

# Development of an engineering maintenance training strategy

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## 1.0 EXECUTIVE SUMMARY

Research was undertaken by AMPC in 2014-15 which identified a need for cross-trade accredited training in the area of engineering maintenance occurred. Subsequent investigation was undertaken by MINTRAC during the 2015 and 2016 network meetings which confirmed a strong interest in further development of appropriate training.

This project proposed that MINTRAC build on and bring to fruition the development of a suitable careers pathway and training solution to the needs and issues identified in the previous AMPC research.

From the project the following resources have been developed:

- ) Enterprise implementation strategy for the delivery of training to engineering maintenance personnel
- ) Trainer development program for the delivery of training to engineering maintenance personnel
- ) Guide to maintenance training in the meat processing industry trainer manual
- ) Case study: A typical day for a maintenance manager
- ) Draft training video: Maintenance training essentials

The resources developed provide information and advice to enterprises and RTOs so that they may better understand training pathways available and training strategies that are best suited to engineering maintenance staff.

Well trained maintenance staff with a sound understanding of the meat processing industry may work more efficiently and reduce downtime.

Training and development of engineering maintenance staff may assist with employee recruitment and retention within this section of the workforce. The resources may also be useful in helping identify pathways for employees into a maintenance role from other areas of processing.

The following recommendations are made at the end of this report:

- ) Recommendation 1 – completion of the draft training video
- ) Recommendation 2 – development of a second video focusing on career options in engineering maintenance departments

## 2.0 INTRODUCTION

Following research undertaken by AMPC in 2014-15, a need for cross-trade accredited training in the area of engineering maintenance occurred. Subsequent investigation was undertaken by MINTRAC during the 2015 and 2016 Network meetings which confirmed a strong interest in further development of appropriate training.

In December 2014 MINTRAC developed the concept of developing a series of new qualifications, to be incorporated into the Australian Meat Industry Training Package, to cover the skills development needs of engineering maintenance staff. The concept incorporated the development of a training pathway suitable for both qualified tradespersons and trades assistants, with an emphasis on gaining a skill set which addresses the range of engineering skills required in the meat processing industry, as

well as an awareness and understanding of the meat processing industry in terms of food safety, quality assurance, workplace safety and other considerations specific to the industry.

Feedback from the concept paper presented to the first round of 2015 meetings indicated a keen interest in the development of training in this area.

This project thus proposed that MINTRAC build on and bring to fruition the development of a suitable careers pathway and training solution to the needs and issues identified in the previous AMPC research.

### **3.0 PROJECT OBJECTIVES**

This project sought to achieve the following objectives:

- // fully investigate the need for industry-specific training for meat processing maintenance personnel
- // develop draft qualifications and units to address those needs
- // identify and develop suitable resources
- // develop an implementation model for future adoption by RTOs.

### **4.0 METHODOLOGY**

The MINTRAC Networks acted as the Industry Technical Reference Groups overseeing this development. The overall process for development of qualifications was to be overseen by the Meat Processing Industry Reference Group, a group formally constituted and which reports to the Australian Industry Skills Committee which oversees the management of all Australian Training Packages. Discussions with AMPC had also determined that a Technical Advisory Committee was required and this was established as well.

MINTRAC proposed to undertake the following activities:

- Develop draft qualifications and Units of Competency, undertake consultation with industry and prepare final qualifications for accreditation.
  - / Draft qualifications will be developed and will go to the Engineering and Training networks during 2017-18.
  - / Units will be identified and/or developed and distributed for consultation during 2017-18.
  - / An industry validation meeting will be held in mid-2018.
  - / A Case for Endorsement will be prepared after the completion of the project, and according to the schedule approved and set by the Australian Industry Skills Committee (note that the industry does not have control over the endorsement process or timing).
- Develop a training implementation strategy.
  - / An implementation strategy will be developed in consultation with the Engineering Network and interested RTOs.
  - / Strategies investigated will include on-line learning strategies, suitability for Traineeships and Apprenticeships, proportion of on- and off-job training, suitability of combining with other food processing industries etc.
- Develop trainer and RTO expertise to deliver the qualifications

- / A review of current and future trainer expertise will be undertaken and gaps and needs identified.
- / A minimum of three RTOs will be assisted to develop suitable expertise in order to place the qualifications on their scope of registration.
- Develop suitable training and assessment support materials.
  - / A consultant with maintenance engineering expertise will be engaged to undertake a review of current existing training and assessment support materials which could be adapted for the qualifications.
  - / The consultant will develop suitable training and assessment materials where no materials already exist.
  - / Training support materials will include a mix of written and audio-visual materials.

### First milestone stage

During this stage a significant amount of research, review and industry consultation was conducted. Existing training qualifications and units were reviewed as well as training and assessment resources to determine the training needs of engineering maintenance staff. Consultation was undertaken with red meat engineering personnel in five NSW plants and one Victorian plant to confirm the main maintenance areas for training pathways, the qualifications structure and relevant existing units of competency which may could be customised or if the development of new units was required.

The comments very much affirmed the areas previously identified in AMPC and MINTRAC research and consultation prior to the project's commencement. These included meat industry plant and process skills, generic skills such as basic problem solving and root cause analysis, specific technical skills in respective trade areas particularly advanced skills related to technology, cross trade skills, as well as leadership, management, teamwork and communication skills. Direct consultation with maintenance staff made it apparent that team work, organisational and communication skills are very important in this role. Consultation with plant and training managers indicated that production knowledge, food safety and a basic understanding of quality assurance requirements regarding meat processing was also important and often lacking when people first started in their role. There were also several comments regarding employees' attitudes and motivation – it could be argued that the functionality of many maintenance departments can be affected by how organised or disorganised their maintenance staff are.

Draft qualifications were developed at this stage, and three units of competency proposed for development. These were also reviewed in the consultation phase and generally confirmed as covering the tasks and roles of trades assistants, tradespersons requiring cross trade training and supervisors. The information was intended to form the basis of the case for change for development of the qualifications which included:

- ) Certificate II in Meat Processing (Maintenance) – designed for trades assistants and new workers
- ) Certificate III in Meat Processing (Maintenance) – designed for more experienced maintenance workers
- ) Certificate IV in Meat Processing (Maintenance) – designed for supervisors and managers.

The units proposed for development included:

- ) Operate an industrial robot safely in a production environment
- ) Diagnose faults, maintain and service an industrial robot safely in a production environment
- ) Program an industrial robot in a production environment

## Second milestone stage

Because any changes made to a national Training Package falls under the authority of the federal government, the development of qualifications and units occurred concurrently with this project. The decision about the structure of the qualifications to be adopted rested with the Meat Industry Reference Committee (IRC) which makes recommendations to the Australian Industry Skills Committee for any new developments to be undertaken. A Case for Change for the development of new qualifications was submitted to the Meat IRC for approval, however this was not approved and the Committee asked MINTRAC to explore alternative options. These options include the possibility of utilising an already existing Certificate II, and developing Skills Sets. This meant that the development of the proposed maintenance specific AMP Training Package qualifications and units would not be going ahead as had been planned.

The main focus of the AMPC project continued to be in developing a draft training strategy and trainer development program to support whatever qualification pathways would be determined as suitable for engineering maintenance personnel.

From the research and consultation undertaken, as well as the current situation of uncertainty around what exactly will be developed in terms of endorse training products (i.e. qualifications, units and skill sets), we have determined that a trainer resource, or manual, should be developed to support the implementation of training and assessment programs within the meat processing industry. It was also determined that a consultant or organisation with experience in trade training and an understanding of maintenance functions would be the best entity to assist in developing this resource. To this end Gary Brown from Rising Teams was engaged to provide technical advice and assistance in the development of the resources. Gary has a significant amount of experience and skills in trade and maintenance areas as well as the meat processing sector – having worked at Teys for many years in maintenance supervisor and training manager position and is also a qualified tradesperson in his own right.

## Third milestone stage

The Meat Industry Reference Committee had requested that MINTRAC explore alternative options to developing meat industry specific qualification, which MINTRAC did and presented alternatives to the IRC. The IRC met on 19 June and considered the information presented on the suitability of an existing Certificate II in Engineering and a range of existing skill sets and confirmed at this meeting their decision that there was no need to develop new qualifications or skill sets.

The main focus of the AMPC project continued to be in developing training strategies and resources for engineering maintenance personnel and developed a draft training strategy, trainer development program and a trainer resource manual. The training strategy supported the delivery of the Certificate II in Engineering qualification to trades assistants and new workers and provided examples of how meat industry electives could be incorporated in several different ways to make the qualification meat processing specific. For qualified tradespersons, more experienced maintenance personnel and maintenance supervisors a range of skill sets from the AMP Australian Meat Processing Package and other packages were presented covering the different aspects of maintenance functions.

A validation of these draft resources was conducted via webinar in June 2018 with a group of technical and training experts. Feedback from two further webinars were scheduled in August for the professional development of trainers intending to work with maintenance personnel now or in the future and who were interested in learning more about the materials. It was also determined during this stage to include the addition of a case study along the lines of 'a day in the life of a maintenance

manager' and a proposal to develop a short training video along a similar vein to the very popular and recently released AMPC Meat Industry Essentials series.

#### **Fourth milestone stage**

During this stage the trainer webinars were held. These were facilitated by Sharon Fitzgerald from MINTRAC and Gary Brown from Rising Teams who had been engaged as a consultant for the development of the materials. The same webinar was held on two occasions and both were well attended and interactive. The topics covered were a brief overview of the project, typical roles and responsibilities of meat processing maintenance staff, key skill and knowledge requirements for maintenance workers, training methods and strategies, and information on how trainers can use the project products in their training and assessment practices.

The draft materials were amended to include feedback from the initial validation and to format them into a publishable form. They were then validated by the technical advisory group for a second time, with positive feedback received and no changes recommended.

A draft training video was developed from a mix of existing footage from other the other Meat Industry Essentials videos and new maintenance-specific footage obtained from a plant in NSW. However, this draft requires significant editing before it will be suitable for release as a training product.

## **5.0 PROJECT OUTCOMES**

The following materials have been developed as a result of this project and are included as appendices to this report.

### **Enterprise implementation strategy for the delivery of training to engineering maintenance personnel - final draft (Appendix 1)**

This resource provides maintenance training implementation information and advice to industry. It will provide information to companies who want to start putting in place a training program for their maintenance staff. The strategy provides an overview of the maintenance function, possible training pathways, selecting training programs and providers, funding opportunities, and how workplaces can support students.

### **Trainer development program for the delivery of training to engineering maintenance personnel – final draft (Appendix 2)**

This document provides development information and recommendations for trainers who want to deliver training to maintenance staff and covers development options for trainers with meat industry experience who need to upskill in the maintenance training area, and for trade trainers who may need to gain a deeper understanding of the meat processing industry. It includes options for knowledge development such as reading, research and webinars, as well as practical options such as gaining hands-on experience in the production or maintenance environments in a plant.

A key feature of this program is the recommendation for a team teaching approach, and importance of providing trainers with plant tours to help them to become familiar and comfortable with the meat processing environment.

### **Guide to maintenance training in the meat processing industry trainer manual – final draft (Appendix 3)**

This training manual is intended to be used by trainers and RTOs to develop a deeper understanding of the maintenance function, key tasks undertaken by maintenance workers in a plant, and the key training priority areas of the industry. Information from the manual can also be modified by training providers and used as learning resources for students.

#### **Case study: A typical day for a maintenance manager – final draft (Appendix 4)**

This was developed to be used by trainers and enterprises. It is designed as a training tool which can be used to with new employees (in both maintenance and production areas), and even experienced people who have worked in production areas for a long time and may not have necessarily understood the perspective of maintenance.

#### **Draft training video: Maintenance training essentials**

The first draft of a short video designed to align with the AMPC training essentials series has been completed. The script and footage were developed by Anvil Media, MINTRAC provided the key themes and points to be included in the content. The draft video covers introductory maintenance information such as key task, roles and responsibilities as well as core meat industry areas such as workplace health and safety, food safety and quality, team work and communication, and hygiene and sanitation. It should be noted that this is a draft only at this stage and needs significant editing and additional footage before being suitable for publication.

## **6.0 DISCUSSION**

The project was successful in confirming and building on the research conducted in 2014-15 regarding training needs for engineering maintenance personnel working in the red meat industry. These included the need for cross-trade skills and knowledge across different maintenance areas; general understanding of the meat industry in terms of production requirements, workplace health and safety, quality and food safety standards and hygiene and sanitation. They also included more generic skills like being organised, communicating with others, and working in a team. These needs were found to be at all levels – trade assistant, qualified tradesperson, and supervisor, though each group had slightly different skill and knowledge gaps and priorities.

For trades assistants in particular there was no qualification in the AMP Training Package and no qualification identified yet from any other package suitable for those who did not want to undertake a trade or who may be undecided about which trade they would like to do. Tradespersons who already had a qualification in one particular field such being a qualified electrician, had gaps related to working specifically in the meat industry – they may have been employed after having worked in non-food industries, but also lacked skills and knowledge in other maintenance tasks that would allow them to assist on other jobs such as fitting and turning. Supervisors may also hold qualifications, trade or otherwise, but might require management and organisational skills.

Initially the three new qualifications with a maintenance stream or specialization for these three levels of maintenance staff were proposed for development. For example, *Certificate II in Meat Processing (Maintenance)* for trades assistant, *Certificate III in Meat Processing (Maintenance)* for tradesperson/experienced staff, and *Certificate IV in Meat Processing (Maintenance)* aimed at maintenance supervisors and managers.

As the project progressed and the case for change for these qualifications was developed and consultation undertaken, other options came to light and were further explored. Ultimately the decision was made that it was not necessary to develop new qualifications because there were

suitable product from other Training Packages already available for use – specifically a Certificate II in Engineering from the Metal and Engineering Training Package, and a wide range of skill sets from a range of other Training Packages. These products, and information on how they could be used in the meat processing industry were then developed into an enterprise training implementation strategy.

From the beginning the project objective had been on the development of a training strategy and resources to support this, and this continued to be the focus as the project progressed. These resources have been outlined in detail in the previous section. They have been validated by industry and training experts.

The resources developed provide information and advice to enterprises and RTOs so that they may better understand training pathways available and training strategies that are best suited to engineering maintenance staff.

Well trained maintenance staff with a sound understanding of the meat processing industry may work more efficiently and reduce downtime.

Training and development of engineering maintenance staff may assist with employee recruitment and retention within this section of the workforce. The resources may also be useful in helping identify pathways for employees into a maintenance role from other areas of processing.

## **7.0 CONCLUSIONS/RECOMMENDATIONS**

### **Recommendation 1 – completion of the draft training video**

Options for the completion of draft training video should be explored. MINTRAC recommends that additional footage be obtained, preferably from Cowra Meat Processors for consistency, of general meat processing rather than maintenance activity to be able to complete the video in full. At the moment the general meat processing footage is not approved for use so this video cannot be published in its current form.

### **Recommendation 2 – development of a second video focusing on career options in engineering maintenance departments**

More maintenance footage than was required for this film was obtained on the day of filming, thanks to how accommodating Cowra Meat Processors were throughout the entire process and also due to the efficiency of the development company, Anvil Media, who have a long history of working in the industry and are able to capture the footage needed with minimal disruption. The additional footage is for the maintenance staff interviews, and Anvil have suggested there is sufficient footage there to support a second video focused more on the career opportunities in the engineering maintenance section of the industry. MINTRAC recommends that this video be developed to add to AMPCs range of promotional resources for career in the red meat processing industry.

## **8.0 BIBLIOGRAPHY**

AMPC (2016), Pathways to build the capabilities of maintenance engineers, Final Report.

AMPC (2015a), Recruitment and retention guide for maintenance engineering in the red meat processing industry.

AMPC (2015b), Guide to competencies and training options for maintenance engineers in meat processing plants.

## **9.0 APPENDICES**

**10.1 Appendix 1 – Enterprise implementation strategy for the delivery of training to engineering maintenance personnel – final draft**

**10.2 Appendix 2 – Trainer development program for the delivery of training to engineering maintenance personnel – final draft**

**10.3 Appendix 3 – Guide to maintenance training in the meat processing industry trainer manual – final draft**

**10.4 Appendix 4 – Case study – a typical day for a maintenance manager – final draft**