PRODUCTIVITY COMMISSION INQUIRY INTO THE AUSTRALIAN GOVERNMENT RESEARCH AND DEVELOPMENT CORPORATIONS MODEL

A Submission by Barry White, Consultant, June 2010.

<u>Key Suggestion on Community Benefits</u> – Increase the proportion of community benefits by the RDC by developing R&D corporations in major Australian regions - the corporations to be charged with tapping in and developing new sources of innovation.

- *The aim is to develop regional capacity to lead to the use of a wider range of environmental policy instruments contributing to increased community benefits on priority cross-cutting issues.*
- *There is largely untapped potential for the RDC to build on their strengths to connect with the initiatives in NRM in regional Australia.*
- *There is untapped scope to create more effective regional ownership and synergies to drive approaches to a more sustainable rural Australia. (See Issue 6, p10)*

Introduction

Following a brief summary of my relevant RDC experience, comments are provided on various aspects of the TOR as summarised in the six issues listed on p1 of the PC Issues Paper. My views are hopefully relevant across the RDC, but perhaps biased more to GRDC and LWA experience. However I have had some involvement with most of the RDC through collaborative programs. Some of my views may be based on possibly out of date or remote partial views of internal workings of the RDC. Abbreviations and References are listed at the end.

Experience - Rural R&D management and evaluation

2006-10. Consultant to Agtrans Consulting including author of eleven sub-program evaluations for GRDC (including several for CRRDCC) of randomly selected clusters of research projects.
1992-2005. Coordinator part-time of the various national climate variability programs (MCV) for LWA involving DAFF and several RDC as partners.
1999-2000. Project Leader AEC4, “Evaluation of Outputs for GRDC Projects”.
1994-97, Project Leader AEC1, “Benefit Cost Analysis” ,GRDC. – implementing ex ante BCA process for GRDC proposals.
1991-92, Chair, Steering Committee for GRDC Gains for Grains with oversight of case studies of 21 evaluations of GRDC projects and publication of Gains for Grains Occasional Paper Series to promote a consistent R&D evaluation methodology.
1990-1993, Director, GRDC.
1986-1990, Member, Barley Research Council and then Wheat Research Council
1962-1994, Queensland Department of Primary Industries.

1.The rationale for Australian Government investment in rural R&D

The general rationale remains presumably as set out in the PIERD Act and enabled by the levies on production and the matching arrangements. The rationale has an underlying market failure motivation. The objects include "*achieve the sustainable use and management of natural resources"*. The weighting the community attaches to that objective would have increased over the two decades since the Act was introduced. The complexity of the sustainability task has also increased as have alternative approaches, policy instruments and government programs to achieving the same objective. This issue will be picked up later.

In 2009 the Outcome statements that drive the RDC planning process were revised to what seems to be a more realistic scope. The previous version in the case of GRDC implied a responsibility for industry profitability and sustainability. The more modest revision requires:

"New information and products that enhance the productivity, competitiveness and environmental sustainability of Australian grain growers and benefit the industry and wider community, through planning, managing and implementing investments in grains research and development."

The implication appears to be that community benefits (used broadly to include environmental and social) are achieved through information and products adopted by grain growers.

The rationale for Australian Government investment should also consider alternative approaches to investing to achieve community benefits. If we consider environmental benefits in particular in the context of all R&D, it is clear that *"the biggest shifts in priorities for funding have been to human health and the environment, away from agricultural production*....." (Productivity Commission 2007). Over the decade to 2006 the environment share of total Australian Government support for all R&D went up by about as much as agriculture's share went down. Perhaps the Productivity Commission view that the Australian Government contribution to the RDC was excessive in relation to community benefits has already been sufficiently actioned in the broader R&D funding context.

In my view it would be simplistic and unproven to argue or believe that increased environmental benefits could be achieved by redirecting funding to environmental research by various agencies. Such a shift would be at the expense of a possibly large proportion of the environmental benefits that are being achieved by the RDC model. Tidy silo management models are not the answer to complex issues. Better collaboration is, and by organisations that have the flexibility to do it, and an outstanding record in achieving effective collaboration. It rarely happens spontaneously. More on this in Issue 5.

2.The appropriateness of current funding levels and arrangements particularly levy arrangements, and the basis for Australian Government contributions

There would be a case for increased funding, for example if

- there was significant or increasing impacts of market failure, and
- if high rates of return were being achieved, particularly by even marginal (low priority) projects.

There are some areas where demand for funding appears to have decreased because the RDC have been effective in removing market failure, for example through End Point Royalties to fund major plant breeding programs either by the private sector or joint ventures. But current RDC income levels from royalties etc are probably a small proportion of expenditure. In addition private sector extension and advisory services have taken up some areas previously provided by State Governments and to a much lesser extent RDC.

A general case for increased funding would need to be based on reducing any deficiencies in meeting the objects as in the PIERD Act. Average rates of return to industry benefit R&D are generally acknowledged as being high. That could be a basis for levy payers to increase funding provided they saw potentially profitable investments (the marginal ones) going unfunded and provided they accepted the risk. (The risk is clearly much higher ex ante than at the end of a project which is the common point for much of the ex post evaluations). But from a farmer perspective the benefits as calculated would need to be high. The lag is generally a decade a more and a 5 percent discount rate is well below what a farmer would use. And some farmers are generally sceptical about R&D that is not about improved varieties or a current concern. Farmers recognise too that existing levies of the order of one percent in gross income terms are very significant in terms of net incomes (10% or more).

There is probably not much information on marginal projects, in particular whether they are truly marginal by some objective test against benefits. (and there is no follow-up on the fate of unfunded projects).

The Act charges the RDC with increasing economic, environmental and social benefits. There are also enabling objects relating to

- use of the resources and skills of the community in general and the scientific community in particular, and
- accountability. (both issues to be covered in Issue 6)

It aint broke, but can it be tinkered with?

In general looking back over two decades, the arrangements have been widely accepted as a highly successful catalyst that built a sound system for increasing industry benefits and giving a new priority to community (mainly environmental) benefits. The 0.5 percent cap is an indicator of the catalyst role. Success in increasing industry benefits has had important spillovers for community benefits, particularly environmental benefits, until the demise of LWA anyway.

However, the view may have been taken that under the current arrangements, the RDC were not delivering significant environmental benefits to the community over and above those that were integral to industry benefits (also to be covered in Issues 4 and 6). Ironically the LWA projects appeared to be the exception in generating community benefits that were not simply joint benefits free riding on industry benefits (Chudleigh et al 2006).

In general where there are complex attribution issues, it is easy to see the lack of evidence as no evidence. The answer then is uncertainty.

The basis for the Australian Government contributions is also seen to include impacts in rural Australia in terms of a priority to a strong rural economy, fostering innovation, building scientific capacity and diversity, and in maintaining the multiplier benefits that underpin regional economies. Any withdrawal of Australian Government contributions or alternative investments in organisation not in inland Australia would be seen as devaluing those priorities, and perceived as devastating given declining populations and availability of services in many regions.

Marginal redirection of some RDC funding

But there may be scope to creatively redirect some matching funding to achieve broader benefits using a wider range of instruments than used by the industry-focussed RDCs. (see Issue 6). Demand is increasing for public good research using a wider range of policy instruments to respond to rapidly changing and interwoven environmental, energy and climate challenges. Much of the response to the increased demand is in coastal areas. Inland, there is unmet demand. There are signs of stress in many rural areas from too many droughts and from increased staff turnover. Declines in services including in State Government research have been general.

The RDC are uniquely placed to respond to some aspects of these broader priorities, and to tap into new sources of innovation simply not available to centralised agencies. There are now a wider range of regional groups starting to develop a wider range of policy instruments to achieve NRM objectives.

3. The effectiveness of the RDC model in enhancing the competitiveness and productivity of Australia's rural industries

Some comments on the macro performance indicators are followed by some specific areas where the RDC system performs exceptionally well compared to alternatives.

The key indicators show generally high rates of growth in productivity over the last two decades but raise some concerns about the decline over the last decade. I see the concern as probably misplaced or at best always speculative because:

- the decline was off an extremely high rate achieved by a confluence of unusual factors in the 1990s
- the last decade has been extreme in terms of droughts
- As the Productivity Commission (2007) has pointed out, there are issues, probably not resolvable, in attributing an objective share of productivity growth to non-R&D factors and to trends in those factors.

The 1990s were exceptional for example with the extent of the switch from sheep to cropping, very rapid adoption of zero till accompanied by increased use of herbicides and nitrogen. Recent research on productivity by ABARE suggests that " *as TFP increases, the effect of moisture availability appears to become more significant*". (Lukacs 2010). Field research (McClelland and Malcolm 2010) also suggests that a high input no-till system was more sensitive and less profitable during a period that included major droughts than other systems were, including those with sheep. There have been welcome attempts by ABARE to account for rainfall and moisture trends

in productivity trends. But they will only be partly successful. The efforts are severely constrained by the often poor correlations between rainfall or modelled soil moisture variables and production, particularly at the farm level.

The last decade has equally been exceptional and it should be no surprise that farmers are more risk averse when confronted with such a run of severe droughts. The rate of adoption of new varieties would be an obvious casualty that would not show up in statistics used for productivity analyses.

The decline in public investment

The decline in public investment as highlighted by Mullen (2010) is potentially more concerning. Research intensity (investment as a % GDP) has fallen to about 3% from a 1980s peak of over 4%. Mullen also showed that the combined state and Australian Government proportion of research providers has fallen from 75% in 1995 to 55% in 2007. This on its own should be sufficient to rethink the view promoted by Productivity Commission (2007) that the Australian Government contribution was excessive in relation to community benefits. That statement would need to be revisited if it could be shown that the substantial State Government investment was targeted at community benefits and not industry benefits.

There would also need to be a clear statement from the Australian Government that their investment was aimed at increasing community benefits. I demonstrate in Issue 4 that withdrawal of the Australian Government would put at risk the large current component of community benefit. The likely decline would not be offset by alternative avenues of investment. Alternatives simply don't have the capacity the RDC system has demonstrated to consult effectively and give direction to a large proportion of all rural research to achieve industry and community benefits. As a key example, the achievement of national environmental benefits could not possibly be achieved without including the RDC system. Landholders contributing to the RDC system are managing over half the nation's land mass.

The fall in research intensity since the 1980s as shown by Mullen (2010) warrants more analysis before too much is made of it. Comforting qualifiers creating uncertainty on a conclusion include :

- Research efficiency would have increased (a productivity dividend!)
- Fewer and larger farms and more efficient machinery
- Economies of scale are relevant
- Savings from reduced sheep and wool research
- Reclassifications from agriculture to NRM
- Relinquishing of roles (for example in extension and plant breeding) to the private sector.
- Staffing levels had some hitherto unexplored capacity to take a cut after decades of steady growth in staff.

The big change in R&D has clearly been in the role of the States. Their current rationale is probably still unclear but probably has been more bound by tradition than by market failure considerations. My understanding is that State Treasuries took an accounting perspective and saw the high proportion of all State R&D going to Rural R&D as anomalous and unfair to other sectors.

Many State Rural R&D agendas have been fully captured by RDC funding leaving the States with little independent capacity, particularly given they have no

constitutional capacity to levy farmers. Often State rural R&D priorities would therefore be seen to be aligned with RDC priorities. There is consultation at many levels to shape priorities. It is probably fair to conclude that the increased R&D funding has to some extent crowded out State funding to being little more than providers of infrastructure. (Interestingly as a collateral benefit, the growth of the RDC and the Australian Government support might have actually helped divert State resources into more NRM where there was a more explicable and clearer rationale, and community support !)

RDC strength in achieving effective collaboration

One of the outstanding strengths of the RDC system is how effectively it achieves collaboration. A little external funding is very effective in encouraging agencies to work together, often in such obvious ways it is always surprising it does not happen more spontaneously. For example, collaboration was perhaps the main ingredient in the success of the Managing Climate Variability program which was able to have a significant national impact with a budget through DAFF and NHT of about one million dollars annually as start-up funding. That was leveraged up by a large factor with support from RDC and research agency partners. (See for example Agtrans Research, 2008). But all too often formal agency collaboration ceases when the external funding stops.

4. The extent to which RDC-funded projects deliver an appropriate balance between industry-specific and wider community benefits

What is an appropriate balance should reflect amongst other things the relative contributions of the partners and also the crucial underpinning role of the Australian Government in facilitating RDC projects via the levy system. Typical projects are funded up to 50/50 with partners (but RDC often less than 50%), for example partners such State Government Departments or CSIRO. The RDC component of the total project cost is probably about 60% industry and 40% Australian Government. Therefore Australian Government contributions could enjoy considerable leverage, of the order of five to one or more. The question is whether that is sufficient to achieve the community benefit objective if it could be easily specified. However if one wanted to take a simplified view of user pays or of equitable sharing of benefits and costs, then wider community benefits would have a support rather than dominant role. (Notwithstanding that the balance between community and industry benefit sought by partner funding such as by CSIRO and the State Governments is not apparent.).

The evaluations that have been done support the view that wider community benefits achieved by RDC projects are typically joint benefits dependent on adoption of practices contributing to industry benefits. And that seems to be more or less what the PIERD Act was aimed at.

"To increase economic, environmental or social benefits to members of primary industries and to the community in general by improving the production, processing, storage, transport or marketing of the products of primary industries."

The intent, and without ambiguity, appears to be to increase benefits generally (economic, environmental and social) by improving performance of the industry through industry benefits - in summary, increased industry and community benefits that flow from pursuit of a more efficient industry. That interpretation might be seen as convenient, and it appears to be in conflict with what I understand to be the

hypothesis of the Productivity Commission that the RDC were not providing proportionate value in terms of public good criteria. It is of course difficult o test the counterfactual given that even the factual benefits are hard to quantify.

Some history

There is some history to the Australian Government contribution that predates the PIERD Act. The 50/50 matching was simply a continuation of the matching funding for the research councils that predated the RDC. Wheat R&D had a national council funded by the Australian Government matching of the levies, and State Committees were funded by the levies. My recall is the council funded industry-related R&D of "national" significance, (usually more strategic and in a sense risky research and therefore more market failure), and the States had a more applied and local agenda. Public good was in neither lexicon. The pattern of total funding being applied to national and regional industry-benefit R&D carried on as shaper of early RDC policies whereby public good benefits were mostly 'free-riding' and accruing on the back of industry research. However it should be noted as an example I recall that the Wheat Committee in transition to the GRDC did respond with projects reflecting broader contemporary needs, for example "the need to address rising community concern for environmental issues and occupational health and safety".

The 1989 Government statement (Kerin and Cooke) on Research Innovation and Competitiveness stated that "*the external benefits that accrue to society underlie the Australian Government's commitment to match industry funding*." That was preceded by quoting the IAC estimate in 1976 that at least 50 percent of the benefits of research accrue to industry.

Increasing and evaluating community benefits

There is likely to be much unrealised scope and a continuing market failure rationale for the Australian Government to make better use of the RDC system. Examples are research to reduce environmental impacts or inform measures to improve environment quality. There may also be scope to better exploit spillovers by developing research capacity to apply a wider range of policy instruments and tapping into new sources of innovation in regional Australia. The rationale for more attention to community benefits is clearly increasing as communities generally place increased priorities on environmental goods and as the underpinning resources are impacted by climate change.

From an additionality perspective, the Australian Government could be expected to seek evidence of increasing community benefits flowing from its (presumed) 20 percent stake. There are two components. The 20 percent share has probably increased total funding by about that amount which would at a minimum have had at least a proportionate impact on community benefits. Samples of projects completed will indicate the extent.

What samples won't show is the second component - the extent to which the Australian Government stake has actually shifted the RDC portfolio in the direction of projects with greater emphasis on community benefits. Some examples and speculation on the counterfactual will indicate that I believe the portfolio shift is significant and it is continuing. Some shifts are clearly a response to the Australian Government priorities, general as they may be. There are projects funded now that would not have been funded or even conceived of two decades ago.

One example - Land Water and Wool was $40 million five-year program, a partnership between Australian Wool Innovation and Land & Water Australia to research some major NRM issues facing the wool industry. The LWW projects were seen to represent a wool industry contribution to non-production-based research. Without Australian Government funding to AWI it is doubtful if any of the program would have been undertaken, and clearly not at the same scale. The total benefits of the Land, Water and Wool program were estimated at $120 million. Approximately $48million of these benefits are environmental and attributable to AWI's investment. These included rehabilitation of degraded land, water quality improvements, biodiversity enhancement, and increased greenhouse gas sequestration.

The rigorous way to evaluate the historical return to the past Australian Government investment is to consider the gain since 1989 over the counterfactual. (A counterfactual could also be run from 2010) .One scenario for the counterfactual would be if there was no matching and simply just a levy system. Based on the preceding evidence, three major differences would be:

- Much reduced investment in R&D in total even two decades on at great cost particularly to regional economies.
- Reduction in projects where community benefit is closely tied to industry benefit.
- A major shift in the portfolio away from projects with a high proportion of community benefit.

There would be major impacts of the portfolio shifts, for example from a reduced component of strategic research. Recall that up to 1989 there were matching funds in many industries and these were often dedicated to national ie at that time more strategic research issues. An RDC model based on levies only would not have picked that up for decades. A more sophisticated counterfactual might assume the funds released were allocated to research agencies with a more apparent community benefit focus. My view is that much of their direction has come from the RDC system and they are typically highly dependent on external funding anyway. This will be picked up in the next issue on other possible funding arrangements.

In Issue 6, I flag an opportunity to move towards what might be seen as more appropriate balance if that should be interpreted as an explicit increase in the public good component from the current proportion.

5. How the current RDC model compares and interacts with other arrangements for funding and delivering rural R&D

The current RDC model is successful because it complements and often leads the other main arrangements for funding rural R&D. There are other unique features.

In summary, the four key strengths that underpin the success of the RDC system are:

- The capacity to consult more inclusively on issues and priorities across the entire system, and thus to help shape the priorities of the research providers

- The involvement through the levy system of the farmer beneficiaries who contribute to industry and community benefits by their implementation of improved practices
- The flexibility the RDC system has to quickly action evolving priorities through competitive grant funding of the research providers.
- The flexibility as often effectively a funder of last resort, to pick up projects and explore new directions and disciplines which were seen as a bit controversial or a bit risky by more conservative R&D agencies.

The RDC has unique features that cannot be replicated by other arrangements. It would be a loss to weaken the above strengths or to not make greater use of them.

With respect to industry benefits, the success is clearly related to the involvement of levy payers in contributing to setting priorities as ultimately shaped by scientific and economic dimensions. Other organisations do not have equivalent consultation arrangements and would not seek to duplicate RDC processes.

The concern is that given the representation of levy payers on Boards and on selection processes that priorities will concentrate on industry benefits at the expense of community benefits (Productivity Commission 2007). LWA would have been an exception.

The emphasis for this issue is presumably whether other arrangements for Australian Government funding can more exclusively deliver community benefits relevant to the rural sector and its impacts.

A review would most likely show that most rural sector community benefits are achieved by landholder actions that produce industry benefits. Alternative funding mechanisms for achieving increased community benefits would need to ensure that agencies have the capacity to achieve specific community benefits. The strengths that the RDC have in the research process from consultation to flexibility to put together a research project with appropriate skills and resources, and to manage the pathways to adoption are simply not available in research agencies with a more strategic focus. Neither are they likely to be available in a centralised Departmental structure.

6. The scope for improvements to the current model and any alternative models that could deliver better outcomes.

Concern is occasionally expressed that the RDC model neglects downstream R&D in the value chain. I am not aware of the rationale or the evidence.

The PIERD Act requires an improvement in accountability for expenditure on R&D activities. The requirement points to an ongoing process for monitoring and evaluating accountability as outlined in the objects of the Act. In addition to evaluation issues, the submission concludes with the key suggestion made at the beginning on cross-cutting and community focussed research.

Towards an Evaluative Culture

Some suggestions follow. Perhaps foremost is the apparent absence of a truly evaluative culture. The absence is in the sense that evaluation in terms of

prescribed outcomes does not have continuity and effective feedback. Evaluation is not seen to be guiding the R&D stages across institutions and processes from:

- consultation on priorities through to
- ex ante analyses and project selection
- through implementation to outcomes.

Evaluation is not seen as an integral part of management.

Researchers typically see efforts to evaluate their completed projects as a necessary evil getting in the way of their next project. Committees involved in selecting priorities and projects for funding have been more comfortable relying on intuition than on efforts to scope out possible benefits (for example a simplified ex ante benefit cost analysis framework). The difficulty in ex ante analysis could be seen alternatively as a measure of project risk that could be managed. I recall a statement (hopefully now atypical) to the effect that "any suggestions that committee members need information on benefits as reflecting on their collective skills."

My suggestion of evaluation to be seen as an integral part of management is broader but includes the PC finding (Productivity Commission 2007 p342)
"Feedback mechanisms should be implemented to ensure that performance evaluation findings are drawn on to enhance the future benefits of public support for science and innovation."
Some indicators are that most evaluation initiatives over the last two decades appear to have been done to meet external requests (eg this one) rather than to provide feedback on priorities and processes. One result is that the initiatives are not sustained. There was a flurry of activity when the RDC were formed but it was used, albeit to good effect, to showcase past research highlights rather than to inform future priorities and processes. An evaluative culture would lead to better specification of partner responsibilities post project. They often have most responsibility for adoption of the knowledge and products developed in the research project phase. There would also be improving information on what determines adoption, better (or even some!) capacity to predict adoption and to invest to influence adoption rates. I suggest the absence of an internal demand for improved evaluation can perhaps be explained as follows.

A simple analysis of the drivers of an evaluative culture would suggest that if the system is not formally driven by research benefits, then perhaps it must be driven by the science, or equivalently research quality. That would be truer if the R&D system gave more priority to monitoring research quality and capacity building. There is of course ample evidence of strong RDC support for science quality in general. But it appears ad hoc and not consolidated. Perhaps bibliometrics might now be more useful given that the information is more readily available (for example the work of the ANU Centre for Policy Innovation). But that is a digression because science quality is not the key driver.

So that leaves the question of what does mostly drive the system at project level taking into account all the players from stakeholders to researchers?

The answer for researchers and research mangers is often, fairly obviously and not unreasonably, the next project.

The consequence is that the post-project risk is often left largely unmanaged and there are usually no processes for monitoring adoption impacts or for evaluation.

The situation will become worse with reduced ABS data and with increasing commercialisation of plant breeding for example.

Key Suggestion - Improving Benefits from Cross-cutting Research

Although generic issues can be readily identified where a national approach is warranted, a proportion might be best developed and managed at a regional level. Two of the impressive strengths of the RDC model are in consultation and collaboration, two attributes of great value at a regional level where the issue is a regional one or best handled on a regional basis. It will be argued that centralised and industry-focussed RDC already have effective approaches for consultation and collaboration at regional and national level. Is their scope for a regional RDC-type structure that would be more effective in delivering community benefits by tapping into and developing more diverse sources of innovation?

An analysis done for CRRDCC (2007a) indicated that Public Good research issues were a component of projects that accounted for over 40 percent of total benefits. Two of these, climate variability and NRM accounted for one quarter. These are areas where there are existing collaborative arrangements. The opportunities to strengthen RDC collaborative activity have been reviewed (CRRDCC 2007b). There are numerous existing areas accounting for 8 percent of RDC expenditure. There is ample scope within new and emerging issues such as rural aspects of energy to develop issues more suitable to a regional approach. There is likely to be more support for such a focus from regions than from centralised organisations.

Scope could therefore be investigated into the merits of creating a more formal regional structure to tap into more diverse sources of innovation, and to build capacity in cross-cutting issues of a broader community benefit. The concept should be compatible with the principles driving the National Primary Industries RD&E Framework. However the direction appears to differ fundamentally from that Framework which appears to be based simply and more or less traditionally on a linear national research focus with regional development and extension.

There is largely untapped potential for the RDC to connect with the initiatives in NRM in regional Australia and create regional ownership and synergies to drive and reenergise approaches to a more sustainable rural Australia. The RDC have made major contributions to increasing environmental benefits by promoting industry benefits such as conservation cropping that also have ongoing community benefits in terms of reduced erosion, reduced losses of nutrients and reduced drainage and runoff. These environmental benefits are mostly achieved by improved information through RDC networks leading to increased practice change. There has been less concentration on other policy instruments such as market based ones and regulation which can be highly effective in some situations.

So the scope for regional RDC that can create regional ownership and synergies with NRM initiatives to drive approaches to a more sustainable rural Australia warrants some consideration including:

- in the National Primary Industries RD&E Framework, and
- how such an initiative would complement the National Environmental Research Program.

The RDC have demonstrated they have been very effective in funding the type of collaborative projects needed to make progress on emerging and complex environmental, energy and climate challenges.

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Abbreviations

CRC Cooperative Research Centre

CRRDCC Council of Rural Research and Development Corporation Chairs

CSIRO Commonwealth Scientific and Industrial Research Organisation

DAFF Department of Agriculture, Fisheries and Forestry

GRDC Grains R&D Corporation

IAC Industries Assistance Commission

IOC Industry-owned Corporation

LWA Land and Water Australia - R&D program managed by LWA

LWW Land Water and Wool - R&D program managed by LWA

MCV Managing Climate Variability (collaborative R&D program managed by LWA)

NHT Natural Heritage Trust

NPI RD&E National Primary Industries RD&E Framework

PC Productivity Commission

PIERD Act Primary Industries and Energy Research and Development Act 1989

R&D Research and development

RIRDC Rural Industries Research and Development Corporation

RDC Rural Research and Development Corporation