



Commercialization and Utilisation Plan

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1 OVERVIEW

The CRC for an Internationally Competitive Pork Industry (Pork CRC) was established to improve the global competitiveness of the Australian pork industry which in most key performance indicators lags behind our competitors in the USA, Canada, South America and European countries such as Denmark and the Netherlands. The latter is illustrated in Table 1 which shows the Key performance Indicators (KPI) for Australia and other selected countries. Even the top 10% of Australian producers lag behind the average US and Canadian producers for feed costs and overall COP which is due to the relatively high cost of grain in Australia compared to the USA and Canada. Similarly the top 10% of Australian producers are able to match the average of Denmark and The Netherlands in the number of pigs sold per sow/year but continue to trail in carcass weight sold/sow/year which adversely affects overhead costs. The top 10% of Australian producers also trail The Netherlands average value for whole herd feed efficiency (HFC) which in turn affects the feed cost component of the profit equation. The Pork CRC will achieve its vision of a globally competitive vibrant Australian pork industry through targeted research programs and projects designed to deliver improvements in each of the key performance indicators. The targeted improvements and their consequent effects on cost of production and consequently the competitiveness of the Australian industry are shown in Table 2. The sensitivity of individual business indicators on margins and profit on a per sow basis are shown in table 3.

Table 1: Relative business indicators for the Australian (APL Pig Annual 2004-2005), USA (United Feeds Records 2005) Canadian (Agristats 2005), Danish and Dutch (British Pig Executive 2006) pork industries for 2005.

<i>Indicator/Country</i>	<i>Denmark</i>	<i>USA</i>	<i>Netherlands</i>	<i>Canada</i>	<i>Australia</i>
COP (\$Aus/kg carcass weight)	2.16	1.52	2.14	1.56	2.20
Pigs weaned/sow/year	26.1	20.0	24.5	24.4	21.1
Pigs sold/sow/year	24.6	18.1	23.4	23.0	19.4
Hot carcass weight (kg)	78.3	91.5	88.1	85	73
Carcass/sow/year (kg)	1734	1647	2062	1955	1416
Feed cost (\$Aus/tonne)	297	185	285	190	280
Average Diet DE (MJ/kg)	13.9	14.6	13.6	13.8	13.3
Diet cost (Cents/MJ DE)	2.13	1.27	2.10	1.37	2.10
HFC (Carcass weight basis)	3.79	3.90	3.54	3.80	4.20
HFC (MJ DE/kg carcass weight)	52.7	56.9	48.1	52.4	55.8

Table 2: Effects of short-term improvements in feed costs and key performance indicators on the profitability of the Australian Pork Industry

Variable and KPIS	Current	Targets
Price (\$/kg carcass weight)	2.40	2.40
HFC (carcass weight)	4.2	3.6
Feed cost (\$/kg)	0.27	0.25
Total feed (\$/kg carcass)	1.13	0.90
Other costs (\$/kg carcass)	1.07	.95
Total COP (\$/kg carcass)	2.20	1.85
Pigs sold/sow/year	19	22
Carcass weight (kg)	74	75
Profit (\$/sow/year)*	281	908

* The Australian industry currently has 340,000 sows

Table 3: Effects of a 10% improvement in individual business indicators on margins and profit

<i>Business indicator</i>	<i>Change in margin (\$/kg carcass weight)</i>	<i>Change in profit (\$/sow)</i>
Price	24.0	345.60
Feed cost	11.8	169.34
HFC	11.8	169.34
Pigs/sold/sow/year	9.1	176.26
Carcass weight	9.1	176.26

The objectives of the Pork CRC are:

- To reduce feed costs by 10% and improve the energy content of grains by 1.0 MJ/kg.
- Improve whole herd feed efficiency from 4.2 to 3.6.
- Increase the demand for Australian pork both domestically and internationally.
- To provide the industry with new scientists/researchers and commercial managers through specific and targeted education and training programs.

These objectives will be achieved primarily through the development and distribution of new knowledge and technologies to the different sections of the supply chain affecting the profitability and sustainability of the industry. Much of the IP generated through the Pork CRC research projects will be in the form of new knowledge though this will vary and a commercialization plan will be developed for every project and the most suitable commercial route identified and an appropriate commercialization plan developed. The latter may involve licensing of new grain varieties, rapid analytical techniques for determining the nutritive value of grains, the commercialization of vaccines and/or genetic makers from Programs 1 and 2 .The Pork CRC research program covers aspects of productive efficiency and production costs ranging from the development of new grains to advanced animal breeding technologies and the commercialization plan for each project is likely to differ so the process has to be flexible.

1.1 OUR VISION

To enhance the international competitiveness of the Australian pork industry and provide producers and Australia with opportunities for growth by providing and adopting new and novel technologies that reduce feed costs, improve herd feed conversion efficiency and increase the range and functionality of pork products.

2 MARKET POTENTIAL AND MONITORING

2.1 RATIONALE AND MONITORING MARKETS

Globalisation, food safety requirements, technology developments and trade reforms have forced profound structural changes in the Australian pork industry over the past 7 years. In 1998, the industry was focused on the domestic market and international competitiveness was not critical to its profitability. Since that time imports from the USA, Canada and Denmark have increased and currently (2007) are approaching 100,000 tonne annually (Figure 1).

During the same period exports of Australian pork have varied with changes in the exchange rate reaching maximum levels/values in 2002-2003 and declining to approximately 45,000 tonnes annually more recently (Figure 2).

The number of producers has declined over time but domestic production currently approaches 385,000 tonnes carcass equivalents (Figure 3) from the slaughter of approximately 5.4 million pigs (Figure 4) and has remained constant over the last two years reaching a gross value exceeding \$1.0 billion in 2006/2007.

In contrast the Australian market for pork (based on disappearance) has increased to nearly 500,000 tonne (Figure 5) due largely to imports all of which is used in manufactured product (bacon, hams etc). The difference (55,000 tonne) represents a potential additional but established market for domestic producers via import replacement if cost of production can be reduced to the level required to match the cost of imported material to Australian processors/manufacturers. Although adversely affected by the drought Australia's competitive position in terms of grain prices has changed relative to the USA and Canada due to the effects of ethanol production particularly in the USA on the price of corn which has almost doubled in the last year.

The full extent and magnitude of this difference and the implications it might have on Pork CRC strategies will not be fully understood until late 2007 when the Australian and North American crops are harvested. Nevertheless North American feed prices are expected to remain higher than the long term average for some time to come.

The Pork CRC monitors industry changes and trends on an almost continual basis and their implications on Pork CRC research directions and strategies are discussed at the program management and board levels.

Figure 1 Australian pork imports

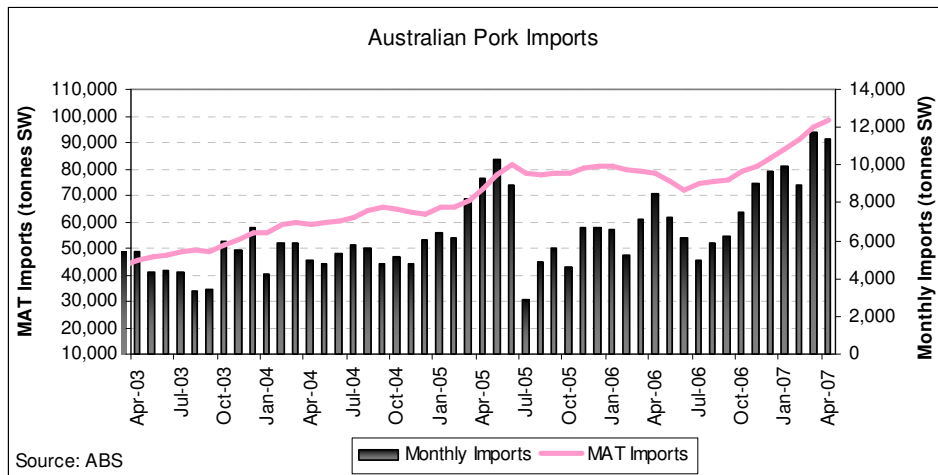


Figure 2 Domestic pork production

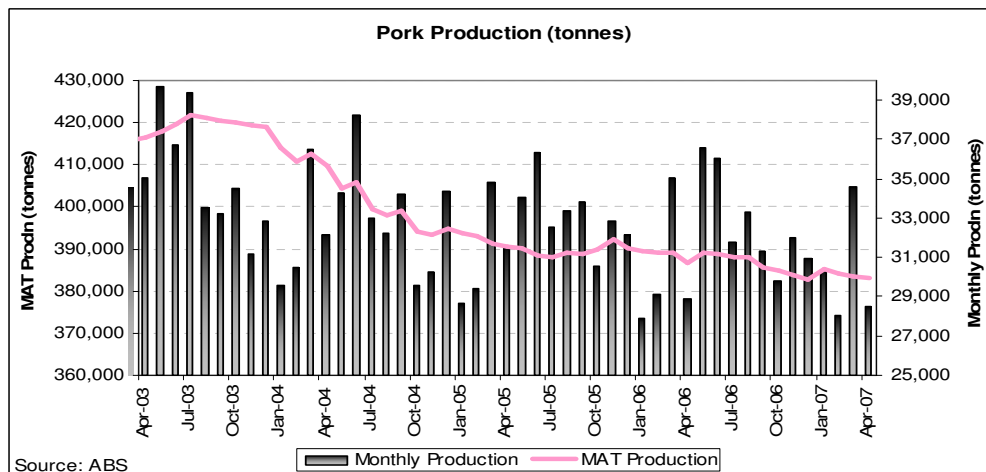


Figure 3 Pig slaughter numbers

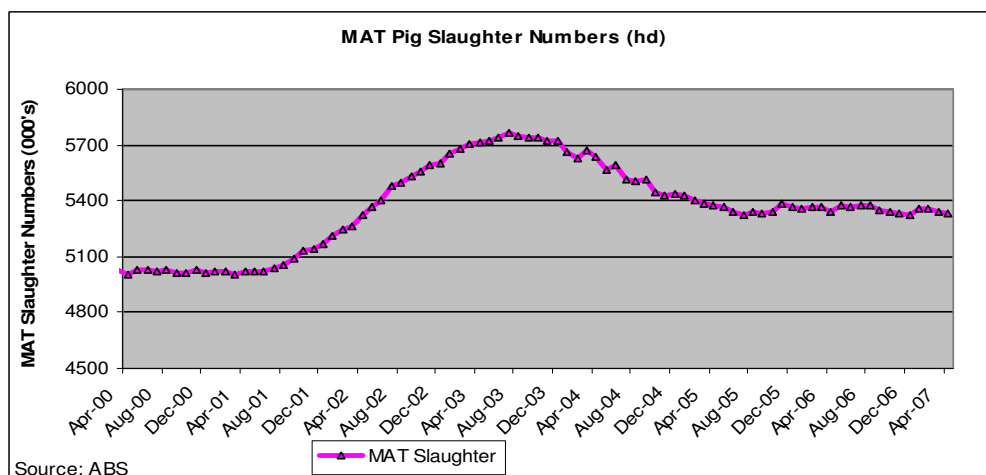


Figure 4 Australian exports of pork

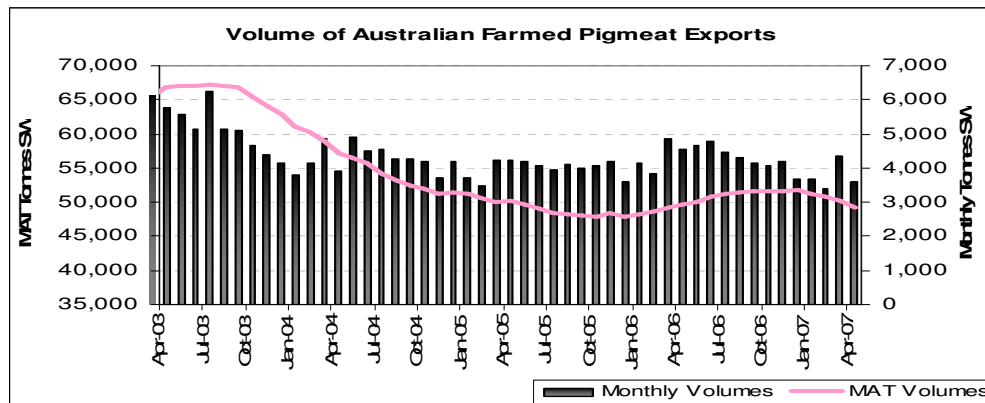
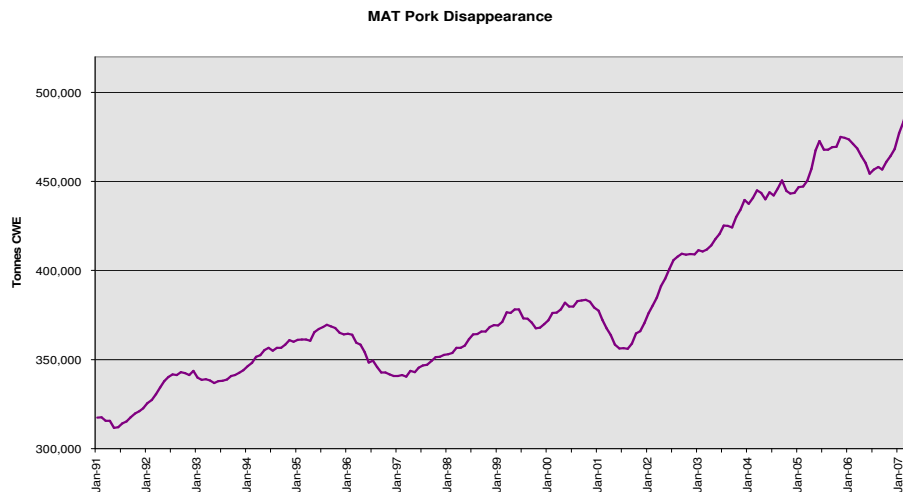


Figure 5 Pork disappearances in Australia



Whilst Australia has the potential to substantially increase production to replace imports and to meet some of the growing demand for pork products in Asia, we must compete against much larger exporters (some with subsidised production) on either price; quality and/or service in what are largely commodity, price-driven markets. To remain viable in global markets as a niche producer and exporter, attract further investment and build on past success, the industry must reduce the cost of production and add value to, or differentiate its product range. In addition, although Australia is a low-cost producer by world standards in times of grain surplus, high and unpredictable grain prices remain a crippling burden in times of drought, particularly as grain cannot be readily imported. The Pork CRC Programs and research projects are designed to address these issues.

At the international level the Pork CRC is able to monitor trends in production and compare key performance indicators through Nutreco and the British Pig Executive in the UK. Nutreco (Based in The Netherlands) is the world's largest animal nutrition company and they joined the Pork CRC as a supporting participant in 2006. We have a close working relationship with the British Pig Executive who is responsible for improving the competitiveness of the UK pork industry and share their UK and European benchmarking information with the Pork CRC.

In North America we are able to monitor industry and technological developments through our USA/Canadian Think Tank group which meets twice a year to discuss trends in the two industries which may have implications with respect to the Pork CRCs strategic plans and research activities.

3 TARGET MARKETS

The Pork CRC research program will generate the following marketable outputs with associated target markets including:

- New information to improve on-farm management decisions, and new processes, or enhancements to existing practices. These will include agronomy packages to enhance crop and nutrient yields, feed formulation and nutritional strategies to reduce feed costs and improve the efficiency of production, sow management strategies to improve throughput and reduce overhead costs. The new information will be targeted towards piggery owners and managers and service providers (e.g. nutritionists, consultants, veterinarians) with transfer via established and novel pathways.
- New prototype products to reduce costs and improve on-farm efficiency. These will include new grain varieties, vaccines, metabolism modifiers and feed additives. These will be targeted towards grain growers, pork producers, service providers and feed mills.
- New pork products will be targeted towards highly integrated pork producers, food processing companies and retailers with transfer via intellectual property commercialization licenses¹.
- A new generation of well-trained specialists with pork industry expertise. The new generation researchers and managers will be targeted towards research and teaching institutions, highly integrated pork producers and the service industries.

The strengths of the Pork CRC in the market place revolve around its participants who include the three largest pork production companies in Australia one which is fully integrated and another with processing capabilities, the largest feed miller/nutrition company in Australia and numerous other participants involved in providing advice and services to the Australian pork industry. The strong industry participation extends to the program management and board levels and ensures industry changes and constraints are well understood and monitored and are fed back into Pork CRC strategic and operational plans.

The Pork CRC works closely in monitoring industry needs and trends with its core participant Australian Pork Limited (APL) which ensures marketing issues particularly in respect to the development of new pork products are well understood and are taken into account in the development of research projects. APL's membership also covers at least 80% of Australian pork producers which further strengthens the Pork CRC's ability to communicate its messages to industry.

The Pork CRC is less well positioned in the grain side of the supply chain but has attempted to overcome this weakness by working closely with the Grains Research and Development Corporation with whom we have at least three joint projects and ensuring grain growers and agronomists are included in all the project management teams within Program 1.

The Pork CRC is also a member of the Feed Grains Partnership Initiative (FGPI). The FGPI is a co-coordinating and planning group comprising several research organizations and industry organizations with a significant stake in the Australian feed grain supply chain. Membership enables the Pork CRC to better understand and where possible influence the development of a feed grain industry in Australia and specifically feed grains and supply chain arrangements unique to the pork industry.

The potential value of the Pork CRC programs and projects is estimated at \$ 203.9 million annually up to the farm gate with an additional \$63.5 million annually from post farm gate activities/projects.

4 STRATEGY TO REALISE THE VALUE OF IP

4.1 PROTECTION OF OUTCOMES

4.1.1 IP identification and protection

At the earliest point in a project's development, a project agreement is completed and all background IP and anticipated commercial IP is identified. Each project investigator provides a quarterly report on progress to monitor the project's performance and evaluate its research. If the project investigator considers a finding arising from a project is novel and would require protection or is of potential commercial value, the project investigator is to communicate details to the Pork CRC. The Pork CRC will then consult with the Commercialization Committee and make a decision on the path to protect the IP, and make a recommendation to the Board if needed. The commercialization paths expected to be identified and used by the Pork CRC will include licensing, the formation of spin off companies, the sale of technologies and the communication of results to our participants and different parts of the industry.

The results of all Pork CRC projects are reviewed quarterly and identification of potential IP is a major component of the review. Potential IP identified is discussed with the researchers and Program and Sub program managers and if potential is thought to exist it will be discussed by the Commercialization Committee and the appropriate actions taken.

4.1.2 IP ownership

There are two types of projects;

- 1) Pork CRC Commercial Projects, and
- 2) Scholarship Projects.

The IP generated through these projects will be owned as;

- 1) Pork CRC IP, where IP is held on trust for the Pork CRC parties in proportion to their participating shares (Pork CRC Projects);

2) Scholarship IP, where IP is assigned to the Pork CRC.

All IP is held on trust for the Pork CRC Participants.

4.1.3 Confidentiality provisions

A policy has been established to ensure that publications, abstracts, manuscripts, articles, posters, presentations, reports, information sheets, media releases and these are reviewed by the Pork CRC before clearance is given. The Pork CRC is to ensure that before any material is published or disclosed the potential effects on commercialization of any IP in the material are considered, including the possibility that disclosure might preclude grant of a patent.

All Pork CRC students are required to sign an agreement to ensure that IP is protected.

4.1.4 Background IP

Background IP developed by a Participant, may be required in a Pork CRC project. The Participant making Background IP available to the Pork CRC is required to record the IP in the Pork CRC IP register. Background IP remains the property of the Participant making it available.

Each Participant shall have a non-exclusive, royalty-free right to use any other Participants background IP. The Participants will take all necessary steps to protect background IP and give each other prompt notice of any infringement of background IP that comes to their attention.

4.1.5 IP management at wind-up

Adoption plans will be developed to ensure that the project outcomes would be taken up by end-user organisations well before wind-up of the Pork CRC.

4.1.6 Commercialization Committee

The Pork CRC board has established a Commercialization Committee. The Committee is currently chaired by Mr Andrew Maughan (Independent director) and has two other permanent members. These are the CEO of the Pork CRC and the Company's Finance and Business Manager. Other expertise is seconded to the committee as required.

The role of this Commercialization Committee is to provide advice to the CEO and the board and to:

- examine project progress reports to ensure IP generated is identified and protected,
- approve the commercialisation strategy,
- review the background IP and IP registers,
- examine and advise on project commercialisation plans, and
- examine and advise on commercialisation activities.

4.2 PROJECT DEVELOPMENT & SELECTION

A critical part of the operation of the Pork CRC is the development and selection of projects. The Pork CRC commissions projects based on tender in areas where gaps in knowledge are identified and through formal requests for projects on a quarterly basis dependent upon available funds. However,

proposals can be submitted at any time, especially on issues of an emergency nature or of high national priority. The projects have to meet the Pork CRC's strategic direction and goals which are reviewed by the Board annually. Some projects involve leading-edge research and development, while others are designed to fill a perceived need to improve Australia's capacity and, as such, may not be considered to be leading-edge science. Irrespective, the science needs to be of high quality.

Project proposals are initially reviewed by the relevant Sub program and Program managers who after discussion with the applicants forward the proposals to the Program Committee who score and examine each proposal and make decisions on the appropriateness or otherwise of the proposals relevant to the Pork CRC's objectives and strategic plans, recommend changes to the Program, Sub program Managers and the principal investigator. On receiving the amended proposal the Program Committee again review the proposed project and make final recommendations to the board. Each project is ranked on its potential to improve the competitiveness of the Australian pork industry in terms of its impact on cost of production or margins in cents/kg carcass weight, the chances of success and the extent the outcomes can be adopted by the industry. Both the latter rankings are expressed as a percentage between zero and 100. The system enables the maximum potential benefit (MPB) of each project to be estimated from the product of the potential effects of costs/income and the proportional chances of success and adoption. The MPB for each project is recalculated as progress reports and results become available and are used in decision making during the annual review process and by the board to judge the potential value of and progress of individual projects.

The proportion of projects with MPB values ranging from 0-1 to above 5.1 cents/kg is shown graphically in Figure 6. As indicated previously these values are reviewed and where appropriate adjusted quarterly following review of progress reports. For projects funded at June 30 2007 the cumulative MPB or potential improvement in cost of production was 89 cents.

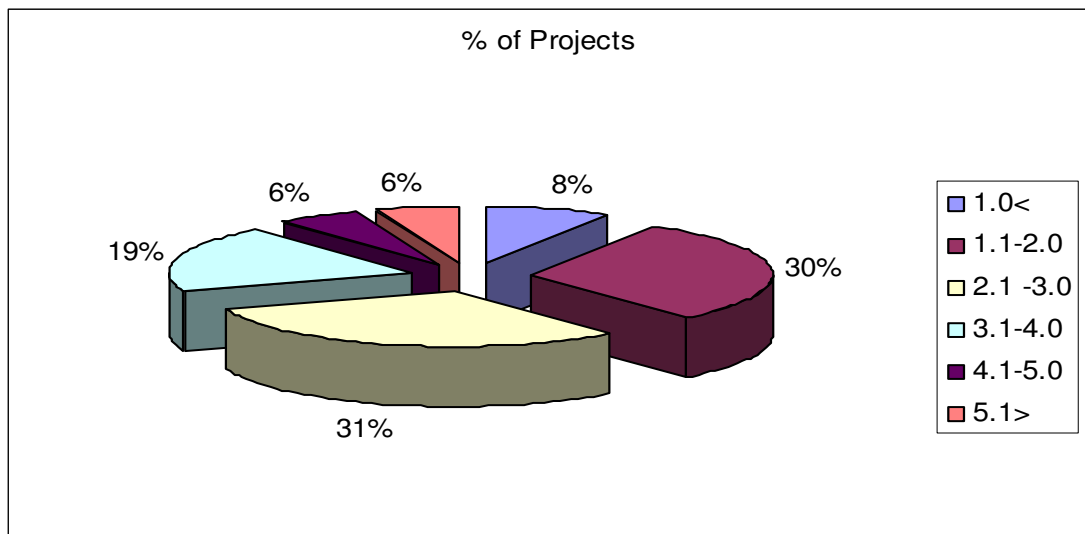


Figure 6: The percentage of currently funded Pork CRC projects with maximum potential benefits ranging from less than one to greater than 5 cents/kg carcass weight.

5 COMMERCIALIZATION STRATEGIES

Some of the strategies for utilisation and commercialisation are based on mechanisms that are well recognised by the majority of industry participants (i.e. low risk). Significant involvement by Australian Pork Ltd will ensure ongoing R&D investment outside the scope of the Pork CRC is complementary and that integration occurs where appropriate (especially during the technology transfer phase). In addition, existing pork industry infrastructure will facilitate monitoring of Pork CRC outcomes so that a net benefit from commercialization and utilisation can be quantified.

Adoption and utilisation of Pork CRC outputs will be assured by the balance of end-user participants and the established technology transfer mechanisms in the pork industry. The outputs will include:

1. New information to improve on-farm management decisions, and new processes, or enhancements to existing practices. These will include agronomy packages to enhance crop and nutrient yields, feed formulation and nutritional strategies to reduce feed costs and improve the efficiency of production, sow management strategies to improve throughput and reduce over head costs. The new information will be targeted towards piggery owners and managers and service providers (e.g. nutritionists, consultants, veterinarians) with transfer via established and novel pathways.
2. New prototype products to reduce costs and improve on-farm efficiency. These will include new grain varieties, vaccines, metabolism modifiers and feed additives. These will be targeted towards grain growers, pork producers, service providers and feed mills.
3. New pork products will be targeted towards highly integrated pork producers, food processing companies and retailers with transfer via intellectual property commercialization licenses'.
4. A new generation of well-trained specialists with pork industry expertise. The new generation researchers and managers will be targeted towards research and teaching institutions, highly integrated pork producers and the service industries.

Each of these outputs requires a different strategy for commercialization and utilization by end-users with achievement of this via several pathways.

New information and new processes will be directly used by piggery owners and managers, and service providers (e.g. nutritionists, consultants, veterinarians) with transfer via established and novel pathways.

Over years of investment in research and development (R&D) through levy contributions, the pig production sector has developed successful channels for communicating new information to producers and encouraging the adoption of innovations. The Pork CRC will use these channels, supported by the in-kind investment of Australian Pork Ltd, to ensure that new information and technologies are effectively integrated with existing knowledge. The Pork CRC core commercial participants are highly integrated companies, incorporating

grain production, feed formulation, commercial facilities and staff for applied R&D, pig production, processing and, to varying degrees, further processing and marketing to domestic and export markets. These companies have a combined production capacity representing 30% of the industry and their in-kind investment will allow large-scale evaluation of promising new technologies within fully commercial environments before promotion to the wider industry. Through close cooperation with these 'lead-user' companies under the co-investment structure of the CRC, beneficial innovations will be rapidly adopted by a significant part of the industry before final development is completed and documented.

Examples of existing and new pork industry information dissemination mechanisms that will be utilised by the Pork CRC include:

1. Pig Link – a bimonthly series of electronic seminars for pork producers with a phone in questions and answers session. Pig Link is a joint initiative of the Pork CRC and APL.
2. InnovateE- a bimonthly electronic technical bulletin used to highlight recent research findings and new technologies for producers and industry advisers. The bulletin is sent to all Pork CRC participants, researchers and all Australian Pork Limited's members.
3. Pork CRC News letter – a quarterly publication which highlights Pork CRC events and achievements.
4. Pork CRC Web Site – the web site is used to promote Pork CRC research results and their implications and to provide members, industry consultants and producers with the outputs of Pork CRC research projects in the form of reports and presentations.
5. Refresher courses for industry consultants – the Pork CRC in conjunction with APL has instigated a refresher course for industry consultants. The refresher courses will be used to update consultants/industry influencers on the latest technologies available for the pork industry and will include topics relevant to the industry and overseas experts in fields deemed relevant to the Australian industry at any point in time.
6. Press articles and articles in industry publications – the Pork CRC contracts APL to handle press releases and articles for the Pork CRC. The CEO does a monthly column for the Australian Pork News Paper and a technical article on Pork CRC research findings for each addition of the Pork Producer. Articles on Pork CRC projects and breakthroughs are published periodically in other rural press publications.
7. Industry seminars- Pork CRC staff and scientists regularly contribute to seminar series for producers and industry providers.
8. Pork CRC and APL seminars – The Pork CRC and APL are developing an annual seminar series for pork producers across Australia. The seminars will involve Pork CRC scientists and provide producers with the latest results and their commercial implications from the Pork CRC's research programs.

9. Pork CRC Annual Meeting – The Pork CRC holds an annual meeting for all participants, scientists and Pork CRC postgraduate, undergraduate and Postdoctoral students. The meeting reviews progress within programs and projects and enables the Pork CRC to prepare press releases and producer updates for distribution to the industry. Future meetings will involve industry consultants and wherever possible the meeting is timed to coincide with APL producer forums.
10. Pan Pacific Pork Expo – biennial conference and tradeshow for producers;
11. Pork Trends – monthly news-sheet to Australian Pork Ltd members.
12. Australian Pork Ltd Group Demonstration funding to encourage groups of producers to trial new technologies arising from Pork CRC research;
13. Uptake Technology Forum to showcase new technologies – biennial Australian Pork Ltd meeting attended by end-users representing 80% of Australian pork production (plus opportunities for video conferencing to remote locations). The Uptake Technology forum will likely be combined with the Pan Pacific Pork Expo in 2008.
14. Australian Pig Science Association (APSA) – internationally-recognised biennial technical conference for scientists, technical service providers, extension officers and leading producers. APSA is a supporting participant of the Pork CRC, and by combining a Pork CRC annual conference with the APSA conference every two years, the Pork CRC is assured of a wide national and international audience for some of its outcomes.

Other technology transfer pathways and strategies that will be utilised by the Pork CRC include:

Targeted information packages and expert working groups.

The Pig Research and Development Corporation examined “pathways for nutritional information” (Project DV 1638, 2001) and identified that five nutritionists or providers of feed formulation advice serviced almost 68% of Australian pork production with the next five providers servicing an additional 19% of pork production. Since that review was undertaken, it is likely that only eight nutrition providers service more than 90% of the commercial pork production sector. Similar ratios exist for the provision of specialist veterinary services and other service providers to the pork industry. This unique industry structure means that establishment of expert working groups comprising these key individuals servicing the pork industry is an efficient way to disseminate information to industry and ensure wide adoption. The Pork CRC will convene these groups and will facilitate targeted delivery of information generated by Pork CRC research programs.

Utilisation of existing grains industry information dissemination mechanisms.

The opportunity exists to utilise GRDC’s extensive communication network to disseminate information, promote new initiatives and enhance the link between grain growers and pork producers. The GRDC communication mechanisms that could be utilised by the Pork CRC include:

- Ground Cover – newspaper updating farmers on the latest in research;
- Growers Group – news and information from groups of growers active in grains research. Includes Local Farmer Group Network, Partners in Grain, Grower Group Alliance and TOPCROP;
- Advice sheets – research information and advice for farmers and agronomists.

Grains/Pork Industry Management Teams

Adoption of some outputs from the Pork CRC will require changes in traditional grain and pulse production practices, not only in the crops and varieties planted, but the agronomic practices required to optimise yield. The supply of high yielding feed grains with specific nutritional attributes for pigs will also necessitate an increased level of interaction between pork producers and grain growers. To bridge this divide, the Pork CRC has established Management groups for all its grains projects which include grain growers, agronomists, pork producers and the relevant research organizations and scientists. The model will help facilitate the development of relationships between growers and producers and promote confidence in the development of a potentially new model for grains for the pork industry. The Management groups will also be responsible for the initial development of a commercialization plan for each project outcome using the considerable expertise and previous experience in this area within the respective teams.

Specialist skill-development workshops and training kits.

The pork industry has a strong reputation in the development of training kits based on research outcomes and the use of these kits to facilitate specialist skill-development workshops for pig producers and their staff in regional locations. The Pork CRC will utilise this base to expand the scope of these workshops and training kits based on relevant research outcomes.

Short knowledge-development courses.

Delivery of Pork CRC research outputs via short courses will support life-long learning initiatives for pork producers and managers, and will be targeted so that formal qualifications are not required for participation.

Development of the Pork CRC brand.



From the initial stages of bid development, the Pork CRC core participants have attempted to establish, and view as important, an identity enhanced through a logo and coordinated strategies. The Pork CRC will further develop this identity or brand so that sources of information and products can be easily recognised, and so that end-users associate these outputs with a credible, industry-driven, collaborative research and development effort increasing their willingness to utilise the information or adopt the output.

Participant communication Network.

A participants' communication network utilising the internet, newsletters and annual conferences has been established by the Pork CRC to build a strong culture of collaboration between all participants, to earn public support for the pork industry and the associated research and development conducted within the CRC, and to ensure that all participants understand the principal needs of stakeholders and report promptly their progress and outcomes.

Website.

A website has been established to communicate the objectives of the Pork CRC (www.porkcrc.com.au) details of the relevant research programs and participants, and research progress. The website also provides a base for promotion of commercial products arising from the research program as well as relevant publications and links.

New pork products will be adopted directly by highly integrated pork producers, food processing companies and retailers with transfer via intellectual property commercialization license.

The Pork CRC will develop cost-effective technologies to produce fresh and possibly processed pork cuts that are enhanced with a range of nutrients that are known to be beneficial to human health, and will determine the extent to which health claims can be made in the promotion of these products. It is envisaged that these technologies will be offered under non-exclusive licenses to companies that have the capability to produce, distribute and promote brands based on the substantiated health benefits for local and export markets, to maximise market penetration. These three core participating commercial producer groups are all currently involved in supply alliances that produce either wholesale (QAF Meat Industries Pty Ltd – Baxters; Australian Pork Farms Group – Auspork and Daylesford Country Pork), export (The CHM Alliance - Sunpork) or local retail brands (The CHM Alliance – Hans Fresh) and are well placed to lead the development of new nutritionally-fortified brands into all major markets for Australian Pork.

Trained specialists will be engaged by the pork industry to redress the current lack of qualified personnel.

The critical research momentum generated by the Pork CRC and the influence the outputs will have on confidence and investment in the pig production will help stem the loss of existing technical expertise, and will increase the retention of newly trained specialists by the industry. This will provide a significant boost to the transfer of technology arising from the Pork CRC and will promote widespread adoption.

5.1 CONTRIBUTION OF THE MAIN END-USER PARTICIPANTS IN THE PORK CRC

1. Integrated pork producers and processors (Australian Pork Farmers Group, QAF Meat Industries Pty Ltd, The CHM Alliance).
2. Feed ingredient and therapeutic manufacturers and suppliers (Alltech Biotechnology, Elanco Animal Health Pty Ltd, Feedworks Pty Ltd, and Kemin Industries (Asia) Pte Ltd).
3. Stockfeed manufacturers and ingredient processors (Betterblend Stockfeeds Pty Ltd, Ridley Agriproducts Pty Ltd).
4. Agronomists and new cultivar suppliers (Grainsearch Pty Ltd).

Integrated pork producers and processors

Core industry participants (farming 100,000 of the total 340,000 sows in the Australian pig herd) have already collaborated to generate the substantial seed funding (despite all experiencing losses in current markets) necessary to secure the involvement of essential university, government and other private sector participants. Combined with the support of Australian Pork Limited and the Western Australian Agriculture Produce Commission Pork Producer's Committee, the Pork CRC involves 100% of the commercial pig sector in Australia through either direct cash investment, representation by the peak body and/or the provision of research capacity and demonstration sites. Through the proposed program, core industry participants will contribute to the basic research program in conjunction with traditional research providers, which will greatly enhance the rate of adoption. The Pork CRC will have the balance of participants necessary to ensure an integrated approach, both to research and to adoption of research outputs. It will also allow fragmented research groups to establish the critical mass needed to make significant advances towards the defined goals and to compete for limited resources.

Two pork industry participants (The CHM Alliance and QAF Meat Industries Pty Ltd) have established science and technology programs, research expertise and training programs, and plan to contribute a proportion of these in-house resources to the Pork CRC. All core pork industry participants have made resources available for the demonstration of technologies and commercialization of outcomes. Being integrated pork producers, this means they can directly demonstrate technologies relating to grain production, feed manufacture, ingredient processing, pig production, and fresh and processed pork products. Using industry facilities for research, training and demonstration/adoption activities, in collaboration with public sector research providers, will increase the relevance of the program, making the path to commercial adoption clearer and ensuring the success of the CRC.

Feed ingredient and therapeutic manufacturers and suppliers.

In addition to cash and in-kind investment, these end-users will contribute existing technologies to the Pork CRC research program including:

- Proprietary enzyme preparations and enzyme technology;

- Stable sources of omega-3 fatty acids (SALmate);
- Metabolic modifiers (e.g. Ractopamine);
- Proprietary acidifiers and related technologies;
- Sources of organic materials and supplements suitable for enhancing the nutritional attributes of pork.

Stockfeed manufacturers and ingredient processors

Ridley Agriproducts Pty Ltd is Australia's largest stockfeed manufacturer and Betterblend Stockfeeds is a well-established grain trading, processing and stockfeed manufacturing business based in Oakey, Queensland. Both organisations will contribute to specific research programs and will provide expertise and infrastructure for the processing (eg. expanding, pelleting) of ingredients and complete pig feeds.

Agronomists

The members of Grainsearch Pty Ltd were all original members in establishing the very successful Southern Farming Systems. This is a farmer driven non-profit organisation undertaking research and extension programs in the 'high rainfall and cool climate' region of Southern Australian with over 1000 members. Grainsearch Pty Ltd will provide the Pork CRC with access in the first instance to long season feed cereal varieties from the United Kingdom and France via licensing arrangements between Grainsearch Pty Ltd and Wrightson Seeds. The program will be amongst the first to utilise new technology for feed grain quality measurement to ensure that at all trial sites, characteristics for yield and disease resistances are matched with those nutritional features (digestible energy, voluntary feed intake and processing attributes) that are important to the pig production. As further encouragement for grain growers into a "new generation" feed grain industry, Grainsearch Pty Ltd will bring price risk management tools developed for feed grain supply chains.

6 COMMERCIALIZATION COMMITTEE AND INDIVIDUAL COMMERCIALIZATION PLANS

6.1 COMMERCIALIZATION COMMITTEE

The Pork CRC board has established a Commercialization Committee. The Committee is currently chaired by Mr Andrew Maughan (Independent Director) and has two other permanent members. These are the CEO of the Pork CRC and the Company's Finance and Business Manager. Other expertise is seconded to the committee as required.

The role of this Commercialization Committee is to provide advice to the CEO and to:

- examine project progress reports to ensure IP generated is identified and protected,
- approve the commercialisation strategy,
- review the background IP and IP registers,
- examine and advise on project commercialisation plans, and
- examine and advise on commercialisation activities.

6.2 INDIVIDUAL COMMERCIALIZATION PLANS

Because of the varied nature of the Pork CRC research programs and projects and extensive range of commercialization routes a commercialization plan will be developed for every project. Each plan will be based on the Pork CRC's Commercialization template (Appendix 1). The commercialization plan will be developed by the Program and Sub Program managers along with the Principal investigators and/or where appropriate the Management groups overseeing each project and submitted/presented to the Commercialization Committee for review modification before being submitted to the Pork CRC board for approval. All projects will be required to have a commercialization plan developed and submitted to the Commercialization Committee within 12 months of the project commencing.

The Pork CRC will create a culture that values IP and commercial success and attempt to maximize the value transferred to the Australian industry for each Pork CRC project by providing training and support to assist Program managers, Sub program managers and Principal investigators develop business plans and by attracting commercial champions for each project and building interest and collaboration with potential commercializer's.

A number of projects have commercial companies involved who have agreed to commercialize any marketable IP arising from these projects. In these cases the commercialization plan will be developed by the company and submitted to the Commercialization Committee for comment/modification before going to the Pork CRC board for approval.

The commercial outcomes and time lines for all Pork CRC programs are shown in Appendix 2.

7 INVOLVEMENT OF SME PARTICIPANTS

The size of all Pork CRC commercial participants is summarized in Table 4. All participants are involved directly in Pork CRC research projects and individuals from each organization will be involved in the development of commercialization plans for the projects in which they are involved and for projects in which they are part of a project management team. In addition SME participants are invited/encouraged to "test" Pork CRC developed technologies within their own or their customer's facilities/businesses. All participants are also provided directly and immediately with Pork CRC publications and new information that could affect the efficiency of their operations and/or the profitability of their customers. SME and all other participants are encouraged to collaborate and contribute to the Pork CRCs research and commercialization plans and are linked through the Pork CRC website, News letter and project management groups and the annual meeting.

Table 4 the nature and size of Pork CRC commercial participants

<i>Participant</i>	<i>Nature of business</i>	<i>Size</i>
QAF Meat Industries	Integrated production including feed milling and processing at the abattoir level.	Large
Australian Pork Farms	Integrated pork production	Large

CHM Alliance	Integrated pork production and processing at the wholesale level.	Large
Ridley Agriproducts	Feed milling – service provider	Large
Betterblend Stockfeeds	Feed milling –nutrition	Small
Feedworks	Service provider –technical & products	Small
Kemin	Service provider - products	Medium
APSA	Scientific & publication	Small
Nutreco	Service provider –products and technical and technical advice.	Large
Elanco	Pharmaceutical and animal health	Medium
Alltech	Technology and products	Medium
Grain Search	Agronomy and Grains	Small
WACC –Pork Producers Committee	Pork producers	Medium

8 MEASURING NATIONAL BENEFIT

A number of mechanisms exist to measure the national benefit arising from adoption of Pork CRC outcomes. These include:

1. Australian Pig Check – This is a benchmarking program coordinated by Australian Pork Ltd that monitors both key production indices (such as average daily gain, feed conversion ratio, pigs born alive etc) and financial indices for a broad cross section of the pork industry. All commercial participants in the Pork CRC contribute to this database, and hence improvements in their business operations will be reflected in this benchmarking program and can then be used to estimate national benefit.
2. AUSPIG – AUSPIG is a simulation model developed by the Australian pork industry. The model is effective in simulating benefits arising from the implementation of changes in key production parameters. It will be used to quantify the benefit arising from implementation of many Pork CRC outcomes.
3. Commercial validation – Pork CRC outcomes will be validated in the commercial facilities of industry participants. These validations will be communicated to the wider industry and will allow a quantification of national benefit arising from the Pork CRC outcomes.
4. Pork CRC Benchmarking – The Pork CRC has developed a benchmarking project which will involve the Pork CRC’s three commercial participants within the production industry and at least 12 other Australian production businesses. The project will involve the collection of key performance indicators on a quarterly basis and the reporting of these and trends in these on two occasions annually. The biennial meetings of the group will allow the Pork CRC to monitor and discuss changes in industry dynamics and to realign its research program if necessary. The meetings will also allow participating producers to discuss reasons for differences in absolute values and in trends between participants and the extent these are affected by the outcomes of Pork CRC research projects.

9 COMMUNICATING NATIONAL BENEFIT

The Pork CRC has a well established communications strategy and communication channels which are detailed earlier in the document.

The Pork CRC stakeholders and methods of by which national benefits will be communicated are summarized in **Table 5**.

<i>Stakeholders</i>	<i>Communication Vehicles</i>
Federal Government	Annual reports to DEST
	Specific Project Reports and Summaries
	News Letter
	Press releases and articles
	First and Third Year Reviews
Pork CRC Participants	Annual Reports
	Project Reports and Summaries
	Participant Seminars and Refresher Courses
	Pork CRC Annual Meeting
	Pan Pacific Pork Expo
	APSA Biennial Meeting
	Web Site
	News Letters
	Sub Program and Program Reviews
	Pork CRC Technical Reviews and Updates
	Scientific Meetings
Pork Producers /Grain Growers	Annual reports
	Project reports and summaries
	Industry Seminars and Pig Link
	Innovate E
	News Letter
	Consultant Refresher Courses
	Web Site
Press releases and articles	
Australian Public	Press releases and Stories of general/specific interest.