



**Process Manufacturing, Recreational Vehicles and
Laboratory Industry Reference Committee (IRC)**

**MSL Laboratory Operations Training
Package**

Case for Change

November 2017

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Prepared on behalf of the Process Manufacturing, Recreational Vehicles and Laboratory IRC for the Australian Industry Skills Committee (AISC)

**Process Manufacturing, Recreational Vehicles and Laboratory Industry Reference Committee
Case for Change November 2017**

This Process Manufacturing, Recreational Vehicles and Laboratory Industry Reference Committee *Case for Change* has been produced with the assistance of funding provided by the Commonwealth Government through the Department of Education and Training.



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Administrative Information

Name of Industry Reference Committee (IRC)

Process Manufacturing, Recreational Vehicle and Laboratory Industry Reference Committee (IRC)

Name of Skills Service Organisation (SSO)

Innovation and Business Skills Australia (IBSA) Manufacturing

Name of the Training Package(s) examined to determine change is required

MSL Laboratory Operations Training Package

Brief description of how the case for change was developed

This Case for Change was developed by the Process Manufacturing, Recreational Vehicle and Laboratory Industry Reference Committee, based on an industry proposal received from the Queensland Department of Education and Training, and informed by evidence based research. Feedback was considered from a select group of key stakeholders that were directly contacted via phone. The Case for Change was developed having regard for the Training Package Development and Endorsement Process Policy and provides robust evidence to support AISC's decision making process.

This Case for Change is to undertake broader scoping activities, consultation and analysis of the MSL Laboratory Operations Training Package to determine the required skills and knowledge for work in the bio sector. The MSL Laboratory Operations Training Package products listed in Schedule A are proposed for development and review in this Case for Change and include the following:

Qualifications

- MSL30116 Certificate III in Laboratory Skills
- MSL40116 Certificate IV in Laboratory Techniques
- MSL50116 Diploma of Laboratory Technology
- MSL60116 Advanced Diploma of Laboratory Operations

It provides evidence of the need to review four qualifications, with the potential to develop new units of competency, in the MSL Laboratory Operations Training Package to meet industry needs. It is estimated that at this stage in our consultation six (6) new units will be developed.

The case for change

Drivers for change and evidence

With the rise in global energy demand, the importance of biofuels and bioenergy as alternative energy sources has grown significantly. Australia's current installed bioenergy generation capacity significantly lags the OECD average, and delivering on this market potential will leverage Australian strengths in

research and development, agriculture, water and land, and provide significant rural and regional jobs, firm renewable electricity, renewable heat and gas and biofuels.¹

In the United States and Europe, the bioenergy industry is significantly developed and they both have renewable energy and biofuel targets. In the United States, energy independence and fuel security have been key drivers of recent biofuels activity, whereas Europe has placed a greater focus on emission reduction goals.² In 2013, biomass and waste accounted for almost a quarter of the Swedish energy supply.³

Australia's biofuel's policy sits at the intersection of energy, environmental and regional development policies and as a result should not be viewed in isolation.⁴ Developments with these renewable energies offer economic benefits to regional communities.⁵

The Commonwealth government funds the *Clean Energy Finance Corporation (CEFC)* and the *Australian Renewable Energy Agency (ARENA)* to support jobs and innovation through investment in clean and renewable energy in Australia. The Clean Energy Finance Corporation (CEFC) has created a \$100 million dedicated fund for bioenergy projects – *the Australian Bioenergy Fund* – in recognition of the significant potential for bioenergy to contribute to renewable energy, biofuels and carbon emissions. ARENA has funded developments (\$2.65 million) in bio fuels including Northern Oils Advanced Bio Fuels laboratory, Southern Oil Refining Pty Ltd (Southern Oil Refining or SOR)⁶

This bio sector focus' on the manufacture of products from sustainable organic and/or waste resources into a diverse range of bioproducts such as sustainable chemicals, fuels, synthetic rubber, cosmetics, detergents and textiles. Innovative scientific and industrial technologies create bioproducts which are renewable and provide environmentally beneficial alternatives to existing conventional chemical and fossil fuel refining processes.⁷

Recognising this, the *Australian Renewable Energy Agency (ARENA)* has invested in an advanced biofuels laboratory being built near Gladstone in southern Queensland by Southern Oil Refining. This pilot plant will use biomass material such as sugarcane bagasse and prickly acacia as feedstock for the production of bio crude oil, which will be refined into saleable kerosene and diesel products.

¹ <https://www.cefc.com.au/where-we-invest/bioenergy.aspx>

² LEK Consulting (2011) *Advanced Biofuels study*

³ Ericsson, K & Werner, S (2016) *The introduction and expansion of biomass use in Swedish district heating systems* Science Direct.

⁴ LEK Consulting (2011) *Advanced Biofuels study*

⁵ Ernst Young (2012) *Fuelled for growth: Investing in Victoria's biofuels and bioenergy industries*

⁶ <https://arena.gov.au/projects/northern-oil-advanced-biofuels-laboratory/>

⁷ State of Queensland, Department of State Development (2016)

Queensland Advanced Manufacturing – 10-Year Roadmap and Action Plan– December 2016

The development of the industrial biotechnology and bioproducts sector is a priority for the Queensland Government and reflected in its Biofutures Roadmap.⁸ It is projected to help create thousands of jobs and a new high-value, knowledge-intensive industry in Queensland and Australia, particularly in rural areas and regional centres. It encompasses a spectrum of innovative scientific and industrial technologies designed to convert sustainable grains, feedstocks and waste into a diverse range of by-products. Agriculture, plantation forestry, algae, organic and carbon-rich 'waste' streams could all be used as feedstocks and energy in the future.

A bio refinery is being established at Mackay with financial assistance from the Queensland government. This planned commercial-scale facility would have capacity to annually produce up to 26,000 tonnes of soymeal, 2000 tonnes of yeast products for the animal feed market and 15 mega litres of biodiesel suitable for heavy transport industries.

Queensland and NSW have mandates on bio fuel. Queensland has a bioethanol mandate that starts at 3% and increases over time, and a biodiesel mandate of 0.5%. In NSW, a 6% ethanol mandate has been in place for some time, but as it currently provides exemptions only about 2.5% ethanol is blended into the fuel mix.⁹

The biofuel industry has created jobs, particularly in Queensland where two ethanol plants are operating. The United Plant at Dalby is currently at capacity and is considering further expansion which will create jobs. The Wilmar Plant at Sarina, near Mackay also supports the sugarcane industry.¹⁰

The Clean Energy Finance Corporation (CEFC) suggest that the energy from the waste market has considerable potential. NSW, Western Australia, Victoria, South Australia and the ACT are all developing facilities to convert waste. The CEFC supports projects from waste companies and councils who wish to develop energy from waste products.¹¹ Most states have energy from waste guidelines.¹²

The domestic aviation sector remains the major driver for developing the biofuels sector in Australia, with demand from the aviation industry to supply 5% of its domestic fuel use from biomass by 2020.¹³

The *Australian Renewable Energy Training and Workforce Strategy for 2020* found that "too few undergraduate courses that cover renewable energy technologies are currently available." *Renewable Energy Jobs in 2009 and Forecasts to 2020* shows 65 companies across Australia and 1,155 employed,

⁸ <http://statedevelopment.qld.gov.au/industry-development/biofutures.html/>

⁹ Bell, G & De Jong, E 2016 *What is Australia's biofuel future?* <http://www.ecogeneration.com.au/what-is-australias-biofuel-future/>

¹⁰ <http://biofuelsassociation.com.au/>

¹¹ <https://www.cefc.com.au/where-we-invest/bioenergy.aspx>

¹² CEFC (2016) Energy from waste in Australia: a state-by-state update.

¹³ Murphy, H. T., O'Connell, D. A., Raison, R. J., Warden, A. C., Booth, T. H., Herr, A., ... & Mclvor, J. G. (2015). Biomass production for sustainable aviation fuels: a regional case study in Queensland. *Renewable and Sustainable Energy Reviews*, 44, 738-750.

not including downstream jobs. Bioenergy current employment intensity in Australia is higher than the international averages.

Recommended Changes

This Case for Change is to undertake broader scoping activities, consultation and analysis of the MSL Laboratory Operations Training Package to scope the required skills and knowledge by:

- reviewing the following qualifications against the scope of laboratory operations requirements in biofuel and biomass to identify gaps:
 - MSL30116 Certificate III in Laboratory Skills
 - MSL40116 Certificate IV in Laboratory Techniques
 - MSL50116 Diploma of Laboratory Technology
 - MSL60116 Advanced Diploma of Laboratory Operations
- identifying if discreet units need to be developed or current units can be modified
- identifying what type of skills sets are required to support the full range of job role in this emerging area
- identifying which qualifications are particularly related to the requirements in this sector.

Industry support for change

Stakeholder Consultation

Feedback was gained through a targeted consultation process:

- An interview protocol was prepared with information on the project and a series of questions that covered current context in the bioenergy industry; the drivers for change; identification of changes needed in the qualifications and any issues or risks in not addressing this industry need.
- A series of interviews, with structured questions were held to provide industry intelligence on the skills needs, workforce directions and industry trends.

Key individual and group stakeholders, as identified by the IRC and the Queensland Department of Education and Training, were consulted during development of this Case for Change in October and November 2017 are detailed in Attachment B.

IBSA Manufacturing has actively engaged with all State and Territory Training Authorities (STAs). STAs had two weeks, from 22 November to 6 December, to review and provide feedback on the Case for Change. There were no objections from STAs to the Case for Change or the proposed training package development and review work.

The IRC supports further research and job analysis in this emerging industry in order to identify the required skills and knowledge to be included into the MSL Laboratory Operation Training Package.

Overview of the issues identified by stakeholders

Currently, there is a great deal of activity in the bio-energy sector in Queensland. Companies from Victoria and NSW are setting up in Queensland and biofuel testing from South Australia has to be sent to Queensland, as there is no facility in SA. The renewable energy sector requires well trained personnel as more standards are being applied. Federal government regulations apply to the quality of petrol and diesel fuel in Australia.

Consultation undertaken by the Queensland Department of Education and Training, with a number of companies representing sugar milling, abattoir operations, ethanol manufacturing and bio-diesel trials has identified that current training in laboratory qualifications is not producing workers with the desired skills and knowledge in testing, sampling, analysis and interpretation of results. IBSA Manufacturing has undertaken further industry consultation to investigate training requirements in the new and emerging areas related to the renewable and sustainable energy sector, in bio-fuels and bio-processing of waste and agricultural products.

Initial research indicates that training in these areas should encompass the broader area of laboratory operations work in the bioenergy field with the subsets of biofuels and biomass. Bioenergy is a renewable energy derived from biological sources or waste and produces gaseous fuels to generate electricity and heat, or liquid fuels for transport.

Sensitivities

This is a relatively new and emerging area, and currently quite concentrated in Queensland. However, it is expected that there will be considerable growth across Australia in the future.

Impact of change

Impact of recommended changes on stakeholders

This work is a priority area as it is an emerging industry need and no training currently exists. There is a particular need in Queensland where the industry is being established with federal and state government incentives.

Impacts of Risks of not implementing the changes

Stakeholders were concerned about recruiting difficulties in regional areas (where bio-energy plants are located), and significant loss of quality within the sector as a result of inadequately skilled workers. The Queensland ITAB regarded this as a particular problem in the future because of the location and growth of facilities in remote locations. Bioenergy organisations, such as the Northern Advanced Biofuels Laboratory and the United Dalby Bio-Refinery, are employing graduates with VET qualifications.

Estimated timeframes

- The recommended time to complete review and redesign work on the five qualifications is 12 months to the time of submission for endorsement.
- The review and redesign work will follow the stages of project scoping, industry consultation, technical development, validation, quality check and endorsement. Should new components be required for development, these will be informed by a Technical Advisory Committee consisting of members selected by the Process Manufacturing, Recreational Vehicles and Laboratory IRC.

Implementing the COAG Industry and Skills Council (CISC) reforms for Training Packages

This Case for Change will implement the CISC reforms to the Training Package System as follows:

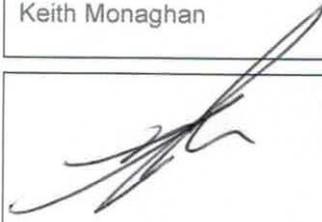
- **removing obsolete and superfluous qualifications from the training system to make it easier for consumers to find the training relevant to their needs:**
 - The proposed work builds on existing qualifications to meet the demands of the emerging bio sector.
- **making more information available about industry's expectations of training delivery to training providers to improve their delivery and to consumers to enable them to make more informed course choices:**
 - Feedback suggests that currently there are no specific training package products that meet the demands of industry so development of new components will specify industry's expectation for workers in this sector.
- **ensuring the training system better supports individuals to move easily from one related occupation to another:**
 - The proposed work builds on existing qualifications, so there will be increased portability of skills across the laboratory sector.
- **improving the efficiency of the training system by creating units that can be owned and used by multiple industry sectors and housing these units in a 'work and participation bank':**
 - Existing components will be reviewed to ensure any new components do not duplicate existing components.
- **fostering greater recognition of skill sets:**
 - There could be consideration to development of a skill set in this area.
- **ensuring that accredited courses 'fill the gap' in training packages and provide for training courses to be developed as quickly as industry needs them and support niche skill needs:**
 - This Case for Change does not relate to accredited courses.

This Case for Change was agreed to by the Process Manufacturing, Recreational Vehicles and Laboratory IRC

Name of Chair

Keith Monaghan

Signature of Chair



Date

24/11/17

IRC Signoff

This IRC Skills Forecast and Proposed Schedule of Work was agreed as the result of a properly constituted IRC decision and was approved by the Chair, Keith Monaghan in November 2017.

Attachment A: Training Package components to change

Innovation and Business Skills Australia – Manufacturing

Contact details: Antoinette Hewitt, IBSA - Manufacturing

Date submitted: November 2017

Training Package Code	Training Package Name	Product Code	Product Name	IRC Name	Review status	Change Required
MSL	Laboratory Operations	MSL30116	Certificate III in Laboratory Skills	Process Manufacturing, Recreational Vehicle and Laboratory Reference Committee (IRC)		Broader scoping, consultation and analysis to determine required skills and knowledge for bioenergy
MSL	Laboratory Operations	MSL40116	Certificate IV in Laboratory Techniques	Process Manufacturing, Recreational Vehicle and Laboratory Reference Committee (IRC)		Broader scoping, consultation and analysis to determine required skills and knowledge for bioenergy
MSL	Laboratory Operations	MSL50116	Diploma of Laboratory Technology	Process Manufacturing, Recreational Vehicle and Laboratory Reference Committee (IRC)		Broader scoping, consultation and analysis to determine required skills and knowledge for bioenergy
MSL	Laboratory Operations	MSL60116	Advanced Diploma of Laboratory Operations	Process Manufacturing, Recreational Vehicle and Laboratory Reference Committee (IRC)		Broader scoping, consultation and analysis to determine required skills and knowledge for bioenergy

Attachment B: Stakeholder Consultation Method and Scale

Name of Stakeholder	Title Organisation	Detail method(s) and Scale of Consultation
Shahana McKenzie	Bioenergy Australia	Situated in ACT, Key contributor to draft Case for Change
Heather Bone	Bioenergy Australia	Situated in ACT, Key contributor to draft Case for Change
Gavin Hughes	Biofuels Association of Australia	Situated in NSW, Key contributor to draft Case for Change
Bradley Siddans	Oakley Beef Export, NH Foods	Situated in QLD, Key contributor to draft Case for Change
Ben Tabulo	Southern Oil Refineries	Situated in NSW, Key contributor to draft Case for Change
David Schaller	Northern Advanced Biofuels Laboratory, Northern Oil Refinery	Situated in QLD, Key contributor to draft Case for Change
Brett Kuskopf	Ethanol production company, United Dalby Bio-Refinery	Situated in QLD, Key contributor to draft Case for Change
Heng Ho Wo	Queensland University of Technology	Situated in QLD, Key contributor to draft Case for Change
Wendy Hughes	MSF Sugar	Situated in QLD, Key contributor to draft Case for Change
John Lockhart	Bio Processing Australia	Situated in NSW, Key contributor to draft Case for Change
Morgan Hunter	SA Biofuels	Situated in SA, Key contributor to draft Case for Change
Stelios Liberatos	Wilmar Ethanol Plant	Situated in Vic, Key contributor to draft Case for Change
Sam Nicolosi	QMISolutions	Situated in QLD, Key contributor to draft Case for Change
Darryl Outhwaite	WA Biofuels	Situated in WA, Key contributor to draft Case for Change
Mitch Lever	WA Biofuels	Situated in WA, Key contributor to draft Case for Change