Australian Meat Processor Corporation
REQUEST FOR PROPOSALS (RFPs) FY2015-16

About AMPC

The Australian Meat Processor Corporation (AMPC) is the national Research & Development Corporation (RDC) that supports the Red Meat Processing Industry throughout Australia. AMPC’s mandate is to invest in and deliver Research, Development and Extension (RD&E) outcomes that enhance the sustainability productivity and profitability of the red meat processing sector.

RD&E Program Development

In partnership with the Red Meat Processing Industry and the Australian Government, AMPC seeks to fund the delivery of a balanced portfolio of RD&E investments across five key programs. Those programs are:

1. Technology & Processing  
2. Environment & Sustainability  
3. Food Safety, Product Integrity & Meat Science  
4. Implementation, Extension & Education  
5. Industry Improvement & Economic Analysis

With investments across the above program areas, AMPC is looking to fund:

a) Projects that are disruptive or transformative in nature and can deliver opportunities for the red meat processing sector to obtain sustainable competitive advantage. It is likely that these activities will require a range of disciplines and capabilities and extend over several years (i.e. 2-3 years).

b) Medium term projects (i.e. 6-18 months) that seek to adapt or enhance existing technologies into new products and processes. Activities might include design, development and prototyping with a demonstrated route to commercialisation.

c) Short term (i.e. <6 months) projects that include working partnerships and integration with industry. AMPC will encourage and facilitate industry involvement and provide guidance.

d) Projects that demonstrate awareness of processing costs and benefits to enable an assessment of economic, environmental, social, and regulatory impacts.

Activities and Outputs required from Providers

Research providers will be responsible for activities and outputs such as:

a) Assembling internal or external expertise to conduct the work and deliver outcomes.

b) Designing scientific studies and methodologies, in consultation with AMPC.
c) Securing access to research facilities (laboratories, equipment, etc.) and the necessary approvals for the conduct of research & development.

d) Developing a comprehensive project plan which includes a detailed methodology and budget and describes the cash and in-kind contributions to the project, and subsequently delivering the research on budget and on time.

e) Disseminating key findings from the research to the wider scientific community in a variety of formats, subject to approval by AMPC.

f) Preparing progress reports against milestones that detail findings from individual experiments. The milestones are to be agreed with AMPC during the contracting phase of the project. Milestone delivery is a critical metric for AMPC.

g) Preparing a comprehensive final report (following approval of a draft by AMPC) detailing the project (methodology, data, analysis & conclusions).

h) Preparing communication materials such as scientific papers, conference presentations, information brochures, snapshots, processor talks and trade articles as approved by AMPC.

The following pages provide a summary of Request for Proposals (RFPs) associated with each of the above-mentioned programs. Each program is described in terms of its overall objective and the individual streams that constitute that program. Following that overview is a list of RFPs to which providers should respond in the form of a Preliminary Research Proposal (PRP).

The PRP Template is available at the links below:

To download the PRP form in MS Word, please [click here](#).

To download the PRP form in PDF, please [click here](#).

It is recommended that each potential provider contact the relevant AMPC Program Manager (PM) as detailed below for more information regarding individual PRP submissions and to obtain guidance on areas of focus and how to construct the most compelling PRP.

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PROGRAM 2: ENVIRONMENT AND SUSTAINABILITY

About the Program:

The objective of the Environment and Sustainability Program is to develop technologies that improve industry sustainability in terms of environmental, economic and social outcomes.

The program operates across five program streams:

Program Stream 1: Energy Efficiency Systems

Red meat processing requires significant amounts of energy, which is ordinarily derived from the grid (electricity or gas), liquefied petroleum gas, coal, or oil/diesel. Energy is a major input and expense, as well as a source of greenhouse gas emissions. Major energy consuming activities include refrigeration and the production of steam and hot water. Less significant amounts of energy are used for processes such as lighting, ventilation, compressed air systems, motors and pumps. There is a large variation of energy usage across processing sites due to a range of factors such as the different ages and sizes of plants, different processing configurations, and the types of species processed (i.e. beef or sheep).

This stream focuses on generating innovative concepts and processes to reduce energy consumption at the site level (i.e. total energy consumption), as well as the energy intensity of red meat processing operations (i.e. energy consumed per unit of output).

Program Stream 2: On Site Energy Generating Systems

Increasingly, red meat processing facilities are exploring how to utilise available on site energy sources instead of relying on energy supplied externally. Drivers include rising energy prices, continued advancements in renewable energy technology, a desire for increased energy security and independence, and an ambition to maintain and enhance the industry’s clean and green image by reducing greenhouse gas emissions.

This stream focuses on technologies that enable facilities to harness available on site energy sources such as methane (from solid and liquid waste treatment systems), solid biofuels (from paunch waste, sludge, or manure), liquid biofuels (from tallow), solar energy, geothermal energy, and wind energy.

Program Stream 3: Water Harvesting & Conservation Systems

Water is primarily used in red meat processing to ensure food safety and hygiene during operations. The primary source of water originates from mains water (town or bore) or nearby water bodies (rivers, or dam etc.). Constraints such as availability and cost are forcing processing plants to reduce consumption and consider new sources. However, current food safety requirements, particularly for export registered facilities, limit water recycling.

This stream focuses on technologies that will deliver a reliable, safe and affordable supply of water to red meat processing operations and includes water harvesting (i.e. use of alternative water sources such as rainwater and geothermal systems), reuse (i.e. reuse of water captured within the facility before it is sent to the wastewater system), and recycling (i.e. treating and recycling wastewater for non-potable uses such as cattle wash) systems. Central to this stream is the need to ensure food safety standards are maintained, and this is factored into all research activities.

Program Stream 4: Solid Waste Management Systems

Red meat processing results in the production of a range of organic and inorganic solid wastes, including fats, oils, greases, manure, paunch, and sludge, as well as plastics and inorganic compounds. The majority of waste solids are organic in nature and are recycled by rendering and composting processes, or through reuse in land rehabilitation schemes. The disposal of solid waste can be costly, therefore processing facilities are incentivised to reduce waste production and consider alternative treatment and recovery options. This includes energy recovery (solid and liquid biofuels), nutrient recovery (nitrogen, phosphorous and potassium), composting and vermiculture, bioactives for pharmaceuticals and nutraceuticals, and ingredients for biodegradable plastics and food products.

This program focuses on technologies to reduce, reuse, recycle, and dispose of organic and inorganic solid waste in a way that minimises the impact on the environment, decreases waste management costs, and generates additional revenue streams through product recovery.

Program Stream 5: Liquid Waste Management Systems

Red meat processing plants generate large quantities of wastewater which requires varying levels of treatment prior to disposal to land or waterways. Sources of wastewater include stockyards, slaughter areas, offal processing areas and rendering processes. Depending on plant configuration, these sources can result in varying amounts of blood, fat, manure, meat, paunch and detergents entering the wastewater treatment system if not captured at the source and diverted into the solid waste treatment system. Wastewater constituents contain varying amounts of organic materials (such as nitrogen, phosphorous, salt, etc.), micro-organisms, and minor traces of chemicals (from cleaning processes) and heavy metals. Red meat processing wastewater can generate methane which is a valuable energy source and a greenhouse gas. The primary option available to the processing sector in reducing greenhouse gas emissions is generating energy on site through methane capture and use.

This stream focuses on technologies impacting liquid waste reduction, reuse, recycling and disposal in order to reduce the impact on the environment, reduce waste management costs, and generate additional revenue streams through product recovery. Product recovery can be in a number of forms including energy (methane) recovery, nutrient (nitrogen, phosphorous and potassium) recovery, bioactives and ingredients for biodegradable plastics and food products.
Environment & Sustainability

Topics relating to Program Stream 1 – Energy Efficiency Systems

AMPC requests proposals focused on generating new concepts, methodologies and understandings around new and innovative ways of reducing energy consumption at the site level (i.e. total energy consumption), as well as the energy intensity of red meat processing operations (i.e. energy consumed per unit of output).

All relevant applications are welcome, however specific areas of interest are outlined below. NB proposals may cover multiple RFPs.

Request for Proposal #15-E01
Investigation into Modular Micro-Turbine Cogenerators and Organic Rankine Cycle Cogeneration Systems for Abattoirs

Recent industry funded research (2013/5011: Examining options to maximize process heat recovery at red meat processing facilities) indicate that there are a number of technological improvements in high temperature heat production and heat recovery available, which are both practical and economically attractive. This project will build on this research through a literature review and desk-top feasibility study (or studies) into the following cogeneration systems for simultaneous heat and power production (with possible cooling applications):

- Cogeneration systems driven by one or more modular micro-turbines, with the micro-turbine integration to existing boiler plant; and
- Cogeneration systems driven by organic rankine cycle (ORC) engines, integration to existing boiler plant.

Request for Proposal #15-E02
Investigation into Voltage Optimisation Technology for Australian Red Meat Processing Facilities

A number of voltage reduction and voltage optimization technologies exist internationally. However there are no known installations within the Australian red meat processing industry. This project will involve a literature review and desk-top feasibility study examining the technical potential and economic benefits of voltage reduction and voltage optimisation technology at Australian red meat processing facilities. The investigation should also compare voltage stabilisation with voltage optimization and consider the various technologies that enable both, in addition to the implications for plant and equipment under operation at a processing facility.

Topics relating to Program Stream 2 – On-Site Energy Generating Systems

AMPC requests proposals focused on researching new concepts, methodologies and understandings relating to technologies that enable abattoirs to harness available on-site sources of energy such as methane (from solid and liquid waste treatment systems), solid biofuels (from paunch waste, sludge, or manure), liquid biofuels (from tallow), solar energy, geothermal energy, and wind energy.

All relevant applications are welcome, however specific areas of interest are outlined below. NB proposals may cover multiple RFPs.
Request for Proposal #15-E03
Investigating the potential applications for medium to high temperature solar thermal technologies at Australian abattoirs

Through recent discussions with the Australian Rendering Association, AMPC has become aware of potential application of medium-to-high temperature solar thermal collectors to the rendering industry. Medium-to-high temperature collectors are considered to include flat plates used for heating water or air, or collectors comprised of mirrors or lenses which concentrate sunlight and are generally used for fulfilling heat requirements up to 300 degrees Celsius / 20 bar pressure, and even for electric power production.

AMPC seeks a detailed technical and commercial feasibility of medium-to-high temperature solar thermal collector technology for application to the Australian red meat processing industry.

Request for Proposal #15-E04
Integrating solar photovoltaic (PV) technology with battery storage at Australian abattoirs

The cost of PV technology has reduced dramatically to the point where some systems are commercially viable without financial support. However, a limiting factor to uptake of solar systems in industrial applications is that a solar system alone may not provide a stable supply of electricity to meet base-load electricity requirements. In order to address this issue, technology companies are seeking to offer integrated solar PV and energy storage solutions.

This proposal should consider, in-detail, the technical and commercial viability of integrating solar PV with energy storage systems to provide electricity supply that meets base load energy requirements at Australian abattoirs.

Topics relating to Program Stream 3 – Water Harvesting and Conservation Systems

AMPC requests proposals focused on researching new concepts, methodologies and understandings around water harvesting (i.e. use of alternative water sources such as rainwater and geothermal systems), reuse (i.e. reuse of water captured within the facility before it is sent to the wastewater treatment system), and recycling (i.e. treating and recycling wastewater for non-potable uses such as cattle wash) systems that will deliver a reliable, safe and affordable supply of water to red meat processing operations. Central to this program is the need to ensure food safety standards are maintained, and this is factored into all research activities.

All relevant applications are welcome, however specific areas of interest are outlined below. NB proposals may cover multiple RFPs.

Request for Proposal #15-E05
Investigating Water and Energy Efficiency Opportunities Whilst Maintaining Food Safety at Abattoirs

Purchasing, treating and disposing of water represents a significant cost for the red meat processing industry. However the extent of water recycling and reuse in food processing is limited, primarily due to consumer and regulatory requirements. This area of research will include investigations and trialing of innovative approaches to reduce, recycle or reuse water (and associated embodied energy) at abattoirs, whilst maintaining food safety.
Included in this area of research will be an investigation into the technical, commercial and regulatory feasibility of treating 100% of abattoir wastewater to a potable standard or 'fit-for-purpose' use (i.e. reuse in non-potable water consuming processes). Other water recycling initiatives should also be considered (i.e. reuse of water within non-potable water application areas within an abattoir).

Areas of particular interest include the following (note: proposals may address any number of topics outlined below):

**Developing a Steam Sterilisation Cleaning Method for Viscera Trays at Abattoirs**

The heating of water to 82°C for organoleptic sanitation contributes greatly to operating costs at Australian abattoirs. Cleaning equipment with pressurised steam enables impact temperatures in excess of 100°C. A recent industry funded project entitled ‘2013/9118: Steam Sterilisation of Viscera Trays (2013)’ found that the use of steam sanitation of viscera tray surfaces has potential to significantly reduce potable water consumption, however further research into boiler capacity and steam injection technology is required.

As part of the project, steam injection into a steam bath was trialed which resulted in temperatures of 82.8°C at a distance of 140 millimetres (mm) from the surface. The required temperature is 82°C and therefore results were satisfactory for organoleptic sanitising. Microbiological post sampling and the visual assessments were conducted with the results showing almost 100% elimination of bacteria. However, further study into steam bath design should incorporate a professionally designed system to improve contact time and the use of recycled steam and water to further water savings. This project will investigate this through further trialing and development activity.

**Quantifying Energy Savings from In-Line Temperature Boosting of Steriliser Water Ring Mains at Abattoirs**

It has been determined through consultation with AMPC members that significant energy savings may be achieved through integrating point of use heating systems into existing hot water ring mains in abattoirs. This project will investigate the potential energy savings achievable in additional to any additional in-direct benefits.

**Investigating the Merit of Utilising 65°C Water In Sterilisation Processes at Abattoirs**

It has been determined through consultation with AMPC members that significant energy savings could be achieved, without compromising food safety, by utilising steriliser water heated to 65°C in place of steriliser water heated to 82°C used for cleaning equipment and surfaces within abattoirs. This project will investigate the economic feasibility of this initiative and analyse the food safety implications.

**Request for Proposal #15-E06**

**Electrolytic Disinfection of Abattoir Effluent**

Previous industry funded research has identified that chlorination, ozonation, UV irradiation, and membrane filtration are capable of achieving the effluent standards required of Australian red meat processing facilities (Advanced Wastewater Management Centre, 1999, Disinfection of effluent from meat processing). UV irradiation and membrane filtration, however, were discovered to operate only on very high quality effluent. Ozone, UV and membrane filtration have high capital and operating costs. Chlorination has been identified as the most economic disinfection process, but may not be an acceptable form of disinfection for meat processing effluents because of toxic by-product formation. Electrolytic disinfection is an untrialed technology in respect to meat processing wastewaters and could offer improved disinfection at lower operating costs. This project will examine the technical, regulatory and commercial feasibility of this initiative.
Topics relating to Program Stream 4 – Solid Waste Management Systems

AMPC requests proposals focused on researching new concepts, methodologies and understandings to reduce, reuse, recycle, and dispose of organic and inorganic solid waste in a way that reduces the impact on the environment, reduces waste management costs, and generates additional revenue streams through product recovery.

All relevant applications are welcome, however specific areas of interest are outlined below. NB proposals may cover multiple RFPs.

Request for Proposal #15-E07

Investigation into 24-Hour Composting Technology for Treating Abattoir Waste

AMPC has been made aware of a composting technology that has potential to compost abattoir waste within 24 hours. This project will involve the following activities:

- A desk-based technical, economic, and regulatory evaluation including an analysis of the process in the form of an ex-ante cost benefit analysis (CBA);
- A trial and demonstration of the technology to test the efficacy of the technology and the quality/suitability of the composted material for all potential end uses; and
- An independent CBA following the trial.

Request for Proposal #15-E08

Assess the Requirements to Treat, Store, or Otherwise Transform Paunch into a Usable Product for On Farm Use and Assess Applications Rates

Paunch management and handling in abattoirs can be an onerous or costly task. Some facilities have sufficient land to undertake composting while others are confined or restricted by housing or other factors. The objective of this project is to assess the requirements to treat, store, or otherwise transform paunch into a usable product for land application (i.e. on farm use) and assess application rates.

This will include an examination of:

- How to develop a ‘beneficial use’ agreement (BUA) or ‘end of waste’ agreement for handling paunch waste;
- The criteria for 70% moisture content (as laid out in the National Water Quality Management Strategy Guidelines, for Sewerage Systems - Biosolids Management (2004) published by the Natural Resource Management Ministerial Council), applicability or degree of pasteurisation for lot fed or grass fed cattle, and the level of stability required;
- How to measure stability of the product;
- How to assess potential risks or harm from on-site storage and on- or off-site farm use;
- Given the nature of paunch, is the minimum of three turns required and/or is there any other criteria; and
Whether MLA/AMPC document entitled PENV.023a "Assessment of contaminants in waste solids from meat processing wastewater streams" provides sufficient information to satisfy the conditions of a BUA for handling paunch waste.

A secondary activity of this project will involve a review of the MLA/AMPC document entitled PENV.023a "Assessment of contaminants in waste solids from meat processing wastewater streams" in light of current State Government regulation (all States) governing treatment and disposal of waste solids from red meat processing facilities across Australia. The review should include examination of how to treat and dispose of ‘sludge’ from wastewater treatment systems at abattoirs, as well as ‘fly ash’ from primary energy generating plant.

Request for Proposal #15-E09

Examination of Options for Dewatering of Paunch Waste and Sludge from Dissolved Air Floatation Systems

For more than a decade the Australia red meat processing industry has grappled with the challenge of cost-effectively dewatering solid organic abattoir waste (primarily paunch waste and DAF sludge) to enable preparation of a solid biofuel for combustion in a boiler, and concentrated liquor high in nutrient content for fertiliser applications.

Results from an AMPC member survey conducted in 2012 and regarding treatment of paunch waste (PW) and DAF sludge indicated that the majority of abattoirs use screw presses for dewatering of PW. In addition the survey revealed that 92% of the respondents land applied their PW and 8% sent the dewatered PW to landfill.

A number of technologies have been investigated through various research projects, including presses, screws and centrifuges, with varying levels of success. The most recent investigation was undertaken as part of project ‘A.ENV.0153: Paunch value adding – energy and nutrient recovery (2013)’. Under this project, the Rotary Fan Press (RFP) was the most trialed. The results from the trial revealed that the technology did not improve cake solids levels but did provide improved solids capture. The RFP did not improve the economics of energy recovery from PW. Nutrient recovery via precipitation of struvite from the PW filtrates appears to be technically feasible. Costs were developed for an integrated PW management system comprising RFP dewatering, nutrient recovery via struvite precipitation from the filtrate and energy recovery from the cake via co-combustion in the abattoir boiler. However the economics of this proposed PW management system does not appear to be attractive, even for large abattoirs (in this case processing 1,600 cattle/day).

This project will build on this previous research and investigate alternative technology options that may enable cost-effective preparation of a solid biofuel for combustion in a boiler, and concentrated liquor high in nutrient content for fertiliser applications.

Request for Proposal #15-E10

Examination of Inorganic Waste Reduction, Reuse and Recycling

The Australian red meat processing industry is under constant pressure to improve the management of solid waste arising from processing operations. Factors such as higher environmental expectations by government and consumers, innovations in sustainable materials and processes, and alternative uses and markets for outputs formerly considered waste create challenges and opportunities for red meat processing businesses.
This project will involve an investigation into inorganic waste streams being generated by red meat processors and how these waste streams can be reduced, reused or recycled with the greatest return on investment (ROI).

**Topics relating to Program Stream 5 – Liquid Waste Management Systems**

AMPC requests proposals focused on researching new concepts, methodologies and understandings relating to liquid waste reduction, reuse, recycling and disposal in order to reduce the impact on the environment, reduce waste management costs, and generate additional revenue streams through product recovery. Product recovery can take be in a number of forms including energy recovery (methane), nutrient recovery (nitrogen, phosphorous and potassium), bioactives for pharmaceutical manufacture and nutraceuticals, ingredients for biodegradable plastics, as well as ingredients for edible and non-edible food products.

All relevant applications are welcome, however specific areas of interest are outlined below. NB proposals may cover multiple RFPs.

**Request for Proposal #15-E11**

*Optimising Anaerobic Digestion Performance: Determining the Appropriate Inclusion Rate of Fat Oil and Grease for Optimal Crust Management and Biogas Production in Anaerobic Digestion Systems at Abattoirs*

In recent times, the majority of investment made by the Australian red meat processing industry into covered anaerobic lagoon (CAL) technology has focused on design and build aspects. Now that a number of full-scale CALs have been installed, there is an emerging need to understand the key operational elements of CALs. In particular, an important need is to improve understanding of the appropriate inclusion rate of fat oil and grease for optimal crust management and biogas production in anaerobic digestion systems at abattoirs. This project will investigate this issue and other important operational issues.

The project should consider both CAL and covered high-rate anaerobic lagoon (COHRAL) technology.

**Request for Proposal #15-E12**

*Integrated Agri-Industrial Wastewater Treatment and Nutrient Recovery from Abattoir Effluent*

Since 2012, AMPC has funded research and pilot trials of a range of standalone and integrated wastewater treatment technologies that are new to the Australian red meat processing industry. The results of this research, as well as prior related research is published in the following reports available on the AMPC website; [www.ampc.com.au/reports]:

- PRENV.01: Phosphorous removal from meat processing wastewaters (1999)
- PRENV.02: Nutrient removal from meat processing wastewaters (1999)
- A.ENV.0132: High rate aerobic treatment combined with anaerobic digestion and anammox Yr 1 (2012)
The technologies investigated to date include:

- A high-rate sequencing batch reactor (SBR) process to remove carbon (C) and nutrients;
- An anaerobic membrane bioreactor (AnMBR) process to stabilise the production of sludge and bioenergy (in the form of methane);
- An anaerobic ammonium oxidation (anammox) process to eliminate residual nitrogen (N), and;
- A struvite crystallisation technology for removal of phosphorus (P).

This research is approaching the conclusion of its developmental phase and is fast approaching the point where it can be applied in a full-scale setting in the Australian red meat processing industry. However, a number of RD&E activities remain, including:

- Development of an operational control scheme for the AnMBR process;
- Review of co-digestion options (i.e. digestion of various waste streams available on-site or near-site) to maximise the potential methane yield from the AnMBR process;
- Identify and validate the maximum organic loading rate (OLR) to the AnMBR;
- Determine the mechanisms of inhibition and/or process failure at the maximum OLR within the AnMBR;
- Develop the remediation strategies for managing inhibition and/or process failure at the maximum OLR within the AnMBR;
- Optimise the AnMBR for downstream nutrient recovery;
- Assess the impact of non-degradable chemical oxygen demand (COD) on the anammox process to determine efficient ways of removing N, and to predict the total N and NH₄ concentrations in the SBR effluent compared to discharge limits;
- The economic merit of P recovery is highly dependent on both mitigation of waste disposal fees and the value of the nutrient product. Therefore market analysis for the fertiliser product is a critical step to validate cost benefit analysis assumptions; and
A detailed cost benefit analysis (CBA) of the fully integrated treatment train, as well as its component parts such that a single process may be integrated into an existing wastewater treatment process at an Australian red meat processing facility. The CBA should include an analysis of commercial technology providers for the high-rate SBR process, AnMBR process, anammox process, and struvite crystallation process so that this technology may transition into a commercial setting in the Australian red meat processing industry.

AMPC is calling for research proposals that address the activities listed above.

Other Topics

Project proponents may submit a PRP that may not align with a particular program stream outlined above, however generates a social, environmental and/or economic value proposition for the Australian red meat processing industry. Other topics may include:

Request for Proposal #15-E13
Development of an Environment and Sustainability RD&E Strategy for the Australian Red Meat Processing Industry

Two key ‘sustainability Initiatives’ have emerged within the Australian and Global Red Meat Industries in 2014; the Australian Red Meat Advisory Council’s (RMAC’s) ‘Sustainability Framework’ (currently under development) and the Global Beef Sustainability Round Table (GBSRT), which has recently released its ‘Principles and Criteria’ (www.grsbeef.org). These initiatives concern the entire supply chain.

Underpinning the GBSRT’s draft principles and criteria is “the triple-bottom-line approach, depicted in Figure 1, that balances environment, social, and economic considerations and the requirement that a sustainable beef value chain respects national and international laws that govern the activities of beef value chain participants” (Global Beef Sustainability Round Table, 2014, Available: www.grsbeef.org).

![Figure 1: Triple bottom line underpinning the GBSRT's principles and criteria (Source: Global Beef Sustainability Round Table, 2014)](image)

The GBSRT defines sustainable beef as “a socially responsible, environmentally sound and economically viable product that prioritizes Planet (relevant principles: Natural Resources, Efficiency and Innovation, People and the Community); People (relevant principles: People and the Community and Food); Animals (relevant principle: Animal Health and Welfare); and Progress (relevant principles: Natural Resources, People and the Community, Animal Health and Welfare, Food, Efficiency and Innovation).
The GBSRT’s draft principles and criteria can be found on the GBSRT’s website - http://grsbeef.org/DRAFTprinciples.

With this in mind, AMPC has identified a need to devise a Strategy to provide the overarching framework to govern RD&E activities within its Environment and Sustainability RD&E Program. The strategy should building upon recent and current industry strategies and plans including the:

- Red Meat Processing Industry Climate Change Strategy (2012);
- AMPC Strategic Plan (2013-17);
- Meat Industry Strategic Plan; and
- Environmental Future Scan: Mega Trends to 2030.

A key objective of the Australian Meat Processing Industry Environment and Sustainability RD&E Strategy will be to provide objective, science-based information to underpin the red meat processing industry’s standing in relation to the environment and sustainability. This may require analysis of existing information available from industry, which may lead to further data gathering at the firm or site level as part of the project.

The proposed timeframe for consideration within the Strategy is five years.

**Request for Proposal #15-E14**

**Quantitative Risk Analysis of the Impact of Climate Variability on the Australian Red Meat Processing Industry**

Climate variability and long-term climate change presents a range of short, medium, and long-term challenges to the Australian red meat processing industry. These challenges include availability of stock (cattle, sheep, goats) as a result of changes to animal production systems, and availability of water and energy for red meat processing facilities.

This project will involve quantitative risk analysis of the challenges presented by climate variability to the Australian red meat processing industry. The analysis will examine key issues such as:

- What and where (geographically) the risks exist;
- What is their likely frequency; and
- What is the impact on the sustainability of the Australian red meat supply chain.

Following this analysis, mitigation and adaptation strategies will be developed along with an appropriate information extension program that communicates the research findings to industry in an effective manner.