

FOREWORD

The Animal Welfare Centre (AWC) was established in March 1997 as a collaborative venture between the, then newly formed, Department of Natural Resources and Environment (NRE), the University of Melbourne and Monash University. The Centre's role was to concentrate the research and academic resources of the three partner organisations, to improve the welfare of farm, companion, laboratory and captive animals. In so doing, the AWC aimed to improve the sustainability of animal production agriculture through ethical husbandry practices. An additional aim was to enhance the quality of life for both animals and people through better understanding of the relationships between animals and society.

At its inception, the Centre had a secondary goal, for the first five years, which was to establish a solid research capability on which to build national leadership in the field of animal welfare Research, Development and Extension (RD&E).

This Review of the AWC was commissioned to evaluate its scientific performance over the first five years and to identify issues and opportunities that need to be addressed for its future success. The review is timely because, over the last five years, there have been significant changes in technology and a perceptible shift in the ways in which the community is expressing ethical values and concerns over the treatment of animals by society. These ethical values are being translated into consumer preferences, whereby the means of production of animal products is considered to be among the criteria of quality. The welfare of animals is thus becoming a more important factor for the animal industries and it is crucial for there to be a sound scientific base for assessing the welfare implications of husbandry practices. There is a clear role for both governments and universities to support this scientific base, in order to educate society, and to inform debate and discussion about what is known and what needs to be known from the scientific point of view.

Animal welfare is, nonetheless, a broader topic than just how we treat animals in agricultural production systems. The living conditions and treatment of zoo, laboratory, feral and recreation animals, as well as wildlife and pets, all attract community concern at times. In addition, there are many issues, not expressly involving welfare, that arise where society has an interface with animals. Not all people choose to have animals as part of their lives. For these people, issues of dog attacks, barking dogs, fouling of recreation areas and the impact of cat predation on wildlife are unacceptable intrusions. All of these factors must be faced by society, and animal scientists have their parts to play in providing the scientific perspective.

It is perhaps unrealistic to expect the AWC to maintain scientific relevance and expertise over such a complex arena of issues. This is particularly so when considering the paucity of similar units across Australia, or indeed globally, that are charged with these responsibilities. It is therefore necessary for the AWC to be viewed as the national leader, and to assist in consolidating the national effort in animal welfare science.

The three partner organisations in the AWC recognise the importance of the Centre and confirm their commitment to its future. They also recognise a need to increase its profile and broaden its funding base. To do this the Centre will need to ensure that its goals remain well aligned with the priorities of the community in Victoria and other states of Australia.

I am grateful to the members of the Review Committee for the care and effort they have put into the Review process. It is now up to the Board to work with the Director of the AWC to ensure that the recommendations are addressed and implemented.

BRUCE KEFFORD

Chairman of the Animal Welfare Centre Board,
Executive Director Agriculture, NRE

Animal Welfare Centre Review of Scientific Performance 1997 - 2001
June 2002

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EXECUTIVE SUMMARY

This Review of the Animal Welfare Centre (AWC) was commissioned in August 2001 by Dr Bruce Kefford, Executive Director Agriculture, Department of Natural Resources and Environment (NRE) and Chairman AWC Board. The objectives were to provide a critical analysis of scientific performance and provide recommendations for improvement in scientific capacity of the Centre. Further, issues that may affect future performance, such as scientific capacity, national co-ordination of welfare RD&E, funding and national recognition, were to be identified and addressed in the recommendations. The Review Committee met on 19-20 March 2002 at the Catholic Theological College, East Melbourne.

The AWC was established in March 1997 by the University of Melbourne as a collaborative centre with Monash University and NRE. The aim of creating this joint centre was to focus and coordinate the research and academic resources of the three organisations to provide the Australian farming community, general community and academic community with an internationally competitive research, teaching and training resource in animal welfare. The primary goals for the three organisations were to improve the welfare of farm, companion, laboratory and captive animals, generate agricultural wealth through sustainable animal welfare practices in agriculture and improve the quality of life of people through a better understanding of human-animal relationships. A secondary goal was to build a solid research capability. A rigorous foundation in science was seen as invaluable for the second 5 years to assist positioning of the Centre as a national leader in the field of animal welfare RD&E.

The Committee members acknowledged that the research on farm animal welfare by the AWC shows demonstrable leadership in animal welfare RD&E. Three areas which have international prominence are (1) the assessment of the welfare status of pigs and poultry in housing systems, (2) human-animal relationships and the impact of human attitudes and behaviour on welfare and productivity and (3) the selection and training of stockpeople. The list of publications in the literature and other contributions is very impressive and constitutes exceptional effort for a unit of this size in communication with the science fraternity and specific industries at a high standard. In addition, the AWC has been active in publishing literature reviews on welfare issues for the dairy cow, hen and sow and piglet. Animal welfare groups involved in public debate extensively use these scientific reviews, and rely on them for information on the welfare issues in an industry. The AWC recently completed a review of welfare issues in the beef and sheep industries, which will be published in 2003.

Despite the Centre's impressive scientific publication performance and level of interaction with selected animal production industry groups, the Committee was concerned over the low profile that the Centre appears to have among Federal decision-makers and instrumentalities in other Australian states. A stronger national profile would be likely to increase the benefits that the Centre may provide nationally and therefore on the overall scientific performance. Submissions to the Review suggested that the Centre's national profile is much lower than would be expected from its international reputation. Another concern relates to the relatively narrow and static funding base. The Centre is primarily dependent on NRE's Agriculture Division for recurrent funding and, to a lesser extent, on the agricultural industries. In addition, being a small unit, the Centre is vulnerable to staff losses. While these issues threaten future success, the expectations on the Centre staff are onerous and growing (eg, with increased undergraduate teaching loads). The Centre cannot be expected to cover all aspects of the welfare of animals, and its priorities need to be defined in the context of the needs of its key customers, that is, those who are prepared to provide ongoing financial commitment. The demands by the partners on staff resources need to reflect the willingness to contribute to real costs of the Centre. In the present Review, the Committee found it difficult to recognise any major changes in the welfare of animals that could be unequivocally attributed to the activities of the Centre. It is recognised, however, that it is unreasonable to expect significant changes in industry behaviour and community attitudes in a five-year timeframe.

The Committee was concerned over the low level of recognition of the Centre by some animal industry groups, for example the extensive/pastoral industries. In contrast, the profile of the AWC was generally higher among the intensive animal industries. There is increasing international evidence that compliance with Codes of Practice may become non-tariff barriers to trade and consumers are also becoming increasingly concerned with the means of food production. These factors reinforce the need to include animal welfare in quality assurance schemes, and to recognise the growing importance of welfare to Australian agriculture. Needless to say, the supermarkets are beginning to use welfare as a marketing advantage.

In light of the activities initiated by the AWC since October 2001 to develop a 5-year plan for animal welfare RD&E, the Centre has involved a comprehensive range of stakeholders in developing priorities within industries/sectors and involving industry, processors, wholesalers and the animal welfare groups. The Committee recognizes this initiative has recently been expanded to look at issues across industries to inform priorities for the future. Whilst the Committee is very strongly supportive of this approach, it recognizes that this process is not expected to increase the national profile of the Centre, nor its on-going funding options. Nevertheless, the Committee commended the Centre on involving processors and wholesalers in the current processes to develop welfare audits and the five-year RD&E plan.

The Committee viewed the development of the Centre in two phases. The first 5 years was for the establishment of the research profile and based on comments from industry this has been very successful in some key areas. The second 5 year period should be for broadening the activities of the Centre. The opportunity to secure funding from other sources, to establish links and or alliances with other states, to invest more in animal welfare education and to stimulate, and participate in, public debate on animal welfare, should facilitate broadening the base of national recognition. While the AWC should continue to provide animal welfare RD&E from an objective, dispassionate standpoint, there is a clear need for untied infrastructure funds. The three partners in the Centre each recognise the need to raise the Centre's profile as a national leader in animal welfare science and education. However, the financial contributions of the two University partners are modest and insufficient to provide any discretionary operating funds that would enable the Centre to fulfill its diverse interests. A recommendation of the Committee is to establish a project, separately funded by the partners, to investigate opportunities to increase the Centre's national profile, leading to the establishment of a national centre for animal welfare science and a broadening of the funding base.

In the next five years, however, there are opportunities for the Centre to establish links and build alliances with other organisations to help secure a sustainable future. The inclusion of CSIRO as a partner in the Centre and the potential involvement of the extensive industries are exciting prospects for the Centre. The Centre has already commenced a process involving a wide range of stakeholders in the identification of animal welfare issues and in developing an across-industries strategic plan for prioritising RD&E requirements for the immediate future. NRE is to be commended for their active support of animal welfare, including financial support of the Centre, and their initiative to create a Key Project in Animal Welfare.

The Centre is obligated to take a proactive stance on animal welfare issues to provide the community with objective information based on science. Where gaps exist in the information or education on animal welfare, there are clear roles for the Centre, as a national centre for animal welfare science, to conduct rigorous research, development and education for the relevant industry sectors and the general community. The staff of the Centre has shown great commitment over the five years of operation, and it is due to their hard work and dedication that the Centre has completed the first five years with such a solid foundation in animal welfare science and education. This augers well for the future.

KEY RECOMMENDATIONS

The Review Committee makes the following recommendations:

Mission and Functions

It is recommended that

1. ***The Centre's Mission be changed to reflect a national leadership role in the science behind animal welfare, and being a source of independent expert advice:***
2. ***The functions of the Centre be expanded to include:***
 - *a broader role as a national leader in animal welfare science;*
 - *a focus for community education and discussion on animal welfare science issues; and*
 - *consideration of the welfare of wildlife species.*

Positioning the Centre for the Future

It is recommended that

3. ***The Animal Welfare Centre works to become recognised as the leading, national Centre for animal welfare science and ethics, through:***
 - *continuing negotiations with CSIRO Division of Livestock Industries, with the objective of increasing the number of partner organizations in the Animal Welfare Centre to four;*
 - *further expansion in the number of core partners, to include other state and federal animal welfare science entities, and*
 - *development of alliances and collaborations with appropriate public institutions and associations across Australia, New Zealand, Canada and the USA.*
4. ***As the Centre evolves, dependence on funding from productivity research be decreased and the focus of activities concentrated on areas with primary animal welfare objectives, through:***
 - *undertaking appropriate consultation and discussion to gain a better understanding of the perceptions and attitudes of livestock industry funding bodies towards animal welfare R&D;*
 - *involving appropriate representation from the general community, along with industry, animal welfare groups and Government, in understanding the issues from which the research priorities may be determined; and*
 - *establishing a project based on exploring possibilities for establishing a Co-operative Research Centre in animal welfare and human-animal interactions.*
5. ***The Centre's R&D projects be routinely evaluated to enhance programs and improve project focus, development and implementation through:***
 - *providing AWC staff with access to training in project evaluation and impact assessment;*
 - *ensuring that the focus and impact of all RD&E projects of the Centre are evaluated using recognised project evaluation techniques; and*
 - *the AWC exploring the possibility for establishing a link with NRE's Economics Unit, with the objective of better defining the costs and benefits of the Centre's RD&E projects to producers or the community.*

Communications

It is recommended that

6. ***Communications and marketing strategies be developed to plan a more proactive role for the AWC in industry and community education and public debate on the science associated with animal welfare, to achieve an improved national profile, through:***
 - *Engaging specialists in communications and marketing to develop and implement detailed strategies and plans for publicising the issues being addressed by the Centre and its achievements; and*
 - *identifying key stakeholders, including livestock industry funding bodies, the messages that need to be delivered to them, and mechanisms for effectively communicating these messages.*

Funding

It is recommended that

7. ***The Centre develops and implements a strategy for a broader and more sustainable funding base, through:***
 - *appointing additional appropriately skilled and trained staff to conduct consultation, communication and research to explore opportunities for the AWC to implement the recommendations in this Review report;*
 - *broadly canvassing options for securing funding, including through philanthropic trusts, offering naming rights of the Centre, contact with the humane movement and other community links;*
 - *encouraging the core partners to review their financial inputs to the Centre with a view to reflecting the benefits received from the Centre and its longer-term needs;*
 - *the core partners providing increased support to the Director of the Centre, to ensure the inputs of funds and staff are proportional to the Universities' expectations and demands for teaching and supervision;*
 - *exploring opportunities for commercialisation or value-adding of under-utilised research findings of the Centre; and*
 - *development of educational material for sale to the public, on animal handling and other issues involving human-animal interactions.*

ACRONYMS

AFFA	Agriculture, Fisheries and Forestry — Australia
APL	Australian Pork Limited
AQA	Agriculture Quality Assurance
ARC	Australian Research Council
AWC	Animal Welfare Centre
AWD	Animal Welfare Department – NRE/VIAS
BAW	Bureau of Animal Welfare
CAS	Catchment and Agricultural Services
CRC	Collaborative Research Centre
CSIRO	Commonwealth Scientific and Industrial Research Organisation
ESAI	Ecologically Sustainable Agriculture Initiative
FTE	Full time equivalent
NHMRC	National Health and Medical Research Council
NRE	(Department of) Natural Resources and Environment
PRDC	Pig Research and Development Corporation
ProHand	Professional pig stockperson training program
RD&E	Research, Development and Extension
RIRC	Rural Industries Research Corporation
RSPCA	Royal Society for the Prevention of Cruelty to Animals
VFF	Victorian Farmers Federation
VIAS	Victorian Institute of Animal Science

1. INTRODUCTION

1.1 The Precursor to the Animal Welfare Centre

From 1978 to 1997, scientific research on animal welfare in Australia was conducted at the Victorian Institute of Animal Science (VIAS), of the (then) Department of Agriculture. Experiments were conducted at the then Animal Research Institute Werribee, using a multidisciplinary approach to quantify the effects of different housing systems for adult pigs on their welfare. Welfare was objectively assessed based on comparative changes in behaviour, stress physiology, immunology and injury status. The pig industry and the Department of Agriculture, Victoria, provided funding for the research. Other relevant welfare research, which also commenced at about the same time at Werribee, measured the effects of interaction between feeding level and number of sucking lambs per ewe on acute and chronic stress responses. The focus on welfare research for the pig industry was prominent through the decade of the 1980s, with research into the effects of housing and husbandry on welfare and productivity being strongly supported by industry. During the 1990s, the research on the welfare of pigs was expanded to include poultry and dairy cows.

The Animal Welfare Centre (AWC) was established in March 1997 by the University of Melbourne as a collaborative centre with Monash University and the, newly-formed, Department of Natural Resources and Environment. The aim of creating this joint centre was to focus and coordinate the research and academic resources of the three collaborating organisations to provide the Australian farming community, the general community and the academic community with an internationally competitive research, teaching and training resource in animal welfare. The primary goals for the three collaborating organisations were:

- Improvements in the welfare of farm, companion, laboratory and captive animals;
- Generation of agricultural wealth through sustainable animal welfare practices in agriculture; and
- Improvements in the quality of life of people through a better understanding of human-animal relationships.

A secondary goal for the first five years of the Centre was to build a solid research capability. This rigorous foundation in science was seen as invaluable for the second five years to assist positioning of the Centre as a national leader in the field of animal welfare RD&E.

1.2 Background to the Review

This Review of the Animal Welfare Centre (AWC) was commissioned in August 2001 by Dr Bruce Kefford, Executive Director of the Department of Natural Resources and Environment (NRE) and Chairman of the Board of Directors of the AWC. This Review is the first review of the performance of the AWC, marking the completion of the Centre's first five year's operation.

1.3 Objectives and Terms of Reference

The objectives of the Review were:

- to provide a critical analysis of scientific performance of the Centre and provide recommendations for improvement in its scientific capacity; and
- to identify issues that may affect the Centre's future performance, such as its scientific capacity, national co-ordination of welfare RD&E, funding arrangements and national recognition of the Centre, and address these issues in the recommendations.

The Terms of Reference and Domain of the Review were:

1. Review the scientific performance and impact of the Centre in improving the welfare of farm animals;
2. Review the scientific performance and impact of the Centre in improving the welfare of companion, laboratory, captive animals and wildlife; and
3. Identify the strengths and weaknesses of the Centre particularly in relation to its future capacity.

The performance of the Centre should be considered in terms of local (Victoria), national and international endeavours.

1.4 Membership of the Review Committee

The Review Committee was composed of:

Dr. George Riffkin Director Science Quality NRE (Chair)	Professor David Fraser Faculty of Agricultural Sciences and Centre for Applied Ethics Uni. of British Columbia, Vancouver, Canada
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Dr. Rhonda Galbally Chief Executive Officer OurCommunity.com Pty Ltd	Dr. Alick Lascelles National Farmers Federation
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Professor Graham Mitchell Chief Scientist NRE	Ms. Glenys Oogjes Executive Director Animals Australia
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A secretariat was provided by Dr. Greg Cronin, Animal Welfare Centre, VIAS, NRE.

1.5 The Review Process

The Committee proceeded with its task in the following manner:

- In February 2002, relevant stakeholders representing the Rural Industries Research Corporations, producer groups and animal welfare groups, plus key NRE and University staff, were invited to provide written submissions on the scientific performance of the AWC.
- Some 40 sets of review documentation, which included a Summary Report of the Scientific outputs of the AWC, Terms of Reference, Membership of the Review Committee and background to the review were distributed. Twelve written submissions were received (Appendix I).
- The Committee met at the Catholic Theological College, 236 Victoria Parade, East Melbourne, on 19 and 20 March 2002. All members of the Review Committee were present for the first day and apologies were received from Professor Mitchell and Dr. Galbally for the second day. Written stakeholder submissions were tabled for consideration and discussion by the Committee.
- In addition, interviews were conducted with key stakeholders representing the AWC and co-representing one of the three joint organisations (University of Melbourne, Monash University and NRE) and key stakeholders from NRE including the Meat Industry Co-ordinator and the Director, Bureau of Animal Welfare (Appendix II).
- Draft reports were circulated to the Committee for comment on 25 April and a final draft report was sent to the Committee members for endorsement on 7 June 2002.

2. THE ANIMAL WELFARE CENTRE

A website providing information about the AWC and its activities is available on the Internet at the following URL (website address):

www.animal-welfare.org.au

2.1 The Centre and its Mission

The Centre is a joint venture between the University of Melbourne, Monash University and NRE and has scientific and academic staff at the Victorian Institute of Animal Science (NRE), School of Agriculture and Food Systems (University of Melbourne), and the Departments of Psychology and Physiology (Monash University).

At the time of its inception, the partners consulted various industry organisations and individuals in preparing a 'Five-Year Plan' for Research, Teaching and Training (1997-2002). This Plan set out the Centre's Mission, Operating Environment and Structure, and outlined seven programs of work for the first five years. A Board of Management was established, comprising senior staff representatives from the partner organisations. The Board is responsible for establishing policy and monitoring management of the Centre. The Director of the Centre is responsible to the Board of Management for the programs, operations and conduct of the Centre. An Advisory Committee, composed of eminent scientists and representatives of funding, farming and animal welfare organisations, provides advice to the Centre on future opportunities, directions and funding.

The Centre's Mission is to:

- Through rigorous and innovative research, identify practices for farm, companion, laboratory and captive animals that achieve high standards of animal welfare, animal performance and human-animal relationships.
- Improve welfare practices for these animals through training, teaching, public education and provision of expert advice.

The Centre aims to achieve these goals through:

- The development of improved research methodologies to evaluate the welfare of animals.
- The conduct of rigorous and innovative research to identify sustainable animal welfare practices for farm, laboratory, companion and captive animals.
- The conduct of rigorous and innovative research to characterise the key features of human-animal relationships to optimally meet agricultural, social and cultural needs.
- The development and implementation of undergraduate courses and research programs in animal welfare at the University of Melbourne and Monash University.
- The provision of training programs focused on major welfare issues for farm, companion, laboratory and captive animals to key interested groups.
- The provision of scientifically-valid advice on animal welfare to Government, research institutions, farming and animal welfare groups and the general public.

2.2 The Staff and Structure of the Centre

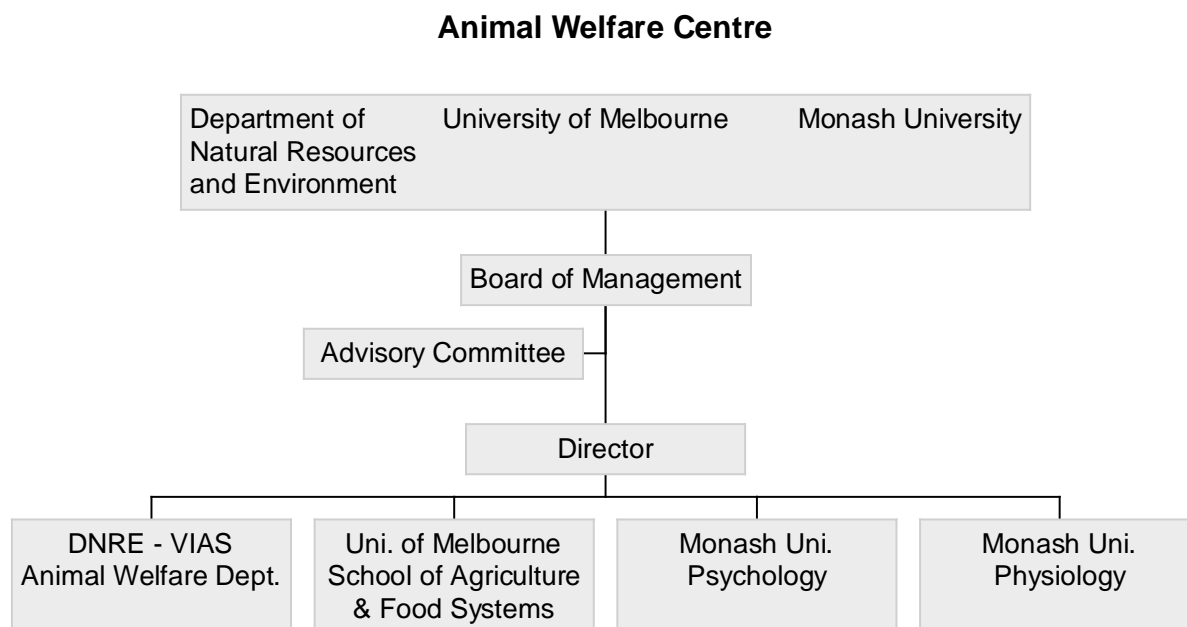
The staff and resources of the Animal Welfare Centre are located on four main sites:

- Department of Natural Resources and Environment
Victorian Institute of Animal Science
Animal Welfare Department
600 Sneydes Road
Werribee, Victoria
- Monash University
Department of Psychology
Caulfield & Clayton, Victoria
Department of Physiology
Clayton, Victoria
- University of Melbourne
School of Agriculture and Food Systems
Parkville, Victoria

Professor Paul Hemsworth is the Director of the Centre and has a joint appointment between the University of Melbourne and NRE. The respective leaders of the different organisations that form the Centre are Associate Professor John Barnett (Head, Animal Welfare Department, NRE/VIAS Werribee), Professor Grahame Coleman (Psychology Department, Monash University Caulfield) and Dr Alan Tilbrook (Physiology Department, Monash University Clayton).

There are nine scientists, three research assistants (based at Monash University, Psychology Department Caulfield), four technical support staff (3.8 FTE, based at NRE VIAS/Werribee) and nine post-graduate students, with a primary association with the AWC (Appendix III).

The operational structure of the Centre is summarised by the following diagram:



2.3 The Centre's Initial 5-year Plan

A 5-year plan for the Centre was prepared in 1997 with the help of various industry organisations and individuals and the plan set out the programs of the Centre to improve the welfare of farm, laboratory, companion and captive animals in Australia. The main programs of the Centre are as follows:

- **Basic research on welfare methodology** to improve the scientific assessment of animal welfare.
- **Basic and applied research on human-animal interactions** to evaluate the impact of human-animal interactions on animals and humans.
- **Housing practices** to evaluate the welfare and productivity implications of contentious housing practices in order to develop alternatives when necessary.
- **Husbandry practices** to evaluate the welfare and productivity implications of husbandry practices to develop alternatives when necessary.
- **Undergraduate and graduate courses and programs in animal welfare.** To develop and implement courses and research programs for undergraduate and graduate students.
- **Training programs on animal welfare.** To develop training programs for animal handlers and owners to improve animal welfare and performance.
- **Public education.** Provide Government, research institutions, farming and animal welfare groups and the general public with scientifically-valid advice on animal welfare.

2.4 Facilities and Equipment

The various building facilities and equipment dedicated to, and accessible by, researchers for use in AWC RD&E programs are described in Appendix IV.

*Image:
The Animal Behaviour & Welfare
Research Building, located
at NRE/VIAS Werribee*



2.5 Funding

In its first 5 years of operation, the Centre attracted a funding base of approximately six million dollars. Of the three joint partners in the AWC, NRE was the single largest funds provider of the Centre (~42%) with the other partner organisations contributing smaller amounts (University of Melbourne ~5% and Monash University ~6%). External funding from RIRCs accounted for the largest proportion of operating income to the Centre, being 47% of income. A more detailed breakdown of funds from each source on a financial year basis is provided in Appendix III.

Animal Welfare Centre Review of Scientific Performance 1997 - 2001
June 2002

3. The Review

3.1 Review of the Scientific Performance

The Committee acknowledged that the research on farm animal welfare conducted by the then Department of Agriculture scientists prior to the establishment of the AWC shows demonstrable leadership in animal welfare RD&E.

Three areas of research which have international prominence are:

- Assessment of the welfare status of pigs and poultry in housing systems;
- Human-animal relationships and the impact of human attitudes and behaviour on animal welfare and productivity; and
- The selection and training of stockpeople.

3.2 Assessment of the Scientific Performance

In recognising the significant scientific base and 23 year history on which the AWC has developed, the Committee restricted its review to the scientific performance of the Animal Welfare Centre over the 5 years since inception. This was conducted with reference to the mission and functions described in the Centre's Five Year Plan for Research, Teaching and Training (1997-2002) and the Committee's Terms of Reference.

The Committee adopted a broad definition of the term Scientific Performance to encompass the processes used to:

- define and prioritise the issues to be researched;
- design experimental protocols to address these issues;
- conduct research and report to funders and peers on the results of research;
- engage in the teaching of undergraduates and supervision of postgraduate students;
- promulgate, and facilitate extension and adoption of, practical applications of the research findings; and
- communicate and publicise the implications and benefits of the Centre's research.

The list of refereed publications, contributions to text books and conference presentations is very impressive and constitutes exceptional effort for a unit of this size in communication with the science fraternity and specific industries at a high standard. The publication records for the Centre for 1997-2001 are shown in the Centre's Annual Reports. A total of one text book, six chapters in text books, 47 research publications in refereed journals, 87 conference proceedings, 25 research reports, 37 industry publications and 5 theses (3 PhD and 2 Honours) have been listed in the Annual Reports.

Certain aspects of scientific performance, as defined above, need to be strengthened. In particular, a strategy is needed to determine what welfare issues exist within and across stakeholder groups and how to address the needs of stakeholders.

3.2.1 Welfare of Farm Animals

Term of Reference #1 concerned farm animals. The major focus of the AWC has been towards the welfare of farm animals and the effects on production. While it is not always easy to demonstrate a link between welfare and productivity, it is important to have objective measures of welfare. To ensure attitudinal and behavioural change on animal welfare, it is often necessary to have a legislative or market-based accreditation system. Industry education on animal welfare should be easier than public education due to the relatively smaller number of producers than the community as a whole. The need for welfare standards

and audits has emerged as an international issue for animal production industries. As a response to this need, the Animal Welfare Centre has been instrumental in initiating programs for the development of animal welfare standards and audits for the animal industries, and positioned itself well before the need became critical internationally. Thus, the AWC demonstrates a history of timely leadership in welfare audits.

The Committee believes that the AWC has an excellent publication record in peer reviewed scientific journals and that the publications from the Centre over the 5-year period could be categorized into three areas of influence:

- **Applied animal welfare science**
These scientific publications cover the effects of housing, structural design and husbandry among other things, and show the impact of management variables on animal welfare. They provide a solid contribution to world literature.
- **Fundamental animal welfare research**
These publications involve basic science such as stress endocrinology. The animal welfare benefit may not be immediate from the research reported in these papers, but there may be a long-term benefit from the basic research running alongside the more applied research.
- **Other research**
These publications report research with a primary pay-off to productivity and no direct animal welfare benefit. For example, play-back of sow nursing grunts to piglets, where the benefit to welfare is not as clear as the productivity benefit. Such research may well continue as a function of NRE scientists, but as the AWC develops a clearer focus on its animal welfare mission, including such projects in the Centre's reports may confuse readers as to its goals.

In addition, the Centre has been active in publishing literature reviews on welfare issues for the dairy cow, hen, and adult sow and piglet. Animal welfare groups involved in public debate extensively use these scientific reviews, and rely on them for information on the welfare issues in an industry. The AWC has also recently completed a review of welfare issues in the beef and sheep industries, which will be published later in 2002.

As the Centre evolves, the Committee recommends it is important to try to decrease the dependence on productivity research and increase activities in areas that focus on an animal welfare benefit, recognizing that production benefits will often follow from such research.

3.2.2 Welfare of Companion, Laboratory and Captive Animals and Wildlife

Term of Reference #2 concerned companion, laboratory and captive animals and wildlife. The Committee considered it important to include wildlife within this Term of Reference because of the increasing interest in these areas that has developed since the establishment of NRE with its broader responsibilities for the environment.

The efforts and resources dedicated to companion, laboratory and captive animals and wildlife by the Centre is much less than for farm animals (Term of Reference #1). Nevertheless, projects in this area are well targeted, although in an early stage. Furthermore, it is considered that this is research which would not be conducted under the auspices of industry and therefore remains a responsibility of Government. Hence, there is a good opportunity for the AWC to promote science to inform policy and address community concerns. The Centre could also move into research on the humane control of exotic animals.

Research on the welfare of companion animals has been driven more by social expectations and thus has focused more on public education. This has presented a challenge as it is less amenable to objective research. The issues with companion animals are entwined in the interface between pet animals and society, rather than animal welfare. Issues include dog attacks in the community, fouling of pavements and roads, barking, the effects on wildlife, etc. These are issues of public interest, often to those who neither own nor like animals and who raise their concerns directly to Government Ministers.

Term of Reference #3 concerned identification of the strengths and weaknesses of the Centre particularly in relation to its future capacity.

The Committee notes that the Centre's publications in books have a very high profile and are effectively internationally-regarded standard references on animal welfare for veterinarians and animal scientists. Clearly, in the period 1997-2001, the Animal Welfare Centre has concentrated on providing high quality publications in the scientific literature. The Committee was less certain that all findings were appropriately extended. There may be benefit from reviewing past research results to determine which of these may not have been translated into actions by which their benefits could be realised.

AWC Science Meetings have been regularly held during the first 5 years of the Centre (see Annual Reports for details). As well as for the more structured publications, the AWC is to be commended for initiating and promoting discussion at the regular forums on AWC research and new topics / issues. These meetings are an important part of the Centre's scientific endeavour. The liaison and extension of science occurs in an environment which is conducive to learning and discussion. It is recognized that these forums provide extremely valuable training opportunities for staff and students alike to present their work and ideas. Abstracted reports from the meetings are published on the AWC website.

The numbers and quality of PhD and Masters theses are impressive when considered in the context of the wider responsibilities of the AWC staff.

A further benefit of the Centre has been the ability to attract funding for visiting scientists, who have been able to provide international perspectives to their work, under NRE's Visiting Fellows Program.

There is evidence that the Centre has been involved in many presentations to industry stakeholders and producer groups. An extensive record of meetings with producer groups at evening discussion nights and at weekends indicates the AWC is very active in communication with industry and stakeholders, especially within Victoria. In addition, between 1997-2000 there has been a large effort to interact with general public on research conducted by AWC and importance of animal welfare, via displays at the Royal Melbourne Show.

Overall, the Committee was extremely impressed with the Centre's scientific output, both in quality and quantity, in communicating the outcomes of the science in the different forums.

3.3. Recommendations for Improvements in Scientific Performance

Despite the record detailed in the previous section, submissions to the Review confirmed an overall impression by Committee members that the reputation and profile of the Centre nationally was not as high as could be expected. For example, only 12 written submissions were received for the Review. The Committee was concerned that the low profile is having an effect on the benefits that the Centre may provide nationally. A further concern relates to the relatively narrow and static funding base of the Centre. The Centre is primarily dependent on NRE's Agriculture Division for funding and, to a lesser extent, on the agricultural

industries. In addition, being a small unit, the Centre is vulnerable to staff losses. Together, these issues threaten the future success of the Centre.

The Committee iterated the need for a stakeholder analysis and marketing plan. The Centre has not produced any brochures to present to stakeholders and potential clients. Nor was there evidence of a strategy addressing these needs for the future. Indeed, prior to the recent process to develop a 5-year plan for animal welfare RD&E, there has been no formal process for determining priorities in the context of customer needs. As a result, the Centre has tended to respond to issues in an opportunistic manner. There is currently in train a robust consultative process to engage stakeholders and the community at large in identifying issues requiring research. Although this process will more clearly define the goals of the Centre, it will not *per se* address the profile issue.

The Centre is a relatively small unit and cannot expect to cover all the aspects of the welfare of animals. The Centre needs to define limits in the context of the needs of its key customers, that is, those who are prepared to provide ongoing financial commitment.

4. Future of the Animal Welfare Centre

4.1 Function of the Centre

The Centre's missions are to identify practices for farm, companion, laboratory and captive animals that achieve high standards of animal welfare, animal performance and human-animal relationships, through the conduct of rigorous and innovative research and to improve welfare practices for these animals through training, teaching, public education and provision of expert advice.

The Centre's scientific publication performance and interaction with selected animal production industry groups is very impressive. Furthermore, the Committee was reassured that the Centre is developing a strategy to define priorities for welfare issues that exist within and across stakeholder groups, including wildlife species, and has considered how to address the needs of stakeholders within Victoria. However, the national profile of the Centre is much lower than would be expected from its international scientific reputation. The Committee therefore explored additional strategies that would complement the Centre's progress in these current activities. This was considered especially important in order to determine where the Centre may fit nationally, and how it may be promoted as the primary national scientific resource on animal welfare and ethics. The Committee also considered the Centre should expand its functions to include the welfare of wildlife species.

The Committee recommended that:

The Centre's Mission be changed to reflect a national leadership role in the science behind animal welfare, and being a source of independent expert advice.

The functions of the Centre be expanded to include a broader role as national leader in animal welfare science, a focus for community education and discussion on animal welfare issues and consideration of wildlife species.

4.1.1 Structure of the Centre

There is a structural anomaly at Werribee where the AWC is co-located with the Animal Welfare Department (NRE/VIAS). Professor Hemsworth is the leader of the Centre, a joint appointee between the University of Melbourne and NRE, whilst Associate Professor John Barnett, who is an NRE employee leading the Animal Welfare Department, is also a member of the Centre. This arrangement seems to work well in practice because the leaders clearly complement each other's skills and attributes. Nevertheless, with different personalities, the structural arrangement has the potential to create friction and misunderstanding. It may not be a major issue since if different personnel were involved this could lead to the formation of a different structure. The Review Committee does not recommend any changes to the structure of the Animal Welfare Centre at this time.

4.1.2 Future Scope of Activities

Despite the very good publication rate, there doesn't seem to be a good strategic plan or priority of issues for research. Thus projects have developed in an opportunistic manner, usually related to the needs of intensive industries, and associated with available production research funding from NRE industry programs with co-investment from RIRCs. Although this is understandable, the Committee thinks it is now time for the Centre to develop clear strategic directions. These directions should include the criteria to be used in establishing priority areas for investigation, the balance of public and private good and the relative emphases between basic versus contract research. As the Centre evolves, the Committee recommends it is important to try to decrease the dependence on funding from productivity research and increase activities in areas focussing on an animal welfare benefit.

Improving welfare standards often leads to productivity gains and improvement in product quality. This being the case, it is disappointing to note the relatively low level of industry funding for animal welfare R&D in the past, particularly from the more extensive livestock industries (beef, lamb, wool and dairy industries) where animal welfare issues are perceived to be less of a threat to trade. Given the magnitude of difficulties faced by the more intensive livestock industries (pork and poultry) however, support for research from these industries has also been much lower than expected. Despite the success of such AWC initiatives as 'ProHand' (pork industry training package) and the Poultry Industry Welfare Audits, investment in animal welfare R&D by these industries has been very modest. Reasons for this need to be identified and addressed as a matter of urgency.

The Committee is concerned over a clear lack of recognition of the Centre by the extensive / pastoral industries, and recommends market research be conducted with the relevant industry organisations to assist them to recognise the future importance of welfare to Australian agriculture. There is increasing international evidence that compliance with Codes of Practice may become non-tariff barriers to trade. Consumers are also becoming increasingly concerned with the means of food production and there is a recognised need for inclusion of animal welfare in quality assurance schemes. Needless to say, the supermarkets are beginning to use animal welfare as a marketing advantage. The Committee commended the Centre on involving processors and wholesalers in the current processes to develop welfare audits and the five-year animal welfare RD&E plan.

As evidenced by the activities initiated by the AWC since October 2001, the Centre has attempted to involve the whole range of stakeholders to first develop priorities within industries / sectors and second to involve industry, processors, wholesalers and the animal welfare groups in the development of a 5-year animal welfare RD&E plan. The Committee recognizes this has recently been expanded to look at issues across industries to inform priorities for the future. Whilst the Committee is very strongly supportive of this approach, it recognizes that this process is not expected to enhance the national profile of the Centre nor its on-going funding options.

To some stakeholders, the Centre is seen as academic, not wanting to become engaged in community debate and therefore not known, and without profile in the community. The Committee recommends that the Centre involves the general community, along with industry, animal welfare groups and Government, in establishing research priorities. The Centre would thus benefit from receiving market intelligence on community expectations for animal welfare RD&E and receive a spin-off of raised community awareness facilitating development of a national profile.

The Committee, in its concern that the Centre had a narrow funding base, explored the potential opportunities for further investigation. There was discussion around the potential for CSIRO Division of Livestock Industries to join the Centre as a co-funding partner. The Centre's initiative was strongly supported by the Committee, provided that the objectives and role of the expanded Centre were still consistent with existing objectives and that it broadens the funding base. It was also considered that there would be value in exploring the benefits and options for the AWC to lead the creation of a Cooperative Research Centre (CRC) in Animal Welfare and Human-Animal Interactions.

The Committee recommended that:

The Centre develops clear strategies to establish priority areas for investigation, the balance of public and private good and the relative emphases between basic versus contract research.

As the Centre evolves, dependence on funding from productivity research be decreased and the focus of activities concentrated on areas with primarily animal welfare objectives.

The Centre involves appropriate representation from the general community, along with industry, animal welfare groups and Government, in understanding the issues from which the research priorities may be determined.

The Centre undertakes appropriate consultation and discussion to gain a better understanding of the perceptions and attitudes of livestock industry funding bodies to animal welfare R&D.

Negotiations with CSIRO Division of Livestock Industries continue with the objective of increasing the number of partner organizations in the Animal Welfare Centre to four.

4.2 Profile

The Committee viewed the development of the Centre in two phases. The first five years was for the establishment of the research profile. Based on comments from industry to this Review, this has been very successful in some key areas. The second five year period however, should be for broadening the activities of the Centre. The opportunity to secure funding from other sources (eg ARC and NHMRC), to establish links and or alliances with other states, to invest more in animal welfare education (eg Certificate of Animal Welfare) and to stimulate, and participate in, public debate on animal welfare, should facilitate broadening the base of national recognition of the Centre. There is a clear need for untied, infrastructure funds to allow some of these activities to develop. The financial contributions of the two University partners are modest, and insufficient to provide any discretionary operating funds.

The three partners in the Centre each recognise the need to raise the Centre's profile as a national leader in animal welfare science and education. It is recommended that the partners make a commitment to share the costs of a two-year project to support the Centre through roles of (1) promotion and marketing and (2) communications. The Committee recognises that the project must be adequately funded and staffed by the three organisations to fulfill these discrete roles. While it may be possible to find one person with appropriate experience, skills and training to fulfil both roles, it could be more likely that two people are appointed, with the sum of their time commitment equivalent to 1 FTE. Depending on the strategy chosen, the occupant(s) of the position might have a major role in consultation, communication and research for promotion and marketing of the Centre with existing and potential stakeholders and funding sources. The occupant could proactively explore options for developing the linkages and rationale for a successful bid for the next round of CRCs to create a National Centre for Animal Welfare and Human-Animal Interactions. A CRC would also likely increase the opportunity to attract post-graduate students in the Centre.

The Committee thought the Centre should raise its profile to position itself as a national source of independent advice on the science behind animal welfare issues, and suggested the Mission Statement of the AWC be changed to reflect this. The Centre also has the opportunity to broaden its scope to include community need areas, for example issues of handling pets. It was suggested that there may be an opportunity to raise the profile and funding base of the Centre through development of educational materials for pet owners, on handling animals such as horses, dogs and cats, possibly through the use of high profile personalities on the electronic media.

The Committee was also concerned that post-graduate students in the Centre do not have a central location for their base. The Centre should consider creating a "shop-front" location to provide a publicly-visible base, which could also facilitate raising the profile of the AWC and serve as a central location for post-graduate students of the Centre. With a raised public profile in the field of animal welfare education, improved recruitment of post-graduate

students may also follow. However, a “shop-front” may be costly and therefore not a high priority.

The Committee recommended that:

The three partner organisations fund a project to appoint additional appropriately skilled and trained staff to conduct consultation, communication and research to explore opportunities for the Centre to implement the recommendations of this Review report.

The Mission Statement be modified to reflect the Centre’s role in being recognised as a source of independent, expert advice on animal welfare issues.

4.3 Linkages and Alliances

The opportunity for inclusion of CSIRO as a partner in the AWC was seen by the Committee as a progressive move for the Centre. The expansion in the number of partners to four will increase the Centre’s science base (eg inclusion of fundamental physiology and immunology), and should increase the national profile and improve funding opportunities. Also, the development of better links at a local level within NRE is a likely outcome of the new Key Project in Animal Welfare being developed by NRE. The key project will facilitate establishment of cross-linkages between the AWC and other relevant NRE units such as the Bureau of Animal Welfare (BAW) and the Animal Health and Extension Field Services. Clearly, linkages between these units should be pursued.

The Director of BAW has a clear focus on developing science-based evidence to support changes and amendments to Codes of Practice. He is committed to close co-operation with the AWC to achieve this outcome and is likely to provide some funds to the Centre for this purpose. The Animal Health and Extension Services are currently untapped resources that could be aligned to the Centre and could provide invaluable assistance in extension and education roles. The potential contribution of the Centre to the development and revision of Codes of Practice by the Bureau of Animal Welfare should also be recognised.

The Committee was keen for the Centre to actively seek other linkages and alliances to help broaden its funding base. Thus the Centre should continue negotiations with sister organisations in other states, including the proposed Chair of Animal Welfare at the University of Queensland, the Beef CRC and WA Agriculture, as well as internationally e.g. New Zealand, Canada and the USA. An additional option to consider is the creation of a CRC in Animal Behaviour and Welfare Science. This would require development of linkages and alliances while achieving outcomes of secure funding and a raised national profile.

The Committee recommended that:

The Centre actively seeks to expand the number of core partners and develops alliances and collaborations with other groups within NRE, appropriate public institutions and associations across Australia and New Zealand, Canada and the USA.

4.4 Funding and Strategies to Build a Secure Base

A serious concern conveyed to the Committee by a key stakeholder, which related to the funding of the Centre, was the misalignment between some of the activities of the Centre and the source of funds to the Centre. NRE industry programs provide the majority of the funding to the Centre, but Centre staff spend a disproportionate amount of time assisting non-NRE projects, which are not funded. The availability of non-discretionary funding in the future may help avoid this becoming an issue of difficulty between the Centre and NRE. However, the Committee noted the Centre’s research over the first five years often reflected the source of funding, that is, a high proportion of work in the area of industry issues. The Committee recognised the necessary limitation on fund sources for the Centre during the first 5 year

period and that welfare research was often associated with production research, but suggested that industries gain an additional public good-will benefit by associating welfare with production research. The question was also raised by some stakeholders whether the high ratio between post-graduate students and supervisors had pushed the balance of research too far towards academia. Both situations increase the risk to the Centre's sustainable funding especially at a time when both industry and University funds are generally declining. The Committee concluded that the partner Universities could be seen to gain benefits from the Centre out of proportion to their financial contribution. In the medium term this will threaten the survival of the Centre. This would be particularly so in the face of losing unfunded NRE staff.

One group that utilises the Centre is the Bureau of Animal Welfare. Although the BAW has had little scope to fund research, it maintains contact with the AWC through regular formal meetings. The BAW recognises the benefits provided by the AWC, of scientific information, literature searches and experimental developments. A recent positive development for the AWC is a change to the Domestic Animals Act, that from 2003 will allow funds collected by local councils for animal registrations to be invested in research. The BAW would like to use funds from this source, in association with the AWC, for research on animal welfare targeted to community welfare issues.

The Committee was extremely concerned for the future of the Centre if an increase in funding and a broader funding base could not be achieved in the second five years. Fund raising opportunities require special consideration. While this Review Committee canvassed a number of possibilities for fund raising, such as increasing the number of partners to four, achieving a CRC in animal welfare and human-animal interactions, developing a communication plan and role, etc, it was clear that there is a strong argument for greater financial commitment from the two Universities. Other possible opportunities for fund raising by the Centre could be through the establishment of a leadership role in new technologies, for example for using telemetry to assess animal welfare and, as discussed in the previous section, the development of educational material for handling pets, especially dogs, cats and horses. There is a need for educational material for children involved in equestrian sports. Currently, there is a low level of information available on how to handle horses and this could be an opportunity for AWC sponsorship. Similarly, the Centre could contribute to the development of video / TV productions, using a systematic approach, for example to handling dogs as pets, expanding to the issue of signs of aggressive behaviour in dogs to reduce dog bites in public places. The approach would be to provide education on non-contentious issues, based on scientific data.

Other suggested opportunities for funding may be through philanthropic institutions, possibly by offering naming rights of a national centre as an incentive, and defining the Centre's function in terms of providing independent advice on animal welfare science issues and in facilitating community discussion on the science informing animal welfare and ethical issues. The Committee suggested the Centre investigates the great potential for links with the humane movement and other community links. This is also a method of positioning the AWC to take advantage of endowments. For example, opportunities may exist to fund research on minimising stress on dogs and cats in shelters and temperament testing of dogs before adoption. Furthermore, the intention of the Centre to seek links with interested ethicists will build credibility for the AWC as a participant in debate on animal ethics issues.

Technical and infrastructure funding is also required if the Centre is to be a leader in the enabling technologies. Livestock facilities, the technical support to manage them and specialised equipment such as video and remote sensing devices are investments in the future of the Centre. The Committee encouraged the continued development of the Centre's technical capability and recommended that funds be sought for this purpose. A list of equipment with costing, to complete the Centre's main research facility, the Animal

Behaviour and Welfare Research Building located at Werribee, is presented in Table 1, Appendix IV.

The Committee recommends that:

The University partners be actively encouraged to review their financial inputs to the Centre with a view to reflecting the benefits received from the Centre and its longer-term needs.

The Centre establishes a project based on exploring possibilities for establishing a Co-operative Research Centre in Animal Welfare and Human-Animal Interactions, for inclusion in the next application round, and other sources of funding.

The Centre broadly canvasses options for securing funding, including through philanthropic trusts, offering naming rights of the Centre, contact with the humane movement and other community links, development of educational material for sale to the public on animal handling and other issues involving human-animal interactions.

4.5 Intellectual Property and Commercial Benefits

The Committee was concerned that the Centre may not have pursued the potential Intellectual Property (IP) benefits of its research. There was some evidence of commercialisation and protection of IP, such as stockperson selection and training packages (eg ProHand). The Committee considered more effort should go towards capture of IP and noted the potential to achieve IP income from developing and selling templates for animal welfare audits. While the Committee was impressed by the scientific output of the Centre, it recommended an internal review of completed research be conducted to seek opportunities to commercialise or otherwise extend under-utilised research findings. While there may not always be financial return from the extension of “unused” research findings, there may be benefits in terms of raised industry or public profile for the Centre.

The Committee recommends that:

An internal review of be conducted to explore opportunities for commercialisation or value-adding of under-utilised research findings.

4.6 Need for PR Strategies

As indicated above, the AWC has established a high profile with the international scientific community and at least the leadership of Australian animal welfare lobby groups. The Centre is also well recognised by the Agriculture Minister and key stakeholders within NRE, but the level of recognition by key industry organisations is much lower, particularly the extensive livestock industries which have tended to see animal welfare as a lower priority issue. The awareness of the AWC by interstate agencies and the community generally is also very low.

The Committee discussed strategies to raise the profile of the Centre, to achieve the desired outcome that the Centre be recognised as Australia’s foremost agency for RD&E and objective advice on animal welfare, and potentially, animal ethics. A short-term possibility would be to print a “glossy brochure” as a medium for advertising the Centre for potential clients. However, the development of a communication strategy, possibly involving the employment of a specialist in communications, will be essential to a successful PR strategy. The AWC also has an obligation to proactively contribute to community education and public debate. Provided that all communication is based on scientifically valid information, the reputation of the Centre would be significantly enhanced.

Serious consideration should also be given to renaming the Centre. This could be in accordance with a sponsorship arrangement to secure long-term stable funding.

The Committee recommended that:

A detailed communications strategy be developed to identify all key stakeholders including livestock industry funding bodies, the messages that need to be delivered to them and mechanisms for effectively communicating these messages.

Consideration be given to the appointment of a communications specialist to develop and implement effective communications strategies and plans for publicising the issues being addressed by the Centre and its achievements.

That the communications strategies provide for a more proactive role for the AWC in community education and public debate on the science associated with animal welfare.

4.7 Personnel and Students

The Committee was concerned about the teaching and postgraduate supervisory load planned for Professor Hemsworth. Expectations for his role in the proposed Animal Science degree course, on top of his existing university responsibilities, would represent more than 100% of a full time load. Although the University only provides one-half of Professor Hemsworth's salary, it appears to receive benefits out of proportion to its current contribution.

The Committee recommended that:

The core partners be encouraged to provide increased support to the Director of the Centre, to ensure the inputs of funds and staff are proportional to the Universities' expectations and demands for teaching and supervision.

4.8 Impact and Evaluation

The Committee recognised that to date there had been no assessment completed of the actual impact of the AWC. Whilst AWC staff have been focussed on delivering high quality science, there appears to have been no attempt to assess whether or not this work is achieving the objectives of key stakeholders such as the Victorian Government (the major funds provider to the AWC) and the community. In order to demonstrate impact, it is important that the Centre focuses on addressing the following types of questions.

- Has the welfare of farm animals in Victoria been improved over the past decade?
- Can any of these improvements be attributed to the activities of the AWC?
- Has there been a change in knowledge and attitudes towards animal welfare amongst key stakeholder groups (industry, community, welfare organisations)?
- Can this change be attributed to the activities of the AWC?

The Committee also noted the comments of some industry stakeholders that there were likely to be economic impacts of change, due to outcomes of animal welfare research and changes to welfare Codes and standards. The inclusion of economic analyses in animal welfare assessments would be valuable and the relevant industry should assist in providing any additional funds to widen the scope of AWC activities to provide this assessment component.

As the Centre matures through its second five-year period, it is necessary that the impact of the Centre be evaluated against objectives. As highlighted in a number of the submissions to the Review, the Committee agreed there was a need to be able to measure the economic benefits and costs of the Centre's RD&E. This evaluation could include measuring the economic costs and benefits from implementing welfare Codes or standards. The Committee recommends the Centre staff become trained in project evaluation and develop links with NRE's Economics Unit.

The Committee recommends that:

Relevant AWC staff undertake training in evaluation and impact assessment, and that all future AWC projects and activities are properly evaluated.

The AWC explores the possibility for establishing a link with NRE's Economics Unit, with the objective of better defining the costs and benefits, to producers, of the Centre's RD&E projects.

5. Conclusion

The Animal Welfare Centre was formed in 1997 as a joint centre for animal welfare, between the University of Melbourne, Monash University and the Department of Natural Resources and Environment. It has achieved impressive international recognition for the high volume and excellent standard of research in the science of animal welfare.

The Centre has focused its attention during its first five years of operation on developing a solid research base in animal welfare science, industry education on animal handling and the development of welfare audits for industries. With the limited staff resources available, there has been less opportunity for the Centre to establish a national profile, particularly with the extensive animal industries and the general community. The lack of national profile may be a contributory factor to the declining funds for R&D, particularly from the intensive industries, and total lack of funds from the extensive industries.

In the next five years, there are opportunities for the Centre to establish links and build alliances with other organisations to help secure a sustainable future. The inclusion of CSIRO as a partner in the Centre and the potential involvement of the extensive industries are exciting prospects for the Centre. The Centre has already commenced a process involving a wide range of stakeholders in the identification of animal welfare issues and in developing an across-industries strategic plan for prioritising RD&E requirements for the immediate future. NRE is to be commended for their active support of animal welfare, including financial support of the Centre, and their initiative to create a Key Project in Animal Welfare.

The Centre is obligated to take a proactive stance on animal welfare issues, including animal ethics, to provide the community with objective information based on science. Where gaps exist in the information or education on animal welfare, there are clear roles for the Centre, as a national centre for animal welfare science, to conduct rigorous research, development and education for the relevant industry sectors and the general community.

The staff of the Centre has shown great commitment over the first five years of operation, and it is due to their hard work and dedication that the Centre has completed the first five years with such a solid foundation in animal welfare science and education. This augers well for the next five year period.

Appendix I

List of Written Submissions to the Review

Organisation	Author of submission
Agriculture, Forestry and Fisheries Australia	Dr. David Adams Senior Principal Research Scientist Office of the Chief Veterinary Officer
Animal Liberation SA (Inc)	Necia Page President
Australian Pork Limited	Kathleen Plowman
NRE	Associate Professor John Barnett Head, Animal Welfare Department VIAS
NRE	Geoff Kroker Meat Industry Coordinator
NRE	Dr. Brendan Tatham Principal Analyst, Livestock Industries
Petcare Information and Advisory Service	Tony Cooke Director
RIRDC Egg Program	Irene Gorman Research Manager
RSPCA Victoria	Peter Barber State Director
VFF Animal Welfare Committee	Meg Parkinson Chair VFF Animal Welfare Committee
VFF Chicken Meat Group	Dr. John Clarke Executive Officer VFF Chicken Meat Group
VFF Pig Group	Tom Smith President VFF Pig Group

Appendix II

Oral Presentations to the Review

Organisation	Presenter
Animal Welfare Centre	Professor Paul Hemsworth Director
NRE	Associate Professor John Barnett Head, Animal Welfare Department VIAS
NRE	Geoff Kroker Meat Industry Coordinator
NRE	Dr. Steve Tate Director, Bureau of Animal Welfare
Monash University	Professor Kim Ng Department Head, Psychology
Monash University	Professor Grahame Coleman Psychology Department
University of Melbourne	Professor Snow Barlow Head School of Agriculture and Food Systems

Appendix III

Summary Report of the Achievements of the Animal Welfare Centre 1997-2001

1. AWC researchers and students

1.1 Researchers

Paul Hemsworth
John Barnett
Greg Cronin
Ellen Jongman
Grahame Coleman
Pauleen Bennett
Alan Tilbrook
Anne Turner
Ross Young

1.2 Postgraduate students

Principal University

Peter Cransberg (Master) – awarded	LaTrobe
Anne Turner (PhD) – awarded	Monash
Kate Breuer (PhD) – awarded	Monash
Rebecca Sargent (PhD) – awarded	Melbourne
Andrew McLean (PhD)	Melbourne
Amanda Kobelt (PhD)	Melbourne
Sabine Roussel (PhD)	INA Paris-Grignon, France
Fleur Dwyer (PhD)	Monash
Adele Arnold (PhD)	Melbourne
Keven Kerswell (PhD)	Melbourne
Neva Van de Kuyt (Masters)	Melbourne
Naomi Pearson (Masters)	Melbourne
Michelle Edge (Masters)	Melbourne
Cecilly Maller (PhD) – resigned	Melbourne

1.3 Honours students

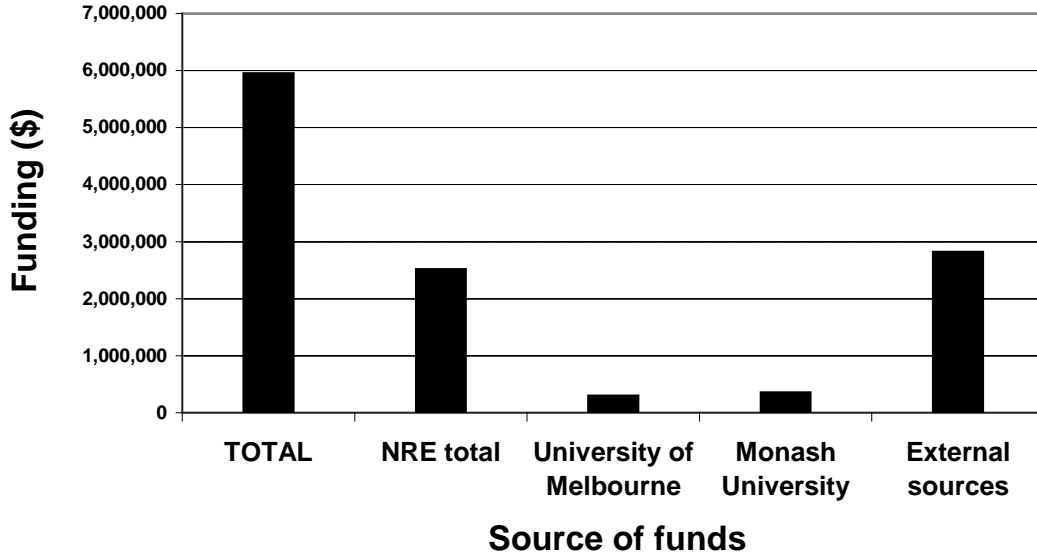
Principal University

Tammie King (Honours) – awarded	Melbourne
Naomi Botheras (Honours) – awarded	Melbourne
Mariko Ng (Honours) – awarded	LaTrobe

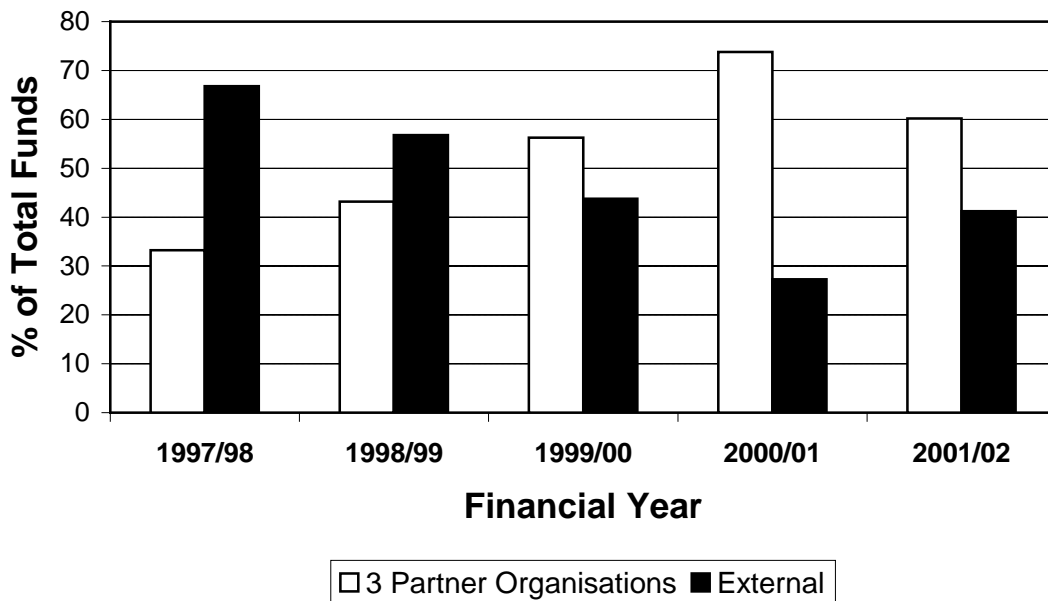
Appendix III

2. AWC Funding

5-yr Total Research Funding for AWC



Sources of R&D Funds - Internal vs. External



Appendix III

Organisation & External Inputs

1997/1998

NRE	Uni ofMelb.		Monash Uni.		External Total	
	Total	Total	Total	Total		
NRE	353,209	PHH Salary Operating Staff salaries	40,678 10,000 0	Operating Staff salaries	10,000 61,186	955,577
TOTAL	353,209		50,678		71,186	955,577

GRAND TOTAL for 1997/1998 **1,430,650**

1998/1999

NRE	Uni ofMelb.		Monash Uni.		External Total	
	Total	Total	Total	Total		
NRE	284,076	PHH Salary Operating	40,678 10,000	Operating Staff salaries	10,000 61,186	533,932
TOTAL	284,076		50,678		71,186	533,932

GRAND TOTAL for 1998/1999 **939,872**

1999/2000

NRE	Uni ofMelb.		Monash Uni.		External Total	
	Total	Total	Total	Total		
NRE	236,689	PHH Salary	43,869	Operating	10,000	466,071
Initiative	237,000	Operating	10,000	Staff salaries	61,186	
TOTAL	473,689		53,869		71,186	466,071

GRAND TOTAL for 1999/2000 **1,064,815**

2000/2001

NRE	Uni ofMelb.		Monash Uni.		External Total	
	Total	Total	Total	Total		
NRE	477,051	PHH Salary	57,496	Operating	10,000	338,609
Initiative	299,798	Operating	10,000	Staff salaries	61,186	
TOTAL	776,849		67,496		71,186	338,609

GRAND TOTAL for 2000/2001 **1,254,140**

2001/2002

NRE	Uni ofMelb.		Monash Uni.		External Total	
	Total	Total	Total	Total		
NRE	302,334	PHH Salary	62,224	Operating	10,000	537,277
Initiative	322,711	Operating	10,000	Staff salaries	61,186	
TOTAL	625,045		72,224		71,186	537,277

GRAND TOTAL for 2001/2002 **1,305,732**

Appendix III

3. Funding for major AWC RD&E Projects

Major Research Projects (source, title, principle investigators, year and amount)

Dairy Research and Development Corporation

“Training stockpersons to improve the productivity and welfare of their dairy cows” – P.H.Hemsworth and G.J.Coleman (1997/98 - \$117,075).

“A survey of operator and cow comfort in the milking shed” – J.L.Barnett, G.J.Coleman, C.A.Lunan and P.H.Hemsworth (1997/98 - \$81,862).

“The effects of a training program targeting stockperson attitudes and behaviour on cow productivity” – P.H.Hemsworth and G.J.Coleman (1998/99 - \$81,640).

“Designing components of milking sheds” – P.H.Hemsworth, K.G.Ng and E.C.Jongman (2000/01 - \$13,774).

DRDC total funds - \$294,351

Pig Research and Development Corporation

“Selection of stockpeople in the pig industry” - G.J.Coleman and P.H.Hemsworth (1997/98-99/00 - \$231,965).

“Stockperson selection modules development and testing” – G.J.Coleman and P.H.Hemsworth (1997/98-01/02 - \$62,608).

“Effect of handling and housing on pig welfare” – P.H.Hemsworth and J.L.Barnett (1997/98-99/00 - \$242,598).

“Conditioning suckling behaviour in sows and piglets” – G.M.Cronin (1997/98 - \$49,244).

“Practical alternatives for farrowing sows” – G.M.Cronin (1996/97 - \$72,744).

“Evaluation of the Werribee Farrowing Pen on-farm” – G.M.Cronin (1997/98 - \$55,210).

“Increasing piglet growth by increasing the number of suckling bouts by sows and litters” – G.M.Cronin (1999/00 - \$39,897).

“Training programs for abattoir workers to improve pig welfare and meat quality”

P.H.Hemsworth and G.J.Coleman (1999/00-01/02 - \$98,673).

“Multi-media computerised training” – G.J.Coleman and P.H.Hemsworth (1998/99-99/00 - \$59,270).

“Improving performance/efficiency of entire male pigs under commercial conditions” – F.Dunsha, I.M.McCauley, G.M.Cronin, J.L.Barnett and P.H.Hemsworth (1998/99-99/00 - \$172,128).

“Evaluation of sow stall dimensions” – J.L.Barnett, G.M.Cronin and P.H.Hemsworth (2000/01-01/02 - \$160,000).

PRDC total funds - \$1,244,337

Rural Industry Research and Development Corporation

“Welfare QA programs for broiler chickens” - J.L.Barnett, A.Almond and P.H.Hemsworth (1999/00-01/02 - \$153,223).

“The welfare and productivity of hens in a barn system and cages” – J.L.Barnett (1997/98 – 38,908).

RIRDC total funds - \$192,131

National Pork Industry Development Program

“The behaviour, performance and welfare of growing pigs in a deep-litter group-housing system “ – R.G.Campbell, R.Sargent and P.H.Hemsworth (1998/99-00/01 - \$190,000).

NPIDP total funds - \$190,000

Appendix III

NRE Initiative Funding

“Assessment of analgesic/poison combinations for the development of a humane avicide for cockatoo control” – J.L.Barnett (1999/00 - \$237,000).

“Welfare audit for the egg industry” – J.L.Barnett and P.H.Hemsworth (2000/01- \$100,000)

“Welfare QA programs for the livestock industries” – J.L.Barnett and P.H.Hemsworth (2000/01-01/02 - \$377,509).

“Stockperson - husbandry interactions and animal welfare in the extensive livestock industries” – P.H.Hemsworth 2000/01 - \$27,048).

“Neophobia in domestic dogs and attacks on humans II. Validating the methodology to assess neophobia.” – P.H.Hemsworth and G.J.Coleman (2000/01 - \$26,474).

NRE Initiative Research funds - \$768,031

Australian Research Council

Specialised Animal Behaviour and Welfare Research Facility” – P.H.Hemsworth, G.J.Coleman and J.L.Barnett (1997/98 - \$163,000).

“Neuroendocrine and behavioural responses to stress in pigs”. A.J.Tilbrook, J.L.Barnett and G.D.Hutson (1997/98-99/00 - \$112,000).

“Behaviour and welfare of suburban dogs” – P.H.Hemsworth, G.J.Coleman and J.L.Barnett (1999/00-01/02 - \$125,912).

ARC total funds - \$400,912

National Health & Medical Research Council

“Sex differences in the mechanisms by which stress inhibits the secretion and actions of GnRH” - A..J.Tilbrook and I.J.Clarke (2000/01-01/02 - \$135,000).

NHMRC total funds - \$135,000

TOTAL RESEARCH FUNDING OVER 5 YEARS - \$3,224,762

Appendix IV**Facilities, Equipment and Capability of the Animal Welfare Centre****1. Animal Behaviour & Welfare Research Building**

A \$300,000 Animal Behaviour & Welfare Research Building, which was predominantly funded by the Australian Research Council (\$167,000), with contributions from the University of Melbourne, Monash University and NRE, was built in 1998 for the Animal Welfare Centre. The building is located at NRE/VIAS Werribee and was designed for the conduct of short term intensive behaviour and welfare studies on farm and companion animals, under highly controlled conditions. This facility involves a large holding yard indoors leading to a number of testing rooms in which a range of treatment comparisons can be imposed and where detailed behavioural observations and physiological measurements can be conducted. The available funding at the time of construction was sufficient to enable completion of the building and connection of essential utilities (power, lighting, water and drainage). The very limited funds available since construction have been used to enhance the facility by fitting two testing rooms with multipurpose penning, erecting some temporary external fencing to facilitate movement of cattle and sheep to and from the shed and purchase of a second-hand cattle crush. Other envisaged enhancements are shown below. These additions, which would maximise the value of research conducted in the facility, include permanent handling and holding facilities for small and large animals both outside and inside the shed, a weather-proof external work area, video and other remote sensing equipment, heating and sound insulation and dampening of testing rooms. Estimates of the cost of these components have been prepared as shown in Table 1.

Component	Estimated cost (\$)
Table 1. Envisaged improvements with costs to complete the Animal Welfare & Behaviour Research Building.	
External yards and races:	
▪ 2 small yards (one at each end of the building) with connecting lane way along north side of building	15,200
▪ 1 cattle crush	4,000
▪ weather proof roofing for outside work areas	5,000
Internal races and penning:	
▪ portable / flexible race way for the indoor holding area including gates to each of the 4 internal testing rooms	2,900
▪ flexible penning for testing rooms 3 & 4 (same as rooms 1 & 2)	3,200
Heating and sound insulation and dampening of rooms	1,600
Video equipment:	
▪ 16 channel digital video system	6,500
▪ dedicated computer for data capture	4,000
▪ 8 low-light cameras, with auto-iris lenses, mounts & dust-proof boxes	3,800
▪ cabling	500
▪ IR lighting	1,000
Physiological measuring equipment to link to digital video system:	
▪ heart rate monitors	4,000
▪ blood pressure monitors	10,000
TOTAL	61,700

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Because of the unique nature of the Animal Behaviour & Welfare Research Building, completion of these proposed developments is likely to lead to a high demand for use of the facility in AWC projects and greatly enhance the competitiveness of the AWC for attracting future research grants. The facility as a whole has a foreseeable life of usage in excess of 20 years.

2. AWC Specialist Equipment Capability at Werribee

2.1 Video recording equipment

The AWC regularly utilises video technology in research projects. Video equipment available within the AWC includes a range of colour and black & white video cameras (the latter enable recording in the dark using infrared lighting), normal and time-lapse video cassette recorders, time-code generators and video monitors.

2.2 Behaviour analysis software

Specialist software developed by the Noldus technology company in the Netherlands is designed for use in animal behaviour and welfare research. The AWC has a mid-range capability in available software and hardware, including two licenses for the Observer base program, 2 Mobile Observers and the Video-Pro system, in which the video record is time-locked to a computer for more efficient and accurate read-out of video data. These technologies are highly valuable for animal welfare research as they are designed to assist the quantification of behaviour either by direct observation or via video (either normal speed or time-lapse recording). The highest level in this technology, which is not available at present to the AWC, is the "Ethovision" system. The purchase price of the Ethovision system is about AUD\$50,000. Nevertheless, the automatic tracking, recording and analysis of animal behaviour possible via the system would greatly increase the research capability of the AWC.

2.3 EEG measurement and the AMLAB Data Acquisition System

The AWC maintains equipment to enable the measurement of EEG (electroencephalogram) and EOG (electrooculogram), used in research on the measurement of painful sensations. The equipment used, an Associative Measurements Amlab Signal Acquisition System, provides a frequency spectral analysis enabling the quantification of the degree of pain experienced by animals. This technology has been used for assessing the pain associated with routine husbandry procedures such as tail docking, mulesing, dehorning or debudding, beak trimming, branding and castration on fully conscious animals without the use of any analgesia or anaesthesia. This could also be used as a tool to assess the effectiveness of analgesics.

2.4 Heart rate monitors

Heart rate monitors, as used by sports people monitoring their performance, are available for use in AWC research.

3. AWC Facilities at the University of Melbourne Parkville

The University of Melbourne is a joint provider of the JAFFR and PRTC facilities at the Werribee site, described below. Some office space for Professor Hemsworth and post-graduate students is also provided at Parkville.

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4. AWC Facilities at Monash University

4.1 Psychology Department, Caulfield

The offices of Professor Coleman and his staff are located at the Clayton site along with a Multimedia Development Laboratory. The latter is a joint facility between the Psychology Department and the Animal Welfare Centre. The AWC shares access to a multi-media program, who also maintains the AWC website.

4.2 Psychology Department, Clayton

The AWC has access to office space and small animal facilities, within the Psychology Department at the Monash Clayton campus.

4.3 Physiology Department, Clayton

The Physiology Department at Monash campus Clayton provides AWC scientists access to animal house facilities and endocrinology laboratories.

5. Pig Research and Training Centre, Werribee

A research piggery has been located at the Werribee site since the late 1940s. A major upgrade of facilities was made possible in 1992 through a loan from the Victorian Swine Compensation Fund (\$220,000), which enabled the construction of a modern 24-place farrowing/lactation shed, weaner room and grower pens. Shortly thereafter, coinciding with the decommissioning of the University of Melbourne piggery at the Mt Derrimut Field Station in 1995, funds of about 0.5 million dollars were invested by the University of Melbourne at the NRE/VIAS Werribee piggery.

The first joint facility on the Werribee site between NRE and the University of Melbourne was thus created, named the Pig Research and Training Centre. The facility is available for RD&E purposes by Government, University and commercial research organisations and is used for practical teaching purposes by the University of Melbourne, Veterinary Science and Agriculture & Food Systems Faculties. The piggery, which has minimal disease status, maintains a breeding sow herd of about 200 sows and has facilities for research on reproduction, growth and development, nutrition, feed evaluation, behaviour and welfare. AWC scientists have conducted both fundamental and applied welfare research at the facility on aspects of pig housing and handling and the evaluation of products such as new flooring materials. The PRTC is operated on a cost-neutral basis.

6. Joint Facility for Food Animal Research, Werribee

Another joint facility between NRE and the University of Melbourne is the Joint Facility for Food Animal Research (JFFAR). The JFFAR facility was formally established at the Werribee site in July 1998 and contains state of the art handling facilities, combined with extensive grazing land and technical expertise. Facilities include:

- Cattle facilities – 12 individual pens in intensive handling shed, Herringbone artificial insemination race, pens, crush and circular race for individual or group treatment.
- Sheep facilities – 72 individual pens, 30 metabolism crates.

Poultry facilities – includes three poultry sheds of different size, some with controlled environment status.

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JFFAR has supported research on ruminant and non-ruminant nutrition, reproduction behaviour and animal welfare. The facilities are also available for commercial purposes and are currently utilised by a commercial client companies (e.g. Animal Reproduction Company, Castella Research and Clone International). JFFAR is conveniently located near the Animal Welfare Centre's Animal Behaviour & Welfare Research Building, a large animal surgery, the Meat Research and Training Centre and the Pig Research and Training Centre.

7. Large Animal Surgery, Werribee

The animal surgery complex is based around a large, well equipped, two table, main theatre. Additional to this is a smaller, single theatre, scrub/dark room, linen and kit preparation area, small laboratory/instrument cleaning room and an extensive, under cover, animal holding/preparation/recovery area. The facility is equipped with a good range of basic surgical instruments, surgical gowns and general linen draping. The theatres are equipped with Halothane anaesthetic machines (one with Iso-flurane capability), respiration monitors, diathermy, shadowless operating lights, and access to PHIMR operating microscope and X-ray and developing equipment. There are facilities for equipment cleaning and laundry, assembly of operating kits and autoclaving.

The animal holding facilities have undercover, overnight holding capacity and handling facilities (catching pen, lifting winch and crush) for sheep, pigs, and cattle. Four recovery pens are centrally placed for easy access and monitoring and have direct access to a small holding/recovery paddock. Depending on the procedures to be performed, the facilities and operating systems allow high daily throughput of more than 30 sheep and up to 20 pigs (depending on groupings etc.).

8. Meat Research and Training Centre, Werribee

The Meat Research and Training Centre (MRTC) is the principal site for meat science training within Victoria. The MRTC is a joint venture between the Victorian Institute of Animal Science (VIAS), Victoria University of Technology (VUT) and Australian Refrigeration Air Conditioning and Heating (AIRAH) and has been servicing industry research and development needs for approximately six years.

Facilities/Features include:

- Fully licensed research and training abattoir.
- Alternative stunning equipment for sheep and pigs, including CO₂ gas stunning.
- Two boning rooms with temperature controlled environments.
- An ammonia refrigeration plant.
- Chillers and freezers which can be manipulated to varying cooling regimes.
- A meat laboratory.
- A conference room.
- Office space.
- Livestock holding yards

9. Hormone Assay Services

AWC researchers have access to NRE/VIAS Attwood Diagnostic Laboratory Services for the measurement of various hormones such as cortisol (both from plasma and saliva).