

The Australian Pork Industry
**National Research,
Development & Extension
(R,D & E) Strategy**



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A joint R,D&E Strategy developed for the Australian pork industry by Australian Pork Limited, the CRC for an Internationally Competitive Pork Industry (Pork CRC) and the Primary Industries Standing Committee R&D Agencies.

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FOREWORD

In an increasingly competitive global trading environment, continuous effort to develop more cost effective products that are more closely aligned to consumer needs, are vital. In this respect, the Australian pork industry is no different to any other, but in being one of the few domestic agricultural industries heavily exposed to world trade through import competition, these efforts take on a significance greater than would otherwise be the case.

Research and development is the driver for innovation, productivity and long term cost competitiveness. This document outlines a strategy for the Australian pork industry designed to optimise the execution and outcomes of future research and development (including the technology transfer of those R&D outcomes). The strategy should be seen as one applying to the industry as a whole, and has been put together through the co-operation of industry bodies such as Australian Pork Limited, the Pork Co-operative Research Centre, Federal and State government agencies, Universities and other research providers.

The objectives behind this strategy are simple – to optimise the combined infrastructure and resources existing around the country, under the management of the various interested parties, for the purposes of carrying out research, development and extension for the Australian pork industry.

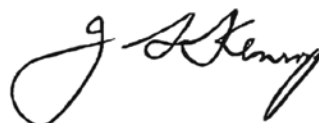
Just as our markets are competitive, so is the access to resources for research and development. Pressures exist on all stakeholders involved with R&D for the pork industry in many different forms – whether it is government budgets, reduced producer levy income or demands on higher and higher returns on investment.

Through a co-ordinated effort, where all involved agree to co-operate and work in a common direction for the benefit of the pork industry, the benefits flowing from research, development and extension can be significantly improved.

We are confident that we have in this strategy, the blueprint for such an R,D&E outcome. It is now the challenge for all of us involved to turn the blueprint into a reality so that it will deliver sustainable and competitive outcomes.



Mr Enzo Allara
Chair
Australian Pork Limited



Dr John Keniry
Chair
Pork CRC

EXECUTIVE SUMMARY

Australian Pork Limited (APL) and the Pork CRC have worked in collaboration to ensure that pork research, development and extension (R,D&E) is focussed, efficient and delivers outcomes in a timely manner to ensure that the Australian pork industry is competitive, productive and sustainable. This collaboration between APL and the Pork CRC has ensured that there is no duplication of R,D&E programs and activities. The recently held three year review for the Pork CRC determined that “the linkage between the Pork CRC and APL has led to major benefits for the programs of both organisations without leading to duplication in programs”.

That is not to say that challenges for the future of R,D&E for the pork industry do not exist. The Australian pork industry, like a number of other agricultural industries, is facing a potentially acute and unprecedented decline in research and development, human and physical infrastructure support services.

To ensure the increased alignment and coordination of the various pork R,D&E programs, APL and the Pork CRC, in conjunction with the various government, university & industry R,D&E stakeholders, have developed a comprehensive National Pork R,D&E Strategy that comprises a number of important components:

Pork R,D&E Facilities:

- 1) Focus resources into fewer but better funded facilities (‘experimental ready’) that are critical to meeting the current and future needs of the industry; and
- 2) Provide certainty for these facilities by base funding them on a rolling two year basis.

Pork R,D&E Programs:

- 3) Move from a project by project basis to a coordinated “National Program” approach; and
- 4) Enhance the development and retention of appropriate human resources and skills.

The National Pork R,D&E Strategy will enhance the range of collaboration and resources across the pork R,D&E portfolio including the development and delivery of core research programs and outcomes to meet both sectoral and cross-sectoral strategic objectives in an efficient and timely manner. The National Pork R,D&E Strategy will:

- Allow the pork industry to develop and maintain appropriate infrastructure and facilities for both pork and other cross-sectoral R,D&E programs;
- Strengthen the pork industry R,D&E capability and sustainability through the development of a coordinated program approach alongside these dedicated facilities;
- Enable the pork industry to demonstrate the effectiveness of delivering core research programs that meet the industry and government strategic priorities;
- Enhance the identification, attraction and championing of students and post-doctoral fellows to allow the pork industry’s human capacity to build sustainably;
- Ensure international relevance through the development of more formal linkages with appropriate leading edge R&D providers;
- Encourage the use of secondments, collaborative research programs to ensure that scientists have better access to international developments; and
- Further enhance the rapid uptake of R,D&E outcomes through increased involvement of industry, state governments and university R,D&E stakeholders.

I. INDUSTRY BACKGROUND AND CHALLENGES

I.1 AUSTRALIAN PORK INDUSTRY OVERVIEW:

Australian Pork Limited (APL) has estimated that the Australian pork industry contributed \$2.9 billion to the national economy in 2006-07. Globally, pork is the most popular meat with one and a half times more pork consumed than beef. The Australian industry is relatively small in the world market, accounting for only 0.4 per cent of the world's production and around 1 per cent of world exports.

According to the Australian Bureau of Statistics (ABS) and the Australian Bureau of Agricultural and Resource Economics (ABARE) the industry is estimated to have in 2007-08:

- Produced approximately 5.4 million pigs;
- Produced 385,000 tonnes (carcase weight) of pork; and
- Had a gross value of production (GVP) of \$880 million.

This decrease from the 2006-07 figure of \$944 million occurred as a result of a lower number of pigs being produced stemming from the high cost of feed grain, and continuing drought, combined with low pig prices and record imports of frozen pork for processed pork manufacturing.

Pig producers are located throughout all states and are generally located in grain growing regions. The industry has the largest concentration in New South Wales (25.2 per cent) and Queensland (25.1 per cent), followed by South Australia (21.6 per cent), Victoria (15.8 per cent), Western Australia (11.8 per cent) and Tasmania (0.7 per cent). According to the ABARE data, just under 85 per cent of Australia's pork production is consumed domestically. APL estimates that approximately 75 per cent of that amount goes to the domestic fresh pork market, with the remaining 25 per cent contributing to processed pork products. The export market is important for the Australian pork industry, in some years accounting for more than 20 per cent of Australia's production. APL's priority export markets are Singapore, New Zealand and Hong Kong. Pork imports, which began in 1995, have continued to rise sharply since 2000 and in 2008 were approximately 110,000T. Major exporters to Australia include Canada, Denmark and the United States. These three countries account for 99 per cent of imports.

I.2 PORK R,D&E CHALLENGES:

The Australian pork industry, like a number of other agricultural industries, is facing a number of R,D&E challenges. These include:

- Many state government and university research facilities with insufficient funding and resourcing;
- Closure or rationalisation of a number of university and state government R,D&E providers;
- Lack of succession plans for a number of experienced scientists and advisors rapidly approaching retirement age; and
- Inability to attract sufficient skilled resources leading to an acute decline in employment opportunities in government research organisations for young agricultural science graduates.

On a more positive note, the revitalisation of pork R,D&E by the existence of the Pork CRC has seen an increased level of undergraduate and postgraduate students funded by the Pork CRC and APL. However, it is envisaged that a large proportion of these students are likely to go into private industry roles (technical sales, technical sales support, product managers etc) rather than research based positions.

There has been an increase in the number of private companies conducting pork R,D&E in-house, with private research based organisations now accounting for a significant proportion of pork R, D&E personnel. The loss of some key state government R&D facilities has also seen an increase in the use of private industry facilities to conduct public R,D&E, as well as an increase in the number of private companies building R,D&E facilities. Many of the State government R,D&E facilities are also in urgent need of funding to maintain them so that they can not only deliver valuable outcomes but also be seen as a showcase opportunity for pork R,D&E.

APL R,D&E funding has fluctuated mainly downward (over the last three years) in keeping with industry herd decline and consequently the decline in the industry-generated levies. The Pork CRC has helped reinvigorate pork R,D&E by providing additional funding to scientists enabling many to continue pig research rather than moving on to other career paths. APL funding to State government research organisations has declined over the last 5 years. State government funding of pork R,D&E has also declined and there has been a shift towards the conduct of contract research for pharmaceutical and feed additive companies at these State government R&D facilities.

The decline in R,D&E funds has seen a shift from managing large long-term R,D&E programs to smaller short-term projects resulting in an increase in smaller amounts of R,D&E funds allocated to a large number of individual groups or projects. There has also been an increase in the proportion of funds provided by private industry players to supplement State government R,D&E programs. The lack of pork R,D&E funds has occurred in parallel with an increase in the cross-sector R&D projects/ programs to share R,D&E resources on common priority areas such as animal welfare, biosecurity, climate change and feed grains.

2. DEVELOPING A NATIONAL PORK R,D&E STRATEGY

2.1 BACKGROUND:

Research, development and extension (R,D&E) in primary industries are key factors for increasing competitiveness, productivity and sustainability. Nationally, R,D&E investment in primary industries exceeds \$1 billion annually, and this needs to be focussed to ensure efficiency, effectiveness and collaboration whilst avoiding duplication.

In April 2005 the Primary Industries Ministerial Council (PIMC) endorsed the concept of 'National R with Regional D&E' to facilitate further cooperation between agencies and industry for improving the efficiency and effectiveness of the national R,D&E capability. The notion of collaborative R,D&E between agencies is now well established and in April 2007 PIMC agreed to develop a National Research, Development and Extension Framework as a broad national plan to provide a more comprehensive, structured approach within an agreed timeframe which was endorsed on 6 November 2008 by PIMC.

The Framework spans 14 primary industry sectors (including new and emerging industries) and seven cross-industry sectors. These are:

- Primary industry sectors: beef, cotton, dairy, fisheries and aquaculture, forests, grains, horticulture, pork, poultry, sheep meat, sugar, wine, wool and new and emerging industries; and
- Cross-industry sectors: animal biosecurity, animal welfare, biofuels and bioenergy, climate change and variability, food and nutrition, plant biosecurity and water use in agriculture.

To build the Framework each industry sector and cross-sectoral area will be explored for its R,D&E capacity, research priorities, emerging needs and opportunities. This involves consulting with relevant collaborators in each sector to identify resource requirements and implementation issues.

By ensuring the substantial resources invested by government and industry in research are managed cooperatively, a more efficient, effective and comprehensive capability will be possible. In addition, there will be a more coordinated and collaborative approach to rural R,D&E, national research capability will be focussed, used efficiently, and effectively to achieve the best outcome and uptake by primary industries.

2.2 NATIONAL PORK R,D&E STRATEGY:

In developing the National Pork R,D&E Strategy, APL and the Pork CRC have consulted widely with its R,D&E stakeholders including federal and state governments, universities and the wider pork industry. The objective of the National Pork R,D&E Strategy is to develop a sustainable R,D&E model for the pork industry that will:

- Enhance collaboration between all R,D&E providers to deliver better outcomes to stakeholders;
- Optimise the use of the total R&D funds available for investment;
- Enhance critical mass of investment and resource utilisation to better deliver R,D&E outcomes to the pork industry and consumers;

- Ensure international relevance through the development of more formal linkages with appropriate leading edge R&D providers;
- Encourage the use of secondments, collaborative research programs to ensure that scientists have better access to international developments;
- Enhance investment of R,D&E funds from sources other than APL and Pork CRC; and
- Utilise appropriate R,D&E systems to ensure effective project management, transparency, reporting, and review.

In order to meet the objectives of pork industry R,D&E and successfully deliver on the R,D&E outcomes, a strategy has been adopted that comprises a number of important components:

Pork R,D&E Facilities:

- 1) Focus resources into fewer but better funded facilities ('experimental ready') that are critical to meeting the current and future needs of the industry; and
- 2) Provide certainty for these facilities by base funding them on a rolling two year basis.

Pork R,D&E Programs:

- 3) Move from a project by project basis to a coordinated "National Program" approach; and
- 4) Enhance the development and retention of appropriate human resources and skills.

2.2.1 CORE R,D&E INFRASTRUCTURE:

R,D&E for Australian pork has been conducted across a range of federal and state government and private industry facilities. These total approximately 12 R,D&E providers that cover approximately 18 individual R,D&E sites across Australia. Following the capability and capacity review undertaken by APL and the Pork CRC in conjunction with the R,D&E providers, six core facilities (Fig 1a - page 10) were identified as being critical to supporting the key pork R,D&E programs to be commissioned by APL and Pork CRC over the next three years. These programs are driven by the APL Strategic Plan and the Pork CRC Objectives and address the key industry drivers of competitiveness, sustainability and responsibility.

The criteria used to identify these R,D&E facilities included: experimental sample size, appropriateness of facility infrastructure to conduct R,D&E and potential for the facilities to allow for new production systems development that will speed up the process of technology adoption by the pork industry.

Once the core R,D&E facilities were identified, the generic infrastructure or the base funds for each of the facilities by pig category were established and included generic facility costs, feed costs, labour costs and number of experiments per year.

2. DEVELOPING A NATIONAL PORK R,D&E STRATEGY

Figure 1a. Core facilities for pork industry R,D&E by infrastructure type

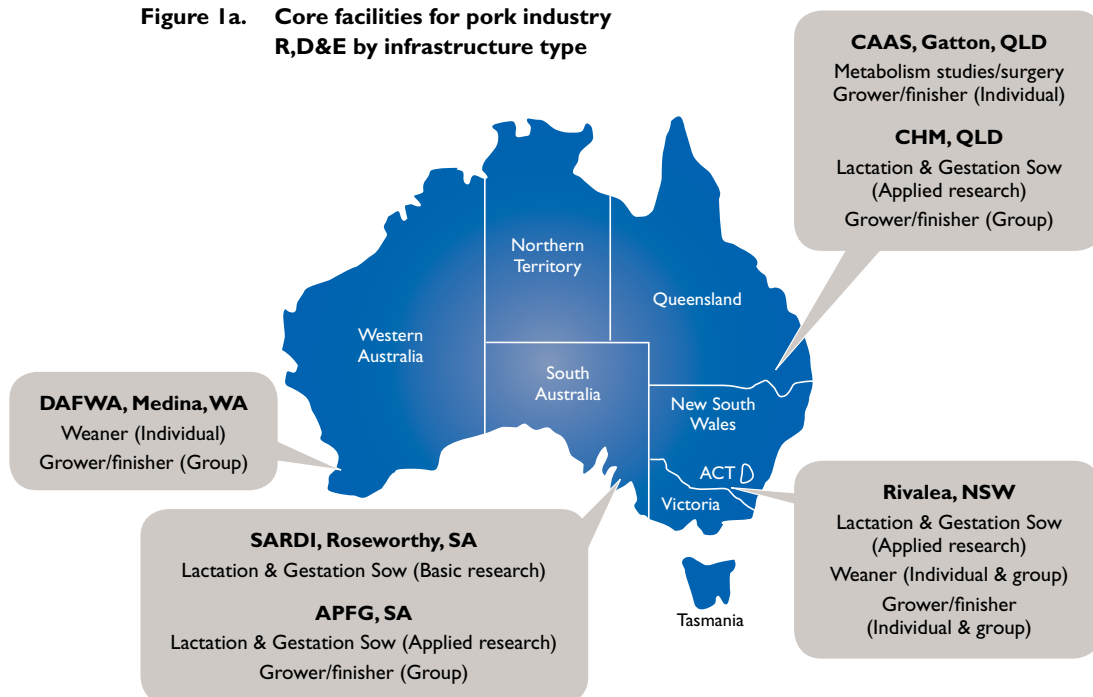
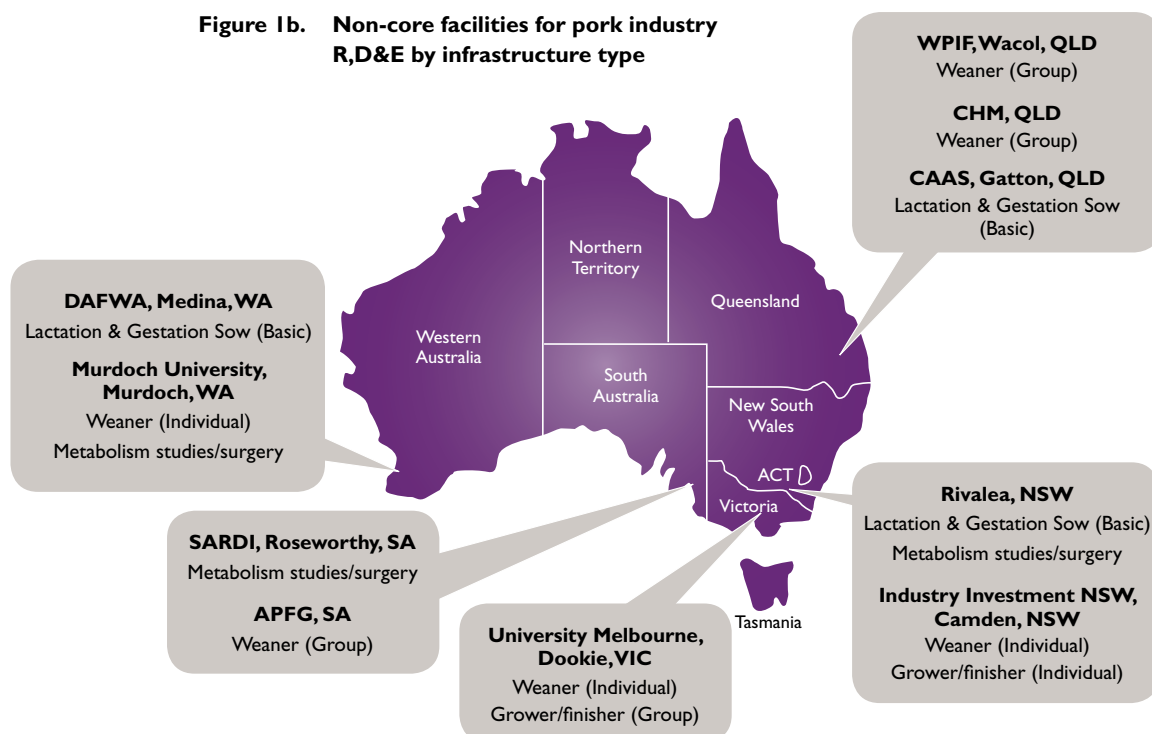


Figure 1b. Non-core facilities for pork industry R,D&E by infrastructure type



The core facility base fund costs have been proposed by the R,D&E providers and standard rates have been agreed for each facility category. A letter of agreement is currently being drawn up between the R,D&E facility providers and APL/Pork CRC for a period of two years and will be reviewed on an annual basis.

The average cost efficiencies of the base funding of core R,D&E facilities are outlined below (Table 1) and represent a significant decrease in the base facility costs and consequently on the overall project costs compared to the arrangements applying in the past. The funding of core R,D&E facilities will also ensure that these key R,D&E facilities are used to their full potential. The base funding of core R,D&E facilities presents the providers with long-term funding security that allows them to maintain their capability and capacity. This has been a major issue for a number of key pork industry projects that have been significantly delayed or terminated due to the loss of key technical staff. The provision of this base fund for the core R,D&E facilities will provide assurances to the R,D&E providers that these facilities will be utilised and as a consequence will be expected to be appropriately maintained.

This also ensures that scientists will be able to focus on delivering the research programs that will enhance the sustainability of the pork industry rather than having to constantly worry about securing future funding for their own positions and those of their key technical staff. In addition, scientists currently not linked to a pork R,D&E facility (e.g. animal behavioural scientists from Monash University) will be able to conduct their research at an appropriate site.

Scientists from non-core facilities (Fig 1b) will still be able to compete for specific R&D projects, but there will be no base funding for these non-core facilities.

Table 1. Historical and new cost arrangements comparison by infrastructure type

Infrastructure	Average Facility Cost (\$/pig)		Per cent Difference
Lactation and gestation sow (intensive)	Historical Base fund	321.00 44.50	86
Lactation and gestation sow (extensive)	Historical Base fund	107.00 47.07	56
Weaner (individual)	Historical Base fund	60.60 29.75	51
Weaner (group)	Historical Base fund	60.00 10.20	83
Grower/finisher (individual)	Historical Base fund	163.60 49.40	66
Grower/finisher (group)	Historical Base fund	56.50 38.90	31
Metabolism studies/surgery*	Historical Base fund	6667.00 2464.00	63

*\$/sample

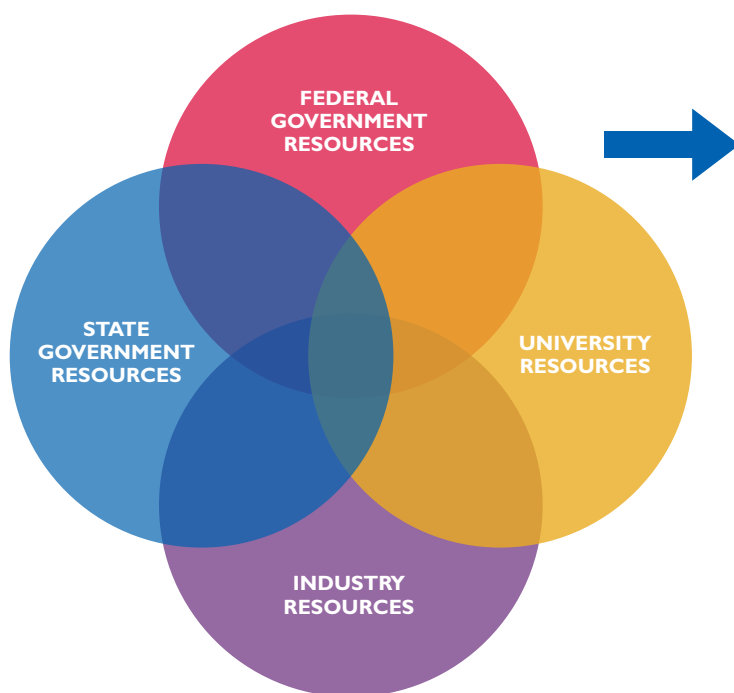
2. DEVELOPING A NATIONAL PORK R,D&E STRATEGY

2.2.2 R,D&E 'PROGRAMS' TO ADDRESS KEY R,D&E PRIORITIES AND HUMAN RESOURCES AND SKILLS DEVELOPMENT:

The R,D&E processes that APL and the Pork CRC currently have in place have been well understood and accepted by the R,D&E providers. Priorities funded by APL's R&D Advisory Committee (RDAC) and the Pork CRC's R&D Committee are based on an ex ante benefit cost analysis (BCA) methodology which identifies both industry and public good. However, the system for the commissioning of R,D&E projects, whilst a significant improvement from past R,D&E systems, still needs to address a number of R,D&E capability issues including:

- Collaboration between state government, university and industry R,D&E providers has always been a strong point for the pork industry, and more recently this has also resulted in increased collaborations with other RDC's on a range of cross-sectoral R,D&E priorities. Wherever possible, this collaboration needs to be fostered and new collaborations with R,D&E providers outside of the pork industry need to be established i.e. other industries and overseas R,D&E research providers especially in the disciplines identified in the pork R,D&E analysis;
- The Pork CRC has been instrumental in reinvigorating pork R,D&E by providing additional funding especially to young scientists and post-graduate students, enabling many to continue pork research rather than moving on to other career paths. However, systems for the mentoring of these young scientists must be further enhanced; and
- As mentioned in the Sector Overview, there has been in recent times, a significant shift from large long-term projects (two to three years) to smaller short term projects. As a consequence, R,D&E providers have been unable to develop any form of technical staff succession plan. This has been particularly evident with the state government R,D&E providers and requires urgent attention.

The establishment of an R,D&E Program within a particular discipline will allow for closer collaboration with the different R,D&E providers - especially industry providers - within a program. The increased capacity to conduct research and evaluate technologies and strategies on-farm will facilitate a greater uptake and concomitant research priority settings to universities, government departments and industry partners. The students and/or young scientists within a program will have access to senior scientists associated with their own project as well as other students and senior scientists from other R,D&E providers within the program. The research outcomes from an R,D&E Program will be more focused compared to outcomes from a suite of projects. This is due to the increased level of communication between providers involved in an R,D&E program compared to that between projects. The funding of R,D&E programs will also enhance the timeliness of deliverables to industry by being able to validate and extend outcomes with industry program partners. The establishment of R,D&E programs will also enable improved co-funding from commercial partners such as feed additive, pharmaceutical and equipment manufacturers.



Pork R, D&E Strategy

1. Focus resources to core R, D&E facilities;
2. Base fund core R, D&E facilities;
3. 'National Program' approach to address key priority areas; and
4. Development and retention of appropriate human resources and skills.



Pork R, D&E Strategy Outcomes

- Enhance collaboration between all R, D&E providers to deliver better outcomes to stakeholders;
- Optimise the use of the total R&D funds available for investment;
- Enhance critical mass of investment and resource utilisation to better deliver R, D&E outcomes to the pork industry and consumers;
- Ensure international relevance through the development of more formal linkages with appropriate leading edge R&D providers;
- Encourage the use of secondments and collaborative research programs to ensure that scientists have better access to international developments;
- Enhance investment of R, D&E funds from sources other than APL and Pork CRC; and
- Utilise appropriate R, D&E systems to ensure effective project management, transparency, reporting and review.

APPENDIX I:

R, D&E facilities currently utilised by APL and the Pork CRC research programs (2008 Survey)

State	R,D&E Site	R,D&E Facility
SA	SARDI, Roseworthy	320-sow farrow-to-finish piggery. Alternative housing facility (four weaner/grower/finisher shelters x 300-600 pigs + 80-sow dry sow shelter). Multi-purpose pig research building with 4 rooms that can be set up as group penning, individual penning/stalls, farrowing crates or metabolism crates. Animal surgery. Feed preparation room. Nutrition laboratory - including Near Infrared Spectrometry (NIRS) & automatic amino acid analyser. Reproduction laboratory with multiple capabilities which include hormone assay, embryo culture etc. Small-scale & commercial feed mill extruder. Food safety - analytical laboratories and food industry product development labs/kitchens.
	Australian Pork Farms Group	Commercial farms on numerous sites. New feed R&D site (grower/finisher).
NSW	Rivalea (Australia) Pty Ltd	Individual weaner pens - 180. Commercial weaner pens - 192 (10 pigs/pen). Commercial grower pens - 56 (18 pigs/pen). Commercial finisher pens - 80 (9 pigs/pen). Electronic feeder finishers pens - 18. Boar test pens - 116. Sow gestation - 16 (85 pigs/pen). Gestation /lactation - 320. Commercial facilities for G-F, sow and microbiology lab.
	Industry and Investment NSW, Camden	Lab facilities include range of molecular technology equipment. CT scanning facility for carcass & live animal scanning. Modern pig housing facilities, including temperature controlled & security housing.
	University of Sydney	40 sow farrow-to-finish piggery. Labs for research & diagnostic capability.
QLD	QDPIF, Wacol	120 single pen; eight groups pens; 24 weaner pens. Digestibility studies. 14 single pens & another 14 to be constructed to hold pigs. 10 metabolism crates. Surgery for cannulations.

State	R,D&E Site	R,D&E Facility
QLD (cont)	QDPIF, Wacol	Grow out facilities for Gatton pigs (not currently utilised for research). Weaner shed. Grower/Finisher Unit. Feed mill. Animal Research Institute. Nutrition analysis laboratory. Microbiology labs and equipment. Leslie Research Centre. Mainly grains research NIR machine being used to establish calibrations as part of the current Pork CRC project.
	UQ/QDPIF, Gatton	Centre for Advanced Animal Science (CAAS) Facilities at PC1, PC2 and PC3 for studies on nutrition, metabolism, growth, health, disease, welfare and breeding (400 sows). Group and individual animal housing. Collaborative research, contract and consultancy.
	CHM	FEEDLOGIC System/1000, head grower shed. Commercial facilities available.
VIC	DPI, Werribee (facility has been depopulated of pigs)	Experimental grower facility. Experimental sow gestation and lactation facility. Experimental weaner facilities. Meat research & training centre including research abattoir. Surgery. Metabolism study facilities. Dual energy x-ray absorptiometry facility.
	University of Melbourne, Dookie	56 Grower-finisher pens (seven pigs/group).
WA	DAFWA, Medina	FEEDLOGIC System/Group housed grower facility (64 pens with 8 pigs/pen = 512 pigs). Multi-purpose controlled environment room (100 weaners in individual pens, 16 farrowing pens). Individual grower shed (64 pigs). Two controlled environmental rooms (16 weaner pens/room with 5 pigs/pen (160 in total) or 12 farrowing crates). Alternative housing facility (2 shelters with up to 100 GF each, 2 shelters with up to 200 GF each). Feed-mill. Preparation room. Meat laboratory.
	Murdoch University	AQIS accredited temp-controlled isolation animal facility with three physical & environmental isolated rooms. Research labs. Licensed meat laboratory/abattoir.

APPENDIX 2:

Number of Research, Development & Extension Full Time Equivalents (FTE's) in government (G)/university & private (P) research organisations that are either currently involved in or have been involved in pork R,D&E (2006 Survey)

Discipline	QLD		NSW		VIC		SA		WA		TAS		Total	
	G	P	G	P	G	P	G	P	G	P	G	P	G	P
Nutrition	2	6	3.5	3	2	2	1	2.5	4.5	0.5			13	14
Reproduction	1	1	2	1			6			0.5			9	2.5
Genetics	1		3	2									4	2
Health	1		7	2	2	5	1	3	3.5	2			14.5	10
Housing		1	1	0.5			1		0.5				2.5	1.5
Welfare				0.5	3								3	0.5
Food safety/ Biosecurity	1		0.5	1	1	1	3						5.5	1
Environment	3	10	1	5			1		1				6	17
Meat Science		2		1	1	1			0.5				1.5	4
Extension	3	3	2	2	1		2					1	8	6

APPENDIX 3:

Number of current Pork Research, Development & Extension FTEs in the key government, university & private research organisations (2008 Survey)

State	RD&E Facility	Nutrition	Reproduction	Genetics	Health	Housing	Welfare	Food Safety Biosecurity	Environment	Meat Science	Extension	Expertise
SA	SARDI	0.5	3.6		0.6	1		1			0.2	Reproduction/Food Safety
	University of Adelaide		3.2									Reproduction
	APFG	0.2			0.4							Health/Nutrition/Reproduction/Production
NSW	Rivalea (Australia) Pty Ltd	2	1	1	3	0.5	0.5	1	1	1		All
	Industry & Investment NSW	1			8	0.5			0.5		1.25	Health/Housing/Environment
	UNE (AGBU)			2							1	Genetics
	University of Sydney	1	1		0.4			1.2				Health/Biosecurity/Reproduction
WA	DAFWA	2				1				2		Nutrition/Meat Science
	Murdoch University	2	0.5		2		0.3					Nutrition/Disease/Feed Evaluation
VIC	DPI				2					1		Health
	University of Melbourne	1		0			3	0		0		Welfare, Nutrition
QLD	QDPIF	5.7			1.25				0.75		0.8	Feed Quality/Environment/Health
	University of Queensland	1	1	5				2	3			Food Safety, Feed Quality
	CHM	2										Nutrition/Production

APPENDIX 4:

STRATEGIC DIRECTION

APL:

APL has published four strategic plans – 2002-2005, 2003-2006, 2005-2010 and 2010-2015. Over time the strategic plans have continued to provide strong direction for the industry with specific objectives, outcomes and goals.

The current overview of core objectives as contained within the new Strategic Plan 2010-2015 is provided below:

Core Objective	Build Consumer Demand	Viable Productive Farms	Efficient Value Chains	Leadership, Preparedness, Stewardship	Industry Cohesion & Responsiveness
Objective Champion	GM Marketing	GM R&I	GM R&I	GM Policy	GM Communication
Key Stakeholder	Consumer	Producers	Supply Chain	Community, Producers, External Stakeholders	Industry People
Scope	Domestic & international meat, fresh & processed	Farm efficiency	Links between layers of the supply chain	Managing risks & capturing opportunities	Information, knowledge, communication, internal operations
Strategy 1	Assuring eating quality	Reduce input costs	Create & capture value improvements	Address changing expectations & standards for food production	Engage & connect the industry
Strategy 2	Increasing frequency of use	Improve process efficiency	Enhance linkages between the value chain partners	Manage the impact of regulatory shifts	Facilitate rapid uptake of information & technology
Strategy 3	Improving the image of fresh pork	Build skills & capability	Optimise value chain efficiency & quality	Government policy & compliance requirements	Enhance the reputation & effectiveness of APL
Efficient	Promoting "Australian"				

PORK CRC:

The research and development programs of the CRC for an Internationally Competitive Pork Industry (Pork CRC) will result in the following outcomes:

- Reduced production costs for high-quality pork through more reliable and consistent protein and energy supplies via innovative grain production, co-product utilisation and quality assessment;
- Reduced production costs for high quality pork through improved herd feed conversion efficiency; and
- Increased demand for high-quality niche Australian pork products as a result of enhanced capacity to deliver nutrients, that promote the health and well-being of consumers via consumption of pork and pork products.

These research outcomes will contribute to Australia's industrial, commercial and economic growth through:

- Stabilised and sustained domestic and export pork markets; and
- Improved confidence in the pork industry leading to increased investment and industry growth.

Outcomes of the Pork CRC will be realised economically through:

- A reduction in the on-farm cost of production from \$2.00/kg to \$1.50/kg carcass weight (based on 2004 currency values);
- Development of value-added pork products that capture new niche markets by 2012; and
- The gross value of these outcomes totals \$203.9 million/per annum at the farm gate, with an additional return exceeding \$31.5 million/per annum for the farm-gate sector.

Pork CRC Programs:

Program 1: Securing more reliable and consistent supplies of protein and energy for pig diets

Securing more reliable and consistent protein and energy supplies for pig diets via innovative grain and pulse production, quality assessment and co-product utilisation will result in:

- a) Reduced variation in the annual cost of pig feed;
- b) Reduced total cost of pig feed;
- c) A wider range of feed ingredients available to more producers; and
- d) A closer match of diet specifications to pig requirements.

Program 2: Improving herd feed conversion efficiency

Improving herd feed conversion efficiency will optimise production efficiency through improved health, metabolic efficiency and reproductive capacity and will result in:

- a) The capacity to routinely and accurately measure feed intake in individual animals and groups;
- b) Products and management strategies that allow manipulation of feed intake/feeding efficiency in pigs;
- c) Reduced reliance on antibiotics in production systems;
- d) Cost-effective nutritional and/or prophylactic treatments for the prevention of disease;
- e) Products and/or strategies to improve production efficiency;
- f) Reduction in sow culling rates; and
- g) Reduced overall costs of production through improved pigs/sow/year; reduced sow turnover; and more efficient reproductive performance.

Program 3: Enhancing capacity to deliver nutrients that promote health and well-being through pork

Enhancing capacity to deliver nutrients that promote health and well-being through pork will enhance the value and versatility of pork products resulting in:

- a) An increased range of viable pork products and market opportunities for the Australian industry; and
- b) Demonstrated benefits from consumption of pork products by consumers.

Program 4: Deliver education and training consistent with specific characteristics of the Australian pork production sector.

The education and training program will build on the established infrastructure for education and technology transfer within the industry to develop the human resource capital necessary to sustain and further develop the pork industry. The major elements of the Pork CRC Education and Training Program will involve formal training opportunities to attract new entrants to the industry and retain expertise and innovation.

APPENDIX 5:

PREVIOUS R&D PROCESSES

AUSTRALIAN PORK LIMITED:

The Research & Innovation (R&I) Division is a core component of Australian Pork Limited (APL) and when APL was established, the R&I Division undertook activities previously managed by the Pig Research & Development Corporation (PRDC). As a consequence, many of the processes previously utilised by the Pig Research & Development Corporation (PRDC) for research and development priority setting, project commissioning and project management were directly adopted by APL.

Project development, budget setting, calls for research proposals and the commissioning of research projects were based on a published annual cycle aimed at expediting contracts by July 1 each year.

Expert Working Groups: Groups of experts in specific disciplines, coupled with producer representatives were established to identify research priorities and to assess research proposals. Membership of the group was by invitation and the core disciplines covered were "Reproduction and Health", "Nutrition and Genetics", "Technology Transfer and Communication" and "Environment and Welfare".

Call for Proposals: The bulk of projects commissioned were via a two stage proposal development process. Based on an annual cycle, APL made a call for two page preliminary research proposals in October each year that were then short listed by the expert working groups for progression to full-proposal. Full proposals were assessed in March/April each year and projects were ranked by the expert working group. Following a budget allocation by the Board, management then approved funding of projects based on rank until funds were fully expended.

In February 2006 the APL Board established an R&D Advisory Committee with the following terms of reference:

- To monitor guidelines, selection criteria and procedures for the initiation and management of R&I Division project investments to achieve better alignment to APL strategic objectives and improved reporting to the Board, and recommend changes as identified; and
- To advise the APL Board on the business plans for all relevant R&D programs and for those major projects agreed by the Board.

In addition, the APL Board also requested that the R&D Advisory Committee develop a project identification and assessment process that will be used internally for developing recommendations for future R&D investments within APL.

CURRENT APL REVISED R,D&E PROCESS:

A revised R,D&E process was implemented in 2007-08. This new process outlined below consists of two key components:

- R&D Specialist Groups; and
- R&D Advisory Committee (RDAC).

The Specialist Groups are comprised of 'expert' participants from industry, research providers and APL R&I program managers. This process is used to advise the R&D Advisory Committee on relevant research and development in the specialist area and assist the attainment of APL strategic objectives by:

- Utilising expertise within the Specialist Group to match R&D opportunities to APL strategic objectives;
- Prioritising projects and the most appropriate mode of commissioning (e.g. tender, general call);
- Alerting the RDAC to potential shortages in capability, infrastructure or resources that are impeding the pork industry's capacity to meet research and development objectives;
- Placing appropriate emphasis on technology transfer through recognition of the need for investment in the development of skills and infrastructure within the industry as a key element;
- Providing advice on opportunities for co-funding research projects; and
- Where appropriate, provide advice on the selection of research projects.

There are 6 Specialist Groups and these are:

- Group 1 - Marketing, supply chain and product development.
- Group 2 - Genetics, genetic modification and genetic transfer.
- Group 3 - Production and product quality.
- Group 4 - Industry capability and technology transfer.
- Group 5 - Environment and welfare.
- Group 6 - Quality assurance, bio-security and food safety.

The Chairpersons of the six Specialist Groups and the R&D Advisory Committee members together with the CEO of APL and the GM, Research & Innovation form the R&D Advisory Committee (RDAC). The primary function of the RDAC, on behalf of the APL Board, is to give direction to activities around the development, management, performance and outcomes of APL's research and associated activities through the:

1. Identification of research needs and opportunities as advised through the Specialist Groups;
2. Allocation of resources to specific areas of research and research projects through the Specialist Groups; and
3. Assessment of performance of the project portfolio and APL's research management.

The specific Terms of Reference for the RDAC are to ensure APL's research and development project portfolio:

1. Reflects the Commonwealth Government's research priorities as appropriate to the pork industry;
2. Is developed and operates with transparency and accountability through all parts of its processes from application for research funds through to reporting of outcomes and deliverables, with appropriate safeguards for commercially sensitive information;
3. Comprises an appropriate balance of projects in terms of scope, duration and commerciality (public/private good) through appropriate apportioning of funds between early stage scientific studies and downstream pre-market launch product development;
4. Provides an accurate and comprehensive overview of the performance of the portfolio regarding alignment with the APL Strategic Plan and progress towards milestones, budget adherence, key deliverables and investment value to the APL Board; and
5. Is responsive to specific Board directives and provides feedback for use in strategy development.

In addition:

1. The RDAC will ratify membership of all Specialist Groups; and
2. Membership of the RDAC will be reviewed annually.

The key steps in the revised APL R,D&E process are:

- A. Research priorities developed by Specialist Groups (January/February);
- B. Business plan developed by Specialist Groups (February);
- C. Submit Specialist Group business plan and ex ante Benefit Cost Analysis (BCA)* (early March);
- D. RDAC review Specialist Group business plans and recommends draft budgets to Board and APL research priorities communicated to industry (March);
- E. Board approves full budget and call for new R,D&E programs/projects (May/June);
- F. New R,D&E projects commissioned (July-January);
- G. R,D&E Process Review by RDAC (December); and
- H. APL/RDC project ex post BCA submitted* (June/July).

* RDC methodology for the BCA analyses adopted to review all APL R,D&E programs/projects.

PORK CRC:

Research and Development Committee

The primary function of the Committee is to provide leadership for the research conducted by the Pork CRC and make recommendations to the Pork CRC Board in relation to the funding of research programs and projects. The Research and Development Committee conducts annual reviews of all projects and monitors research project performance. The R&D committee meetings are held quarterly.

The Research and Development Committee consists of the Chief Executive Officer of the Pork CRC and two Directors of the Pork CRC, five industry members and one government representative.

Education Committee

The Education Committee advises and assists the Pork CRC Board in discharging its responsibilities in relation to the education and training activities of the Pork CRC. The primary functions of the Education Committee are to make recommendations to the Board on:

- Priority post-graduate training areas relative to industry wide capacity;
- Recruitment and selection of suitable postgraduate students; and
- Adequacy assessments of the training and education subprogram during the life of the Pork CRC.

The Education Committee consists of the CEO, Pork CRC, Company Secretary and two Directors of the Pork CRC and two industry representatives.

APL SPECIALIST GROUP PARTICIPANTS:

Specialist Group	Participants
SG1 Marketing, supply chain & product development	Ms Kay Carey*, University of NSW Mr Ron Penn, Craig Mostyn Group Mr Ted Campbell, BE Campbell Pty Ltd Prof. Frank Dunshea, University of Melbourne Mr Peter Hardy, Auspork Mr David Barnes, AJ Bush & Sons Mr Mark McKenzie, Rivalea (Australia) Pty Ltd Mr Peter Haydon, APL Ms Heather Channon**, APL
SG2 Genetics, genetic modification & genetic transfer	Dr Brian Luxford*, Rivalea (Australia) Pty Ltd Dr Susanne Hermes, University of New England Prof. Hans Graser, University of New England Mr Brenden McClelland, Eastern Genetic Resources Mr Paul O'Leary, PIC Australia Dr Rolf Sokolinski, CEFN Genetics Mr Bruce Trout, Pork Producer Dr Randal Cameron, University of Queensland Mr Jeff Braun, Myora Farms Dr Darryl D'Souza**, APL
SG3 Production & product quality	Dr Roger Campbell*, Pork CRC Dr Neil Gannon, University of Queensland Dr John Black, Consultant Mr Rob Smits, Rivalea (Australia) Pty Ltd Mr Anthony Edwards, Consultant Prof John Pluske, Murdoch University Dr Darryl D'Souza**, APL
SG4 Industry capability & technology transfer	Dr Chris Brennan*, Portec Australia Dr John Black, Consultant Dr Ross Cutler, Consultant Mr Ross Brown, CHM Alliance Dr Bruce Mullan, Dept of Agric & Food, WA Mr David Henman, Rivalea (Australia) Pty Ltd Ms Emalyn Loudon**, APL
SG5 Environment & welfare	Dr Rob Wilson*, Consultant Mr Ian Kruger, Industry and Investment NSW Ms Amber Rod, Rivalea (Australia) Pty Ltd Prof. Paul Hemsworth, University of Melbourne Mr John Riley, Consultant Mr Angus Davidson, Consultant Ms Kathleen Plowman, APL APL Manager TBA
SG6 Quality assurance, biosecurity & food safety	Dr Andrew Pointon*, SARDI Dr Ross Cutler, Consultant Dr Trish Holyoake, Industry and Investment NSW Dr David Hamilton, SARDI Dr Duncan Rowland, Animal Health Australia Dr Chris Richards, Chris Richards & Associates Mr Bill Salter, APL Ms Kathleen Plowman, APL Dr Pat Mitchell**, APL

*Chairperson; **APL R&I Manager

PORK CRC R&D COMMITTEE PARTICIPANTS:

Dr Roger Campbell, CEO Pork CRC (Chair).

Dr Robert van Barneveld, Director, Pork CRC.

Mr Rod Hamann, Director, Pork CRC.

Dr Ray King, Independent Consultant, Leader Program 1.

Professor Frank Dunshea, University of Melbourne, Leader Program 2.

Ms Heather Channon, APL, Leader Program 3.

Mr Dave Henman, Rivalea (Australia) Pty Ltd.

Dr Brian Luxford, Rivalea (Australia) Pty Ltd.

Dr Darryl D'Souza, APL, General Manager, Research and Innovation.

Mr Patrick Denham, Committee Secretary.

PORK CRC EDUCATION COMMITTEE PARTICIPANTS:

A/Professor Wayne Pitchford, Director Pork CRC (Chair).

Dr Roger Campbell, CEO Pork CRC.

Professor Paul Hughes, SARDI.

Dr Darryl D'Souza, APL General Manager, Research and Innovation.

Professor John Pluske, Murdoch University.

Dr William van Wettere, University of Adelaide.

Mr Patrick Denham, Committee Secretary.

LIST OF ACRONYMS

AGBU	Animal Genetics and Breeding Unit	NIRS	Near Infrared Spectrometry
APL	Australian Pork Limited	PIMC	Primary Industry Ministerial Council
APSA	Australasian Pig Science Association	Pork CRC	Pork Cooperative Research Centre
ARI	Animal Research Institute	PRDC	Pig Research and Development Corporation
BCA	Benefit Cost Analysis	QDPIF	Queensland Department of Primary Industries and Fisheries
CEO	Chief Executive Officer	UQ	University Queensland
CHM	Cameron Hall McLean	RDAC	Research and Development Advisory Committee
CRC	Cooperative Research Centre	R&D	Research and Development
CSIRO	Commonwealth Scientific and Industrial Research Organisation	RDC	Rural Research and Development Corporation
DAFF	Department of Agriculture Fisheries and Forestry	R,D&E	Research Development and Extension
DAFWA	Department of Agriculture and Food Western Australia	R&I	Research and Innovation
DPI	Department of Primary Industries	RIRDC	Rural Industries Research and Development Corporation
DXA	Dual Energy X-ray Absorptiometry	SARDI	South Australian Research and Development Institute
FTE	Full Time Equivalent		
GM	General Manager		



National Research, Development & Extension (R,D & E) Strategy

A more competitive and sustainable R,D & E
model for the Australian pork industry