AMPC

AUSTRALIAN MEAT PROCESSOR CORPORATION LTD

ANNUAL OPERATING PLAN

2015 | 2016

THE ROLE OF THE AUSTRALIAN MEAT PROCESSOR CORPORATION

The Australian Meat Processor Corporation (AMPC) administers statutory levies on behalf of the red meat processing industry in Australia, as detailed in its Statutory Funding Agreement with the Australian Government. The AMPC Annual Operating Plan (AOP) is submitted in accordance with Clause 12 of this Funding Agreement.

AMPC has 105 members operating in 135 meat processing establishments, representing more than 97 per cent of Australia's red meat processing capacity.

AMPC's primary objective is to maximise the long-term viability and sustainability of the red meat processing industry by providing outcomes that:

- improve efficiency and competitiveness
- enhance the sustainability of the sector
- assist in protecting and securing market access
- enhance capability and innovative capacity, and
- increase overall productivity and performance.

AMPC invests in three key programs – the Core Program, the Joint Program and the Plant Initiated Projects (PIP) Program.

The **Core Program** is the main industry research, development and extension (RD&E) program in the red meat processing sector. It is administered and delivered by AMPC and is supported by an industry-wide consultation process. This program addresses key issues facing the red meat processing chain in terms of productivity, profitability, sustainability and capability. Levies for eligible RD&E activities are matched by government funding.

The **Joint Program** is a collaboratively funded RD&E, marketing and market access program between AMPC and Meat & Livestock Australia (MLA) that uses both processor and producer levies and matching Australian Government funds for eligible activities.

The Joint Program generates supply and value chain results that support food safety and eating quality and increased demand for meat and meat products. In collaboration with the peak industry councils and MLA, AMPC fosters development across the red meat industry supply chain and establishes targets for joint activities.

The **Plant Initiated Projects (PIP) Program** is a mechanism for leveraging additional private investment in industry RD&E programs. It enables processors to identify and undertake RD&E projects that can benefit the whole red meat processing sector. It facilitates the transition to and adaptation of new technologies at operating plants under real world conditions.

Indications from FY 2014–15 show that processing companies continue to support the PIP Program in terms of both size and species, and across a broad range of RD&E activities. This applies in particular to priority investment areas such as capability development and the adoption of emerging processing technologies.

The Australian Meat Processor Corporation (AMPC) is the Rural Research and Development Corporation for the red meat processing industry in Australia. AMPC's mandate is to provide research, development, extension and marketing services that improve the productivity, profitability and sustainability of the sector. Red meat processor levies are strategically invested in programs that deliver a range of benefits for industry and the broader Australian community.

TABLE OF CONTENTS

INTRODUCTION

The 2015–16 Annual Operating Plan

This Annual Operating Plan (AOP) outlines the basis for AMPC's research, development and extension (RD&E) and marketing programs in FY 2015–16. It provides details by program stream.

The AOP is aligned with AMPC's Strategic Plan 2013–17, which itself is aligned with the current red meat industry's Meat Industry Strategic Plan (MISP) and the Australian Government's National and Rural RD&E Priorities. A copy of AMPC's Strategic Plan 2013–17 is available at **www.ampc.com.au**

In order to improve clarity and accountability, the 2015-16 AOP has been re-configured by Program and Program Stream. This structure enables stakeholders to refer to specific projects and their alignment to Program Stream deliverables. The linkage of AOP Programs to the Strategic Imperatives listed in the *AMPC 2011-17 Strategic Plan* is shown on page 10.

Strategic Planning

New and emerging market drivers require an ongoing assessment of investment priorities to ensure Australia maintains a strong and viable red meat processing industry.

AMPC undertakes a collaborative approach to strategic planning to ensure that market insights and signals drive innovation.

To ensure AMPC identifies RD&E priorities that benefit the industry, it will continue to expand its strategic planning activities in FY 2015–16. The company has completed a macro-environmental scan to enable finalisation of the **AMPC 2025 Strategic Plan.** Core Program Roadmaps will be developed so that goals identified in this long-term plan can be achieved.

The Core Program investment areas for FY 2015-16 are:

1. Processing Technologies
2. Environment and Sustainability
3. Food Safety, Integrity Systems and Meat Science
4. Capability, Extension and Education
5. Industry Improvement and Economic Analysis.

In support of the above programs, a triennial strategic communications plan has been developed and is currently being implemented. This plan consists of integrated and targeted communications through both face to face engagement and online communications.

The above medium to long-term strategic plans align with the AMPC Strategic Plan 2013–17, the Meat Industry Strategic Plan (MISP) and National and Rural RD&E Priorities, and provide a robust framework for future AOP portfolio development.

Continuous Business Improvement

AMPC operates as a commercially focused innovation business and has adopted the business and process efficiencies associated with such a model for the benefit of industry and other key stakeholders.

The company has introduced a new P**ortfolio Development Process (PDP)** that improves the mechanism by which the company establishes a balanced portfolio for investment. This process involves deep engagement with a broad array of stakeholders, including member based **Program Advisory Committees (PACs)**. Once the investment portfolio has been established a new **Contract and Project Management (CTM)** process ensures rigorous project management and delivery.

Both the PDP and CTM, together with other business practices, are being integrated into a new IT solution for Enterprise Resource Planning (ERP) and Customer Relationship Management (CRM).

AMPC will continue to review and align its investments with key stakeholder requirements. In 2015, MLA will review its Strategic Plan and in FY 2015–16 the Meat Industry Strategic Plan will be revised as MISP4, which may require AMPC to refine and align some of its plans.

In alignment with its mission to operate as a commercially focused innovation business, AMPC is currently enhancing its communication capabilities. In FY 2015–16, AMPC will implement the first phase of its **Strategic Communications Plan 2015–18**. This initiative will see the implementation of an integrated suite of new initiatives. Branded **AMPC Events** will include AMPC Webinars, AMPC Seminars/Workshops and AMPC Network Meetings. The new CRM tool will facilitate targeted communications and improved face-to-face member engagement.

The CRM tool will support a series of e-alerts bulletins based on member specific interest areas. This will expand the current AMPC Alerts monthly service. A new AMPC website will be launched in the fourth quarter of FY 2015–16, based on the current program structure. This new site will include improved information presentation and search facilities as well as a platform for mobile devices.

KEY CHALLENGES AND DRIVERS FOR RESEARCH, DEVELOPMENT, EXTENSION AND MARKETING INVESTMENT

The Australian red meat processing industry is well positioned to grow. This positive outlook in export demand for red meat products underpins a viable and sustainable industry. Strong market growth will deliver economic returns to processors, the Australian economy and the community as a whole.

In a globally competitive market, however, Australian meat processing businesses face significant challenges. These include the relatively high cost of doing business, market access constraints, industry and human resource capability gaps and growing environmental issues. The need to continually reduce costs and develop differentiated products and services that deliver value to customers and a competitive advantage for processors is paramount.

AMPC has conducted a Future Scan which has identified the impact of the following megatrends and their associated challenges for the red meat processing sector:

Sustainability demands increase

Increasingly, agrifood businesses at every level of the supply chain will be required to demonstrate and provide evidence of their sustainability credentials. In the current environment, sustainability relates to the triple bottom line, so businesses now require Economic, Environmental and Social accountability.

Economic viability is no longer the sole evaluative criteria of business performance; businesses must be also environmentally viable and socially responsible. There are two major threats to sustainability -- climate change and water. There will be increasing pressures on agribusinesses to reduce their carbon and water footprint. Pressures will come in the form of either regulations or incentives/penalties.

Provenance becomes more relevant

Consumers and customers now want to know where their food comes from and the story behind it. This includes where the food was grown, how it was grown, and where and how it was processed.

The growing interest in food provenance is being driven by a number of factors including: television programs such as Masterchef as well as retailer and consumer concerns about food safety, environmental sustainability and ethics.

Social licence is required to operate

Agrifood businesses and industries now need the blessing of the general public to operate. Social media and the hyper-connectivity that it enables, provides individuals with a powerful tool to voice their concerns. Broadly speaking, social licence issues include: animal welfare, environmental sustainability, health and nutrition, ethical treatment of workers, fair trade and accountability as a corporate citizen. Businesses and industries must respond to and manage the social licence agenda. Society now expects and demands greater transparency.

Shift from commodities to brands

The consumer and customer desire to be informed about food provenance has provided the opportunity for meat processors to develop brands to target specific market segments with tailored value propositions. Progressively, the red meat industry is transforming from what once was essentially a commodity trading model to one where an increasing proportion of the product is sold under proprietary brands.

Processor branding strategies are becoming more sophisticated. Now specific value propositions, underpinned by integrity protocols, are being used to target narrow market segments. As processor brands become more prominent, there will be a reduced need for generic marketing.

Switch in market emphasis from domestic to global

Historically the market for red meat was split more or less equally between the domestic and export markets. This is now shifting, with a greater emphasis on exports. The switch is being driven by declining per capita consumption of red meat in domestic markets and a growing demand for Australian meat from overseas.

Supply chains become more integrated

The Australian red meat industry is moving progressively to vertically integrated supply chains, facilitated either through equity ownership or strategic trading alliances such as closed-loop supply chains or branding agreements. The historic trading model of buying livestock from sale yards and selling commodities on an entirely opportunistic basis is shifting to one where interlinked supply chains and supply agreements prevail.

Market access tactics change

Recently negotiated FTAs are likely to shift the market access agenda. While, officially, trade appears to be opening up, this is being countered with increased technical trade barriers. Although recently negotiated FTAs will assist Australia's price competitiveness, it does not necessarily mean that market access is assured. Increasingly, technical trade barriers, based largely on biosecurity matters, are blocking market access.

Power of technology and big data grows

Rapidly evolving digital technology provides unlimited opportunities for data mining beyond seamless supply chain traceability. RFID enabled technology gives processors the means of sophisticated data collection to better understand market behaviour; provide feedback to producers; benchmark performance and more. The aggregation of multisource databases and the ability to apply algorithms to multiple data sets provides potent tools that could be applied widely across the red meat sector.

To address these challenges, AMPC will continue to introduce products, processes and services that improve industry competitiveness and customer value.

CO-INVESTMENT AND COLLABORATION

AMPC engages with the Australian Government, its processor membership base, MLA and other organisations in the red meat industry. This ensures that processor levy funds are appropriately and effectively invested to deliver maximum impact.

The company is committed to working with its stakeholders to use levy funds as efficiently as possible. It leverages its investments through co-investment and collaboration.

One component of AMPC's expenditure involves co-investment with MLA in Joint Program activities. This partnership leverages services to the industry and the entire supply chain, while avoiding the duplication of capability and resources.

AMPC works closely with the Australian Meat Industry Council (AMIC), the peak industry council and advisory body for the red meat processing industry. This relationship ensures that needs and issues identified by AMIC's processing members are considered in RD&E activities. This relationship was enhanced in FY 2014-15 through the formation of the joint AMPC: AMIC Industry Market Access Advisory Committee (IMAAC) to deal with significant technical barriers to trade issues.

AMPC continues to work with the Meat Industry Training and Advisory Council (MINTRAC). Extension activities are critical to the effective uptake of RD&E investments in the industry. AMPC has a very strong track record of ensuring processors adopt RD&E and other AMPC funded outputs.

AMPC will continue to develop strategic partnerships and alliances with other organisations that have complementary capabilities and service delivery assets. These organisations include universities, government agencies, research and development corporations (RDCs), research institutes, the Commonwealth Scientific and Industrial Research Organisation (CSIRO), Cooperative Research Centres (CRCs) and other industry providers, both in Australia and overseas.

Numerous collaborations at the project, program and organisational level extend across state, national and international boundaries. Further information on relationships between AMPC and other organisations can be found at **www.ampc.com.au**.

CONSULTATION FRAMEWORK UNDERPINNING AMPC'S RD&E AND MARKETING INVESTMENTS

AMPC has a range of mechanisms for identifying RD&E and marketing priorities for investment through its Portfolio Development Process (PDP).

Through the PDP, AMPC facilitates industry consultative committees, known as Program Advisory Committees (PACs), which provide strategic and technical input on priorities for investment in the five core programs:

- Processing Technologies
- Environment and Sustainability
- Food Safety, Integrity Systems and Meat Science
- Capability, Extension and Education
- Industry Improvement and Economic Analysis.

Representatives from industry and other key stakeholders participate in this consultation process to ensure that the needs of the industry and the Australian community are addressed. In FY 2015–16, the PDP will be enhanced to include **Program Expert Groups (PEGs)** and the use of an upgraded **Project Assessment Tool (PAT)**. The PEGs will provide input from global experts. The PAT is a methodology for effective project assessment within the PDP.

AMPC engages with the Australian Government to ensure effective alignment and delivery of industry and government priorities and the integration of RD&E activities that benefit industry and the broader community.

The organisation partners with research providers to consider the latest developments in science and technology to help determine priorities for investment. In FY 2015–16, AMPC will continue expanding its international provider base with the aim of adapting world-leading technologies to Australian conditions.

KEY AMPC PROGRAMS AND OUTPUTS

The table below summarises AMPC programs and their key outputs for FY2015–16. These programs and their associated streams are described in more detail in the sections listed below:

CORE PROGRAM	OUTPUTS
1. Processing Technologies	Technologies that improve process efficiency, reduce the cost of production and facilitate improved value capture.
2. Environment and Sustainability	Products and services that improve industry sustainability with regard to environmental, economic and social outcomes.
3. Food Safety, Integrity Systems and Meat Science	The delivery of high standards of food safety, product integrity and eating quality. Meat science that enables new insights into effective process interventions.
4. Capability, Extension and Education	Translation and communication of R&D outputs to stakeholders. Includes key training initiatives at both the research and vocational level.
5. Industry Improvement and Economic Analysis	High level evaluations of the economic impact of AMPC investments and mechanisms to improve overall industry performance.
JOINT PROGRAM	**OUTPUTS**
6. Joint Program	In association with MLA, AMPC invests in through supply chain activities to enhance market access to improve marketing communications and to further develop food safety and integrity systems.

NATIONAL RESEARCH PRIORITIES

Investment programs described in this Annual Operating Plan align with the Australian Government's National and Rural R&D Priorities and *AMPC's Strategic Plan 2013-17 Key Strategic Imperatives* as shown in the table below:

NATIONAL RESEARCH PRIORITIES	RURAL R&D PRIORITIES	AMPC STRATEGIC IMPERATIVES*	AMPC PROGRAMS
Promoting and maintaining good health through strengthening Australia's social and economic fabric and preventive healthcare (healthy food production).	**Productivity and adding value** Improving the productivity and profitability of existing industries and supporting the development of viable new industries.	1,2 and 4	1, 3 and 6
	Supply chain and markets Better understand and respond to domestic and international markets and consumer requirements and improve the flow of such information through the whole supply chain, including to consumers.	1,2 and 4	1 and 6
An environmentally sustainable Australia	**Natural resource management** Support effective management of Australia's natural resources to ensure primary industries are economically and environmentally sustainable.	3 and 5	2 and 3
	Climate variability and climate change Build resilience to climate variability and adapt to and mitigate the effects of climate change.	3 and 5	1 and 2
Safeguarding Australia	**Biosecurity** Protect Australia's community, primary industries and environment from biosecurity threats.	3 and 5	2 and 6
SUPPORTING RURAL RESEARCH AND DEVELOPMENT PRIORITIES			
Frontier technologies for building and transforming Australian industries	**Innovation skills** Improve the skills to undertake research and apply its findings.	6	4
	Technology Promote the development of new and existing technologies.	2, 3 and 4	1,2, 3, 4 and 6

** Refer to AMPC Key Strategic Imperatives from the Stretegic Plan 2013-17 on page 11.*

SCIENCE AND RESEARCH PRIORITIES

The Australian Government has recently implemented new Science and Research Priorities, which will replace the National Research Priorities outlined on page 10.

The Science and Research Priorities are:

- Food
- Soil and water
- Transport
- Cybersecurity
- Energy
- Resources
- Advanced manufacturing
- Environmental change
- Health.

The Science and Research Priorities will be incorporated into AMPC's planning through the year and will be reported in the 2016-17 Annual Operating Plan.

Australian Government RD&E Priorities for Agriculture

As part of the outcomes of the Agricultural Competitiveness White Paper, the Australian Government has implemented farmer-oriented priorities to target rural RD&E funding. The new priorities are:

- **advanced technology**, to enhance innovation of products, processes and practices across the food and fibre supply chains through technologies such as robotics, digitisation, big data, genetics and precision agriculture
- **biosecurity**, to improve understanding and evidence of pest and disease pathways to help direct biosecurity resources to their best uses, minimising biosecurity threats and improving market access for primary producers
- **soil, water and managing natural resources**, to manage soil health, improve water use efficiency and certainty of supply, sustainably develop new production areas and improve resilience to climate events and impacts
- **adoption of R&D**, focusing on flexible delivery of extension services that meet primary producers' needs and recognising the growing role of private service delivery.

These new Australian Government RD&E priorities for agriculture are consistent with the national Science and Research Priorities announced on 26 May 2015. The national priorities align areas of research excellence with Australia's comparative advantages, including food, soil and water, and environmental change.

The Australian Government RD&E priorities for agriculture will be incorporated into AMPC's planning through the year and will be reported in the 2016-17 Annual Operating Plan.

AMPC KEY STRATEGIC IMPERATIVES 2013-17

Key Strategic Imperatives as detailed in AMPC's Strategic Plan 2013-17 are:

1. Enhancing domestic and global competitiveness
2. Delivering to customers and consumers
3. Product integrity, safety and wholesomeness
4. Improving meat processing productivity, products and processes
5. Improving sustainability
6. Building capability and influencing practice change

The linkage between the AOP Programs/Program Streams and the Key Strategic Imperatives listed in the *AMPC Strategic Plan 2013-17* are shown opposite:

AMPC AOP Program Stream FY2015-16	AMPC Strategic Plan 2013-17 Key Strategic Imperatives*
1. Processing Technologies	
1.1 Productivity & Quality	4.1
1.2 Sensing & Analysis	4.2
1.3 Materials Handling	4.1
1.4 Value Added	4.3/4.4
1.5 Processing Technology PIPs	4.5
2. Environment & Sustainability	
2.1 Energy Efficiency	5.3
2.2 Waste Management	5.2
2.3 Water Conservation	5.4
2.4 Sustainability	3.5/5.5
2.5 Environmental PIPs	5.1
3. Food Safety/Integrity Systems/Meat Science	
3.1 Food Safety	3.1
3.2 Integrity Systems	3.2
3.3 Meat Science	2.3
3.4 Transformational Meat Science	2.3
3.5 Food Safety/Meat Science PIPs	2.4/4.4
4. Capability / Extension / Education	
4.1 Industry Capability	6.2
4.2 Extension Services	6.1
4.3 Scientific Education	6.3
4.4 Vocational Training	6.2
4.5 RD&E Capabilities PIPs	6.2
5. Industry Improvement & Economic Analysis	
5.1 Industry Improvement	5.5
5.2 Economic Analysis	6.4
5.3 Industry-Wide System Improvement	5.5
5.4 Strategic Communications	2.4
6. Joint Industry Program/Trade Director AMPC	
6.0 Technical Market Access Act	1.1
6.1 Market Access	1.2/1.3/1.4
6.2 Marketing	2.1/2.2
6.3 Food Safety	3.1
6.4 Integrity Systems	3.3/3.4
6.5 Other Joint Activities	1.5

**Refer Appendix 1 for details of AMPC Key Strategic Imperatives.*

PROGRAM 1

PROCESSING TECHNOLOGIES

PROGRAM 1 OUTPUTS
Technologies that improve process efficiency, reduce the cost of production t facilitate improved value capture.

KEY STRATEGIC IMPERATIVES
4. Improving meat processing productivity, products and processes.

PROGRAM STREAMS	DESCRIPTION OF THE PROGRAM STREAMS
1.1 Productivity and Quality	Increasing processing efficiency and productivity is essential to ensure Australian red meat processors are competitive in domestic and international markets. It is crucial to the sustainability, viability and growth of a sector that has been characterised as high-volume and low-margin. This stream will focus on developing and implementing technologies and solutions that automate manual tasks, increase the use of manual assist technologies, and improve resource efficiency to enhance process value and recovery.
1.2 Sensing and Analysis	The Australian red meat processing industry works with raw material that is highly variable both in shape and composition. Each carcase is different and the ability to automatically measure characteristics 'online' offers an opportunity to increase processing efficiency and productivity. This stream will focus on developing and implementing systems that can manage these variations to capture the data and images necessary to adjust cutting lines for automation and inform processing decisions according to carcase type, product specification, and customer and market requirements.
1.3 Materials Handling	Meat processing facilities incur significant labour and other business costs associated with managing increasingly complex materials handling challenges. This stream focuses on developing and implementing cost-effective technologies and solutions to materials handling tasks, including the load out of carcasses, picking and packing boned and sliced product (e.g. primals, subprimals and shelf-ready portions) and cartoned meat.
1.4 Value Added	This stream explores the potential for innovative concepts, products and technologies to add value within the supply chain. It will focus on transforming existing products (e.g. improving the eating characteristics of secondary cuts) and creating new ones (e.g. transforming inedible co-products into raw ingredients for other industries). Projects will deliver cost-effective methods of increasing value in alignment with customer needs.
1.5 Plant Initiated Projects (PIPs)	AMPC supports members to identify and undertake RD&E projects that benefit the whole sector. AMPC facilitates these projects through the PIP Program. Members can identify site or business-level RD&E activities that will improve processing efficiency and technology. Areas of RD&E activity might include the automation of manual tasks; value adding of existing and new products; improvements to materials handling; improvements to processes, practices and systems to increase productivity; and improvements in the global competiveness of the Australian red meat processing industry.

PROGRAM 1 STREAM PROJECT PORTFOLIO (PROJECT CODE IN BRACKETS)	BUDGET
Program Stream 1.1: Productivity and Quality	**$1,531,817**
Intelligent Y-Cutter Optimisation (2013.5038 and 2013.5039) The objectives of these two projects are to improve the reliability and uptake of the Intelligent Y-Cutter technology in Australia. This will be achieved by improving parameter tuning and system performance during normal operation through modification of code parameters, development of improved sensors and implementation of a new monitoring and fault diagnostics system (Nov 14 – Sept 15).	
Lamb Aitchboning Manual Assist (2014.1055) This project will develop a manual assist device for lamb hindquarter boning. The device will give the boner freedom to concentrate on the boning technique in the most ergonomic manner reducing the physical effort required and increasing consistency and yield (Feb 15 – Apr 16).	
X-Ray Lamb Frenching (2014.1056) This project will investigate using X-ray sensing to develop an automated solution for producing French lamb racks. Previous R&D has investigated options to semi-automate or automate this process without using water as the primary process. The lack of an accurate sensing system to guide an automated solution has held back development of a non-water–based system (Feb 15 – Jul 16).	
Caprine and Ovine 'Cubing' Characterisation and Automation Feasibility (2016.1001) This project will investigate technical requirements and specifications for developing a cost-effective technology to cut caprine and ovine carcasses into cubes (Aug 15 – Sept 16).	
Automated Beef Rib Set Deboning (2016.1011) This project will produce a design for a commercial machine to debone chilled beef rib sets. It will be a compact, relatively inexpensive device that will need an operator to load the product, but will remove the bone automatically (Aug 15 – Jun 16).	
Technology Evaluation for Fat Removal from Beef Striploins Leaving a Uniform Thickness (2016.1032) This project will assess requirements for fat trimming and quantifying the variability in beef striploin with respect to fat trimming requirements. It will review the general literature on uniform fat trimming and automation patents. It will evaluate methods for handling, fixing, sensing and trimming fat from beef striploins (Aug 15 – Sept 16).	
Cellular Production (2016.1033) Research will examine the potential benefits and possible disadvantages of automated cellular-based processing systems versus continuous production systems. It will consider the suitability of both traditional industrial robots and newer collaborative robots for automating meat processing tasks (Jul 15 – May 16).	
New Concepts For Cattle Slaughtering and Break-Up Into Primal Meat Cuts. Stage 1: Concepts Creation (2016.1034) This project will examine new technologies and approaches to creating new potentially advantageous automated concepts for cattle slaughtering and break-up into primal meat cuts. It will look at technologies being developed and used in other manufacturing and processing sectors to evaluate novel methods for tackling slaughter, dressing and break-up tasks (Aug 15 – Feb 16).	
French Dressed Lamb Rack Preparation Robot Cell. First Stage to Research and Develop a User Requirement Specification and Present a Prototype Build Cost and Timeline (2016.1035) This project will develop user requirement specifications following a successful stage 1 R&D project to create a concept for the automated french dressing of lamb racks. It will create a prototype build cost and timeline for the next developmental stage (Aug 15 – Apr 16).	
Technology and Processing Automation Using the Internet of Things (2016.1036) The objective of this project is to set a foundation for introducing industrial internet solutions to the Australian red meat processing industry by demonstrating how to integrate and monitor existing production steps in the industrial internet (Jul 15 – Jun 16).	

Investigation Into the Financial and Technical Feasibility of Using a Low-Temperature, Cascading NH_3–CO_2 Refrigeration System to Reduce the Cost of Production of Liquefied CO_2 for Snow Applications in the Red Meat Industry (2016.1038) This project will investigate the feasibility of using common equipment for both a low-temperature refrigeration plant and off-peak production facility for liquefied CO_2 in a co-located environment (Aug 15 – Mar 16). **Ultrasonic Knife for Bovine Slaughter-Board Activities (2016.1039)** This project will further develop and adapt ultrasonic knives and convert them from ovine processing to bovine applications (Aug 15 – Jul 16). **Improvements to Robotic Bandsaw Operations (2016.1043)** This project will analyse and develop key components in automated cutting by targeting robotic band sawing in the red meat industry. Recognising that full automation in beef processing can be challenging and prohibitively expensive, it will focus on isolating components that can improve intermediate stages of partial automation, while working towards a holistic system that incorporates 3D computer vision, algorithmic cut path generation, online monitoring of tool health and computer visualisations (Jul 15 – Dec 16). **Bandsaw Risk Mitigation and Bandsaw Replacement (2016.1045)** This project is designed to develop a 'suite' of solutions which mitigate the risks caused by band saws, focusing on measuring operator fatigue and alertness and new technologies that may replace traditional bandsaw blades (Jul 15 – Oct 15). **Innovative Race and Knocking Box Design Concepts to Optimise Animal Welfare and Carcase Quality (2016.1046)** This project will focus on combining new technologies with best practice engineering design to develop and evaluate new approaches to moving bovine animals through the race and up to the point of stunning (Jul 15 – Dec 15). **Wearable Technology for the Meat Processing Industry (2016.1048)** This project will investigate the applicability of wearable technology, in conjunction with machine learning, as potentially transformative technologies for the Australian red meat processing industry (Jul 15 – Nov 15).	
Program Stream 1.2: Sensing and Analysis	**$274,118**
Beef and Lamb OCM with CT In Situ Further Development (2014.1057/ A.TEC.0123) This project will continue to apply learnings from previous laboratory based industry R&D projects into computed tomography (CT) technology to demonstrate how advanced CT images captured in situ and in real time on a meat processing line can enable the next quantum leap in sheep and beef objective carcase measurement (OCM) and automation (Nov 14 – Jun 16). **X-Ray OCM Bone, Fat and Muscle Trials (2014.1065/ A.TEC.0124)** This project will continue to investigate the potential for dual X-ray systems enabling automation through sub surface sensing to become a cost-effective system for providing eating quality, food safety inspection and supply chain information for the Australian red meat sector (Nov 14 – Jul 15).	
Program Stream 1.3: Materials Handling	**$343,760**
Meat Lumping – Beef Quarters (Phase 1) (2013.5022) This project will develop a motorised transport device to replace manual handling of carcases (Jul 14 – Oct 15). **Container Loading Pilot Installation (2014.1011)** This project will continue to develop an automated container loading system as a production pilot to be installed in a red meat processing facility (Dec 14 – Feb 16).	
Program Stream 1.4: Value Added	**$72,951**
Value Adding (2016.1037) This project will focus on improving the profitability of meat processing operations by defining specific business cases and supply chain partnership models for higher value co-products that can be generated from non–red meat parts of the animal (Aug 15 – Jul 16).	

Program Stream 1.5: Plant Initiated Projects (PIPs)	$1,130,288
AMPC supports members to identify and undertake RD&E projects that benefit the whole sector. AMPC facilitates these projects through the PIP program. Members can identify site or business-level RD&E activities that will improve processing efficiency and technology. Areas of RD&E activity might include development of manual assist technologies and automation of manual tasks; value adding of existing and new products; improved materials handling; improving process, practices and systems to increase productivity; and improving global competiveness of the red meat processing industry.	
AMPC CONTRIBUTION	$3,352,934

PROGRAM OUTPUT GOALS

Processing Technologies Output Goals 2015-16
Invest in and manage projects that contribute to the goal of delivering cost effective increases in red meat processing production efficiency and improved value capture. Define the strategic direction for the program and the challenges to be addressed through the Processing Technologies Program RoadMap.

PROGRAM 2

ENVIRONMENT AND SUSTAINABILITY

PROGRAM 2 OUTPUTS
Products and services that improve industry sustainability with regards to environmental, economic and social outcomes.

KEY STRATEGIC IMPERATIVES
3. Product integrity, safety and wholesomeness. 5. Improving sustainability.

PROGRAM STREAMS	DESCRIPTION OF THE PROGRAM STREAMS
2.1 Energy Efficiency	Red meat processing facilities consume a lot of energy – especially for refrigeration, steam and hot water production. This is expensive, as well as being a source of greenhouse gas emissions. This stream focuses on generating innovative concepts, methodologies and products for reducing the overall energy consumption of red meat processing operations and the intensity of energy consumption (i.e. energy consumed per unit of output). It will look at using available on-site renewable energy sources instead of relying on external energy derived from fossil fuels such as coal, gas, liquefied petroleum gas, oil or diesel.
2.2 Waste Management	Red meat processing can produce liquid and solid wastes that are costly to treat and remove. However, waste treatment technologies are available that can reduce costs and even generate income by converting waste into solid and liquid biofuels, nutrients such as nitrogen, phosphorus and potassium, compost, bioactives for manufacturing pharmaceuticals and nutraceuticals, biodegradable plastics, and edible and non-edible products. This stream will focus on developing innovative products and processes to reduce, reuse, recycle and dispose of waste in ways that limit the impact on the environment, cut waste management costs and generate extra revenue streams through product recovery.
2.3 Water Conservation	Red meat processing requires water to ensure high levels of food safety and hygiene are maintained. The primary sources of water are town supplies and bores, as well as rivers and dams. Decreasing availability and the increasing cost of water are forcing plants to reduce consumption, recycle where it is safe to do so, and consider new sources where available. This stream will focus on developing new products and processes around water harvesting, reuse and recycling systems that can deliver a reliable, safe and affordable supply whilst maintaining food safety standards.
2.4 Sustainability	This stream will research new concepts, methodologies and processes directed to projects that can contribute to the further validation of the sustainable supply chains that already exist in Australia. This includes, but is not limited to food safety, integrity systems, animal health & welfare systems and biosecurity.
2.5 Plant Initiated Projects (PIPs)	AMPC supports members to identify and undertake RD&E projects that benefit the whole sector. AMPC facilitates these projects through the PIP Program. Members can identify site or business-level RD&E activities that will enable the sustainable development of the business. Areas of RD&E activity might include the management of energy, water or waste; planning for extreme climate events; biosecurity; and animal welfare issues.

PROGRAM 2 STREAM PROJECT PORTFOLIO (PROJECT CODE IN BRACKETS)	BUDGET
Program Stream 2.1: Energy Efficiency	**$99,910**
Investigation into Modular Micro-turbine Cogenerators and Organic Rankine Cycle Co-generation Systems for Abattoirs (2016.1002) This project will investigate how to use micro-turbines and Organic Rankine Cycle units to cut energy costs and greenhouse gas emissions from abattoirs. It will produce practical information red meat processors can use when considering such equipment, helping them to undertake detailed appraisals and make decisions (Jul 15 – Feb 16). **Investigation into Voltage Optimisation Technology for Australian Red Meat Processing Facilities (2016.1005)** This project will investigate the benefits or otherwise of voltage optimisation equipment as an energy efficient technology for abattoirs (Jul 15 – Dec 16). **Investigation into the Potential Applications for Medium-to High-Temperature Solar Thermal Technologies at Australian Abattoirs (2016.1006)** This project will investigate replacing a fossil-fuelled boiler with a solar thermal boiler. It will also explore the possibility of supplementing, complementing or replacing existing boiler systems. A thorough techno-economic analysis of the most suitable technology will be recommended as a case study which will also indicate a number of other potential applications (Sept 15 – Mar 16). **Integrating Solar Photovoltaic (PV) Technology with Battery Storage at Australian Abattoirs (2016.1007)** This project will involve a detailed techno-economic analysis of the most up-to-date solar photovoltaic technology with battery storage (Sept 15 – May 16). **Quantifying Energy Savings from In-Line Temperature Boosting of Steriliser Water Ring Mains at Abattoirs (2016.1008)** This project will investigate the energy savings that might be achieved by integrating point-of-use heating systems into existing hot water ring mains in abattoirs, especially for sterilisation units. It will consider any additional indirect benefits (Jul 15 – Jun 16).	
Program Stream 2.2: Waste Management	**$486,110**
Robust Membrane Systems for Enhanced Primary Treatment and Energy Recovery of Abattoir Wastewater (2013.5024) This project will investigate whether membrane technology is a viable alternative to dissolved air flotation (DAF) for treating abattoir wastewater, and the technical and economic viability of using it for heat recovery (Apr 15 – Jun 16). **Optimising Energy and Nutrient Resources in Food Production, Meat Processing and Essential Services (2014.1073)** This project will investigate the risks of and drivers for anaerobic digestion of waste streams from agri-industry and municipal wastewater treatment (referred to as co-digestion). It will include a review of literature and a full-scale demonstration of co-digestion (Jul 14 – Jun 17). **Rapid Digestion Composting Technology Evaluation Project (2016.1009)** This project will review alternative rapid digestion technologies to try to identify their advantages over traditional waste management solutions such as conventional composting. It will find ways of reducing costs for the industry and generating new revenue opportunities through abatement projects and beneficial use of by-products (Sept 15 – May 16). **Solid Waste Management of Paunch and Inorganic Waste (2016.1010)** This project will examine solid waste management activities for paunch handling; the characterisation of paunch waste to inform design criteria for dewatering technologies; and inorganic waste reduction, reuse and recycling (Jul 15 – Jun 16). **Biochar and Hydrochar as Solid Waste Management Systems in the Australian Meat Processing Industry (2016.1012)** This project will investigate the potential of the hydrochar process for converting abattoir solid waste into a renewable energy source and fertiliser. It will examine the calorific value of hydrochar, its potential to increase crop yield, and the economic value of the process (Oct 15 – Sept 16).	

Self-Cleaning Membranes for Cost-Efficient Tallow Recovery (2016.1022) This project will involve a proof-of-concept bench-scale pilot trial to investigate the benefits of an actively cleaned (self-cleaning) membranes for the red meat processing industry as an alternative to dissolved air floatation (DAF) technology (Jul 15 – Sept 15). **Purple Phototrophic Bacteria for Resource Recovery from Red Meat Wastewater (2016.1023)** This project will develop purple phototrophic bacteria (PPB) that allow near-complete carbon, nitrogen and phosphorus removal in a one-step process. PPB could be used to recover energy; nutrients (e.g. by stripping or crystallisation); high-protein high-nitrogen products for fertiliser; industrial commodity proteins; commodity chemicals; and even potentially animal feed (particularly for chicken or fish) (Jul 15 – Jun 16). **Anaerobic Membrane Bioreactors: In-vessel Technology for High-Rate Recovery of Energy and Nutrient Resources (2016.1024)** This project will complete the research program into anaerobic membrane bioreactors (AnMBRs) as a high-rate in-vessel anaerobic technology for treating processing plant wastes, particularly combined wastewater. The final stage of research will focus on strategies to increase the organic loading capacity of the AnMBR and increase the release of nutrients (particularly phosphorus) with subsequent capture and reuse (Aug 15 – Jun 16).	
Program Stream 2.3: Water Conservation	**$56,000**
Strategic Evaluation of Opportunities and R&D Needs for Water Reuse and Recycling in Red Meat Processing Operations (2016.1021) This project will take a broad, strategic look at the opportunities and constraints for improving water efficiency at abattoirs using diverse water recovery options. It will define an R&D framework to help the industry identify and implement such solutions while effectively managing potential risks (Jul 15 – Jun 16).	
Program Stream 2.4: Sustainability	**$61,656**
Animal Welfare – Percussive Stunning Review (2016.1040) This project will involve analysing and publishing data to support the use of percussive stunning as an acceptable method under Australian conditions. It will review published scientific data and industry findings to establish what issues have been encountered overseas and assess optimum stunning conditions (Jul 15 – Jan 16). **Animal Welfare – Development of Key Performance Indicators and Reporting Tools to Facilitate Government Recognition of the Australian Livestock Processing Industry Animal Welfare Certification System (2016.1041)** This project aims to establish a single standard, and a verification and reporting process to address regulatory and quasi-regulatory requirements and avoid audit duplication for compliance in the area of animal welfare. It will deliver reporting tools at a plant and industry level to facilitate government recognition of the Australian Livestock Processing Industry Animal Welfare Certification System (Jul 15 – Apr 16).	
Program Stream 2.5: Plant Initiated Projects (PIPs)	**$565,144**
AMPC supports members to identify and undertake RD&E projects that benefit the whole sector. AMPC facilitates these projects through the PIP Program. Members can identify site or business-level RD&E activities that will enable the sustainable development of the business. Areas of RD&E activity might include the management of energy, water or waste; planning for extreme climate events; biosecurity; and animal welfare issues.	
AMPC CONTRIBUTION	**$1,268,820**

PROGRAM OUTPUT GOALS
Environment & Sustainability Output Goals 2015-16 Invest in and manage projects that contribute to the goal of delivering cost effective reductions in emissions, cost effective improvements in waste and water treatment and substantiation of the sustainability of the red meat processing sectors supply chain. Define the strategic direction for the program and the challenges to be addressed through the Environment & Sustainability Program RoadMap.


WF 10X

PROGRAM 3

FOOD SAFETY, INTEGRITY SYSTEMS AND MEAT SCIENCE

PROGRAM 3 OUTPUTS
The delivery of high standards of food safety, product integrity and eating quality. Meat science that enables new insights into effective process interventions.

KEY STRATEGIC IMPERATIVES
2. Delivering to customers and consumers. 3. Product integrity, safety and wholesomeness. 4. Improving meat processing productivity, products and processes.

PROGRAM STREAMS	DESCRIPTION OF THE PROGRAM STREAMS
3.1 Food Safety	Food safety is a critical component of the red meat supply chain and a key driver of Australian exports. This stream focuses on technologies and tools that ensure industry understands, validates and demonstrates food safety in processing, and responds to and manages safety risks and concerns. Projects in this stream will demonstrate technologies for rapid detection of pathogens in red meat and risk-based interventions that ensure food safety.
3.2 Integrity Systems	Australia enjoys an enviable reputation in the international market for producing clean and safe premium quality meat. The integrity of the underlying systems ensures products are safe and wholesome. This stream focuses on systems and technologies that ensure traceability, biosecurity, disease risk mitigation, strong animal health and hygiene, and overall meat quality standards.
3.3 Meat Science	Production of high-quality meat is underpinned by a robust understanding of meat properties and qualities, such as meat tenderness, colour, pH, intramuscular fat, etc. This stream focuses on technologies that help measure, monitor and improve meat qualities. It will also look at technologies and practices that can alter these properties.
3.4 Transformational Meat Science (TMS)	Unanticipated scientific findings often push the boundaries of knowledge further than planned research. This stream includes projects that focus on basic meat properties such as structure and colour at a molecular level, and how advanced technologies can be used to alter these properties. The stream is dedicated to disruptional meat science.
3.5 Plant Initiated Projects (PIP)	AMPC supports members to identify and undertake RD&E projects that benefit the whole sector. AMPC facilitates these projects through the PIP Program. Members can identify site or business-level RD&E activities that are linked to food safety, quality and integrity.

PROGRAM 3 STREAM PROJECT PORTFOLIO (PROJECT CODE IN BRACKETS)	BUDGET
Program Stream 3.1: Food Safety	**$318,470**
Rapid Detection of Meat Pathogens using MALDI-TOF Mass Spectrometry and Metabolomics (2014.1049) This project will continue to investigate the use of proteomics-based matrix-assisted laser desorption ionisation-time of flight (MALDI TOF) mass spectrometry and metabolomics approaches for rapid, sensitive, reliable and cost-effective detection of listeria, salmonella and *E. coli* in red meat (Aug 14 – Dec 15). **Metagenomic Analysis to Explore the Mechanisms of Carcase (2014.1066)** This project will continue to investigate the mechanisms responsible for carcass contamination in processing plants, focusing on microbial transmission from hide to carcass, and looking at bioaerosols as carriers of pathogens (Sept 14 – Mar 16).	
Program Stream 3.2: Integrity Systems	**$437,454**
Sheep CRC Extension FY15–19 (1000.0006) Projects within this CRC program aim to develop new information and technologies that simultaneously increase the lean meat yield, eating quality and nutritional value of lamb meat, delivering benefits across the supply chain (Jul 14 – Jun 19). **Electronic System for Alternate Protocol for Managing Illegible or Missing Shipping Marks for the USA (Precursor Project to the Use of Barcodes as the Shipping Mark) (2016.1047)** This project will implement a system to aid the collection, processing and reporting of the carton GS1 barcode and related data as an alternative to managing illegible or missing shipping marks for export to the United States (Aug 15 – Jun 16).	
Program Stream 3.3: Meat Science	**$685,470**
Enhancing Retail Colour Stability and Shelf Life of Lamb Meat for Key Markets (2013.3003) This project will continue to compare the retail colour stability and shelf life achieved through different levels of dietary antioxidants in lamb diets under grain-fed and pasture-based systems. It will also examine heat stress and thermoneutral conditions during finishing, transportation and lairage (Oct 13 – Mar 16). **Development and Validation of a Probe to Measure Meat Quality (PhD) (2013.9501)** This project will continue to build on earlier work to evaluate a handheld probe with the potential to measure tenderness and other traits in lamb meat. Undertaken as a PhD project, it will establish the ability of the probe to predict tenderness and other traits, as well as aiding a commercial application (Nov 12 – Sept 15). **The Influence of Pre-Slaughter Stress on Meat Quality and Carcase Yield of Prime Lambs (2013.9504)** This project will continue to investigate the role of stress on meat quality and meat yield in prime lambs. It will develop industry practices to manage the stresses caused by such factors as dehydration, extended curfews and pre-slaughter handling in order to optimise carcase yield, animal welfare and meat quality (Aug 13 – Sept 16). **Manipulating Processing Conditions to Enhance Lamb Meat Colour Stability (2013.9508)** This project will continue to improve colour stability in lamb meat using a supply chain approach. It will focus on the relationship between oxygen consumption, bloom depth and retail colour and identify related processing technologies (Nov 12 – Feb 16). **Automated Visual Inspection and Preparation of Live Animals for Meat Processing (2014.1041)** This project will continue to develop technologies for the automated detection of animal contamination in lairage with the evaluation of a high throughput cleaning station that prepares animals for slaughter. It will review existing technologies and evaluate the possibility of building such a station (Oct 14 – Dec 17). **Ultrasonic Measurement of Tenderness of Vacuum-Packaged Beef (2014.1045)** This project will extend ultrasound technology in measuring the tenderness of vacuum-packed beef and in developing a proof-of-concept online non-invasive measuring tool for processing plants. The prototype will have an electronic assembly for ultrasound acquisition and signature production. It will incorporate a tenderness prediction model closely correlated with standard shear force measurements (Sept 14 – Sept 15).	
Identifying Storage Thresholds in Frozen and Chilled Red Meat (2014.1048) This project will continue to investigate the effects on meat quality of freezing following an extensive chill period. It will examine the use of oxidation to indicate freeze duration and the effects of long-term freezing on lamb and beef quality and safety (Oct 14 – Aug 17).	

Causes and Contributing Factors to Dark Cutting – Current Trends and Future Directions (2014.1060) This project will continue to review the literature in order to identify the factors influencing dark cutting and provide recommendations and directions for specific future research (Aug 14 – Sept 15). **Infrared Thermography and Radio Frequency Identification for Detection of Stress in Lairage (2014.1063)** This project will develop automated systems for detecting stressed animals during lairage, focusing on beef cattle with secondary trials in sheep and goats. The project will produce a proof-of-concept infrared thermography (IRT) that can detect 'at risk' animals using the surface temperature of the body and eyes. It will combine IRT with radio frequency identification (RFID) reader panels placed in strategic locations at abattoirs to identify individual animals and groups (Mar 15 – Jan 18). **Sensing for Offal Grading and Enablement of Automation (2016.1003)** This project will develop an automated sensing system for offal grading. It will be based on a grading tunnel using X-ray, a hyperspectral camera and a UV sensor to inspect for cysts, lesions, pus, faecal and urine contamination, and the presence of foreign material. Sensors produce images that may be saved for auditing and claims management (Aug 15 – Jul 17). **Optimising Eating Quality of Beef Steak By Using Tri-Gas MAP (2016.1042)** This project will evaluate how the tri-gas solution (oxygen 30%, carbon dioxide 30% and nitrogen 40%) affects shelf-life and organoleptic qualities of Australian beef exported to Europe (Sept 15 – Jun 16). **Relationship between Fear of Humans, Temperament and Handling Pre-Slaughter on Lamb Welfare and Meat Quality (3000.5091)** This project will investigate the relationship between stress and the meat quality of lambs. It will focus on key animal characteristics such as genetics, temperament, fear of humans and pre-slaughter handling (Aug 13 – Aug 16).	
Program 3.4: Transformational Meat Science (TMS)	**$308,943**
Improving Beef Colour at Grading (2013.3005) This project will continue to investigate the role of muscle structure in determining beef meat colour, which at grading is a key attribute to influencing carcase value. It will develop strategies to manipulate muscle structure in order to improve colour (May 14 – Aug 17). **Muscle Structure and Water Retention in Fresh and Cooked Meat Products (2013.5009)** This project will continue to focus on the basic mechanisms responsible for fluid loss in meat during pre-rigour processing and storage and cooking. It will look at the structural changes that occur and conduct experiments to determine the structural basis of water loss during cooking (May 14 – Aug 17). **Optimising Meat Quality and Functionality through Novel Processing Interventions (2013.5040)** This project will continue to investigate processing technologies to develop new value-added red meat products. It will focus on rapid tenderisation of non-primal cuts, including tough muscles, increasing the overall value of carcasses. It will explore new technologies to 'tenderise' low-value meat and accelerate tenderisation in high-value cuts from 'tough' animals (May 14 – Aug 17). **The Effect of Processing Technologies on Microbial Populations Impacting the Shelf Life of Meat (2013.5041)** This project will continue to use a molecular approach to investigate the impact of processing technologies, such as ultrasound and pulsed electric field, on microbial inactivation and survival, and the effect on shelf life of meat. It is essential to understand the impact of processing technologies on bacteria to improve the effectiveness of these techniques in reducing spoilage and the incidence of pathogenic bacteria (May 14 – Feb 18).	
Program 3.5: Plant Initiated Projects (PIPs)	**$282,572**
AMPC supports members to identify and undertake RD&E projects that benefit the whole sector. AMPC facilitates these projects through the PIP Program. Members can identify site or business-level RD&E activities that are linked to food safety, quality and integrity.	
AMPC CONTRIBUTION	**$2,032,909**

PROGRAM OUTPUT GOALS

Food Safety, Integrity Systems & Meat Science Output Goals 2015-16
Invest in and manage projects that contribute to the goal of delivering cost effective improvements in meat safety that is underpinned by continuous improvement in industry integrity systems. Investigate new areas of meat science to determine the impact of macro processing interventions on meat molecular composition and micro-structure. Define the strategic direction for the program and the challenges to be addressed through the Food Safety, Integrity Systems & Meat Science Program RoadMap.

PROGRAM 4

CAPABILITY, EXTENSION AND EDUCATION

PROGRAM 4 OUTPUTS
The establishment of the core capabilities required by the sector and the translation and communication of R&D outputs to stakeholders. Includes key training initiatives at both the research and vocational level.

KEY STRATEGIC IMPERATIVES
6. Building capability and influencing practice change.

PROGRAM STREAMS	DESCRIPTION OF THE PROGRAM STREAMS
4.1 Industry Capability	This stream focuses on developing innovation capabilities within the red meat processing sector and among its personnel. Key to this is identifying the training, education and capability gaps that exist. AMPC continues to support the Meat Processing Professional Development Program, which provides accredited courses and general-purpose workshops to extend R&D to industry personnel. AMPC has identified the importance of tailoring training resources to meet the needs of small to medium enterprises (SMEs), and will invest in this area to aid capability building. The company will invest in new on line extension programs that complement face to face engagement.
4.2 Extension Services	AMPC continues to support extension and adoption strategies to ensure R&D outputs deliver value to industry. This includes industry networks that are critical for disseminating results. In 2015–16, AMPC will manage the following engagement networks: ■ Meat Inspection and Quality Assurance Network ■ Meat Industry Training Network ■ Meat Industry Environment Network ■ Meat Industry Engineering Network.
4.3 Scientific Education	AMPC continues to recognise the need to foster professionals who will contribute to industry innovation. This stream invests in scholarships and programs that develop and build the skills of undergraduate, post-graduate and post-doctoral students and professionals intent on undertaking research careers in the red meat processing sector. AMPC also recognises the significant results that can be gained from improving coordination and collaboration across government, RDCs, industry and educators. Strengthening these partnerships will help cut duplication and improve efficiencies.
4.4 Vocational Training	The red meat processing industry faces continual changes to operating market access and regulatory requirements, which result in the need for ongoing professional development and training for employees. In addition, it is difficult to attract and retain highly skilled personnel. This stream focuses on providing vocational training and upskilling opportunities for plant staff, and is based on priority pathways to build and retain capability within the sector.
4.5 Plant Initiated Projects (PIPs)	AMPC supports members to identify and undertake RD&E projects that benefit the whole sector. AMPC facilitates these projects through the PIP Program. Members often identify business-specific capability building, training and educational initiatives that they intend to implement on site. This stream helps processors implement those initiatives.

PROGRAM 4 STREAM PROJECT PORTFOLIO (PROJECT CODE IN BRACKETS)	BUDGET
Program Stream 4.1: Industry Capability	**$237,478**
Meat Processing Professional Development Program (2016.1016) This project will provide accredited courses and general-purpose workshops to extend the latest R&D to meat industry personnel and industry trainers and give them the skills and knowledge needed to implement changes in practice (Jul 15 – Jun 16). **Developing Resources for Compliance with Recently Harmonised Work Health and Safety (WHS) Legislation for High Priority Areas in the Red Meat Processing Industry (2016.1025)** This project will focus on revising and updating support materials for WHS Certificate II for meat processing personnel. It will develop a WHS guide for maintenance engineers, which will cover the responsibilities of senior managers, supervisors and personnel who need to comply with new WHS legislation as it applies to the industry (Aug 15 – Apr 16). **Disease and Contamination Image Library (2016.1028)** This project seeks to create a world-class digital resource to support the training and assessment of red meat industry personnel. The library will be aimed at meat inspectors and quality assurance staff, but will also be valuable for training trimmers, stock handlers, livestock managers, livestock transporters and regulatory officers (Sept 15 – Apr 16). **Customisation of Training Materials for SMEs (2016.1029)** This project will review previously developed industry resources to determine their applicability to small and medium sized enterprises, which have identified a number of issues with current RD&E outcomes. Often smaller businesses do not operate standard processing chains and their isolation can mean it is difficult to make use of standard RD&E outputs (Aug 15 – May 16). **Development of an Interactive Training Platform (2016.1030)** This project will develop AMPC's online and interactive training platform in 2015–16. It will bring together individual and group learning tools, which give members access to self-paced learning across a range of topics within AMPC's remit. The optimal platform will blend traditional face-to-face seminars and webinars with interactive online functionality, including member forums and coursework (Oct 15 – May 16).	
Program Stream 4.2: Extension Services	**$451,737**
Meat Industry Training Network (2016.1013) This project will support a forum which ensures that R&D outcomes and new regulatory and industry requirements are embedded in the meat industry training system and are communicated and assessed consistently. The network also communicates meat industry training requirements and priorities to state and federal training authorities (Jul 15 – May 16). **Meat Processing Engineering Network (2016.1014)** This project will support a forum which consists of industry personnel, researchers, regulators and trainers. The network distributes new information for processing plant engineers and provides extension services for AMPC R&D activities. It also gives plant-based engineering personnel, researchers and regulators a forum to explain, explore and discuss issues and innovations (Sept 15 – May 16). **Meat Inspection and Quality Assurance Network (2016.1015)** This project will support a forum for practitioners to discuss with peers, researchers and regulatory representatives the practical implications of changing quality assurance requirements and ways to meet these effectively. The network also communicates industry training needs and priorities – generated by changing regulatory, customer and importing country requirements – to industry bodies and state and federal training authorities (Sept 15 – May 16). **Meat Industry Environment Network (2016.1017)** This project will support a forum which helps disseminate information on the RD&E activities of AMPC's Environment and Sustainability Program. It promotes engagement among plant environment managers, researchers, regulators and industry consultants to ensure new regulatory requirements are circulated and all parties are meeting their obligations (Aug 15 – Jun 16).	

Management of the Australian Q Fever Register for 2015-16 (2016.1044) This project will continue delivering the register's services and research activities to the red meat processing industry. The register is an important contributor to Q fever risk management in the workplace. A Technical Management Committee will review activities and help design an industry survey to better understand factors that may inhibit some organisations from using the register (Sept 15 – Jun 16).	
Service Agreement for the Provision of Professional Extension Services and Consultancy. (2016.1062) This extension project will examine training advice given to meat processing companies or their registered training organisations (RTOs) on the uptake of training and government funding available to aid its use. It will provide career services advice to the red meat processing industry, as well as industry education and training advice to state and Commonwealth government agencies. Priorities and changes to market and customer requirements will be identified (Aug 15 – Jun 16).	
Program Stream 4.3: Scientific Education	**$100,604**
Collaborative Primary Industries Health and Safety Partnership (PIHSP) Program (2013.5045) This project will continue the work of PIHSP, which is committed to developing industry-wide research projects that achieve significant WHS benefits. AMPC and its members recently participated in brainstorming to explore barriers to resolving WHS issues in the industry. This project has identified key initiatives in other primary industries, which can be of benefit in red meat processing (Jul 13 – Jul 16). **An Integrated Scholarship Program in Process Engineering (2016.1026)** This project is part of AMPC's goal of establishing a prestigious Integrated University based Scholarship Program to educate and train the next generation of industry leaders and technical professionals. The scheme will engage with industry and integrate students and researchers, ranging from undergraduates to masters-level and PhD students with academic staff supervisors. This component of the program will focus on providing scholarship support in process engineering, automation and robotics (Jan 16 – Jan 20). **Educational Pathways: Creating a Highly Skilled Meat Industry (2016.1027)** This project is part of AMPC's goal of establishing a prestigious Integrated University based Scholarship Program to educate and train the next generation of industry leaders and technical professionals. The scheme will engage with industry and integrate students and researchers, ranging from undergraduates to masters-level and PhD students with academic staff supervisors. This component of the program will focus on providing scholarship support in food technology and nutrition (Jan 16 – Jun 19).	
Program Stream 4.4: Vocational Training	**$119,950**
Development of Training and Assessment Support Materials for the Revised Meat Safety Qualifications (2016.1018) This project will enable the development of written training and assessment support materials for sixteen new Units of Competency in Certificate III and Certificate IV in Meat Processing (Meat Safety). RTOs will be the most frequent users of these training materials, which are vital for ensuring standardised training and assessment across Australia (Aug 15 – May 16). **Red Meat Processing Upskilling Scholarship Program (2016.1019)** This project will form the vocational component of AMPC's Integrated Scholarship Program. It will allow existing personnel to upgrade their skills to Certificate IV level or higher. This will ensure red meat processing companies and the broader industry address identified skill shortages, build capability in a dynamic and changing environment, and put in place succession planning (Jul 15 – Dec 20). **Meat Industry Leadership Development Program (2014.1029)** This project will continue to implement strategies that aid formal and informal leadership development for senior meat processing personnel. It will focus on senior and developing leaders to help the industry address new challenges. The project will provide a forum for identifying future leadership requirements that support innovation in the industry (Jul 14 – May 16).	

Program Stream 4.5: Plant Initiated Projects (PIP)	$847,716
AMPC supports processors to identify and undertake RD&E projects that can benefit the whole sector. It facilitates these projects through the PIP Program. This stream relates to PIP's focus on building capability and delivering innovative training opportunities for industry.	
AMPC CONTRIBUTION	**$1,757,485**

PROGRAM OUTPUT GOALS

Capability, Extension & Education Output Goals 2015-16
Invest in and manage projects that contribute to the goal of delivering cost effective improvements in industry capability, extension and education. Implement new education programs including the Integrated Scholarship Program and introduce new extension channels such as AMPC Webinars. Define the strategic direction for the program and the challenges to be addressed through the Capability, Extension & Education Program RoadMap.

PROGRAM 5

INDUSTRY IMPROVEMENT AND ECONOMIC ANALYSIS

PROGRAM 5 OUTPUTS

High level evaluations of the economic impact of AMPC investments and mechanisms to improve overall industry performance.
Note: *This is a new program that was initiated in Q3/4 FY 2014-15. Accordingly, there is only one project currently in this portfolio for FY 2015-16.*

KEY STRATEGIC IMPERATIVES

2. Delivering to customers and consumers.
5. Improving sustainability.
6. Building capability and influencing practice change.

PROGRAM STREAMS	DESCRIPTION OF THE PROGRAM STREAMS
5.1 Industry Improvement	This stream provides research and analysis to help improve the overall performance of the Australian meat processing industry against its global competitors. It includes competitiveness analysis and benchmarking studies that identify and quantify economic factors. Studies will include mechanisms to increase productivity and profitability and improve sustainability. At a more granular level, analyses may consider the economic factors associated with regulatory compliance, industry marketing, energy policy and carbon emissions, infrastructure investment, workforce management and innovation policy.
5.2 Economic Analysis, Data and Statistics	This stream generates and improves economic models for the red meat supply chain in order to assess supply and demand constraints and opportunities. A portal will be developed on the new AMPC website that provides timely and accurate processing-related information, data and statistical analysis from Australia and around the world.
5.3 Industry-Wide System Improvements	This stream identifies mechanisms by which the Australian red meat processing sector can become more competitive through industry-wide system improvements, such as common IT platforms or portals to reduce compliance costs. It will focus on areas where industry-wide reputation is critical to export success, such as supply chain issues associated with shipping information, food safety etc.
5.4 Strategic Communications	This stream improves AMPC visibility and develops strategic communications with key stakeholder groups. It covers strategic marketing communications based on a three-year plan to substantially lift AMPC's profile and recognition levels, and to differentiate it from other meat industry organisations with key influencers. It does not include day-to-day project marketing communications.

PROGRAM 5 STREAM PROJECT PORTFOLIO (PROJECT CODE IN BRACKETS)	BUDGET
Program Stream 5.4: Strategic Communications	**$68,575**
Evaluating the socio-economic benefits of the red meat processing industry in regional Australia (2016.1031) This project will provide an estimate of the economic contribution of the red meat processing sector across regional Australia at the national, state and individual region levels. It will also quantify the social impacts of the sector at the macro and micro levels (Aug 15 – Jul 16).	
AMPC CONTRIBUTION	$68,575

PROGRAM OUTPUT GOALS

Industry Improvement & Economic Analysis Output Goals 2015-16
Invest in and manage projects that contribute to the goal of determining how at the whole of industry level performance can be improved through economic modelling, statistical analysis, benchmarking and networked information flows. Define the strategic direction for the program and the challenges to be addressed through the Industry Improvement & Economic Analysis Program RoadMap.

PROGRAM 6

JOINT PROGRAM: FOOD SAFETY, INTEGRITY SYSTEMS, MARKET ACCESS AND MARKETING

PROGRAM 6 OUTPUTS

In association with MLA, AMPC invests in through supply chain activities to enhance market access, to improve marketing communications and to further develop food safety and integrity systems.

Note: MLA manages market access and marketing activities in the Joint Program. However, AMPC invests separately in and manages the Technical Market Access Program, which deals with specific non-tariff barrier issues of greatest concern to industry.

KEY STRATEGIC IMPERATIVES

1. Enhancing domestic and global competitiveness
2. Delivering to customers and consumers
3. Product integrity, safety and wholesomeness

PROGRAM STREAMS	DESCRIPTION OF THE PROGRAM STREAMS
6.1 Market Access	Australia's red meat exports face access restrictions in many overseas markets. Global trade liberalisation and improvements in technical market-access conditions are key focus areas in industry efforts to create opportunities for growth, development and diversification. The industry invests in research and consultation, and assists diplomatic activities and advocacy in pursuit of commercial and economic gains from removing or reducing impediments to trade. This stream builds on industry positions and advocacy to tackle trade barriers.
6.2 Marketing	Through this stream, AMPC invests in the development and delivery of market insights, and promotes beef and lamb domestically and internationally. This includes domestic advertising campaigns and the highlighting of Australia's integrity systems in international markets.
6.3 Food Safety	Food safety systems and quality assurance are vital for all sectors of the red meat industry. This stream conducts scientific research to ensure food safety systems are at the leading edge of knowledge and practice. It supports the development of food safety and quality assurance systems.
6.4 Integrity Systems	This stream invests in through supply chain meat and livestock integrity systems such as the National Livestock Identification System (NLIS) and its associated capability development.
6.5 Other	This stream develops information technologies that drive productivity and innovation through the supply chain, such as objective carcase measurement (OCM). It also examines ways to build engagement with the community on integrity practices and value chain capabilities.

PROGRAM 6 STREAM PORTFOLIO	BUDGET
Program Stream 6.1: Market Access	**$3,408,158**
■ Progressing industry positions under the India-Australia, Indonesia-Australia, Australia-GCC, Trans Pacific Partnership and Regional Comprehensive Economic Partnership trade negotiations ■ Strategic advocacy in support of timely implementation of the China-Australia free trade agreement (FTA) ■ Advocacy in support of initiating FTA negotiations with the European Union ■ Implementing measures to assist in alleviating access impediments in Indonesia, the Middle East and China ■ The ongoing effort in conjunction with industry and government to tackle prioritised technical trade barriers imposed by a number of Australia's trading partners. Priorities are determined by IMAAC.	
Program Stream 6.2: Marketing	**$4,785,000**
■ Developing and delivering market and consumer insights that help red meat producers and other stakeholders in the value chain to make informed business management decisions ■ Aggressive promotion of lamb and beef in global markets through domestic advertising campaigns and international investment in the integrity of Australia's red meat products.	
Program Stream 6.3: Food Safety	**$778,000**
■ Scientific research to ensure food safety systems are at the leading edge of knowledge and practice ■ Support of the development of food safety and quality assurance systems for all sectors of the red meat supply chain.	
Program Stream 6.4: Integrity Systems	**$1,157,000**
■ Developing and implementing appropriate meat and livestock traceability systems including NLIS and promotion of industry capability.	
Program Stream 6.5: Other	**$169,500**
■ Identifying information platforms and technologies that drive productivity and innovation through supply chains. It will focus on developing and proving objective carcase measurement technologies that predict a range of carcase attributes including eating quality and lean meat yield ■ Supporting effective engagement with the community to reinforce that the industry is an ethical and responsible custodian of livestock, land and resources. The community engagement program will support industry to communicate the integrity of practices through the supply chain and the commitment of the industry to improvements based on scientific underpinning ■ Building innovation value chain capability through programs such as the Australian Intercollegiate Meat Judging Association (ICMJ) competition.	
AMPC CONTRIBUTION	**$10,297,658**

TOTAL PROGRAM INVESTMENTS FY 2015-16

The table below summarises AMPC's contribution to each program as described in this AOP. In addition, the total for each program is shown based on additional MLA investment and matching government funding.

1	PROCESSING TECHNOLOGIES	AMPC CONTRIBUTION	TOTAL INVESTMENT
1.1	Productivity & Quality	1,531,817	3,063,634
1.2	Sensing & Analysis	274,118	548,236
1.3	Materials Handling	343,760	687,520
1.4	Value Added	72,951	145,902
1.5	Plant Initiated Programs	1,130,288	4,521,152
	TOTAL	3,352,934	8,966,444

2	ENVIRONMENT & SUSTAINABILITY	AMPC CONTRIBUTION	TOTAL INVESTMENT
2.1	Energy Efficiency	99,910	199,820
2.2	Waste Management	486,110	972,220
2.3	Water Conservation	56,000	112,000
2.4	Sustainability	61,656	123,312
2.5	Plant Initiated Programs	565,144	2,260,575
	TOTAL	1,268,820	3,667,928

3	FOOD SAFETY, INTEGRITY SYSTEMS AND MEAT SCIENCE	AMPC CONTRIBUTION	TOTAL INVESTMENT
3.1	Food Safety	318,470	636,940
3.2	Integrtity Systems	437,454	874,908
3.3	Meat Science	685,470	1,370,940
3.4	Transformational Meat Science (TMS)	308,943	617,886
2.5	Plant Initiated Programs	282,572	1,130,288
	TOTAL	2,032,909	4,630,962

4	CAPABILITY, EXTENSION & EDUCATION	AMPC CONTRIBUTION	TOTAL INVESTMENT
4.1	Industry Capability	237,478	949,912
4.2	Extension Services	451,737	1,806,948
4.3	Scientific Education	100,604	402,416
4.4	Vocational Training	119,950	479,800
4.5	Plant Initiated Programs	847,716	3,390,864
	TOTAL	**1,757,485**	**7,029,940**

5	INDUSTRY IMPROVEMENT & ECONOMIC ANALYSIS	AMPC CONTRIBUTION	TOTAL INVESTMENT
5.1	Industry Improvement	-	-
5.2	Economic Analysis, Data & Statistics	-	-
5.3	Industry Wide System Improvements	-	-
5.4	Strategic Communications	68,575	137,150
	TOTAL	**68,575**	**137,150**

6	JOINT PROGRAM	AMPC CONTRIBUTION	TOTAL INVESTMENT
6.1	Market Access	3,408,158	5,641,158
6.2	Marketing	4,785,000	26,976,000
6.3	Food Safety	778,000	3,160,000
6.4	Integrity Systems	1,157,000	8,843,000
6.5	Other	169,500	2,198,500
	TOTAL	**10,297,658**	**46,818,658**

FORECAST INCOME AND EXPENDITURE FY 2015-16

The table below provides a summary of AMPC's forecast income and expenditure in relation to delivery against the programs listed on pages 35 and 36.

Forecast Income and Expenditure FY 2015-16

	BUDGET 2015-16			
	Research, development and extension funds*	**Marketing funds****	**Pre-statutory funds*****	**Total**
INCOME				
	64%	36%	-	-
Industry levies	10,716,800	6,028,200	-	16,745,000
Interest income	1,358,822	-	181,792	1,540,614
Other income	675,252	-	-	675,252
Total income	**12,750,873**	**6,028,200**	**181,792**	**18,960,866**

AMPC PROGRAMS	Research, development and extension funds*	Marketing funds**	Pre-statutory funds***	Total
Program 1: Processing Technologies	3,352,934	-	-	3,352,934
Program 2: Environment and Sustainability	1,268,820	-	-	1,268,820
Program 3: Food Safety, Integrity Systems and Meat Science	2,032,909	-	-	2,032,909
Program 4: Capability, Extension and Education	1,757,485	-	-	1,757,485
Program 5: Industry Improvement and Economic Analysis	68,575	-	-	68,575
Program 6: Joint Program	2,935,500	7,362,158	-	10,297,658
Total Program Costs	**11,416,223**	**7,362,158**	**-**	**18,778,381**

CORPORATE COST	Research, development and extension funds*	Marketing funds**	Pre-statutory funds***	Total
AMPC corporate costs – direct[1]	1,350,503	-	-	1,350,503
AMPC corporate costs – indirect[2]	946,794	2,220,453	-	3,167,246
Total Indirect Costs	**2,297,297**	**2,220,453**	**-**	**4,517,749**

[1] Direct corporate costs include personnel and associated on costs directly related to the management of industry projects.
[2] Indirect corporate costs cover general expenses, corporate communications, business operations and improvements, other personnel costs, Board of director's fees and financial/accounting charges.

BUDGET SURPLUS/(DEFICIT)	**(962,645)**	**(3,554,411)**	**181,792**	**(4,335,264)**

Accumulated Funds Movements FY 2015-16

	Research, development and extension funds*	Marketing funds**	Pre-statutory funds***	Total
Accumulated funds as at 30 June 2015	41,532,893	(2,688,238)	6,157,303	45,001,957
AOP FY 2015-16	(962,645)	(3,554,411)	181,792	(4,335,264)
Estimated Accumulated funds – 30 June 2016	40,570,247	(6,242,649)	6,339,095	40,666,693

*R = Research, development and extension funds as defined by Statutory Funds Agreement 2011-15
**M = Marketing funds as defined by Statutory Funds Agreement 2011-15
***P = Pre-statutory funds accumulated from voluntary members' contribution before the Statutory Funding Agreement 2007-11.

APPENDIX 1: AMPC KEY STRATEGIC IMPERATIVES (AMPC STRATEGIC PLAN 2013-17)

AMPC KEY STRATEGIC IMPERATIVES
1. Enhancing domestic and global competitiveness
1.1 Research, identify, prioritise and address trade and technical market access barriers to develop agreed strategy in industry and with Government
1.2 Apply sound, scientific solutions to mitigate and remove trade barriers and enhance opportunities into existing markets
1.3 Build capability in key technical and trade disciplines to support ongoing response to market access, trade negotiations, technical and regulatory issues as they arise
1.4 Maximise the market access options for red meat processors through effective trade reform activities
1.5 Respond to domestic and international market expectations by effectively demonstrating and 'describing the system' under which red meat is processed (and produced)
2. Delivering to customers and consumers
2.1 Understand what consumers and customers want in relation to red meat products and how these expectations would be met
2.2 Demonstrating the importance of red meat in the diet
2.3 Delivering wholesome and consistent eating quality
2.4 Enhancing and communicating the value proposition of the red meat category to the customer, consumer and community
3. Product integrity, safety and wholesomeness
3.1 Research and development to ensure food safety systems and practices are the landmark of Australian product
3.2 Maintain and enhance efficient product integrity standards and quality assurance systems
3.3 Maintain and enhance world class traceability systems
3.4 Biosecurity, residue management and animal health standards are underpinned by sound science
3.5 High standards of animal welfare are demonstrated
4. Improving meat processing productivity, products and processes
4.1 Increasing the productivity of red meat processors to compete on the global scene through new technologies and manufacturing practices
4.2 Examining novel and efficient technologies and processes for whole carcase measurement and monitoring
4.3 Developing new meat products
4.4 Examine opportunities to value add from meat and meat products
4.5 Enhance the adoption and commercialisation of new technologies and innovations in industry
5. Improving sustainability
5.1 Investigating, understanding, communicating and responding to changes and influences in the red meat processing industry
5.2 Technologies, practices and procedures that contribute to improved waste management systems and that add value to waste products
5.3 Improving industry knowledge and capability to achieve sustainable resource management and adapt to climate change
5.4 Examining options to integrate new technologies and improve industry infrastructure
5.5 Business sustainability and continuity is enhanced
6. Building capability and influencing practice change
6.1 Engaging key stakeholders to create awareness and demonstrate value
6.2 Increasing industry capability and capacity
6.3 Increasing research capability and capacity
6.4 Evaluation of RD&E outcomes

AMPC

SUITE 1, LEVEL 5, 110 WALKER STREET, NORTH SYDNEY NSW 2060
PO BOX 6418, NORTH SYDNEY NSW 2059
T (02) 8908 5500 F (02) 9436 0343 **AMPC.COM.AU**