



SECOND YEAR REVIEW

**STAGE 1 AND
STAGE 2 REPORTS
2003**



Second Year Review, Stage 2 Report

Mr Jim Miller Dr Peter O'Brien Dr John Vercoe

Executive Summary and Recommendations

The CRC for Tropical Savannas Management (Savannas CRC) is an unincorporated joint venture. The headquarters of the CRC are at the Northern Territory University, in Darwin with geographic nodes in: Darwin, Katherine, Brisbane, Cairns, Charters Towers, Townsville, Kununurra and Broome.

The Savannas CRC (established 1 July 2001) is a 'new from existing' application in the 2000 selection round with core participants as below:

University:	Northern Territory University; James Cook University; The University of Queensland
Commonwealth:	CSIRO, Sustainable Ecosystems, Land and Water; Environment Australia (Biodiversity Group)
State:	Queensland Government; Northern Territory Government; WA Department of Agriculture; WA Department of Conservations and Land Management.
Industry:	Meat and Livestock Australia.
Other:	North Australia Indigenous Land & Sea Management Alliance

In its first six years (CRC1) the focus was on research work to better understand the condition and the dynamics of savannas, the definition of problem areas and knowledge gaps. A major task for CRC1 was to develop meaningful relationships and networks with savanna users and to build a critical mass of research providers. This CRC builds on the good work done previously, maintains a high quality basic research thrust but also brings in new dimensions in the development of sustainable management systems for both industry and community and introduces a new theme in Regional Planning and Management.

Overall this is a significantly different CRC from its predecessor with a major injection of socioeconomic, cultural and communication skills in order to build the knowledge systems which are based on the excellent biophysical databases built up to date.

Objectives of the CRC are clear and have been developed after extensive consultation with stakeholders. The Centre aims to achieve its objectives by focusing its activities and resources on key result areas:

- Healthy landscapes
- Sustainable Management Systems
- Viable and socially desirable regions
- Productive and capable people

To deliver in these key result areas the CRC has organised its work under four themes:

- Landscape Ecology and Health
- Industry and Community Natural Resource Management
- Regional Planning and Management
- Human Capability Development

The CRC addresses issues of major national importance. Potential input into management options, policy options, information resources and tools and training in their use have significant long term benefit both to the savanna managers and communities and to Australia as a whole. There is also potential for the CRC to become a world leader in this area.

The quality and relevance of the research program is reported in detail in the Stage 1 review. The panel supports the Stage 1 findings and notes the positive and complementary comments. There are a number of recommendations which involve fine tuning rather than major intervention. A key issue coming out of the Stage 1 review is the suggestion that more resources to be allocated to improve the interface with the indigenous population in the northern savanna. The Board's responses were generally positive and all of the issues listed will be addressed subject to the impact on resources and the potential for external funding.

The CRC has a very effective technology transfer capability. This is based on an excellent communications capacity in publications and associated website, the utilisation of extension resources of partners and a well resourced and effective technology transfer strategy.

Key user groups are well aware of the CRC and are integrated into the Centre by a range of mechanisms including the Savanna Advisory Committee, and particularly the developing activities in Themes 3 and 4.

Commercialisation is not a major issue for this CRC but the strategy of setting up an incorporated company 'Tropical Savannas Management Systems Inc' to manage the Centre's IP, consultancies and sale of products, is supported. There is a wide range of SMEs in the form of pastoral groups, indigenous groups, tourism operators etc involved in the CRC and these appear to be well integrated into Centre activities.

Education and training activities in this Centre are innovative and evolving rapidly to meet the needs of stakeholders. Quality of graduate students and their integration into the research program is excellent. Overall numbers are somewhat low at 18 but plans are in hand to increase numbers and to achieve a better spread across the University partners.

The Panel notes and supports the Professional Doctorate Courses and the provision of course material for secondary schools. The involvement of partner researchers in student supervision is a standard practice and student projects form an essential element of the overall CRC research program.

Cooperative linkages between CRC participants are very good. The projects have been designed to be multiagency and multi-theme where appropriate to encourage collaboration. There was clear evidence that CRC based collaborative arrangements were adding value to the pre-existing research activities of participants.

International collaboration is being developed particularly with South Africa and some US based groups. The Panel considers that more needs to be done to ensure that the CRC fully understands the progress being made by international land management groups to maintain the CRC at the cutting edge in research.

There may also be a need to build better linkages with the Commonwealth and with state and territory land management agencies to assist the CRC in its packaging of products to meet the needs particularly of the agencies involved in policy development.

Resources and budgets available to the CRC are adequate to meet its commitments. The Panel has a concern however that active pursuit of external funds may overcommit the existing limited resource base.

Management structures are appropriate for this type of CRC. The Board composition is in line with requirements and appears to operate with enthusiasm and also with regard to corporate governance issues. The Panel recommends that key performance indicators be established and monitored for the Board and Committees and that the current assessment arrangements for the CEO be upgraded and formalised.

Overall this is a very good CRC which achieves a high rating in all evaluation criteria. There are no major weaknesses and the Panel considers that the CRC will in time make a significant contribution to savanna management.

Recommendations

- 1. That there would be mutual benefit if the Savanna Advisory Committee (SAC), as well as the Board were asked to comment on the Scientific Program Advisory Group (SPAG) reports.*

2. *That the CRC examines on a regular basis the trends in long term external drivers of change in savannas and assess the impact of these changes on CRC activities.*
3. *That the CRC develops better collaborative links with State and Territory land management agencies to better define its role in supporting policy development and to design more effective tools and information packages.*
4. *That the CRC investigates the potential to further define links particularly with international agencies that fund development in savanna management in other parts of the world.*
5. *That the CRC develop duty statements and key performance indicators for the Board and its Committees as an ongoing review tool. The performance assessment for the CEO should also be upgraded to a more formal basis.*

Review Procedures

Stage 1 of the Second Year Review of the Savannas CRC was a scientific and technical review of the CRC conducted on 27-29 August 2003 in Darwin. The panel comprised:

Professor Jon Altman	Chair
Dr John Vercoe	Visitor
Dr Tony Press	Panel Member

Stage 2 of the review was conducted on 4 - 5 November 2003 in Darwin. The panel comprised:

Mr Jim Miller, Chair, CRC Life Sciences Panel	Chair
Dr Peter O'Brien	Panel Member
Dr John Vercoe, Visitor	Panel Member

The panel was assisted by Vic Lawrentin of the CRC Programme, Department of Education, Science and Training.

Objectives of the CRC

CRC objectives have been developed in close consultation with end-users and management systems are in place to ensure that end-users are closely involved in project development, monitoring progress and commenting on the effectiveness of outcomes.

The CRC in achieving its goals and objectives as specified in the Commonwealth Agreement will make a significant contribution to the national economy.

The CRC has identified these major new and emerging issues:

- Better regional planning
- Reliable regional land management
- Lease renewal

It has in place a theme-based, research program structure, that incorporate Key Result Areas, to drive activities that address its objectives.

The CRC Board and Management have developed strategic and operational plans that link objectives to the project-based work-plan, and to products and potential outcomes.

Quality and Relevance of the Research Programme

The Panel agrees with the assessment by the Stage I review team –

“The TS-CRC has a highly relevant research program that is of significant relevance to the tropical savannas in the 21st Century. TS-CRC seeks to provide knowledge and strategies for the wise management, sustainable use and conservation of the tropical savanna. It seeks to work for the mutual benefit of the region’s people, economy and ecology, maintaining the rich natural and cultural heritage and values of the massive region for future generations in the face of inevitable development pressure. The relevance of the research program is enhanced by a number of key national priorities including:

- *Heightened national awareness of Salinity and Water Quality issues*
- *Heightened national awareness of climate change and greenhouse issues*
- *Heightened national awareness of issues associated with uncontrolled fire*
- *A policy imperative to consider issues of sustainability*
- *An increasing focus on empowering regional communities to address NRM challenges*
- *The EPBC Act and contributing to matters of national environmental significance*
- *Relevant international conventions and obligations.”*

The Stage II also noted the Board’s response to the 7 recommendations made in Stage I and believes the Board is responding positively. The Panel endorses the Board’s response particularly to recommendations 3 and 4 and notes that, in the absence of any additional resources becoming available, the shifting of resources will have to be at the expense of another area of research. Given the current and the rapidly improving engagement of the Indigenous community with the CRC, the Board will need to ensure, in a reasoned and transparent manner, that any shift in resources contributes to the overall goals of the CRC.

In monitoring the quality and relevance of the research program, the Board and Management are assisted by two active and dedicated committees – the Scientific Program Advisory Group (SPAG), whose primary role is to ensure the quality of the science, and the Savanna Advisory Committee (SAC), whose primary task is to advise on the relevance aspects of the research program. The Panel endorses the roles, functions and activities of both these committees but recommends that there would be mutual benefits if the SAC, as well as the Board, were asked to comment on the SPAG reports. This could help further align the science with the needs of end users.

The Panel supports the suggestion by SPAG that, from time to time, the CRC should scan the horizon to detect trends in the long-term external drivers of the CRC agenda e.g. demographic changes, trade issues, energy sources, and climate change. Research done now may not be applied for 10-15 years and the following questions should be asked. Will the savannas have moved on or will the research still be relevant? Does our present investment meet possible future conditions?

The Panel recommends that the CRC examines on a regular basis the trends in long term external drivers of change in savannas and assess the impact of these changes on CRC activities.

The publication rate at this stage of the CRC is satisfactory in most areas and this momentum should continue. However, the Panel emphasises the need for the CRC to invest some effort into forging greater linkages with international research providers and funding agencies to capitalise on the potential impact of the CRC’s activities. The CRC has a competitive advantage in savanna science and management.

Strategy for Utilisation and Commercialisation of Research Outputs

The CRC has a strong focus on consultation and communication with landowners and managers, reflecting the Board’s view that CRC knowledge must be held and used by them. The level of engagement of users through formal processes such as consultations and the advisory committee, and informal processes at project level is impressive and highly regarded. SMEs in the pastoral industry and indigenous area are highly engaged with the CRC, including providing additional funding for targeted work.

A limited company is in the late stages of being established to manage contracts, consulting and IP.

The CRC has recognised its potential to effectively influence policy and will need to develop approaches and strategies to achieve this.

The CRC has produced some excellent publications that have been in demand by savanna land managers.

The CRC has a very effective website, including a new <http://www.firenorth.org.au> site to deliver timely, satellite-based map information on fire status to inform day-to-day land management. The site is cleverly configured for narrow band-width users.

The CRC has responded to the demand for integrated regional land management and program delivery through Theme 3 and is developing approaches to enhance regional engagement.

Some stakeholders made it clear that they were looking for early delivery of practical management tools from the CRC, and the plans and processes of the CRC indicate they are on-track to deliver.

Education and Training

The CRC has an excellent, comprehensive and innovative education and training program that encompasses higher degrees, post-graduate courses and a new initiative on tropical savannas knowledge for schools. There is an excellent orientation process, although students noted there might be some opportunity for integration with existing universities activities.

The number of PhD students is modest at 18, but is likely to increase by 12 in the current round. Students identified a number of factors that may be limiting the number of students, including the remote location, lack of students in the regions and lack of awareness of the tremendous opportunities they felt the CRC provides. Students saw strong benefits from involvement with the CRC, including networking, ready access to high quality scientists and resources and a CRC that is committed to engaging with, and delivering to land managers.

The secondary school initiative is well planned and grounded in identified curriculum needs. This new area will need to be identified in the performance measures.

The CEO has identified that the target of 20 special indigenous scholarships will be difficult to meet and that a new strategy of significant focussed investment in a smaller number of students will be pursued.

Collaborative Arrangements

Collaborative arrangements between CRC partners are excellent. Projects operate seamlessly across agencies and across state and territory borders to produce their outputs. In addition a critical mass of researchers has been achieved in some areas. This would not occur without the CRC.

Management strategies are in place to ensure cross agency and cross Theme integration and appear to be effective.

Clear evidence was given that the CRC had added value to the pre-existing work of the CRC participants that would not have occurred without the advent of this CRC.

The Panel noted that the CRC is moving towards establishing a supporting role in the development of policies for sustainable savanna management. There is still some debate within the CRC regarding the role and opportunities in this area. The Panel recommends that the CRC develops better collaborative links with State and Territory land-management agencies to better define its role in supporting policy development and to design more effective tools and information packages.

International linkages are in place with South Africa and some US based groups. However, the Panel recommends that the CRC investigates the potential to further define links particularly with international funding agencies that fund developments in savanna management in other parts of the world.

Overall, the CRC has established good collaborative linkages between jurisdictions across Northern Australia, between sectors and between researcher users. The CRC is active in looking at developing new linkages and contacts particularly with additional Indigenous groups.

The Panel notes that linkages with other CRCs have been developed and there is potential for further joint activities particularly for students.

Resources and Budget

Appropriate and effective financial management systems are in place allowing the CRC to track contributions and expenditure in order to support internal management processes as well as meeting its contractual reporting requirements. While there are some variations in contributions from individual participants to those specified in the Schedules to the Commonwealth Agreement, the Panel does not consider that any of the variations are significant.

Resources and budgets available to the CRC are adequate to meet its commitments. The Panel has a concern however that the active pursuit of external funds to support individual projects may over-commit the existing limited resource base.

Management Structure

The organisational structure for this CRC is similar to most other unincorporated joint venture CRCs. The Board is supported by a Savanna Advisory Committee (SAC) and a Scientific Program Advisory Group (SPAG) as well as the management group.

While the Board is effective and enthusiastic the Panel recommends that the CRC develops formal duty statements and key performance indicators for the Board and its Committees as an ongoing review tool. The performance assessment for the CEO could also be put on a more formal basis.

The SAC and SPAG have very different roles but both provide valuable input for the Board and management. The Panel considers that there would be merit particularly in having SAC consider SPAG reports. The energy and commitment of SAC members is a good indication of end user involvement in CRC activities.

The CRC is well served by a very competent and experienced Chair, John Kerin and the CEO Gordon Duff who has a long term commitment to savanna research and management. Theme managers, Communication and Business managers make up an effective CRC management team.

The geographical distribution of this CRC presents a management challenge but this appears to have been overcome through the development of a very effective communication strategy

Performance Evaluation

The CRC's annual report contains detailed information on the performance of the Centre against the criteria in Schedule 6. In addition, the key elements of the CRC's evaluation strategy are in place and working well,

including a Scientific Program Advisory Group, Savanna Advisory Committee and annual review, as well as a thorough project planning process.

The Panel suggests that the CRC further develop some of its performance evaluation processes, including assessment by the Board of its own performance and that of its supporting committees and structured assessment of the CEO by the Chair.

.....

Mr Jim Miller
Panel Chair

.....

Dr Peter O'Brien

.....

Dr John Vercoe

Stage 1 of the 2nd Year Review

August, 2003

Professor Jon Altman, Dr Tony Press, Dr John Vercoe

Summary

The CRC for Tropical Savannas Management is working to achieve its objectives by focusing on its specific Key Result Areas. Key Result Areas define the outputs required of projects and activities. To achieve these outputs, the CRC uses a structured, integrated, theme-based approach. Themes provide the basis for generating outputs and products of relevance to the objectives, and form a focus of project integration. The projects are grouped under these Themes, and address specific issues and research questions. Projects are discrete, multi-agency activities creating outputs contributing to coordinated Theme outcomes and Key Result Areas. Projects normally contribute to more than one Theme. The themes are:

Landscape Ecology and Health

Through this theme, the CRC aims to understand the ecological principles behind savanna landscape health and the patterns and processes that maintain it.

Industry and Community Natural Resource Management

Through this theme, the CRC aims to develop, with industry and community participation, principles and methods for using and monitoring our natural resources sustainably.

Regional Planning and Management

Through this theme, the CRC aims to develop regionally focused planning, administration and management models for communities that are ecologically sustainable, economically viable and socially desirable.

Human Capability Development

Through this theme, the CRC aims to provide information and learning products, as well as ways of using them, for people living and working in northern Australia

Each Theme is lead by a full time Theme Leader (50% CRC-funded, 50% partner agency funded) who is a recognised research leader in the appropriate field.

The TS-CRC is addressing fundamentally important issues of savanna wide and national significance at a time when the importance of the issue of sustainability has achieved recognition Australia-wide. As a second round CRC, TS-CRC2 is in a strong position to make significant contributions building on strong intellectual capital foundations laid by TS-CRC1. A critical mass of researchers, biophysical and social scientists and holders of Indigenous knowledge, some new to TS-CRC2, some intellectually fresh veterans of TS-CRC1, has been established in a relatively remote and sparsely populated part of Australia. TS-CRC2 is well-positioned to make a significant difference in the next 5 years to the management of relatively ecologically intact tropical savanna Australia.

TS-CRC2 is demonstrating outstanding integration across themes, regions, researcher and stakeholder groupings spread over a vast region. We believe that it is generating significant benefits for Commonwealth investments because the returns to the critical threshold intellectual mass that TS-CRC2 has amassed is generating new research approaches, collaborations and outputs. These would not have been possible without the fiscal support and modus operandi requirements of the CRC programme. Significant additional returns on

current investments will be generated in terms of capability development for the effective management of savanna Australia inter-generationally. National benefit will eventuate through a probability that the unplanned ecological mistakes of southern Australia will not be replicated in northern savanna Australia. The opportunity cost benefits of contributing world-class research to inform policy development to ensure healthy savanna maintenance, rather than far more expensive (circa 10 times) savanna repair, will result in a significant return from the high quality and relevant research being undertaken by this CRC.

Finally, the Panel notes that it supports the changes made to projects and commends the CRC on taking these steps early in the life of the new TS-CRC. The management structure that accompanies the current project alignments will facilitate the achievement of the objectives and contributions to key result areas.

Review Panels invariably want to make recommendations for change, even where organizations are proving highly workable. We seek to avoid this temptation, making few recommendations for changes at the margin that seek to reinforce some of the very positive developments that we see in TS-CRC2. These recommendations focus mainly on enhancing the resourcing of the impressive Indigenous engagements that are already underway and in ensuring that impressive performance in quality of research training is enhanced. They are as follows:

R1. The Review Panel was so impressed by the presentations made that we strongly recommend that the CEO and two or three senior researchers make high profile presentations to showcase this research to key policy makers and politicians, initially in Canberra and also in Darwin, Brisbane and Perth. Such enhanced and targeted communications of research outcomes will, in our view, serve both the nation and TS-CRC well. Importantly, this will provide enhanced opportunity for this work to be incorporated into regional and national policy making.

R2. The communications strategy of TS-CRC is of extremely high quality and is clearly effective in reaching most stakeholder groups. We encourage proactivity and additional innovation to ensure that TS-CRC outputs are disseminated in non-standard forms to Indigenous stakeholders who may lack access to the internet and may have low formal literacy. The proposal to develop a publication *Kantri Laif* (Country Life) targeted at Indigenous stakeholders is strongly endorsed.

R3. We recognize enormous positive developments in TS-CRC's engagement with Indigenous stakeholders, a significant proportion of the non-urban population (circa 50%) and a major (and growing) land holder (circa 30%) in the tropical savanna. We recommend that at the early stage of development of Theme 3, regional planning frameworks seek to ensure that measures of Indigenous aspirations are not limited to market options. Despite statistical limitations, non-market (customary) activity, with important articulations and linkages to market and state sectors, should not be overlooked.

R4. We recommend that the TS-CRC considers reallocation of some of its resources to further strengthen its work in Indigenous capacity building.

R5 While recognising the expense of convening theme-wide or CRC-wide meetings and workshops, we nonetheless recommend that whenever possible, and at least annually, research students are provided opportunity to participate in whole-of-CRC gatherings. This will benefit students to integrate their research across themes, but will also provide opportunity for knowledge sharing between research students and CRC staff and stakeholders. It will also enhance the emerging and clear TS-CRC2 identity.

R6 Each PhD student cohort should be afforded opportunity to participate in research planning and thesis writing workshops to facilitate timely completion of PhDs. An inaugural workshop convened in August 2003 was lauded by students as extremely useful. Some consideration needs to be

given to the somewhat different supervisory needs and completion frameworks for science and social science based PhD students.

R7 While recognizing the difficulty of recruiting Indigenous graduate students, or PhD students to work on research topics on Indigenous issues, we recommend that special effort be made to recruit additional students to work with Indigenous stakeholders.

1. Review Procedures

The review was conducted in Darwin on August 27–29th by a Review Panel comprising Professor Jon Altman (Independent Expert and Chair), Dr Tony Press (Independent Expert) and Dr John Vercoe (Visitor). The Review followed discussions in the preceding weeks between the CEO, the Secretariat, the Chair and the Visitor.

The methods used included analysis of extensive and comprehensive documentation received prior to the review, and presentations from the CEO and four Theme leaders and a selection of project leaders, PhD students, one stakeholders and one participating agency. Presentations were followed by questions and discussions led by the Review Panel.

We queried the CEO on the selection of presenters and were very satisfied that, other than theme leaders, these were selected on an on-availability basis; a number of the CRC's high performers were overseas (attesting to the international regard with which this CRC is held), while others were not available for professional or personal reasons. We note this merely to highlight that presentations were not necessarily delivered by an 'A-team'; rather there was another equally competent set of researchers who could have provided a briefing to the Review Panel.

2. Quality and Relevance of the Research Program

2.1 Quality of research and likelihood of important advances

The TS-CRC has a highly relevant research program that is of significant relevance to the tropical savannas in the 21st C. TS-CRC seeks to provide knowledge and strategies for the wise management, sustainable use and conservation of the tropical savanna. It seeks to work for the benefit of the region's people, economy and ecology, maintaining the rich natural and cultural heritage and values of this massive region for future generations in the face of inevitable development pressure. The relevance of the research program is enhanced by a number of key national priorities including:

- Heightened national awareness of Salinity and Water Quality issues
- Heightened national awareness of climate change and Greenhouse issues
- Heightened national awareness of issues associated with uncontrolled fire
- A policy imperative to consider issues of sustainability
- An increasing focus on empowering regional communities to address NRM challenges
- The EPBC Act and contributing to matters of national environmental significance
- Relevant international conventions and obligations.

Theme 1 Landscape Health

The research in this theme seeks to enhance understanding of ecological principles underlying savanna landscape health. Measures of this are provided in models of attributes and indicators measured by remote sensing and on-ground sampling and allowing the development of models of savanna function. Of particular importance is work on predicting benefits of wise management and in providing guidance on process that will restore savanna health where diminished.

A standout suite of projects within this theme was presented to the Review Panel. These included overviews of understanding indicators of savanna health, focusing on soil biota, nutrients and water in the savanna and projects on mammal status in northern Australia. Indicators of savanna health from field sites have been effectively integrated into simulation models at landscape scale that can predict outcomes of different management regimes. Innovative research in this theme includes work on carbon dynamics that will allow estimation of sequestration potential across the savanna. This research will have significant impact for land management, ecosystem and production models in the savanna and has the potential for both national and international collaborations.

This theme builds on much biophysical research initially undertaken by TS-CRC1 and has developed considerable depth, that is being enhanced by some important PhD research e.g. on bird assemblage response to seasonal burning in the short term and to a longer time scale (3 years) that shows quite different results; on impact of exotic grass invasions on ecosystem processes; and on fire management in a new region Queensland's North West Highlands. There was a clear and strong integration between case studies and larger scale research and quality was evident not just in presentations but also in publications and presentations at national and international conferences since 2001.

Theme 2 Industry and Community Natural Resource Management (NRM)

This theme sets out to develop principles and methods for monitoring and using natural resources sustainably. The strategic focus is on major land users, the pastoral industry, Aboriginal land owners and conservation agencies that between them own, use and manage almost all of Australia's tropical savanna. Core projects here focus on fire, biodiversity monitoring, pastoral management and best practice issues associated with woody vegetation structure (woody thickening) and Indigenous knowledge. The quality of the research here is exemplified by external competitive funding on much research on biodiversity issues, with significant published outputs on mammal status, biodiversity monitoring and off reserve conservation.

A case study of 'off reserve' conservation associated with pastoral intensification and biodiversity maintenance is likely to make significant advances in informing sustainable enhanced pastoral production. The Fireplan project is similarly continuing much of the innovative internationally-recognised research from TS CRC1 developing research depth on understanding fire in the tropical savanna where an estimated 80% of Australia's annual fires occur. The Arnhem Land Fire Project proposal to the AGO, international work in Indonesia and the widespread dissemination of the book *Savanna Burning* attest to the quality of research in the area. The rapid growth of research on Indigenous Ecological Knowledge (IEK) in this theme, with research underway in Cape York, Arnhem Land and the Kimberley, continues some earlier pilot work undertaken by TS-CRC1. This work is facilitating the conservation of IEK, also ensuring that opportunity for applying such knowledge 'on country' is undertaken and recorded. There is a clear growth in the capacity of TS-CRC2 to work with western and Indigenous knowledge systems in parts of Australia where IEK is still vibrant. There is a strong link between this research and Theme 4 work on Indigenous capacity building.

Theme 3 Regional Planning and Management

This theme is the newest for TS-CRC2 and is making significant early impact in ensuring that planning becomes a means to provide critical information about regions to savanna stakeholders. This theme seeks to develop understandings of regional resources, regional economies, and savanna communities and how different resource uses will impact on sustainable futures. This is a new theme, and at this juncture, much of the research is establishing the frameworks for future planning and management. This theme looks to provide policy and management options for regional planning and development and regional strategies for multiple land use and associated tradeoffs. Much of this research is linked to a recognition that the National Action Plan on Salinity and Water Quality (NAP) and NHT 2 will both require regional plans; that regional plans are essential for resource and economic development; and that biodiversity conservation is facilitated through regional level ecosystem management.

A major focus here has been on the NT associated with the regional planning needs of the new *Building Stronger Regions Stronger Futures* strategy of the NT Government. This research highlights the historic plethora of regional plans and strategies, but extant limitations, like the absence of robust social and

economic data especially on the Indigenous sector. This research will assist in improving regional planning arrangement and NRM planning, but in a context where there has been limited NRM planning historically.

An important project here will be on predicting regional and landscape dynamics, focused on understanding regional economic dynamics. A case study was provided of tourism use within the Carpentaria Shire (Qld) to provide a demonstration of variable tourism impacts upon communities, associated variability in management issues and possible responses. Another case study, from the pastoral industry, provided a perspective on aligning property level NRM goals with what happens at the regional level and Commonwealth and State goals. Other case studies were also provided of anthropological perspectives on Indigenous management of unplanned tourist developments in the Gulf of Carpentaria and on the inter-relationships between social and environmental well-being for Yanyuwa women.

We highlight these case studies because they have all been initiated in the last two years and will generate important empirical research that will inform this theme from the bottom up in a manner that will complement the top-down approaches predicated, to some extent, on availability of secondary data sources.

Theme 4 Human Capability Development

Theme 4 activities look to get knowledge into the hands of stakeholders, including all TS-CRC participants. This theme has two broad objects. First, to enhance research and teaching capacity by training graduate students and ensuring adoption of CRC-sourced educational products by educational institutions. Second, to provide a service to other Themes (1–3) by integrating education (including providing support for HDR students) and communicating research outputs and outcomes within and beyond the CRC. Two elements of this theme (higher education and communications) build on previous activities of TS-CRC1, while two, Indigenous capacity building and the provision of tropical savanna knowledge to secondary schools are new. We discuss higher education performance below, we merely note here that 19 new PhD recruits have been attracted to the new CRC (with a further cohort to be added next year) and that a new and innovative offering, a professional doctorate, is being developed for mid-career professionals.

The suite of communications products provided by the CRC to stakeholders and to the global community is impressive and just gets better and better. It includes email newsletters, the quarterly *Savanna Links* (3,000 copies distributed quarterly), hard copy publications (with some like *Savanna Burning* selling well and being distributed widely both in Australia and overseas), other research reports, CD Roms and web-based knowledge tools targeted at land managers, planners and students/researchers. We especially commend the state of the art North Australia Fire Information website.

The development of tropical savannas knowledge for secondary schools is an innovation that will develop savanna knowledge capacity for students and teachers and that will lead, inevitably, to medium to long-term benefits for the management of the tropical savannas when adopted. This is real inter-generational investment with a likelihood to make important and influential long-term advances.

An important new area where this CRC has made significant advances is in integrating research with Indigenous land and sea management activities and aspirations. Under the umbrella of the North Australia Indigenous Land and Sea Management Alliance (NAILSMA) and after recent appointment of a highly skilled and experienced Indigenous inter-cultural and inter-sectoral researcher/mediator, some important linkages are being forged with Indigenous stakeholders as holders of Indigenous Knowledge, as research collaborators, and as more equitable partners in the CRC. This initiative is looking to enhance Indigenous land owner capacity to sustainably manage their country and resources by making both western science and Indigenous knowledge more readily available. The potential importance of the linkage made here with the 'caring for country' initiatives of land councils across WA, NT and Qld under the NAILSMA umbrella cannot be overestimated.

R1. The Review Panel was so impressed by the presentations made that we strongly recommend that the CEO and two or three senior researchers make high profile presentations to showcase this research to key policy makers and politicians, initially in Canberra and also in Darwin, Brisbane and Perth. Such enhanced and targeted communications of research outcomes will, in our view, serve both

the nation and TS-CRC well. Importantly, this will provide enhanced opportunity for this work to be incorporated into regional and national policy making.

R2. The communications strategy of TS-CRC is of extremely high quality and is clearly effective in reaching most stakeholder groups. We encourage proactivity and additional innovation to ensure that TS-CRC outputs are disseminated in non-standard forms to Indigenous stakeholders who may lack access to the internet and may have low formal literacy. The proposal to develop a publication *Kantri Laif* (Country Life) targeted at Indigenous stakeholders is strongly endorsed.

3.2 The significance of the research in relation to the objectives of the CRC, including any need for alteration of research direction

The goal of TS-CRC as articulated in its Strategy Statement 2003–07 is to ensure that the savannas are healthy and managed to provide long-term benefits (economic, aesthetic, social and cultural) to those who use them, and to sustain the biodiversity and habitats endemic to them.

The significance of the research is demonstrated by standard measures including an impressive number of refereed scholarly papers, conference papers, books or chapters; presentation of invited papers at national and international conferences; and three significant awards to three staff associated with TS-CRC. We note also that there was a relatively high level of media coverage of the TS-CRC research activities and findings in 2002–03.

Research outputs, annual audits and presentations indicate to us that TS-CRC research is highly significant to its overall objectives, a view endorsed in stakeholder and agency perspectives. TS-CRC is undertaking a massive quantity of research, to the highest standards, across a vast region, so obviously there will be a some diversity of opinions on where effort should be strategically focused. The Review Panel found no research that this CRC is undertaking that is not directly compatible with its overarching objectives. As always there is the issue of what more can be done with existing resources and we make only one recommendation for change in emphasis, at the margin.

R3. We recognize enormous positive developments in TS-CRC’s engagement with Indigenous stakeholders, a significant proportion of the non-urban population (circa 50%) and a major (and growing) land holder (circa 30%) in the tropical savanna. We recommend that at the early stage of development of Theme 3, regional planning frameworks seek to ensure that measures of Indigenous aspirations are not limited to market options. Despite statistical limitations, non-market (customary) activity, with important articulations and linkages to market and state sectors, should not be overlooked.

3.3 Level of congruence between research activities and Schedule 1

In terms of the major thrust and the activities of the research program there is excellent agreement between the research activities and Schedule 1 of the Commonwealth Agreement. However there has been some rearrangement of the projects as listed in the Agreement, with some projects having been completed, some merged and some project proposals that were not approved by the Management Team or endorsed by the Board in the final analysis of the research portfolio.

The changes in the portfolio nominated in the Agreement are as follows:

- Project 1.1.1 has been merged with 3.3.7.
- Project 1.1.2 has been merged with 2.1.4.
- Project 1.2.3 is now part of 2.1.2.
- Project 2.1.3 has been merged with 2.1.4.
- Project 2.2.3 is a new project combining some of the work on Biodiversity Monitoring.
- Project 2.3.1 has been merged with 2.3.3.
- Project 2.3.2 has been merged with 2.3.3.

- Project 2.3.4 has been merged with 2.3.3.
- Project 3.1.1 was not approved.
- Project 3.1.2 was absorbed into 3.1.4.
- Project 3.1.3 was terminated after 1 year and reconstituted as a new project (3.1.4) on knowledge building for adaptive management.
- Project 3.1.6 was short new project commissioned by the NT Government and has been completed.
- Project 3.2.2 was absorbed into a new project 3.3.5.
- Project 3.2.3 has been completed and delivered.
- Project 3.3.1 was not approved.
- Project 3.3.4 is a new project developing an outback Atlas jointly with the desert knowledge CRC.
- Project 3.3.5 is new project incorporating planning systems.
- Project 3.3.6 is a new synthesising project on multiple use of the Savanna.
- Project 3.3.7 is a new project combining the predictions of the biophysical aspects of landscape health with socio-economic and demographic considerations.

3.4 Evidence of approval of changes

The CEO indicated that changes that require the formal notification of the Secretariat (changes to key personnel) had occurred. They are all clearly indicated in the latest annual report.

3.5 Alignment of research with CRC's objectives

The current portfolio of projects has strengthened the alignment of activities to contribute to Themes and made for more cross linkages and interactions between disciplines in important areas. This has brought greater focus to the Themes and is contributing to high level of integration that is evident in the work of the CRC. The re-arrangements and amendments have resulted in more obvious targeting of the activities with the CRC's stated objectives and, if anything, further strengthened the extent of alignment. It has also further facilitated the ability of individual projects to contribute to more than one theme.

The Panel supports the changes to Projects and commends the CRC on taking these steps early in the life of the new TS-CRC. The management structure that accompanies the current project alignments will facilitate the achievement of the objectives and contributions to Key Result Areas.

4. Research Management

The TS-CRC was able to demonstrate that it had achieved all of the year 2 milestones listed against each of the four themes in Schedule 1:

Theme 1. Landscape Ecology and Health

Milestone: Integrated and coordinated suite of projects established to enable modelling of landscape function.

The panel was impressed by the range of projects being undertaken under this theme and the CRC was able to demonstrate a very high level of coordination of research effort and the integration of the outputs of these projects and their incorporation into models applicable to the management of Australia's tropical savannas.

Theme 2. Industry and Community Natural Resource Management

Milestone: Coordinated and integrated management projects in place and they included participation of stakeholders.

The comments on coordination and integration made against Theme 1 are applicable to Theme 2. In addition the CRC was able to demonstrate clearly that it had a high level of stakeholder involvement in its research program across all sectors of the tropical savanna. The success of the CRCs work with a broad range of stakeholders in all three State/Territory jurisdictions in fire management is a mature example of this

integration. The CRC was also able to showcase its involvement with pastoral stakeholders in biodiversity research and conservation and with communities, including Indigenous communities, in natural resource management.

Theme 3. Regional Planning and Management

Milestone 1: Reviews conducted which provide the information to design appropriate projects

This has been done and the CRC was able to demonstrate that it had in place appropriate projects under this Theme. These projects are listed as follows:

- Project 3.3.4: The Outback Atlas: The communities, economies and resources of Outback Australia
- Project 3.3.5: Monitoring and evaluation of regional planning processes and plans to assist development of healthy regional planning systems and policies for Australia's savanna regions
- Project 3.3.6: Assessing options for multiple use in savanna regions
- Project 3.3.7: Predicting Regional & Landscape Dynamics in Australian Savannas.

Milestone 2: Regional stakeholder groups are participating in project development.

Theme 3 is a new area of effort begun with the second round of funding for the Centre. As such this theme is not as mature as Themes 1 and 2. Nonetheless, the Centre was able to demonstrate significant progress against this theme and the involvement of stakeholders in project development.

Theme 4. Human Capability Development

Milestone 1: Comprehensive development of education and learning packages are established

The TS-CRC has an impressive array of educational and communications material available to a broad range of stakeholders in the region. The material is provided in a variety of formats (on-line, including in formats suitable for low baud rates, in printed form, as booklets, brochures, books and newsletters and on CD-ROM). There is also a great deal of effort being made to incorporate appropriate regional material into curricular in all three states.

The efforts of the CRC in involving Indigenous capacity building are commendable and a realignment of some resources to strengthen capacity in this area would be wise.

R4. We recommend that the TS-CRC considers reallocation of some of its resources to further strengthen its work in Indigenous capacity building.

Milestone 2: A program of postgraduate research and education is established.

As a second round CRC this milestone has been met, but it is encouraging to the Review Panel that the CRC has expanded its efforts in this area and will be introducing a professional Doctorate into its program.

The activities of the Centre are subject to a project management system, with rigorous selection, assessment and review. This is the responsibility of the CEO and the Management Group, providing advice to the Board of Management. Accountability for project management and delivery is directly between the CEO and Project Leader. Project performance is governed and monitored against an annually revised Memorandum of Agreement between each project leader and the CEO. Progress against project milestones is checked twice annually, and reported in summary form to the Board.

The management group provides advice to the CEO on operational matters relating to projects and other CRC activities. The relevance and representativeness of the program from a stakeholder perspective is evaluated on a regular basis (three times annually) by the Savanna Advisory Committee, which comprises a representative cross section of stakeholders, and which provides advice directly to the Board. A Scientific Program Advisory Group independently reviews the CRC's program of activities annually and advises the Board on the scientific quality and relevance to CRC Program criteria of the its program.

5. Quality of the Research Training

5.1 The quality of the research students and research training

The Review Panel had the opportunity to observe six presentations by PhD students, all recruited in 2002–03 during the life of TS-CRC2. These six students represented nearly a third of the current cohort of 19 graduate students (with three of these recruited during the TS-CRC transition phase 2001–02). Three of the presentations were from biophysical disciplines (Theme 2) and three from social sciences (Theme 3). As noted above under Review Procedures, we are confident that these six students are representative, with some not available owing to fieldwork or other commitments.

In our view these PhD students are of a first-rate exemplary standard. We unequivocally base this judgment on the quality of presentations made, bearing in mind that on average these students were less than half way through their degrees. The nature of research questions, the scholarship and innovation in theoretical framing, and the methodological rigour in data collection all left us with no doubt that each would deliver a research outcome that will make a significant contribution both to savanna knowledge and to their disciplines. Besides the high quality of the science, we were enormously impressed by the quality of presentations, the excellence in communications, and the ability of each student to engage in robust discussion. It is quite clear that each student project meshed closely with Themes and projects and that this was probably the source of excellent supervision without which such HDR performance is not generally possible.

We also note and commend TS-CRC2 for producing high quality induction material for students, advice to supervisors, and recruitment material for prospective students. In the previous week a workshop had been convened (sponsored by the CRC) by Theme 4 to provide advice on planning a research project for timely completion. This workshop was universally praised by those students who were able to attend. The CRC is making (and in the past has made) sound investment in student training and this may well be reflected in the caliber of research student being attracted. Research students were an engaged and integral element of the Stage 1 review process.

R5 While recognising the expense of convening theme-wide or CRC-wide meetings and workshops, we nonetheless recommend that whenever possible, and at least annually, research students are provided opportunity to participate in whole-of-CRC gatherings. This will benefit students to integrate their research across themes, but will also provide opportunity for knowledge sharing between research students and CRC staff and stakeholders. It will also enhance the emerging and clear TS-CRC2 identity.

R6 Each PhD student cohort should be afforded opportunity to participate in research planning and thesis writing workshops to facilitate timely completion of PhDs. An inaugural workshop convened in August 2003 was lauded by students as extremely useful. Some consideration needs to be given to the somewhat different supervisory needs and completion frameworks for science and social science based PhD students.

5.2 The general quality of the topics

Judging from presentations made and from information provided in the Annual Report 2002-03 the general quality of topics are well suited to the research themes of TS-CRC, while also obviously reflecting research opportunities in some cases and availability of high-quality candidates in others. There is an excellent spread of topics across themes and it is clear that PhD research will integrate well with the overall research goals of TS-CRC. We note that the very new (April 2003) Indigenous capacity building project has no PhD students aligned to it, as yet, and encouraged some investment in this area.

R7 While recognizing the difficulty of recruiting Indigenous graduate students, or PhD students to work on research topics on Indigenous issues, we recommend that special effort be made to recruit additional students to work with Indigenous stakeholders.

5.3 The proportion of research in the CRC actually done by students

In formal terms, the CEO has estimated that around 15% of CRC research is actually undertaken by PhD students. Such a figure though underestimates the synergies that graduate research contributions may bring this CRC. This is particularly the case as the CRC recalibrates to focus to a greater extent on economic and social sustainability issues that require field intensive social science research that cannot be easily undertaken by mature research staff. The synergies between student case study community, property level and regional research and landscape scale research must be emphasised as a particularity and strength of this CRC.

6. Quality of Researchers

The CEO has demonstrated exceptional leadership and drive in getting the TS-CRC to its current smooth and productive state of operation in such a short time. Starting from the strong foundation built by TS-CRC1, new parties and personnel, new dimensions, and new concepts have all been successfully integrated into the new CRC. The CEO has a strong reputation both for research and as a tertiary educator, and he clearly recognises the requirements and demands for a successful CRC. He is well supported by a skilled and enthusiastic team, some with enviable reputations for their research performance and their collective depth of knowledge of the complex processes that determine the economic, environmental and social well-being of the savanna region of northern Australia.

The model of 1:1 funding by the CRC and partner agencies for each of the Theme leaders demonstrates both the commitment of the leaders and their agencies to the CRC. The time commitments and leadership of all Theme leaders is judged as appropriate given the high performance of the TS-CRC2 after only two years of operation.

The Theme leaders are strongly supported by a high standard of project leaders and researchers across all four Themes. Without singling out particular individuals, the strength and depth of the research projects, their integration into the Themes and the high quality of research outputs and products demonstrates the quality of researchers and research leadership within the CRC. Given the wide geographic spread of CRC personnel, the strength of this leadership has contributed greatly to the productivity of the CRC and its ability to develop research strengths in new areas.

Professor Jon Altman
(Independent Expert and Chair)

Dr Tony Press
(Independent Expert)

Dr John Vercoe
(Visitor)

29 August 2003.