community and for an early years language and literacy strategy – and another priority for the Partnership is the importance of ensuring a strong and diverse economy for the future.

The Partnership has begun work on a Regional Economic Growth Strategy – an economic vision for the region to drive economic growth, and we look forward to receiving the strategy and hearing the region’s creative plans for the future.

As an early part of that work, the Partnership identified the need to explore the skills the region needs, particularly in the engineering and advanced manufacturing sector. It’s vital that we have the right skills to keep industries growing, and a strong local workforce that’s engaged in the community.

Manufacturing currently contributes \$5.6 billion a year to the Loddon Campaspe’s economy, and provides around ten per cent of the region’s current employment.

We know that employers often find it hard to recruit the right people with the right skills. The manufacturing sector is changing and is embracing digital technology like Internet of Things networks, robotics and artificial intelligence – all of which need advanced skills in technology and a new way of working.

It’s exciting to see the Regional Partnership taking leadership in this field, bringing together stakeholders from industry, education and government – people who might not normally work together, to address the skills and labour force shortages the region faces, and produce this Skills Road Map.

We’re really pleased to support these kinds of place-based initiatives – locally-led initiatives that address what communities need, to ensure this region is prepared for a bright future.



Jaclyn Symes MP
Minister for Regional Development,
Minister for Agriculture, Minister for
Resources

INTRODUCTION

A REGIONAL ROAD MAP FOR SKILLS IN ADVANCED MANUFACTURING AND ENGINEERING IN THE LODDON CAMPASPE.

BACKGROUND

In 2018 the Bendigo Manufacturing Group (BMG) with support from City of Greater Bendigo (CoGB) and Bendigo TAFE hosted a successful business forum for companies that employ skilled welders / fabricators. More than 55 people attended from industry, including representation from Woodend, Castlemaine, Maryborough, Cohuna, Echuca / Moama and Greater Bendigo region.

The forum was arranged because of the findings from several surveys undertaken in the first half of 2018. The surveys indicated a strong demand for skilled welders in the next 3 years, with peak demand in the next 12 months. Responses from 20% of the survey participants indicated in excess of 300 personnel were anticipated to be recruited in the next 2 to 3 years.

THE LODDON CAMPASPE REGIONAL PARTNERSHIP

In 2016 the Victorian Government established nine regional partnerships across the state, to give regional communities greater say about what matters to them and ensure their voices reach the heart of government. Partnerships have significantly increased collaboration between communities, industry, businesses and government

to address the most important challenges and opportunities in each region.

The Loddon Campaspe Regional Partnership (LCRP) covers an area with a diverse population and a buoyant economy based on agriculture, retail, health, property and manufacturing. There are six Local Government Areas (LGA) represented Campaspe Shire, Central Goldfields Shire, City of Greater Bendigo, Loddon Shire, Macedon Ranges Shire and Mount Alexander Shire. The LCRP consists of business and community members together with the CEO's from each LGA. The members are deeply connected to their local communities and bring with them a wealth of experience and knowledge.

INDUSTRIES OF THE FUTURE - ENABLERS

Industries of the Future - Enablers is one of the identified emerging priorities of the Loddon Campaspe Regional Economic Growth Strategy. To support our regional economy, industry requires the right skills to support business growth. Despite employment growth, local employers continue to report difficulty attracting the right skills. The local skills deficit is compounded by a higher proportion of lower income earners. Other statistics point to an issue with the readiness of the region's school leavers for work or further study. The manufacturing industry is facing a new wave of change which is embracing digital technology, which will change the way traditional business has previously worked. Technology such

as smart machines, autonomous functions, artificial intelligence, robotics and the Internet of Things (IoT) will transform the skills required of our workforce.

To grow and sustain our regional economy, industry requires support in business development and workforce planning to ensure the skills in technology are adopted and industry has a workforce that is equipped for the future.

ENGAGEMENT

Businesses, education providers and key stakeholders from across the region were invited to participate in a workshop and one-to-one consultation process. Across the region 15 businesses participated in one-to-one consultations, as did key education providers, Department of Education and Training, Local Learning and Employment Networks (LLEN), industry bodies and recruitment providers.

Consultation was also held with current employees, TAFE apprentices, VCAL/VET students, careers teachers, and parents.

AIM FOR THIS ROAD MAP

This Regional Skills Road Map aims to identify short and long-term initiatives to support future workforce needs in manufacturing and engineering.

A formal Advisory Group comprising representation from industry, education and government has been established to provide guidance and oversight of the initiative.



COMING TOGETHER
IS A BEGINNING, **STAYING**
TOGETHER IS **PROGRESS**
AND WORKING TOGETHER IS
A SUCCESS

— HENRY FORD

ADVISORY GROUP



Leadership and Collaboration

A Project Control Group (PCG) was established to oversee the deliverables of the project.

This group consisted of the following members:

Murray Brown – Operations Manager, Thales Australia

Aaron Cassidy – Special Projects, Bendigo Rail Workshops

Jim Dannock – Regional Manager, Australian Industry Group

Simon Harris – Lead Educator Engineering, Bendigo TAFE

Paul Stagg – Manager, Skills and Jobs Centre Bendigo TAFE

Petra McLoughlin – Senior Industry Development Officer, City of Greater Bendigo

Carly Grigg – Investment and Trade Specialist – Manufacturing, Regional Development Victoria

Hayley Cail – Loddon Campaspe Regional Partnership Co-ordinator, Regional Development Victoria

Dave Richardson – Chair, Loddon Campaspe Regional Partnership

The project was overseen by technical advisor Dr Herbert Hermens

MISSION

WHAT IS INDUSTRY 4.0?

Industry 4.0 is made possible by the emergence of digital systems, networked communications, machine learning and large-scale data analysis. It refers to the increasing integration of these technologies into business and production processes in order to make them self-sustaining and more efficient.

EY Global (2018)

The Loddon Campaspe region will produce innovative and high quality products, be the home of businesses known as employers of choice, with strong relationships with government and education.

This Road Map seeks to act as a guide to government, education and industry to establish the region which has employers of choice, encourages innovation and quality manufacturing.

This Road Map recognises the contribution of the manufacturing/ engineering and related sectors to

the local economy and the challenges presented to the current and future workforce.

It also recognises the changing requirements of the businesses and employees as the local, national and global manufacturing sector prepares for Industry 4.0 and beyond.



**“ MY BOSS
USED TO BE AN
APPRENTICE,
I CAN SEE
WHERE THIS JOB
TAKES ME.”
— LOCAL APPRENTICE**



“Those who said they would steer their children away from manufacturing careers said it was because of concerns about job security (77%), inadequate career paths (70%), and low pay (64%), with many still fearful that manufacturing is a dying industry.”

— Deloitte (2017)

GLOBAL TRENDS

Perception of the industry at a global level

It is widely acknowledged that manufacturing companies are essential to economic growth and the sustainability of nations. However, the globalisation of manufacturing has led manufacturing businesses to increasingly seek out the lowest cost sources of supply, which has been to the detriment of developed economies worldwide. This in part has led to the perception in Australia, as elsewhere, that the manufacturing industry does not offer employment options that are long term.

Even before the financial crisis leaders in the Australian manufacturing industry were increasingly concerned that people were not being attracted to careers in manufacturing. This was a result of how the industry was perceived by the public at large, compounded by the closure of high profile manufacturing operations in Australia, of participate note the car assembly plants in Victoria and South Australia.

There was a substantial impact on the employment and general economic conditions in areas where these manufacturing operations were concentrated. The notion that the manufacturing sector does not offer security to its work force continues to persist in Australia, as it does in a number of overseas developed economies.

Studies from the Centre for Industry and Government (Institute for Manufacturing) and the University of Cambridge suggest that in the United Kingdom only (16%) of people see manufacturing jobs as well paid and many are concerned that manufacturing jobs are the first to be moved overseas (74%). Only one in five parents would encourage their child to pursue a career in manufacturing.¹

This mirrors results of research conducted by Deloitte (2017) in the United states. The vast majority of the 100,000 respondents to the study indicated that they would not encourage their children to pursue manufacturing careers and most did not believe that manufacturing jobs are interesting, rewarding, clean, safe, stable, or secure. Those who said they would steer their children away from manufacturing careers said it was because of concerns about job security (77%), inadequate career paths (70%), and low pay (64%), with many fearful that manufacturing is a dying industry.

In Europe, the manufacturing industry has a negative reputation, where people understand the importance of the jobs, but are not interested in those jobs for themselves. Especially young people, who have a low interest in the jobs

since, the common perception is that manufacturing is dirty and not well paid. In China and Japan, the pool of labour available to the manufacturing industry has been shrinking rapidly, due in part to the ageing population and the growth of job openings in the service sector.



¹ University of Cambridge, IfM Management Technology (2016) <https://www.ifm.eng.cam.ac.uk/research/mierrg/projects>

The gig economy is "a way of working that is based on people having temporary jobs or doing separate pieces of work, each paid separately, rather than working for an employer"

— Cambridge Dictionary (2019)

EMPLOYEE TRENDS

A global issue being played out at a regional level

Competition for labour is a global issue, where other jurisdictions are importing labour to fill skilled and non-skilled openings. Germany, Denmark and the Netherlands offer incentives to attract skilled workers from as far afield as Asia to help fill the gap in manufacturing's skilled labour shortage.

In Australia, regional areas such as Bendigo, Ballarat, Geelong, Orange, Bathurst and Wagga are aware of the need to attract and retain their young people to fill local jobs locally as well as attract labour into their region. Skilled migration is also considered in regional areas as an effective initiative to access suitably skilled workers.

Businesses looking to attract and retain young people in the industry must develop an understanding of what sets this new generation apart in a work setting. Is it their insistence that the working world is overdue for change? They are now the largest generation currently entering the workforce. Key findings from a global study of Millennials by Deloitte (2017) is that workplace diversity and

flexibility are key to loyalty. Good pay and positive cultures are most likely to attract both Millennials and Gen Z, but diversity/inclusion and flexibility are important keys to keeping them happy.

Many view the 'gig economy' as an attractive alternative or adjunct to their jobs. Young workers feel unprepared for Industry 4.0. However, Millennials expressed admiration for corporations that are adapting to and advancing Industry 4.0, and are developing their employees to succeed in this evolving competitive business environment.

Seen in previous surveys, companies and senior management teams that are most aligned with Millennials in terms of purpose, culture and professional development are likely to attract and retain the best Millennial talent and, in turn, potentially achieve better financial performance and operational efficiency.

Who are Millennials and Gen Z?

Millennials were born between 1980 and 1994 and will represent 75 percent of the global workforce by 2025. What they seek most from their jobs is meaningful work, flexibility and autonomy, connection and mentoring.

Members of Gen Z – loosely, people born from 1995 to 2010 – are true digital natives: from earliest youth, they have been exposed to the internet, to social networks and to mobile systems.

— McKinsey (2019)

“An extended definition of manufacturing has been developed by the Institute for Manufacturing which equates manufacturing to the full cycle of activities from research and development, through design, production, logistics and services, to end of life management, within an economic and social context.”

— Institute for Manufacturing, University of Cambridge (2012)

REGIONAL MANUFACTURING AN OVERVIEW

The total employment in the Loddon Campaspe region is estimated at 91,379 jobs.

The Region is home to 1,882 international and domestic manufacturing operations that engage in the physical or chemical transformation of materials, substances and components into new products.

Manufacturing in Loddon Campaspe contributes \$5.6 billion per year to the economy, currently employing 9,451 people, providing approximately 10.3% of the total employment in the region².

A noticeable trend identified in the consultation process is that many individuals gravitate to the manufacturing sector by chance, as opposed to through conscious choice. As such employers are finding it hard to attract the skilled workers that they need to their business.

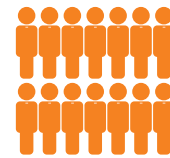
This Road Map encourages business, education providers and influencers to work together to provide innovative solutions to the current skills shortages and plan for future workforce needs.

Advanced manufacturing is already being undertaken at a regional level, and the skills set requirements of workers are changing.

Internationally recognised quality standards are being implemented by many companies and local vocational education training providers to ensure a strong future workforce and regional manufacturing outcomes.

Bendigo TAFE has commenced delivering education program's to meet the international quality standard requirements, at the beginning of 2019.

While this Road Map is focused on the broad set of skills required for engineering and manufacturing in the region, consultation with business found that the recruitment and retention of a) skilled welders and b) tertiary qualified engineers are the occupations that are hardest to recruit in this region.



9,451

manufacturing employees



3RD

largest sector employer



\$5.6 BILLION

economic contribution from
manufacturing sector

² Reference for all figures : Remplan Economy 2019, Loddon Campaspe Region (2018 R2)



“I’m comfy here. It’s great to have these opportunities and I get to stay near home.”

— Local Year 12 VETiS Student

REGIONAL STRENGTHS AND OPPORTUNITIES

To the south, the Loddon Campaspe region borders the metropolitan area of Melbourne and is bordered by the Murray River to the north, with Bendigo as its central thriving regional city and education hub.

The region’s size and location offers the benefit of choice and opportunity in employee pathways while remaining a close-knit community.

The region has an established manufacturing and engineering industry of varying sizes to suit various employee needs. Alongside this, are a number of other strong industries in the region including, world class healthcare, education and government services.



TRANSPORT

Good transport links, short commute between home and work



EDUCATION

Education opportunities for all ages including vocational and tertiary



HOUSING

Affordable housing options. Median house price \$360,000³



ECONOMY

Gross Regional Product of \$12.95 billion⁴

³ REIV www.reiv.com.au (July 2019)

⁴ Remplan Economy 2019, Loddon Campaspe Region (2017 R3)

THE CHALLENGES

What are the region's key challenges?

During the consultation process, a number of key challenges have been unearthed to be included and addressed as part of this Road Map, based on the needs of the Loddon Campaspe region.

Misconceptions

There are a number of misconceptions about the industry. This is what the consultation heard from industry, workers, students, stakeholders and influencers:

- It's "really hard work"
- Employers are "flaky" and hire and fire with no remorse
- Employers just use apprentices because they are cheap
- Wages and pay rates are too low
- Robots will eventually replace the jobs anyway / what is the point of studying if they are?
- The industry is dying - there are no real jobs
- They are just busy and don't have the time to invest in making a change
- There is no Industry 4.0 activity in the region. Industry is not moving forward

Co-operation amongst businesses

There continues to be a highly competitive culture around manufacturing and engineering businesses. A lack of co-operation means the region is missing out on what collaboration could bring for the region, including addressing key issues such as modern Human Resource (HR) practices and implementing Industry 4.0.

Industry support for change

There is a perception from some students, education providers and stakeholders that industry don't have enough time to invest in creating a workforce for the future. They are too busy to take on work experience or placements, don't participate in relevant events and don't invite students and educators to learn from them regularly enough to effect change.

Businesses in the region are primarily made up of small-medium business, often with limited or no HR or operational support staff. Thus, industry themselves identified as an issue that the business owner is working both "on the business and in the business", often leaving little time for development, or new initiatives.

In addition to this, existing workforce consulted during the engagement phase, perceived that professional development activities were not always of a high priority to the business.

Youth unemployment

The Greater Bendigo region has one of the highest youth unemployment rates in Australia at

18.3% (Brotherhood of St Laurence 2019, "Smashing avocado debate") Whilst it appears there is adequate participation in Vocational Education Training in Schools (VETiS) programs, there remains an issue for converting these students into employees within the manufacturing sector.

Who drives change?

All industry stakeholder groups, linked to this Road Map, have leadership input to offer and future policy development will require a balance of input from all parties.

Reputational issues for the industry, the region and individual businesses

The region and the sector have a culture of hiring through word of mouth. The negative reputation of some businesses for their work environments, inconsistent wage structures, and the "hire and fire" attitudes of the manufacturing industry are impacting on effective recruitment and reputation of the industry.



Confusion around education options

This is true for both potential workers and industry. There is confusion from many employers and employees about education pathways available to them from secondary to tertiary.

At a secondary education level there are numerous options for work experience and apprenticeships available. Students engaged during consultation of this project indicated a degree of confusion when trying to access this information.

Willingness to work

Employers are finding that many potential workers are not ready for work, not willing to work or are not in a condition to work due to substance abuse. These factors impact quality, staff turnover and reputation of both worker and employer.

Skilled migration

Attracting workers from outside the region is difficult and provides further challenges: Where will their partners or family work? What other opportunities are there for them once they move? Why live in the region?

Funding confusion

A number of initiatives for funding are available but barriers exist, from competition within the region for the same funding, confusion over how funding is applied for or accessed and the time required to apply. These barriers are often compounded by negative experiences in the past discouraging businesses from taking advantage of these options again in the future.

Research and development

Some industry partners have taken advantage of research and development opportunities but most are unclear on how to take part in these activities; what the benefits are and whether or not their business is able to take part in this type of activity.

Gap between education and industry

While the larger businesses are trying to move towards Industry 4.0, smaller businesses are making investment in machines, in order to remain competitive. This is compounded by National Training Packages, that are often out of date

and do not reflect future industry trends. For example, there is little training currently available, in the area for robotic welders which is critical for an Industry 4.0 response. The education sector is training workers who can work in the conditions on the workshop floor today. Students and educators are not prepared for the changes that are coming, nor do they understand what the future workforce requires.

Bendigo TAFE, the primary vocational education and training provider for a majority of businesses in the region, needs updated advanced technology equipment, such as robotic welding equipment and qualified trainers, to be able to meet modern practices already implemented in workplaces around the region.

Not all career advice for students is reflective of the opportunities which currently exist or the emerging advanced technology environment that the manufacturing industry is moving towards.



THE OPPORTUNITIES

Advantages that the region already has

Engaged youth

There are a large number of engaged youth coming through the secondary and vocational systems in the Loddon Campaspe region.

In 2017 there were 1,929 young people enrolled in VETiS subjects of which 105 are doing Certificate 2 in Engineering. This contrasts with Ballarat at 79 (2.5%) and Geelong 43 (1.2%). This is higher than the average in Victoria at 3.2% of total VETiS enrollments, with the region accounting for 4.9% of all Victoria engineering enrollments⁴. There is an opportunity for business and education providers to capitalise on this trend.

Consultations were held with a number of students, who come from a variety of backgrounds. Including those from farms, VCE and some who have moved from building & construction trades into manufacturing/engineering. When asked why they pursued their vocational training in engineering, a majority felt that they “just got it”.

Respondents advised they are looking for strong long-term job opportunities that offer them money, stability and good conditions, and are motivated to actively pursue the position that fits them best.

Active manufacturing sector

There is an active manufacturing sector already in existence in the region, with numerous organisations having won awards of excellence in the past.

The BMG made the initial push for the funding of this Road Map with the aim to encourage the participation in consultations from across the sector and the region.

There are businesses in the regional who have a reputation for strong employee loyalty and have established themselves as employers of choice.

A number of regional businesses have invested in innovation and adopted new technology in their workplace, including robotics, automation and IoT.

Active education sector

There are existing ties between industry members and the education providers in the region that have lead to positive outcomes for students. At a tertiary level, Deakin and La Trobe University (LTU) both have a presence in the region. LTU has the potential to attract graduates to Bendigo with a \$20 million investment in a new engineering building. This building is also houses the Bendigo TECH

School, which provided STEAM programming for Bendigo senior secondary students.

There is the opportunity to grow these relationships through the appointment of a liaison that works between industry, TAFE and tertiary to ensure clear pathways are communicated to students. This will ensure training needs are being met for industry and the future needs of the workforce. Primarily, all vocational and tertiary education providers are based in Bendigo and it is imperative that these education providers will need to engage with the region as a whole.

Industry co-operation

The diversity of the region's manufacturing sector can be leveraged to its advantage with co-operation sitting at its centre. Co-operation can be achieved through:

- Sharing HR resources and knowledge
- Lobbying to government
- Training needs
- Procurement & supply chains
- Energy
- IoT advancements
- Industry 4.0
- Public relations

⁵. Australian Industry Group (2017)



**SUCCESS IN
BUSINESS** IS ALL
ABOUT PEOPLE, PEOPLE,
PEOPLE...EMPLOYEES ARE
ITS **BIGGEST
COMPETITIVE
ADVANTAGE** — RICHARD BRANSON

THE SKILLS ROAD MAP

OUR VISION

The Loddon Campaspe region will be a preferred regional destination for a career in manufacturing.

OUR METHOD

We have defined four key areas that need to be addressed. Resulting in initiatives for implementation and recommendations assigned to industry, education and government.

At the centre of each of these initiatives and recommendations is the student, the worker, their family and friends respectively.

OUR CHALLENGE

- To change the perception of the industry and the region.
- To align priorities for addressing the skills required now.
- To plan for the needs of the future workforce in engineering and advanced manufacturing.
- To encourage a more responsive uptake of technology by manufacturing to increase competitiveness, productivity, revenue and profit.

OUR STRENGTHS

A strong and active manufacturing sector exists in the region.

The region is home to committed education providers in manufacturing providing vocational and tertiary training opportunities and research and development.

The region has the strongest VETiS participation in engineering in regional Victoria.







ADDRESSING THE
PERCEPTION OF THE INDUSTRY
RECOMMENDATIONS

The public perception of manufacturing and engineering on a global, national and local level is that jobs in this sector are under threat. In addition, these jobs are often filled behind closed doors with little interaction with the general public. The key findings from consultations indicate we need to address issues including employer hiring practices, job stability, pay and conditions and the changing workforce needs in manufacturing.

In order for the public perception of industry to change the region needs to, either individually or collectively implement recommendations and initiatives:

| RECOMMENDATION | LEAD |
|---|---|
| Industry and education to develop, implement and commit to work experience and work placement targets at all levels (secondary, vocational and tertiary). | LLEN – Structured Workplace Learning TAFE La Trobe University – Work Integrated Learning Head Start |
| Annual “Open House” for the sector including public displays, professional development activities, information for students and families. Event to be held in collaboration between government, industry and education. | Industry |
| Development of a series of case studies showcasing the Industry, pathways, skills and types of jobs within manufacturing. | BMG LLEN Head Start |
| Development of a mechanism that allows for partnership between industry groups to support the relocation of potential employees, their partners and families. | LGA Industry Government |
| Development of an online “hub” of information including education and career pathways, case studies, promotional materials, real life stories. | HeadStart Bendigo Schools Trade Training Centre Engineers Australia Ai Group Weld Australia |
| Build awareness of the income and wages for entry, mid and high-level jobs within the sector. | Ai Group Engineers Australia Weld Australia |
| Data obtained should also provide employers in the region with an understanding of the pay conditions they are offering compared to national and international standards, ensuring the Loddon Campaspe attracts and retains a highly skilled workforce. | Ai Group Engineers Australia Weld Australia |
| Utilise professional bodies to publicise and garner participation in promotional events and professional development at a local level. | Engineers Australia Ai Group Weld Australia |
| Development of a regional jobs drive campaign with targets committed to by industry. | LGA Industry Head Start Australian Apprenticeships Providers |
| Explore the opportunity to deliver a 'technology tourism' pilot in the Loddon Campaspe Region, showcasing manufacturing. | RDV LGA |
| Showcase local women in manufacturing to build their profile and inspire others. | Engineers Australia Ai Group Weld Australia Head Start Bendigo TECH School |

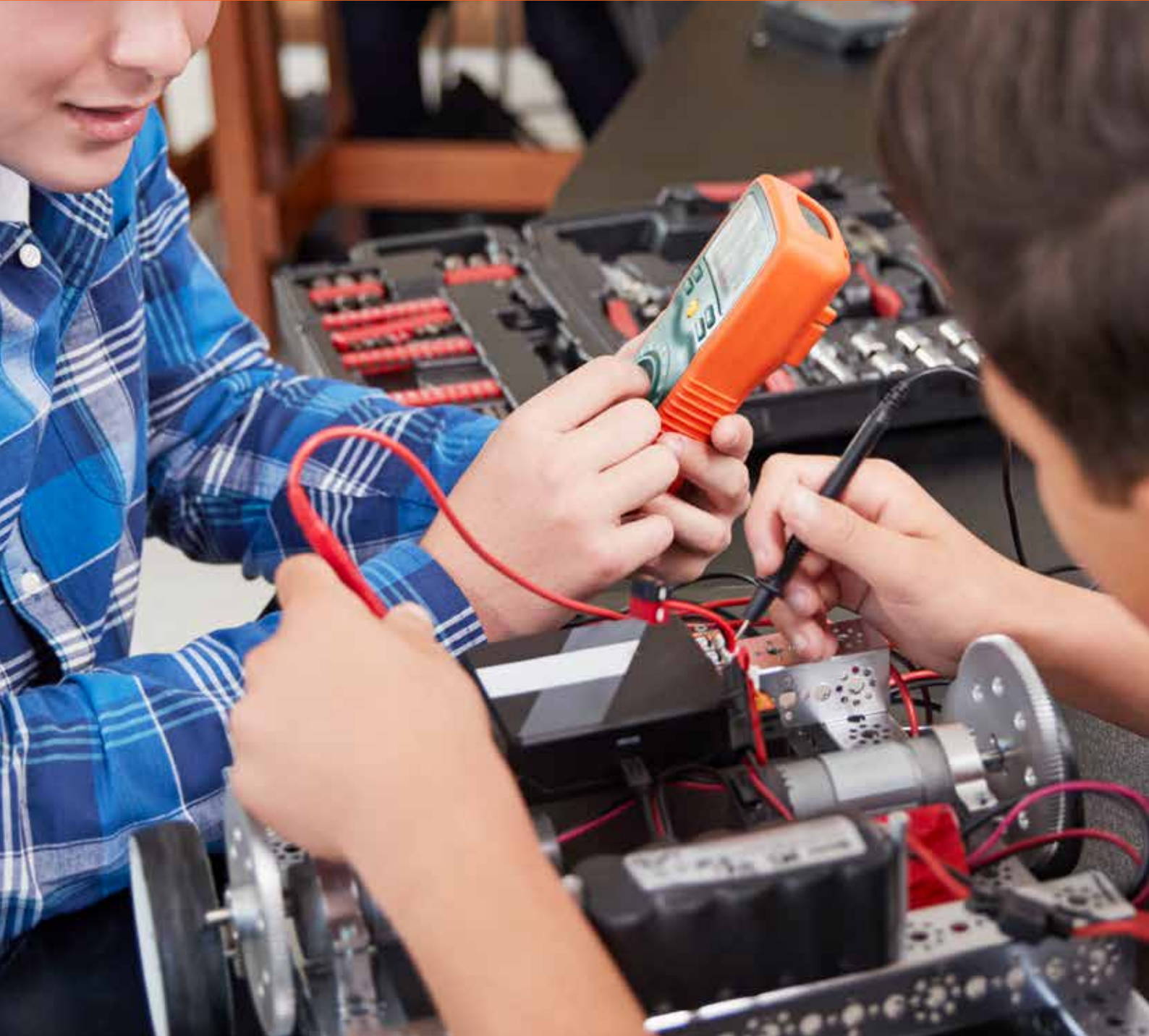
ADDRESSING THE PERCEPTION OF THE INDUSTRY INITIATIVES FOR IMPLEMENTATION

| | Strategic/ Ways of Working | Policy | Funding - New | Funding - Existing |
|---|----------------------------------|--------|------------------|-----------------------|
| INDUSTRY | | | | |
| Lead initiatives that inform students, parents and educators about the exciting careers pathways in manufacturing through a communications plan primarily based on storytelling and real-life experiences. | ✓ | | ✓ | |
| Raise the profile of the industry by a collaborative attendance at local career expos, and other major events in the region. | ✓ | | | |
| Create and lead initiatives that address misconceptions of the industry including types of jobs available within the industry, pay, conditions and hours. These would include: <ul style="list-style-type: none"> • Speaking directly to students and parents • Development of promotion materials: video, content, printed brochures etc. • Development of case studies which highlight the range of jobs available in manufacturing such as engineering, Computer Aided Design (CAD), accountants, electricians, mechanics, welders, fitters, HR, administration | ✓ | | ✓ | |
| Collaborate to promote the innovation that is taking place across the region using public facing channels. | ✓ | | ✓ | |
| Review HR Practices and ensure they align with modern practices <ul style="list-style-type: none"> • Updated job descriptions • Training and upskilling opportunities made available to employees • Pay and conditions set the business apart as an “employer of choice” | ✓ | | | |
| Invest in a co-operative approach to educate business on the benefits and strategies of providing employees with clear pathways, upskilling opportunities and “employer of choice” behaviours. | ✓ | | | |
| Create diversity in the workforce which supports, values and celebrates the contribution of women and men across the sector. | ✓ | | | |

Through the consultation process, stakeholders shared many solutions and suggestions for initiatives to support the recommendations. It's important to recognise that these initiatives are either in place, currently being implemented or are a concept which requires resourcing.

| | Strategic/ Ways of Working | Policy | Funding - New | Funding - Existing |
|---|----------------------------------|--------|------------------|-----------------------|
| EDUCATION | | | | |
| Deliver initiatives in collaboration with industry, that provide professional development opportunities for the education sector. These include visits from secondary school teachers and professional development programs for those in charge of delivery of relevant courses. | ✓ | | | |
| Invest in marketing to businesses and employees on the benefits of upskilling and training opportunities. | ✓ | | ✓ | |
| Provide initiatives that link STEAM and industry, to highlight innovation and opportunity in the sector. | ✓ | | | |
| Provide industry with a platform to share innovation, expectations and opportunities directly with teachers and students through career nights, events and collateral. | ✓ | | | |
| Profile current and alumni students, including those that have utilised a school based apprenticeships and traineeships (SBAT) pathway to promote pathways and career options within the manufacturing sector. | ✓ | | | |
| Support females to study STEAM subjects such as Advanced Mathematics, Physics, Chemistry and Design. | ✓ | | | |
| GOVERNMENT | | | | |
| Development of a regional jobs campaign highlighting: <ul style="list-style-type: none"> • Livability • Business competition • Business growth • Partner industries (manufacturing, government, health, education, building and construction) All information to be housed on a single hub for use by all industry sectors. | ✓ | | | |

SUPPORTING INDUSTRY TO DEVELOP
A HIGHLY SKILLED WORKFORCE
RECOMMENDATIONS



Employees value the opportunity to upskill and learn new technologies. Businesses who support their employees and offer training initiatives benefit from employee loyalty, efficiencies in work flow and enhanced company reputation.

For the region to develop a highly skilled workforce there needs to be an understanding of the future needs of industry and then a collective effort to align industry needs with the delivery of education.

In order to support industry to develop a highly skilled workforce the region needs to, either individually or collectively implement recommendations and initiatives:

| RECOMMENDATION | LEAD |
|---|--|
| Industry develops and implements training plans for their workforce, which addresses not only compliance and licencing requirements, but future advancements in technology relevant to their business. | BMG Engineers Australia Ai Group Weld Australia |
| Targets for an increase in new apprenticeships to be set and committed to by industry. | BMG Bendigo TAFE |
| Attract funding and provide mentorship to educate and support business on the skills and needs in the future of manufacturing and Industry 4.0. | AIG Engineers Australia TAFE Weld Australia |
| Development of a region wide graduate or traineeship program at a vocational level with a commitment from industry to hire a target number from these programs. | TAFE Australian Apprenticeship Providers DET Ai Group |
| Update Bendigo TAFE equipment to meet requirements of industry both immediately and into the future. | TAFE DET Government Weld Australia |
| Industry to attend conferences and share learnings to lift the regions knowledge and skills. | BMG RDV |
| Participate in industry led research and development activities to grow the capacity of the industry, education sector and regional reputation. Engineering R & D event held at LTU to showcase local research. | LTU Deakin University Engineers Australia |
| Lobby the Skills Commissioner to undertake work in the Loddon Campaspe Region. | LTU BMG RDV |
| Initiatives to support the attraction, settlement and retention of skilled migrants in the identified skills shortage gaps for engineering and advanced manufacturing. | LGA Industry Government |

SUPPORTING INDUSTRY TO DEVELOP A HIGHLY SKILLED WORKFORCE INITIATIVES FOR IMPLEMENTATION

| | Strategic/ Ways of Working | Policy | Funding - New | Funding - Existing |
|---|----------------------------------|--------|------------------|-----------------------|
| Industry | | | | |
| Understand the benefits of upskilling for retention and recruitment. | ✓ | | | |
| Provide their employees with inhouse training. | ✓ | | ✓ | ✓ |
| Provide employees with the support to pursue further formal qualifications. | ✓ | | | |
| Adopt industry leading HR practices. | ✓ | | | |
| Understand the future workforce in manufacturing by adopting continuous learning approach to their industry. | ✓ | | | |
| Educate employees on what the future workforce in manufacturing looks like. | ✓ | | ✓ | |
| Implement strong mentor programs to provide guidance and set expectations of work ethic, and behaviour in the work place. | ✓ | | | |
| Access the "Free TAFE for Priority Courses" for potential upskilling and adding diversity to their workforce. | ✓ | | | ✓ |
| Offer market leading re-location packages and support for recruitment from outside of the region. | ✓ | ✓ | ✓ | |
| Partner with education providers for research and development opportunities. | ✓ | ✓ | ✓ | ✓ |
| Work with education providers to provide training, research and development opportunities and partnerships. | ✓ | ✓ | ✓ | ✓ |
| Participate in professional development to better understand the current workforce, including Millennials and Gen Z. | ✓ | | | |

Through the consultation process, stakeholders shared many solutions and suggestions for initiatives to support the recommendations. It's important to recognise that these initiatives are either in place, currently being implemented or are a concept which requires resourcing.

| | Strategic/ Ways of Working | Policy | Funding - New | Funding - Existing |
|--|----------------------------------|--------|------------------|-----------------------|
| EDUCATION | | | | |
| Collaboration between VCAL, VETIS, VCE vocational and tertiary providers to provide guidance on pathways to students across all levels. | ✓ | | ✓ | ✓ |
| Develop promotional initiatives in collaboration with industry to take advantage of the large number of women taking up "Free TAFE for Priority Courses" to encourage women and diversity into the education system and workplace. | ✓ | | | |
| Training of education staff to ensure they can teach to the requirements of the latest in technology. | ✓ | ✓ | ✓ | |
| Provide businesses with professional development areas related to advanced manufacturing and the future of manufacturing. | ✓ | | | |
| Educate business on why and how research and development partnerships can benefit their business. | ✓ | | | |
| GOVERNMENT | | | | |
| Develop and publish education pathways in the sector across secondary, vocational and tertiary levels. | ✓ | | | |
| Support for targeted skilled migration to support the gap in the existing workforce | ✓ | ✓ | ✓ | |

DEVELOPING TIES BETWEEN EDUCATION AND INDUSTRY RECOMMENDATIONS

In order to strengthen ties between education and industry the region needs to, individually or collectively implement initiatives and recommendations:

| RECOMMENDATIONS | LEAD |
|--|---|
| A dedicated regionally based Engineering and Advanced Manufacturing Industry Liaison for Bendigo TAFE to cover the Loddon Campaspe region. | TAFE DET |
| Ensure course material meets the current and changing needs of industry through increased representation from industry on the Engineering Industry Advisory Board. | LTU - Lead |
| A localised marketing plan and Millennial engagement plan developed and rolled out by Bendigo TAFE and La Trobe University to promote manufacturing and engineering related courses. | TAFE LTU Skills and Jobs Centre Weld Australia |
| Bendigo Schools Trade Training Centre and VETiS to enrich their engineering programs to ensure relevance and connection to local industry and their workforce needs. | Bendigo Schools Trade Training Centre BMG TAFE Australian Apprenticeship Providers Weld Australia |
| Encourage Young Industry Ambassadors to be more public facing with targets for public and education engagement. | Industry LLEN Ai Group |
| Gain an understanding from industry on what requirements for tertiary educated employees there is in the region and gain commitment from industry to take on a targeted number of "Work Integrated Learning" students at this level. | Industry |
| Provide training and resources to Young Industry Ambassadors so that they can more effectively promote the industry. | LLEN |

The region houses a vast array of education providers and programs that educate and influence the workforce. Feedback on relationships between educators and industry varies from incredibly positive to ambivalent and negative. This relationship is seen as key to address skills needs in the region.

| RECOMMENDATIONS | LEAD |
|--|---|
| Industry funds a scholarship which targets local students who are undertaking engineering studies at a regional university. | BMG AIG Engineers Australia LTU Deakin |
| Education providers to purchase specialist equipment to develop the skills in the areas of robotics, digital technology, artificial intelligence and advanced materials and develop curriculum in collaboration with industry to ensure new areas of practice are reflected. | LTU, TAFE Industry Bendigo TECH School |
| Degrees, skills sets, short courses and work readiness programs are delivered to meet the current and emerging needs of industry. | Government LTU TAFE Industry Bendigo TECH School |
| Support TAFE to deliver pre-employment and foundation skills training, which links back to current needs of industry. | Government TAFE |
| Support opportunities for investment in research and development that leverage high value manufacturing and universities within the region. | LTU Local Government BeBendigo Deakin |
| Industry provides awards targeted at secondary school students, who excel undertaking STEAM subjects. | BMG |
| Industry, government and educational institutions to build a cooperative framework that will educate, promote and give value to the opportunities of IoT. | Bendigo TECH School LTU Deakin |

STRENGTHEN TIES BETWEEN EDUCATION AND INDUSTRY INITIATIVES FOR IMPLEMENTATION

| | Strategic/ Ways of Working | Policy | Funding - New | Funding - Existing |
|--|----------------------------------|--------|------------------|-----------------------|
| INDUSTRY | | | | |
| Regular and ongoing initiatives that educate influencers in education on manufacturing including industry tours and activities such as "Principal for a Day". | ✓ | | | |
| Increase participation from industry in existing education initiatives: <ul style="list-style-type: none"> • Bendigo TECH School • Head Start • Passions and Pathways • Structured Workplace Learning • Work Experience • Principal for a Day • W.I.L Workplace Integrated Learning | ✓ | | | |
| Engage with education providers and industry bodies to understand the education pathways available to employees. | ✓ | | | |
| Industry to engage with education providers and industry bodies to understand their options for upskilling their workforce. | ✓ | | | |
| Engage with education sector (secondary, vocational, higher education) and industry bodies to ensure that future training needs can be met by education providers. | ✓ | ✓ | ✓ | |
| Identify and support Young Industry Ambassadors to effectively promote the industry to students. | ✓ | | | |

Through the consultation process, stakeholders shared many solutions and suggestions for initiatives to support the recommendations. It's important to recognise that these initiatives are either in place, currently being implemented or are a concept which requires resourcing.

| | Strategic/ Ways of Working | Policy | Funding - New | Funding - Existing |
|---|----------------------------------|--------|------------------|-----------------------|
| EDUCATION | | | | |
| Engage with industry to bring awareness of the various offerings from education providers and education stakeholders including: SWL, SBAT, Work Experience, W.I.L, Passions and Pathways, education Industry forums etc. | ✓ | | | |
| A regional calendar of events for each school term which captures industry tours, Passions and Pathways, key speakers, course selection dates etc. for industry. | ✓ | | ✓ | |
| Development in collaboration between education providers and industry on a series of courses that provide "micro credentials" for skills such as CAD, Quality Standards and other professional development related courses. | ✓ | ✓ | | |
| Engage with industry to ensure that the future training needs of industry can be met by the education provider. | ✓ | | | |
| Ensure the existing relationship between Bendigo TECH School and industry is maintained and programs are co-designed in collaboration. | ✓ | | | |
| Explore the future delivery options for the Bendigo TECH School programs outside the current Bendigo footprint. | ✓ | ✓ | ✓ | |
| Education providers position themselves as leaders not followers in collaboration with industry through modern teaching methods. New areas of practice include robotics, digital technology, artificial intelligence and advanced materials. In addition to the traditional areas of engineering. | ✓ | | ✓ | ✓ |
| Educators participate in industry led professional development to ensure current practice is applied in the delivery of programs. | ✓ | ✓ | ✓ | |

DEVELOPING
LEADERSHIP CAPACITY
RECOMMENDATIONS



The region is home to organisations from across industry, education and government who would all benefit from working collaboratively to address the skills needs of the region.

A strong governance structure to lead initiatives and recommendations is needed to:

- build and support the growth of the industry
- ensure training provided is relevant to industry
- target the support available from government

| RECOMMENDATION | LEAD |
|--|---|
| Implement a suitable governance structure using existing working groups where possible to have oversight of the implementation of the initiatives and recommendations in this Road Map. | BMG RDV C4EM LGAs C4EM Industry BeBendigo Ai Group Skills and Job Centre Bendigo TAFE |
| Implement progress measures to evaluate effectiveness of initiatives. | Regional Steering Group |
| Share data between education providers and industry to inform future workforce planning. Data is used to inform ongoing and new initiatives. | DET Department of Employment, Skills, Small and Family Business RDV |
| Government to facilitate information about initiatives such as Local Jobs First – Victorian Industry Participation Policy and the Industry Capability Network so that industry can be workforce ready. | RDV Industry Capability Network Local Jobs First Commissioner |
| Undertake a future workforce skills analysis for the region to understand the needs of industry and how education can respond. | DET - Skills Commissioner Regional Development Australia RDV |

DEVELOPING LEADERSHIP CAPACITY RECOMMENDATIONS

| | Strategic/ Ways of Working | Policy | Funding - New | Funding - Existing |
|--|----------------------------------|--------|------------------|-----------------------|
| INDUSTRY | | | | |
| The BMG is poised to take a key leadership role in the implementation of the initiatives within this Road Map. In order to do this effectively a dedicated resource is needed to successfully drive this agenda. | ✓ | | ✓ | |
| The BMG to take measures to be representative of the broader manufacturing and engineering businesses in the region. | ✓ | | ✓ | |
| The BMG to expand their membership base and be inclusive of businesses from surrounding regions. | ✓ | | ✓ | |
| EDUCATION | | | | |
| Take ownership of collectively managing the student's pathways from school to vocational and tertiary. | ✓ | | | |
| Take a leadership role in teaching the workers of the future and what that means in collaboration with industry. | ✓ | | | |
| Careers Advisors are informed of options and opportunities within the local setting. | ✓ | | | |

Through the consultation process, stakeholders shared many solutions and suggestions for initiatives to support the recommendations. It's important to recognise that these initiatives are either in place, currently being implemented or are a concept which requires resourcing.

| | Strategic/ Ways of Working | Policy | Funding - New | Funding - Existing |
|--|----------------------------------|--------|------------------|-----------------------|
| GOVERNMENT | | | | |
| To support the initiatives and recommendations outlined in this Road Map where possible. | ✓ | ✓ | ✓ | ✓ |
| Ensure that all relevant local business and industry groups as well as relevant LGA's are working together on infrastructure, funding needs, promotion and employment and training targets. Representation from: <ul style="list-style-type: none"> • BMG, BeBendigo, C4EM, Committee for Maryborough and LGA's | ✓ | | | |
| Gather business intelligence on industry skills needed to create a relevant workforce. | ✓ | | | |
| Facilitate collaboration between industry, professional associations and education. | ✓ | | ✓ | |
| Government to provide early stakeholder engagement for large scale contracts to allow business to plan, train and invest in their workforce so they can be prepared and competitive for the tender process. | ✓ | ✓ | | |

DEVELOPING LEADERSHIP CAPACITY



- » Regional Development Australia
- » Loddon Campaspe Regional Partnership
- » Investment and Trade
- » Economic Development



- » Provide Secretariat to the BMG / Advocacy
- » Regional Sustainable Development Unit
- » Employment and Innovation Corridor
- » Migration



- » Boost Your Business vouchers
- » Jobs Victoria Employment Network
- » Local Jobs First - Victorian Industry Participation Policy (VIPP)
- » Policy



- » Professional Development
- » Industry Peak Professional Body



- » Skills Commissioner
- » Workforce Training Innovation Fund
- » Regional and Specialist Training Fund
- » Free TAFE for Priority Courses
- » Policy and Advisor
- » Bendigo Education Plan – Business and industry working Group



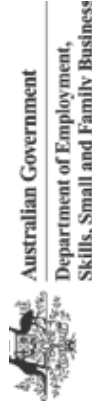
- » VET in Schools
- » School Based Apprenticeships
- » VCAL
- » Work Experience
- » Bendigo Schools Trade Training Centre
- » VCE
- » Structured Workplace Learning



- » Industry Leadership
- » Linking Education and Industry
- » Regional Advocacy
- » Sponsor Workforce Development
- » Identify future workforce requirements



- » Advocacy
- » Business Support



- » Employment
- » Skills and Training
- » Workforce Data and Analysis



BENDIGO TECH SCHOOL

- » Professional Development
- » STEAM Curriculum
- » School Ambassadors
- » GIRLS in STEM
- » Virtual Work Experience
- » Design Thinking



- » Skills and Jobs Centre
- » Engineering Qualifications
- » Free TAFE for Priority Courses
- » Welding / Virtual Reality Training
- » Industry Collaboration
- » Workforce Readiness Programs



- » Workforce Development Needs
- » Advocacy & Influence
- » Regional Manufacturing Cluster
- » Apprenticeships
- » Business Services



- » Work Integrated Learning
- » Research and Development

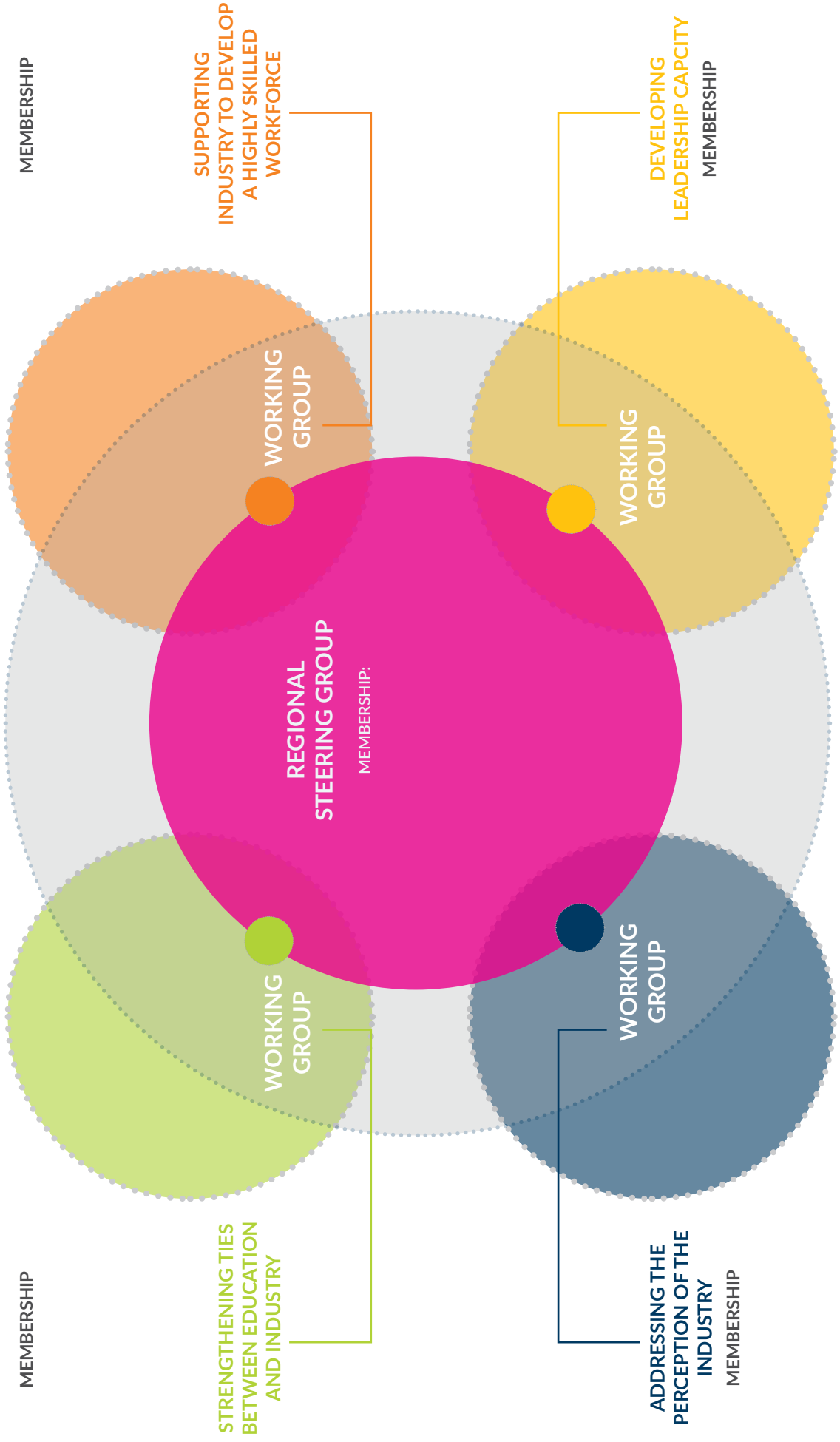


- » Civil and Industrial Engineering delivered in Bendigo
- » Work Integrated Learning - WIL
- » PHD places in Engineering
- » Research
- » Business Development Manager for Engineering

BE. BENDIGO

- » GROW program
- » Advocacy

DEVELOPING A GOVERNANCE STRUCTURE



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