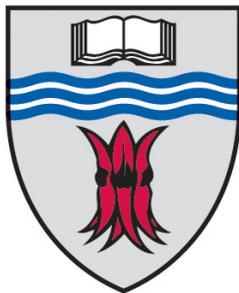


Charles Sturt University



INSTITUTE FOR
LAND, WATER
AND SOCIETY



**Institute for Land, Water and Society
Reaccreditation Review Submission**

Professor Max Finlayson, Director,
December 2010



CSU REVIEW OF RESEARCH CENTRES 2010 INSTITUTE FOR LAND WATER AND SOCIETY

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CSU REVIEW OF RESEARCH CENTRES 2010 INSTITUTE FOR LAND WATER AND SOCIETY

1.0 History of ILWS – its founding, precursors, structure, evolution challenges and current arrangements for structure and management.

1.1 History

The Institute for Land, Water and Society (ILWS) was established in 2005 with the aim of becoming an internationally recognised research group. The mission identified for the institute was:

To be an internationally recognised provider of integrated research that is contributing to enhanced social and environmental sustainability in rural and regional areas.

The Institute was formed from the membership of the Johnstone Centre (JC) under the leadership of Prof Nick Klomp, the Centre for Rural and Social Research (CRSR) under Prof Margaret Alston's leadership and from other scholars within Charles Sturt University, including the Water Systems group that Prof Shahbaz Khan was building at that time. The proposal to establish ILWS was prepared by Professors Margaret Alston, Kath Bowmer, Allan Curtis, Klomp, Ian Gray and Shabaz Khan. Other researchers were involved in this process, but to a considerable extent it was a top down process. Given the scale and the multiple disciplines, faculty and campus nature of the proposed membership, the leadership group recognised that considerable work was needed to effectively engage the membership. The JC and CRSR were successful groups but had very different research cultures and their capacities were not integrated. Further, as these groups were operating at a relatively small scale they were seen as unlikely to make a sufficiently large contribution to the complex, difficult problems facing our region and the nation.

At its inception, ILWS had a number of established partnerships, including with the CSIRO Division of Land and Water and in-principle support from the Murray Darling Basin Commission. Researchers also had existing relationships with a range of government and non-government organisations and stakeholder groups representing regional communities, and international linkages were underway with UNESCO through the HELP (Hydrology for Environment Life and People) program.

Goals of the newly formed Institute included (*inter alia*):

- the development of the capacity for integrated research combining the discipline strengths of members;
- the provision of a “shop front” for interactions between CSU researchers, partners and research funding bodies;
- the facilitation of national and international linkages;
- an expected increase (> 20% per year) in the income to the University from funded research projects from a base of \$1.68M in 2003.

ILWS started with over 80 researchers, including 54 principal researchers, and 69 PhD students. Membership was spread over a number of Faculties/Schools and was located on all three major Campuses. A sub-structure, reflecting the major disciplines within the institute was put into effect, providing some degree of continuity for members of the precursor Centres, a focus for discipline-based research and mentoring, and a way of clearly describing the multiple strengths of the group.

The initial Discipline Groups were:

- Human Dimensions of Environmental Management
- Ecology and Biodiversity
- Rural Social Research
- Water Systems

In 2006, an Economics and Regional Development discipline was added as it was recognised early in the development of ILWS that an economic dimension was required to complete the Institute's capacity to provide an integrated and multidisciplinary approach to many regional issues. Enhancement of the cultural and educational aspects of the research was progressed by encouraging members of CSU visual arts and environmental education staff to form an additional Discipline. While continuing efforts have been made to develop this discipline area, staff changes have meant that this discipline group has remained embryonic.

A major component of the rationale for ILWS was the implementation of an integrated approach to project conceptualisation and outcomes. It was recognised that integrated or multidisciplinary research was a difficult or unfamiliar concept for many researchers and that it would take time and patience to achieve the Institute's goals in that area. To help develop this approach to research, and on the advice of our Advisory Board, ILWS reviewed the major strengths of its current membership and implemented an initial two "Integration Themes" with a third being added in 2008:

1. *Demographic change in rural Australia – Leader: Associate Professor Gary Luck*
2. *Sustainable management of environmental assets – Leader: Associate Professor Robyn Watts*
3. *Vibrant rural and regional communities – Leaders: Professor Mark Morrison and Professor Kevin Parton.*

These Integration Themes were provided with seed resources to conduct meetings and workshops to develop an understanding of the members' disciplinary research, their various approaches to methodology and to identify new projects and sources of funding. After a review of the outcomes and challenges of the Integration Theme approach at the end of 2008, the Institute implemented a shift to a more focussed approach to integrated research through the development of Strategic Research Areas (SRAs). The main rationale for shifting to SRAs was that the Integration themes were seen as too "top down" by members and hence were encumbered with issues of research ownership, and secondly they were seen as not sufficiently representing the key areas of national and international research strength within the Institute.

1.2 Management

The foundation Director of ILWS was Professor Allan Curtis, who led the establishment and re-accreditation of the Institute and managed its early progress from 2005 through to mid-2007. After a 6 month period under the acting leadership of Associate Professor Robyn Watts, the Directorship of ILWS was taken on by Professor Max Finlayson through to the present.

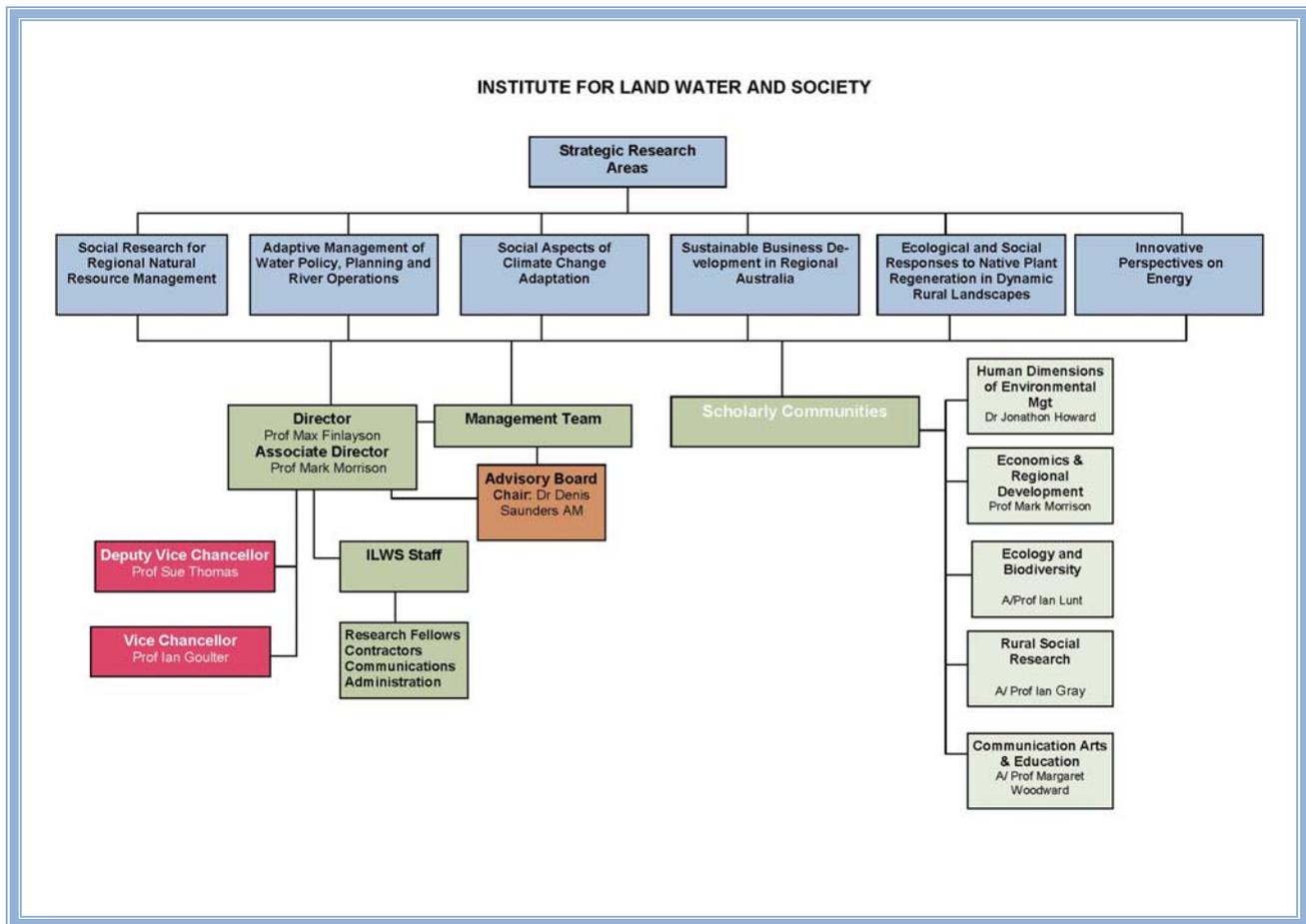
Policy and management of the Institute has been informed and advised by a Management Team of senior staff – initially all Strategic Professors and Discipline and Integration Theme leaders and more recently including the leaders of the Strategic Research Areas. In 2007, CSU provided additional funding to the CSU Centres of Research Excellence to cover part of the costs of employing a senior Business Manager to assist the Director with the administration of the Centre. ILWS currently employs the following staff:

Director:	Professor Max Finlayson (0.5 FTE)
Business Manager:	Ms Roni McDowell (1.0 FTE)
Executive Assistant:	Ms Debra Noy (1.0 FTE)
Communications Manager:	Ms Margrit Beemster (0.8 FTE)
Communications Officer (Web):	Ms Simone Engdahl (0.4 FTE)
Research Assistant (Bathurst):	Ms Jenni Greig (0.4 FTE funded by RIBG competitive allocation)
Research Assistant (Wagga):	Ms Jennie Meiklejohn (0.4 FTE funded by RIBG competitive alloc)

ILWS also has two Strategic Research Professors - Professor Allan Curtis (0.8 FTE), and Professor Kevin Parton (0.5 FTE) - and the following research staff employed on grant funding: one full time Senior Research Fellow (Dr Digby Race) and four Research Fellows/Postdoctoral Fellows (Dr Michael Mitchell, Dr Emily Sharp, Dr Keller Kopf and Dr Karen Ross).

The current organisational structure of the institute is shown in Figure 1.

Figure 1: Structure of the Institute for Land Water and Society: 2010



ILWS has had exemplary operational financial management since its inception. Information on operating income and budget is provided in Appendix 1.

1.3 Advisory Board

From its creation, ILWS has engaged with a strong and diverse Advisory Board of external experts who are in a position to provide input to future research directions and to high level issues of management policy. The current members of the Advisory Board are:

- Dr Denis Saunders AM (Chair);
- Dr Wendy Craik AM (Productivity Commission),
- Mr Ken Matthews AO (CEO National Water Commission (recently retired));
- Ms Cathy McGowan AO (social consultant);
- Ms Vic Keighery (Community Cultural Dev, NSW).
- Ms Samantha Edmonds, Deputy Director, Policy and Communications, Council of Social Service of NSW (NCOSS)
- Mr Shayne Williams, Indigenous expert
- Ms Anna Lukasiewicz, postgraduate student, School of Environmental Sciences, CSU
- Professor Max Finlayson (Director, ILWS)

Representation on indigenous issues and from the ILWS postgraduate student body was sought to provide additional depth to the Board's advice in 2008 and at the same time a charter for the activities of the Board was developed (copy available on request).

The Advisory Board meets approximately twice per year and provides information on the external context from a stakeholders' perspective as well as receiving detailed reports on the strategic developments within the Institute.

1.4 Membership

The formation of ILWS was not without many challenges. While the members of the Johnstone Centre took up the opportunities provided by the new group with some enthusiasm for future development and change, many of the members of the Centre for Rural Social Research did not engage with the Institute in an effective manner. The location of this group in Wagga Wagga, away from the ILWS Central office, impacted on members' capacity to feel involved in the new directions, and resulted in a climate of separatism and dissatisfaction. Much effort was made to turn this around; progress has been made following the departure of some staff who were not fully supportive of the integrated nature of ILWS.

Another major issue was the excision of the Water Systems Discipline Group from ILWS in late 2007 to become IC WATER. This group had been strongly supported by ILWS with the intent of developing it as one of the main strengths of the Institute. This change was made without meaningful discussion with the Director of ILWS and its move to independent Centre status led to concerns both within and outside CSU that research in water within CSU would be fragmented. The move also exacerbated existing reticence and negative attitudes towards research collaboration. The ILWS Advisory Board represented its concerns to the Vice Chancellor through a formal letter. In response to the reality that this decision had been made efforts have been made over the last three years to ensure that joint projects are facilitated and staff of both groups have been successful in gaining recognition from external funding bodies as experts in certain relevant panels; however few cross Centre projects have developed from this dialogue.

The establishment of the Centre for Inland Health in 2008 resulted in some ILWS members moving to that Centre, but with far less impact on ILWS than the situation with IC WATER. As with IC WATER, the establishment of the Centre for Inland Health was not discussed with the Director of ILWS.

Membership of ILWS has undergone evolutionary change since the beginning of the Institute. This has included the addition of broad discipline areas and the loss of some staff. Initially the membership requirements for ILWS were widely inclusive and somewhat poorly defined. Two categories of CSU research staff membership were used – Member and Associate Member, with Members largely being established research staff and Associate Membership covering mainly cross centre members, affiliates without formal adjunct status and some early career members. During 2008, ILWS considered the need to formalise both its membership definitions and the requirements for Institute membership.

The ILWS Advisory Board was instrumental in encouraging the Institute to set a standard for full membership relating to active participation in research. New criteria for full membership were set, requiring members to publish at least four papers within the last three years or to have at least one current externally funding research project. While lower than the CSU targets for Centre publication levels, this standard was felt to be appropriate for management of these targets at an individual researcher level. Appendix 2 shows the full requirements for ILWS membership. In association with this change we have provided input to the Centres submission to the Research Management Committee on appropriate criteria for membership of CSU research institutes and centres.

Data are available on ILWS membership from 2007: Table 1 and Figure 2 show that the number of full members was reduced following the major review at the end of 2008. This was also associated with the formalisation of membership categories. The establishment of a clear category for early and/or developing membership has also enabled these researchers to be identified for the purpose of mentoring and providing additional assistance.

Table 1: ILWS Membership between 2007 and 2010

Status	2007	2008	2009	2010
Member	61	75	48	49
Early/Developing	N/A	N/A	17	21
Associate	83	62	N/A	N/A
Subtotal	144	137	65	70
Post Doc	3	3	3	4
Student	91	73	99	95
Adjunct	18	24	42	45
Cross Centre	N/A	N/A	13	14
Grand Total	256	237	222	228

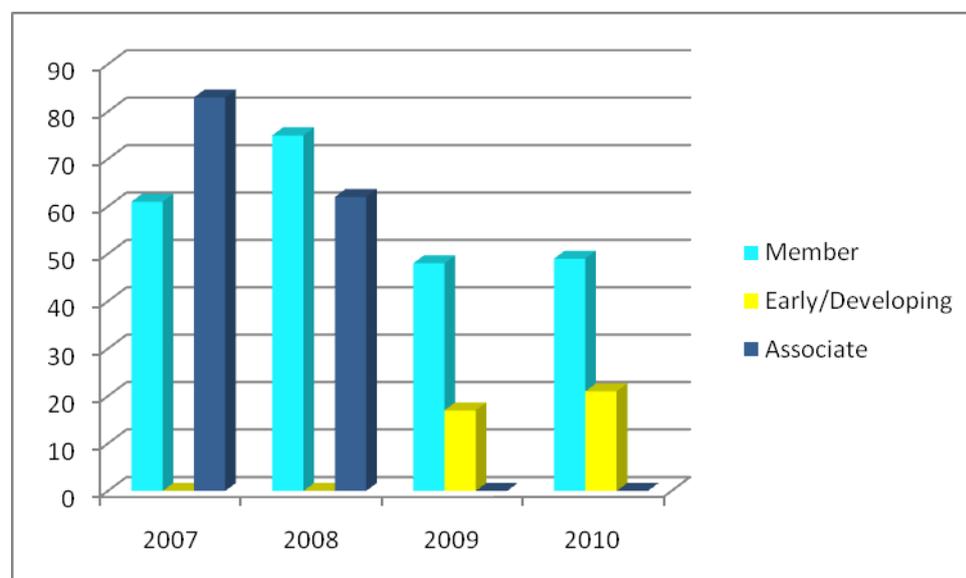
Figure 2: Changes in Selected Membership Types: 2007 - 2010

Table 2 shows changes in the Discipline composition of ILWS over time. Figures for 2007 include members from the then Water Systems discipline which became IC WATER at the end of that year. Drops in membership between 2008 and 2009 reflect the requirement for members to be active researchers. The downturn in membership of the Rural Social Research group was due to the combined impact of staff leaving CSU, some moving to the Centre for Inland Health, and a consequence of establishing clearer membership criteria. Other changes relate to confirmation and recruitment of adjunct members and better data on students aligned with the institute. It is noted that membership is continually dynamic, reflecting the recruitment and resignation of staff at CSU. Given significant effort by staff within ILWS we have established a more accurate database of members; obtaining accurate data from central sources within CSU has been difficult and seems to have reflected a wider set of issues with the recording of data on research activity. Through considerable effort we are now far more confident that we have an improved database, although inaccuracies and discrepancies still occur with centrally compiled data.

Table 2: ILWS Membership by Discipline: 2007 to 2010

Discipline	2007	2008	2009	2010
CAE	11	19	6	9
Ecology	54	56	69	68
Economics & Reg Dev	27	43	58	63
Human Dimensions	52	45	50	47
Rural Social Research	73	74	39	41
Water Systems	39	0	0	0
Grand Total	256	237	222	228

ILWS, through its multidisciplinary nature, is also aligned with many different Schools within CSU. Table 3 shows that ILWS has members from all four Faculties and eleven CSU Schools with major numbers from the Schools of Environmental Sciences, Business and Humanities and Social Sciences.

Table 3: ILWS Membership by CSU Faculty and School: 2007 - 2010

Faculty	School Name	Total
Faculty of Arts	Aust Graduate School of Policing	1
	School of Communication and Creative Industries	5
	School of Humanities & Social Sciences	28
	School of Psychology	1
Faculty of Arts Total		35
Faculty of Business	Faculty of Business Office	4
	School of Accounting	1
	School of Business	43
Faculty of Business Total		48
Faculty of Education	Murray School of Education	1
	School of Education	3
Faculty of Education Total		4
Faculty of Science	School of Ag & Wine Sciences	4
	School of Biomedical Sciences	1
	School of Environmental Sciences	70
Faculty of Science Total		75
Institute for Land, Water & Soc	Head of Campus (Orange) and Strategic Prof	1
	Institute for Land, Water and Society	6
Institute for Land, Water and Society Total		7
Grand Total		169

The multi-campus and multi-School nature of the ILWS present considerable challenges for the Institute in achieving good communication and building a team approach to research. This distribution requires considerable effort and resources to manage and is an area where we consider further effort is still needed. At the same time this provides a diversity of strong multidisciplinary inputs to projects and research methodologies to achieve the integrated research required by our mission.

From its inception, ILWS has had members on the three major CSU campuses and a number of external members (largely students and adjunct members). Table 4 shows the campus distribution of membership from 2007 to 2010.

Table 4: ILWS Membership by Campus: 2007 - 2010

Campus	2007	2008	2009	2010
Albury/Thurgoona	74	80	80	79
Wagga	111	92	61	61
Bathurst/Orange	26	34	34	41
Other	0	0		0
External	45	31	47	47
Grand Total	256	237	222	228

1.5 From Integration Themes to Strategic Research Areas

ILWS was created with the main goal of building on several discipline strengths within CSU to achieve integrated research to solve some of the emerging research issues in regional Australia.

Initially, broad integration themes were decided by the Management Team and the Advisory Board, based on a review of existing strengths and synergies. The overarching goals of the programs included:

- bringing the collective resources of the ILWS together;
- tackling 'big picture' issues;
- conducting cutting edge internationally relevant research.

Integrated research was viewed as an avenue to increase research outputs and to increase the profile of the ILWS. Meetings were held to bring researchers together to explore collaboration and build integrated projects. Some success was gained in this approach with a range of outcomes from the two themes:

Integration Theme: Demographic Change in Rural Australia

A major output of this theme was the preparation of a book, "*Demographic change in Australia's rural landscapes: implications for society and the environment*", edited by Associate Professor Gary Luck, and Drs Digby Race and Rosemary Black, published by Springer and CSIRO Publishing. This was published in 2010 and was the direct result of collaboration facilitated by the Integration Theme and the leadership of Gary Luck.

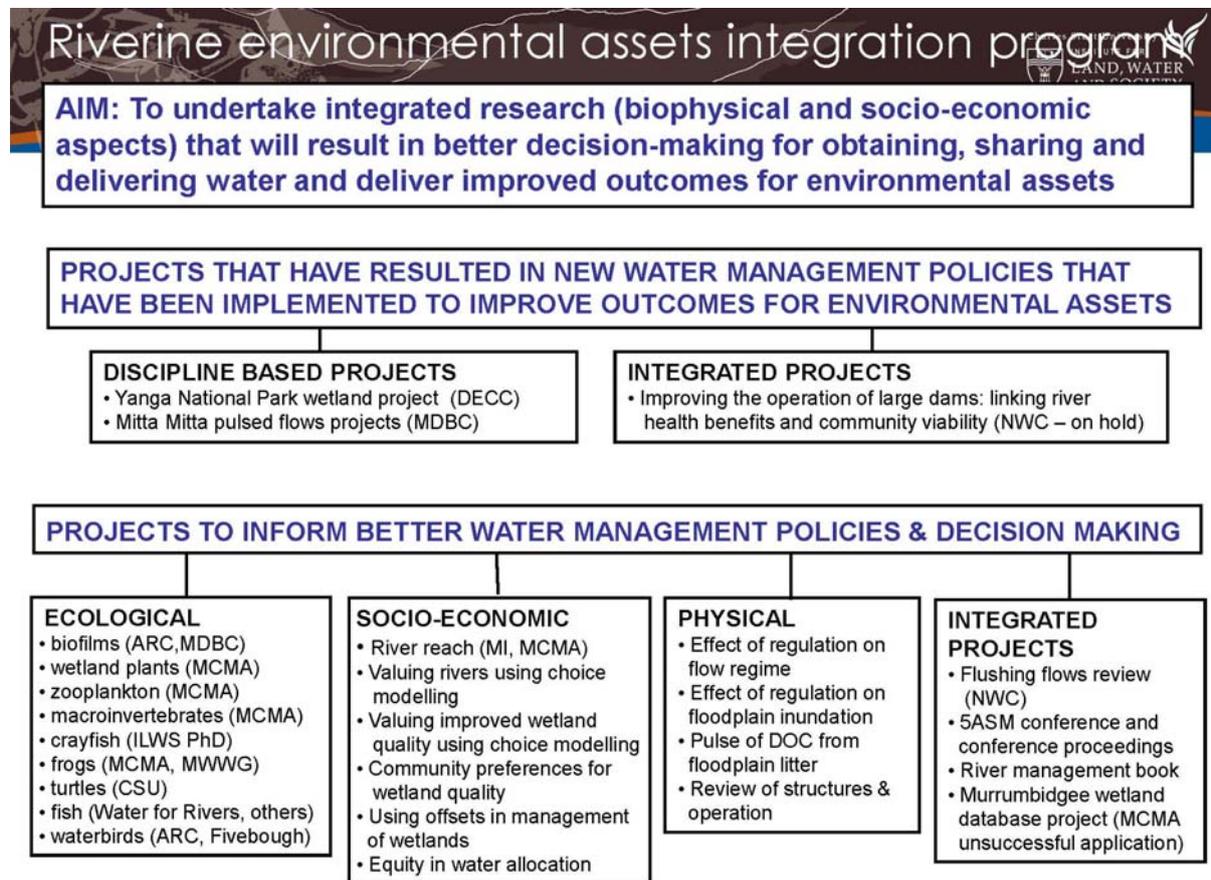
In 2008, the group also organised and led a community based workshop on demographic Change '*The changing nature of our rural neighbourhoods*', which attracted around 80 people from across Victoria and NSW. Participants heard the latest research on this topic and gained perspectives from local landholders and business leaders. The forum included a feedback session to discuss future research needs. A diverse mix of people from local, state and federal government, CMA's, local industry and business, NGO's, landholders, researchers attended.

Integration Theme: Sustainable Management of Environmental Assets.

The main focus of this Integration Theme was the development of working relationships between a diverse range of researchers to generate strong research proposals. Several meetings were held to

allow members to develop the best alignment and understanding of the available research expertise. This led to a change in the name to “*Riverine Environmental Assets Integration Program*”.

Figure 2 below shows the group’s work in presenting the recent activities of researchers within the Integration Theme and shows the relationship between the strong disciplinary focus of individual projects and integration of this work to affect policy and develop new project approaches.



Outcomes of this work include the following:

A number of successful tenders for Government panels to provide expert assistance – these panels have all been based on building a team covering a multidisciplinary approach to research issues:

- Multi-use List for the Provision of expert and Specialised Services Related to Water Resources and their Administration – Dept of the Environment, Water Heritage and the Arts. 2008
- Request for Tender for the Provision of Expert Consultancy Services – National Water Commission 2008.
- Provision of Social Economic and Cultural Services Under a Panel Arrangement – Murray Darling Basin Authority 2009
- Provision of Consultancy Services for Water resources Management Under a Panel Arrangement – Murray Darling Basin Authority 2009

Work by this team has also led to the immediate success of the resulting Strategic Research Area as described below.

Integration Theme: Vibrant Rural and Regional Communities

A third Integration Theme, "*Vibrant rural and regional communities*" was implemented in 2008 to provide a focus for work across the social and economic groups within the Institute. This Theme held a number of meetings to discuss the best areas for concentration within this broad area, and was moving to implement these areas when the Institute's research program was restructured using Strategic Research Areas.

ILWS placed a high strategic value on integrated research programs and used the development of multidisciplinary projects as a major criterion in the allocation of Research Centre Fellowships from 2008. In addition, two PhD student Scholarships were allocated by ILWS on an annual basis to students working within these areas of integrated research. While the doctoral projects themselves were not always integrated due to the nature of PhD requirements, this allocation was quite successful in aligning new work with the key areas.

Strategic Research Areas

Despite the progress achieved by the Integration Programs, researchers within the Institute have frequently struggled to come to terms with the meaning of integrated research and how best to progress this goal. Further some researchers felt that their research foci were not sufficiently covered by existing Integration Programs. The management of ILWS were also concerned that some key research areas within ILWS were being hidden by the focus on Integration Programs (e.g. terrestrial ecology and natural resource management), and that there was limited flexibility with the existing Integration Programs to support the development of emerging research areas. At the end of 2008, ILWS held a major Strategic Planning exercise, facilitated by Board Member Cathy McGowan and strongly supported by the then Deputy Vice-Chancellor-Research. This two day workshop with senior research staff was particularly concerned with the progress towards an integrated approach to research and how to implement this goal more effectively in the future. The workshop concluded that, although some valuable outcomes had been achieved, the Integration Themes were too broad to be fully effective in getting integrated projects underway. This was particularly related to the lack of clear accountability for tasks within such large groups. It was further recognised that sufficient funding had not been allocated to the Integration Themes given the previous emphasis on providing funding through the Discipline Groups.

The consensus was that integrated multidisciplinary research would be more successfully developed by a greater level of focus in smaller teams that were largely self-forming and developed by a more bottom-up approach. This led to the concept of "Strategic Research Areas" (SRAs). The characteristics of an SRA would be:

- problem focussed (i.e., addresses and has impact on real world issues);
- team-based;
- interdisciplinary;
- underpinned by disciplinary excellence;
- output and outcome oriented

To tighten up responsibilities for ensuring these new SRAs were effective, a range of requirements were also introduced for the establishment of a new SRA. Proponents were asked to identify:

- research issues, objectives and potential impacts of the research;
- a coordinator and team members with the experience and time to support the research area;
- funding opportunities for projects and specific activities;
- potential for high quality publications;
- comparative advantage for ILWS;
- mechanisms for integration;
- potential partners and stakeholders (internal and external) including potential international linkages; and the

- potential for development (including an outline of strengths, challenges and constraints).

In response to this new strategy, the following SRAs were established during 2009:

Strategic Research Area	Leader
Sustainable Business Development in Regional Australia	PK Basu
Ecological and Social Responses to Native Plant Regeneration in Dynamic Rural Landscapes	Ian Lunt
Adaptive Management of Water Policy, Planning and River Operations	Robyn Watts
Innovative Perspectives on Energy	Ian Gray/Helen Masterman-Smith
Social Research for Regional Natural Resource Management	Allan Curtis
Social Aspects of Climate Change Adaptation	Kevin Parton/Mark Morrison
Ecosystem Services	Rod Duncan

Details of the activities, goals and membership of these groups are located on the ILWS website. Two further SRAs are currently under development: “*Wetlands and Agriculture*” led by Andrea Wilson and Max Finlayson and “*Improving Rural Livelihoods and Environments in Developing Countries*” led by Jo Millar. Several other ideas have also been tabled, but not yet developed. As we are aware that this bottom-up approach could lead to too many smaller programs each SRA is required to report to the Advisory Board on a regular basis and all will be reviewed over the next 12-18 months to ascertain if they are effective in bringing staff together, developing integrated projects, obtaining research funds, and producing research outputs.

Ideas for the development and future of this focussed approach to integrated research were initially sought from all members at a major Forum of all ILWS non-student members in 2009. This was a major exercise with multiple purposes, including providing an opportunity for members to meet - due to the distribution of staff across different campuses and the strong disciplinary-basis of the pre-existing research structures we had not obtained sufficient cross-campus and cross-discipline interaction. It was also an opportunity to map out ideas for an initial set of SRAs and for members to enquire and question this change in emphasis and structure. Following the meeting a number of SRAs have been established with seed funding allocated to each SRA to develop project plans, pilot proposals and member communication. This also reflected a switch away from a funding focus on discipline groups.

Early success in terms of projects and activities under these SRA's include:

Successful participation in the CSIRO Flagship Cluster program: ***Ecological Response to Altered Flow Regimes*** (Adaptive Management of Water Policy, Planning and River Operations SRA)

Successful ARC Linkage Grant: ***Determining the Factors Influencing the Success of Private and Community- Owned Indigenous Businesses Across Remote, Regional and Urban Australia.*** (Sustainable Business Development in Regional Australia SRA)

Successful participation in the ARC ***National Centre for Groundwater Research and Training Program 5: Integrating Socioeconomics, Policy and Decision Support*** (Social Research for Regional Natural Resource Management SRA)

Participation in the development of a Centre of Research Excellence bid in conjunction with the University of Newcastle – ***Securing and Rebuilding Biodiversity*** (Ecological and Social Responses to Native Plant Regeneration in Dynamic Rural Landscapes SRA)

It has been pleasing to see new SRA's developing in areas that are likely to be of strategic research importance in the future (e.g. Social Aspects of Climate Change Adaptation, Wetlands and Agriculture) and increased prominence now being given to areas of clear research strength by this

new structure (e.g. Social Research for Regional Natural Resource Management). The Wetlands and Agriculture research area has been recently buoyed by attracting two multidiscipline projects and, along with other research areas, is expected to be developed further through a strategic link with the EH Graham Centre for Agricultural Innovation focussed on strengthening the nexus between agricultural and environmental research and teaching within CSU.

While the SRA's have only been in existence for less than two years, it is apparent that they are involving a larger number of researchers than the previous Integration Themes, and that various new collaborative projects are being undertaken across many of the SRAs which would be expected to produce outcomes in coming years. We see the SRA structure as representing a new dynamic within ILWS with wider participation by members and the closing and opening of multi-disciplinary projects as skills and funding opportunities are developed. The process and the individual SRAs will be kept under review through the ILWS Management Team and Advisory Board. The SRAs are being directly supported through the allocation of RCFs to the SRAs and through the provision of seed-funding from ILWS resources. Key criteria for the success of SRAs include the involvement of staff from different disciplines as well as their ability to attract project funding and produce academic outputs. We also have an expectation that all SRAs will contribute to the wider development of collegiality within ILWS and more widely across CSU and also support further community links and, where appropriate, entail some degree of participatory and community-oriented research.

2.0 ILWS Performance

ILWS measures success and performance using a range of parameters including the standard metrics applied by CSU within the University sector and other metric and non-metric based aspects of activity.

2.1 Performance Measures

Measures of research performance generally cover the following areas:

<u>Activity:</u>	<u>Outputs:</u>	<u>Outcomes:</u>
Proposal submissions	Successful funded research projects	Policy impact
Paper submissions	Size of research income	Awards
PhD Enrolments	Publications (number and points)	Community feedback
Stakeholder presentations and liaison	Citations	Media coverage
	Ranking of publication outlet (ARC)	
	PhD Completions	

Within available information resources, ILWS has attempted to assess its performance using a number of these measures although given the nature of the outcomes the available data are not as extensive as we would like.

Caveat Regarding the Data:

A detailed system of monitoring of membership, projects, publications and student supervision is in place within ILWS to provide information to senior managers and the Advisory Board regarding our activities over time. As ILWS was formed from pre-existing organisational structures, the CSU recording system was initially very complex and was not brought into a degree of order until 2008 after considerable effort from ILWS staff. For this reason and because the Institute is large, the records recently supplied by CRGT in relation to project and publication success may not be fully inclusive. Other factors leading to differences between ILWS and CRGT data include the fact that membership changes each year (there is no central recording of Centre membership) and the correct inclusion of membership and projects from IC WATER in 2007 up to the point at which this group was moved out of ILWS.

Given the dynamic nature of the data for Centre membership and the lack of adequate CSU central systems, no one dataset will ever be either completely accurate or consistent with others created for different purposes. Where ILWS records are more accurate, the internal data have been used in the following discussion.

2.2 Performance Overview

Table 5 shows a number of relevant metrics for ILWS over the period 2005 to 2009. Data in 2005 and 2006 contain Water Systems, data in 2007 contain income and student information for Water Systems prior to their separation from ILWS as IC WATER, however publication data for 2007 were all attributed to IC WATER despite being part of ILWS until late in that year.

Table 5: Performance Measures for the Institute for Land Water and Society – 2005-2009

Annual Key Performance Indicators	Actual 2005	Actual 2006	Actual 2007	Actual 2008	Actual 2009
Income from grants (\$M)	\$2.23	\$2.25	\$2.20	\$1.98	\$1.54
Number of new funded projects	28	29	41#	24	33
Publication points	67	127.2	148.9	88.4	74.1
Number of Publications	100	173	187	129	118
Number of Publishing Researchers	44	85	99	74	65
Postgraduate student enrolments	n/a	n/a	81	77	98
Postgraduate student completions	8	4	5	4	10

#Includes new projects in Water Systems prior to their separation from ILWS.

2.3 External Research Income

A strong performance in attracting externally funded research projects was demonstrated in the first three years of the Institute. The data in Table 5 show that the expected 20% increase in income was obtained in the first year of operation. The loss of Water Systems in late 2007 led to a reduction in income in 2008. This was combined with a number of factors leading to a reduction in performance across income and publications in later years. These include:

- Loss of key staff in Rural Social Research through resignation
- Restructuring of ILWS in 2009 to reflect a smaller membership base
- The impact of the global financial crisis and changes in Government funding policy leading to reductions in funding to some granting organisations, particularly Catchment Management Authorities
- The closure of Land and Water Australia which was a major funder of ILWS research

In addition to the above, the following may also offer some insight – as ILWS has grown in profile and confidence as a Centre and its members have gained experience there has been a deliberate move to develop larger projects with a greater level of impact and funding over longer time periods. This approach has been supported by the strategic goals of CSU. In keeping with the mission of ILWS, a multidisciplinary and team approach to project delivery has also been promoted. Such projects require greater lead times and considerable input from researchers. Some success has been delivered in respect to this strategy, at the cost of lower annual income, however it is hoped that the revenue will pick up from 2011 onwards.

Projects in relation to this strategy include:

Professor Allan Curtis: ***Integrated Water Management & Decision Support Program of NCGRT*** (\$656,224)

Professor Mark Morrison: ***Determining the Factors Influencing the Success of Private and community-owned Indigenous Businesses*** (\$580,000)

Professor Allan Curtis: ***Research Hub - Landscape Logic: Linking Land and Water Management to Resource Condition Targets*** (\$591,000)

Professor Robyn Watts: ***CSIRO Flagship Cluster for Environmental Water*** (\$420,000)

Dr Peter Spooner: ***Managing agricultural landscapes to maximise biodiversity gains*** (\$351,000)

Dr Gary Luck: ***Designing landscapes to deliver ecosystem services to agriculture*** (\$255,000)

Dr Andrea Wilson: ***Farm Focus Wetland Study*** (\$208,527)

Table 6 shows an indicative distribution of the total funding received from major types of funding bodies by ILWS since 2005. (Water Systems projects are not included in this analysis for any year) These categories are designed to show the broad distribution of funding. It is noted that the Federal Government (Government Departments, major funding bodies such as ACIAR and RIRDC and the ARC) has been the major source of ILWS funding, however organisations responsible for the management of water resources such as Catchment Management Authorities and Irrigation Corporations play a substantial role in the research conducted by ILWS together with relevant State Government Departments.

Table 6: Indicative Funding and Number of Projects by Funding Body Category: 2005 - 2010

Category	Indicative Funding	Number of Projects
ACIAR	\$692,304	9
ARC	\$3,846,340	9
CMA/Irrigators	\$1,143,976	25
CRC	\$984,494	12
CSIRO	\$303,840	7
Federal Government	\$2,143,939	28
International	\$114,719	5
Local Council	\$94,900	4
State Government	\$1,863,707	47
University	\$43,706	1
Other	\$578,997	19
Grand Total	\$11,810,921	166

There is no obvious trend in funding on a yearly basis in the above data, and it is noted that a small number of very large projects can tend to skew the figures sharply from one year to the next. Figures produced by CRGT relating to project proposal success rates in 2008 and 2009 indicate that ILWS was successful in 71% of proposals in 2008, falling to 65% in 2009 although the number of total proposals increased in 2009.

The new strategic planning round for CSU and the draft Research Plan for 2011-2015 proposes an increase in external research income by 20% per annum and other new goals for research. In discussions within ILWS on the university targets and recent performance, it was agreed that our early and developing researchers were one excellent source of new research projects. This led to the creation of the Research Development Program - a major new initiative in research staff development with a hands-on workshop focus for the production of grant proposals and papers for submission. This program has been funded by the Deputy Vice-Chancellor (Research) and is now underway for 15 ILWS members and 5 researchers from the wider CSU community as a trial. It is hoped that this program will accelerate the development of CSU research staff and give new researchers the expertise and confidence to rapidly develop effective networks and take on new research challenges.

2.4 Publications

Publication figures in Table 5 show that the peak year for ILWS was 2007. Note that the figures provided by CRGT officially for HERDC for 2007 differ substantially from those recently provided. A comparison of these two data sets is available; efforts to harmonize these data sets are ongoing.

Publications since 2007 have declined in ILWS for a range of reasons. There has been an influence on publication approaches relating to both the RQF and now the ERA Government quality assessment processes. Table 6 shows the distribution of publication types from 2007 through 2009. Firstly, as they were not included in the new Government quality assessments, the number of conference papers has declined markedly with a reduction of 63% between 2007 and 2009. Secondly, anecdotal evidence from discussions with researchers suggests that the rejection rate has increased due to the pressure on researchers to target high ranking journals. This has led to a delay in getting publications published as researchers rewrite and resubmit papers, although there is also some evidence that less experienced researchers are also disheartened by this rejection and may not resubmit.

Table 7: Change in publications by broad type and rank: 2007 to 2009

Publication Type	Rank	Number of publication points			% Change
		2007	2008	2009	
Book Total		15.0	7.5	5.0	-67%
Book chapter Total		22.0	5.7	18.9	-14%
Conference paper Total		38.9	23.5	14.3	-63%
Journal article					
	A*	2.3	3.0	0.3	-85%
	A	12.0	11.8	5.4	-55%
	B	14.7	15.8	14.9	1%
	C	25.1	12.6	12.3	-51%
	N	19.1	8.4	3.2	-83%
Journal article Total		73.0	51.6	36.1	-51%
Total Publications		148.9	88.3	74.4	-50%
Creative Works		n/a	8.5	4.1	-52%
Grand Total		148.9	96.8	78.5	-47%

Journal articles are now ranked, using the ERA/ARC ranking system. While the rankings are not strictly comparable between years, Table 7 shows ILWS journal articles by ARC ranking from 2007 to 2009. There is no discernible trend in terms of quality.

An analysis of the publication rates by the broad disciplines within ILWS shows that there has been a reduction in points in all disciplines (with the exception of Communication Arts and Education where numbers are extremely small). Table 8 shows information by discipline. The most notable drop was in Economics and Regional Development between 2007 and 2008. Discussions with staff have suggested that increased teaching loads, removal of funding for casuals and loss of key CSU staff through redundancies and resignations in the Faculty of Business have placed a significantly higher time requirement on staff, diverting activity from publications to teaching.

Table 8: Changes in publication points between 2007 and 2009 by ILWS Discipline

Discipline Area	2007	2008	2009	% Diff 07/08	% Diff 08/09
Comm Arts & Education	4.0	1.0	5.6	-75%	460%
Ecology & Biodiversity	21.3	16.2	11.0	-24%	-32%
Economic & Reg Dev't	51.3	23.7	25.7	-54%	8%
Human Dimensions	36.3	20.8	17.5	-43%	-16%
Rural Social Research	36.1	25.9	14.4	-28%	-45%
Grand Total	149.0	87.7	74.1	-41%	-16%

Consideration of the changes in student staff ratios (SSR) by CSU Schools over this period would tend to confirm this premise. Data from the CSU Planning and Audit website for our three key Schools (Table 9) show that there was an increase in student staff ratios in all three Schools and a marked increase in the SSR for the Faculty of Business which shows up in 2009 but was in train during 2008 and led to the loss of 24% of staff FTE. Staff reductions also occurred in Humanities and Social Sciences which also saw the loss of two key senior and productive ILWS members.

Table 9: Student Staff Ratios and Staffing FTE in Selected Schools – 2007 to 2009

Student Staff Ratios	2007	2008	2009	% Change '07 – '09
Humanities and Soc Sci	23.1	23.8	24.8	7%
Total Fac of Arts	23.1	25.8	24.4	6%
Marketing and Management	24.7	23.5	41.1	66%
Total Fac of Business	22.1	22.1	28.2	28%
Environmental Sciences	14.3	15.2	17.6	23%
Total Faculty of Science	17.6	17.8	18.4	5%
Staff FTE	2007	2008	2009	% Change 2007 - 2009
Humanities and Soc Sci	52.5	49.6	46.1	-12%
Total Fac of Arts	181.8	159.5	175.8	-3%
Marketing and Management	28.6	29.5	25.8	-10%
Total Fac of Business	150.1	135.1	113.4	-24%
Environmental Sciences	27.0	25.1	23.8	-12%
Total Faculty of Science	235.8	236	251.4	7%

The relationship between publications and research projects is complex and cyclical. Reports from the Research Centre Fellows under ILWS in 2009 and early 2010 suggest that the number of papers should increase in 2010 and 2011. Since 2009 we have placed more emphasis on the production of outputs from RCFs with individual contracts outlining expected publications and funding submissions; the management of the RCF scheme is the subject of a separate review.

2.5 Postgraduate Students:

ILWS has a large number of postgraduate students affiliated with the Institute. Postgraduate student membership of ILWS is defined as follows:

- The principal supervisor must be a member of ILWS (in special cases it may be a co-supervisor)
- The project being undertaken by the student must be relevant to the disciplines and goals of the Institute.

Of the 95 current students, 92 have a principal supervisor from staff and three have a principal supervisor outside the Institute. Thirty four of the ILWS members supervise at least on RHD student in 2010. The most common number of students per supervisor is 2 (13 members) with only three members having more than five students each.

As might be expected, postgraduate students are concentrated in a small number of Schools. Table 10 shows the distribution of postgraduate students in 2010 by Faculty and School.

Table 10: ILWS Postgraduate Research Students by School – 2010 Data

Faculty	School Name	Total
Faculty of Arts	School of Communication and Creative Industries	1
	School of Humanities & Social Sciences	19
	School of Psychology	1
Faculty of Arts Total		21
Faculty of Business	School of Business	25
Faculty of Business Total		25
Faculty of Education	School of Education	1
Faculty of Education Total		1
Faculty of Science	School of Ag & Wine Sciences	1
	School of Environmental Sciences	47
Faculty of Science Total		48
Grand Total		95

CSU has allocated two Government funded PHD scholarships per year to each research centre. ILWS has been in a position to offer Scholarships to a variety of excellent students over this four year period. Students and their research topics are listed below. Since 2009 there has been an effort to allocate these scholarships to supervisors with an active research profile and involved in SRAs; now that SRAs are well established this intent will continue.

Scholarships: 2007

Watson, Maggie ***The effects of parasites on the Crested Tern *Thalasseus bergii****

Zukowski, Sylvia ***What information is required for sustainable recreational freshwater fishery regulations in Australia?***

Scholarships: 2008

Lukasiewicz, Anna ***Social justice in Australian water management***

Roots, Jane ***The Future of Farming in Rural Amenity Landscapes – the role of governance and planning in a changing agricultural landscape.***

Scholarships: 2009

Behrendt, Kath ***Production, Consumption and Protection: Modelling the Value Trade-offs in an Agricultural Landscape.***

Blyth, Sue ***Increased Consumption and Decreased Domestic Skills: clues to more sustainable lifestyles?***

Scholarships: 2010

Deans, Wayne ***The role of farm forestry in S.E. Australia in providing liveable landscapes for future generations.***

Manu Saunders ***The delivery of pollination services in Australian almond orchards, and how this is related to landscape structure.***

ILWS has spent some time considering ways in which the Institute can be of assistance to its postgraduate members. A major limiting factor in these discussions is that all postgraduate funding goes to the enrolling School so that no resources are available to Centres to directly support research students. In 2009, Ms Anna Lukasiewicz was appointed to the ILWS Advisory Board to provide a postgraduate research perspective to our management and planning discussions. Recently a review was held of research student concerns and needs. It was agreed that new initiatives in mentoring for ILWS staff (outside the more formal Research Development program) would be designed partly in response to research student requirements and that students would be strongly encouraged to participate in all institute events. It is also intended to discuss with Deans and Heads of Schools how ILWS can complement their support for postgraduates enrolled through their Faculties and Schools. It would also be useful to reopen discussions on how funding support for postgraduate students is allocated between Schools and ILWS – in particular if funding for students supervised by ILWS employed staff can be shared. More importantly, we would be interested in new ideas for collaborative-based support for postgraduates. We are regularly asked to support mentoring for postgraduate students, but are currently not funded for such activities – we may jointly be missing an opportunity to support student-based research and establish a tighter nexus between teaching and research.

2.6 Excellence in Research, Australia (ERA):

ILWS actively participated in the recent CSU ERA review for submission to the Federal Government. The multidisciplinary nature of ERA and lack of central recoding systems mean that it is difficult to isolate the precise contribution of our researchers to the ERA submission. Below is an extract from the full information for CSU's ERA submission (from the Planning and Audit site).

ILWS researchers were strongly associated with the broad disciplines of Environmental Sciences, Biological Sciences and Commerce, Management and Tourism Services. Members are likely to have also been included in the other groups shown above. An analysis of the number of publication points per FTE, which provides information on group performance independent of size (final column), shows that these areas have a generally high level of publication points per FTE. Work will continue within the Institute to ensure that we are even better placed to participate in the next round of ERA.

Table 11: Selected Fields of Research: CSU ERA Submission 2010

Discipline Code	Discipline Name	Volume	Apportionment	Income \$0,000	Head count	FTE	Points per FTE
3	Chemical Sciences	145	118.4	18.66	18	10.5	11.3
4	Earth Sciences	37	25.83	171.33	24	9.7	2.7
5	Environmental Sciences	205	102.9	4017.81	42	16.2	6.4
6	Biological Sciences	345	236.05	1051.33	83	30.7	7.7
7	Agriculture and Veterinary Sciences	587	323.25	19510.53	149	57.3	5.6
14	Economics	96	106.3	916.47	16	9.9	10.8
15	Commerce, Management, Tourism and Services	445	436.45	498.3	92	64.3	6.8
16	Studies in Human Society	323	290.38	1093.72	70	44.4	6.5
19	Studies in Creative Arts and Writing	163	152.7	2.1	31	23.2	6.6
20	Language, Communication and Culture	127	119.35	499.21	37	18.3	6.5

3.0 ILWS Key Outcomes and Achievements

The following section outlines a range of different achievements by ILWS over the last six years. This selection is designed to be representative of our activities, not comprehensive. We have chosen a number of key areas to highlight different aspects of our research and our relationships with external organisations and communities.

3.1 Excellence in Research – An Alternative Approach to Quality

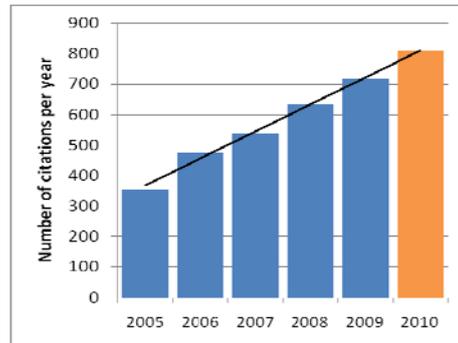
Section 2 provides detailed information on the performance of the Institute, using standard numerical measures. Another measure of the excellence of ILWS research is the use of that research by other researchers and organisations nationally and internationally, measured through citations. The following is a case study of one of our groups based on citation outcomes.

ILWS's excellence in disciplinary research is exemplified by the Ecology and Biodiversity Discipline Group. This group comprises 68 staff, associates and post-graduate students. Since 2005 the group has attracted 6 ARC grants totaling \$2.493M (including grants to five group members as Chief Investigators) and substantial external income from other Government and non-government funding organisations.

Scopus lists 128 papers published by 17 staff members from 2005-2010. In total, **34%** were published in A* and A ranked journals, including four papers in the prestigious A* journals: *Biological Reviews*, *Ecology Letters*, *Journal of Geophysical Research* and the *Proceedings of the National Academy of Sciences USA*.

Citations are a global indicator of research excellence, and represent the number of times a paper is cited (or referenced) in papers by other researchers. They indicate the extent to which the broader research community values research conducted by an individual or group. A Scopus citation search yields a strong indication of research excellence by the Ecology and Biodiversity Discipline Group.

From 2005 to 2010, the group's research was cited 3,334 times in other research papers. Importantly, the citation data illustrates the ongoing improvement in research capacity in the group. (The graphic to the right shows actual citation information for 2005 through 2009 and a projection for 2010 based on citations to date.) The number of citations per year has increased by 19% **every year**, resulting in a doubling of annual citations from 2005 (356 citations) to 2009 (717 citations). This increase shows that both the older research and new publications are being used by the global research community in ever increasing quantities. Increasing research quality from the entire discipline group is evidenced by the fact that seven of 17 staff had over twice as many citations in 2009 compared to 2005, and all but one staff member received more citations in 2009 than 2005. Scopus citation data also indicate the extent of the groups' national and international research collaborations, and the 17 staff in the discipline group have co-written papers with a total of 544 co-authors.



3.2 Social Research for Regional Natural Resource Management

Natural Resource Management (NRM) in Australia is increasingly structured around a regional delivery model where planning and implementation is guided by national and state priorities but mostly occurs at the regional scale. The ILWS team engaged in research examining the social dimensions of NRM has critical mass (9 senior researchers, 2 post docs, 13 PhD students) and has a strong track record of research related making substantial contribution to knowledge, management and policy, research methods and training. We have also been at the forefront of efforts in Australia to identify ways social research can contribute to integrated research teams addressing NRM. For example, group members have:

- pioneered ways of integrating spatially referenced social data to underpin regional NRM adopted by DAFF as the standard approach;
- identified ways of addressing the critical social constraint to implementing active adaptive management;
- identified ways to incorporate farmer knowledge into new grazing systems;
- developed a process that draws on land use history to improve understanding of changes in vegetation extent and condition; and
- established innovative community engagement tools and processes.

The current group of PhD students is undertaking cutting-edge research, including into the role of trust in agency/ community interactions around wildfires; ways of including landholder values in regional decision making; enhancing the social acceptability of a duty of care for biodiversity; the influence of social norms on environmental management in rural communities experiencing demographic change; and the relevance of the concept of community to large scale NRM governance.

In a number of areas, this team is recognised as a national leader in its field, including for:

- Sustaining local organisations (e.g. Landcare);
- Evaluation of NRM programs and policy instruments;
- Regional-scale adaptive management;
- The social dimensions of forestry;
- Adoption of current recommended practices for biodiversity conservation, sustainable agriculture and NRM;
- Regional NRM governance;

- Social dimensions of sustainability reporting;
- Rural social structure and processes;
- Integrating social and biophysical data;
- Engaging communities in sustainability assessments.

Related work within ILWS includes a series of projects involving social aspects of natural resource management, where they have also partnered with CSIRO and researchers from University of Tasmania, University of Technology, Sydney and the Queensland government. This work, has involved seven CMAs and Regional Bodies across three states, and has been funded by Land and Water Australia, NSW Environmental Trust and various CMAs. The research has involved identification of landholder segments, suitable programs for encouraging participation of different types of landholders in natural resource management, and identification of improved methods of communication, particularly for reaching difficult to engage with groups. This research has led to multiple CMAs changing the mix of programs that they provide and their design features, as well as in how to communicate with landholders.

One measure of the group's success is that other scientists and organisations have sought our participation as partners in large Australian and international research programs, including:

- Australian Research Council/ National Water Commission, **ARC/NWC National Centre for Groundwater Research and Training: Integrating socio-economics, policy and decision support systems (social research component)**. (2009-2014). Total funding \$715,000. Our contribution involves collaborations with researchers at UWA, ANU.
- Department of Environment and Water, **Commonwealth Environmental Research Facilities Program (CERF Landscape Logic): Project 2: social research**. Total funding \$630,000. Our contribution involves collaborations with researchers at UTas, ANU.
- **CRC Future Farm Industries**: lead the social research in the CRC. Our contribution involves collaborations with researchers at UWA, UniSA..
- **Cotton Communities CRC**: with a team from ANU, engaged as part of a large integrated team to examine the impacts of climate change and water reform in the Namoi Catchment of NSW.
- **USA Joint Forest Sciences Research Program**: project led by Oregon State University that involves researchers in Australia, Canada and the USA in collaborative research examining the role of trust in fire management.

3.3 Adaptive Management of Water Policy, Planning and River Operations

The construction of dams and regulation of rivers have provided critically important socioeconomic benefits to society, including water supply, food production, electricity generation, and flood control. The ILWS Strategic Research Area 'Adaptive management of water policy, planning and river operations' led by A/Prof Robyn Watts addresses the issue that river regulation has also had serious impacts on river ecosystems, and has had unintended negative impacts on some communities living downstream of dams. ILWS members are among a small group of experts from around the world that are building a body of evidence that demonstrates the potential for more sustainable decisions on dam policy, siting, design and operations to make them more compatible with the protection or restoration of social, cultural, and environmental values.

Through its research and roles on committees the members of the SRA are making significant contributions to water policy and decision making, and to the adaptive management of river operations. Over the past 10 years the multidisciplinary team has worked with regional and national organisations in Australia (e.g. Murrumbidgee Catchment Management Authority, Department of Environment and Climate Change NSW, Murray Wetlands Working Group, Water For Rivers, Murray-Darling Basin Authority, National Water Commission) to assist water managers balance the multiple benefits of water to achieve enhanced environmental and social outcomes. Examples include:

- Environmental monitoring of variable release trials conducted at Dartmouth Dam 2001-2007
- Development of new interim operating guidelines for Dartmouth Dam
- Optimising frog breeding responses to flooding in managed wetlands in NSW
- Review of environmental outcomes of pulsed flows
- National water planning project
- Ecological responses of aquatic communities to a managed wetland flooding event

These projects have recently led to two significant collaborations at both a national and international level. Firstly, CSU is partnering with CSIRO, four universities (Griffith, UNSW, Monash, La Trobe) and the Arthur Rylah Institute for Environmental Research on a 3 year CSIRO Flagship Cluster project (2010-2013) 'Ecological responses to altered flow regimes' to improve our ecological knowledge and understanding of how aquatic ecosystems will respond to changes in water availability under future water resource development and climate scenarios.

At an international level, in 2010 ILWS partnered with UNESCO International Hydrological program and The Nature Conservancy (USA based NGO) to host an international workshop on "Challenges and Solutions for Planning and Operating Dams for Optimised Benefits" held at UNESCO in Paris in October 2010. The workshop participants produced a technical report and a statement that includes a number of recommendations for accelerating progress toward sustainable dam planning and operations, and these will be presented to the next UNESCO Bureau meeting in early 2011. The aim is to prompt lending institutions, national governments, and dam owners and operators around the world to substantially increase investment and facilitate real-world demonstration and implementation of sustainable dam siting, design, and operations.

3.4 Social Aspects of Climate Change Adaptation

Effective adaptation to climate change requires adaptation at multiple levels. Adaptation is required by households and businesses. Adaptation also requires that governments implement strategies and policies that create the structures and incentives that will lead to carbon neutrality and communities that are resilient to the impacts of climate change. The focus of the SRA is to assess how the response by individuals and organisation to climate change (adaptation and mitigation) and to climate change policy will proceed, and to contribute to policy as it unfolds.

ILWS researchers and a PhD student have conducted research on household demand management of electricity. This research, which was funded by Country Energy, was recently the subject of a nomination for a B-HERT award. The findings from this research have been used by Country Energy to identify which demand approach to use. A presentation on the results was also given to the Prime Minister's Energy Efficiency Taskforce and informed their subsequent report.

Researchers have also worked with CSIRO/Dept of Climate Change on the effective communication of the economic impacts of climate change policy, which influenced the way the government communicated with the public in its release of the Emissions Trading Scheme (ETS). Other work on climate change has included research examining the effectiveness of social marketing strategies for reducing energy use among students (funded by Country Energy), work includes assessing the viability of a carbon tax policy and comparing the government's proposed Emissions Trading Scheme with alternative policies, examining how specific health issues are affected by climate change, how rural landholders are adapting to climate change (funded by Land and Water Australia) and how rural economies have been affected by drought and climate change. The research team has also provided frequent commentary in the media, particularly radio, on issues involving climate change.

ILWS researchers have also crossed the boundary between the broad areas of Climate Change and Water Policy in regional Australia and with colleagues from CSIRO, the University of Sydney and Virginia Tech undertaken a project on the value of improving riverine health on the Murray River and Coorong which has made an important contribution to government decision making regarding the Murray-Darling Basin plan. Professor Morrison from this team was also first author of a report with substantial policy significance on the estimation of environmental values for the Murray-Darling Basin plan. The report produced benefit estimates for each of the catchments of the Murray-Darling Basin, for use in the cost-benefit analysis of the basin plan. This report was cited frequently in Volumes 1

and 2 of the Basin Guide, and has led to much media interest. It was reported in 55 Fairfax newspapers across the country, plus other newspapers (eg Adelaide Advertiser) and attracted a large amount of media attention, particularly from radio programs including ABC NSW Country Hour and the ABC NSW Drive program.

3.5 ILWS International Research

ILWS has quickly established a 'reach' across the wider Asia-Pacific region, and more recently into Africa, to undertake high-quality collaborative research with recognised partners. This portfolio of research has consolidated several important partnerships ILWS has with influential partners, such as the Australian Government's ACIAR, the Centre for International Forestry Research (CIFOR) in Indonesia, and world-class universities. Past achievements include research on:

- the preservation and practice of community informal care and welfare practices across Asia-Pacific countries;
- enhancing rural incomes from community forestry in eastern Indonesia;
- management of cultural heritage in the Central and Northern Pacific;
- sustainable management and livelihood trade-offs in wetland ecosystems in Southern Africa and Southern Asia; and
- capacity building of livestock farmers in Laos.

A major research partner has been ACIAR, with funding over \$2 million in research grants to support ILWS's research, with several more large research proposals currently under negotiation (e.g. improving livelihood outcomes from tank irrigation in India, \$1.5 M). ACIAR has also funded several international PhD students whose research has brought new partnerships with Universities and Research Centres in India, Indonesia, Nepal, Bhutan, and Laos. ILWS also has global alliances have been established with Hohai University, China, the University of Botswana, Global Wetland Consortium, Gadjah Madah University in Indonesia. The value of strategic links with international institutions will be reviewed in the next few years with the goal of supporting further integrated research opportunities and strengthening the link between research and teaching at CSU.

The social science and community development expertise of researchers in the ILWS is having widespread influence in the Asia-Pacific region. During 2006-'07, ILWS researchers were commissioned by ACIAR to conduct five training workshops on the 'Social and Community Dimensions' for the effective implementation of research projects in the agricultural, forestry and fisheries sectors. Participants at the workshops were involved in research projects valued at \$10 million of investment by the Australian government (ACIAR), Australian partners, and in-country government, university and private sector partners. Over 100 project leaders, policy makers and researchers attended the workshops in Indonesia, Laos and Papua New Guinea. The leading role of ILWS in research to address critical livelihood and natural resource management issues in the wider Asia-Pacific region continues to grow, with major current and future ACIAR-funded projects in India, Laos and Indonesia.

Other international research has been undertaken by an ILWS researcher in the Kiska Islands between Russian and Alaska, as part of a research project with the US Fish and Wildlife Service and the US National Park Service documenting the heritage of the remote islands. This project seeks to document and preserve the guns which are "rem(a)inders" of the Japanese invasion of Alaska in WW2. This work has led to a major exhibition of the research and photography associated with the project in Anchorage, gaining acknowledgement as the most successful exhibition in the history of the gallery.

Further international research has been undertaken with institutions in southern America, Asia and Africa based around the twin concepts of sustainable development and trade-offs between ecosystem services provided by wetland/river complexes. This has included research input to high profile environmental issues in internationally important wetlands in Chile, China, India and Russia as well as the provision of technical advice to wetland research programs in France, Mexico and Brazil and inputs to the Ramsar Convention on Wetlands covering ecosystem restoration, climate change, agriculture and human health, and participation in the United Nations reports covering World Water Resource Development and Global Environment Outlook, and a joint report with the Ramsar

Convention and World Health Organisation on the interactions between human and ecosystem health. International experts have also been hosted within Australia, particularly those interested in the water management issues in the Murray-Darling Basin.

Global Alliances:

ILWS has developed alliances with the following Universities in recent years to progress collaborative research and exchange of staff with organisations outside Australia. Two formal alliances are now in place:

Charles Sturt University and **Hohai University China** (with the Faculty of Science and the International Centre of WATER for Food Security). This alliance was progressed through further discussions between the two Universities. Through this alliance, CSU allocated a PhD Scholarship to Hohai University to allow a Chinese student to attend CSU to work in a relevant area. This student will commence in early 2011.

Charles Sturt University and the **Harry Oppenheimer Okavango Research Centre (HOORC) of the University of Botswana** (UB) and members of the Global Wetland Consortium, including Duke University & the Universities of Ohio & Florida, USA; the University of Waterloo, Canada; Jawarhalal Nehru University, India; Centro Pantanal, Brazil. In 2010, staff of ILWS attended a major conference hosted by the HOORC leading to proposals to develop joint publications and projects; these are under discussion and could lead to increased research collaboration as part of a wider effort to increase east-west contacts and exchange, including links with Southern American and Southern Asian institutions, covering for example, sustainable wetland management and trade-offs between biodiversity and livelihoods.

3.6 Media, Promotion and Stakeholder Interaction

ILWS has worked hard to establish a profile within CSU and nationally as a Centre of research in our areas of expertise. Activities in relation to the Centre as an entity cover:

- Conferences, forums, book launches and workshops
- Public lectures
- Media releases
- Media commentary on current issues
- Provision of expert advice on panels and for local communities

Conferences, forums and workshops:

Over the last six years ILWS has run many meetings to disseminate the outcomes of our research both within the research community and for the community and stakeholders.

The largest event was the **5th Australian Stream Management Conference** themed "Australian Rivers: Making a Difference," was held in Albury, May, 2007. The conference, which included a day of field trips, was attended by 275 delegates and resulted in a peer-reviewed conference proceedings publication of almost 100 papers. All papers are available [on line](#). The Institute was successful in obtaining \$80,000 worth of sponsorship to run the national conference. Principal sponsors were the Murray Darling Basin Commission, Earth Tech, Land & Water Australia and Water for Rivers. Partners were the NSW Department of Natural Resources, Murray Darling Freshwater Research Centre, NSW Murray Wetlands Working Group and the North East Catchment Management Authority. The late Prof Peter Cullen, a member of the Wentworth Groups of Scientists and Commissioner with the National Water Commission, presented the closing address.

Another major conference in which the Institute played a major role was the **Australian Forest Growers 2008 National Conference** held in Albury, October, 2008. The conference, convened by an ILWS research fellow Dr Digby Race, was attended by 270 international and national delegates.

Smaller conferences which aimed to showcase the research work of the Institute and its members were the **Communities and Catchment Conference** held in Wagga, August, 2005 (attended by 130 people) and the **Better Bush on Farms Conference** held at Thurgoona campus in September, 2007.

Attended by 140 people the conference was hosted with ILWS, CSIRO, the NSW Environmental Trust and the Conservation Management Network. A joint initiative between Engineers Australia Railway Technical Society of Australasia and the Institute was a symposium on the **Future Framework for Regional Rail**, held in Wagga Wagga, February 2007.

The Institute has run a number of public forums the institute where speakers from other organisations are invited to present their views to engage and inform the wider community. The forums include the **Bird Flu Public Information and Discussion Sessions** which involved Institute scientists as well as the Department of Primary Industries and representatives from the public health sector (Albury, November, 2005 (attended by 100 people) and Wagga, March, 2006 (attended by over 45 people.)) Other forums include **"Taking the Heat out of Prescribed Burning"** - Albury, August, 2006 with Prof Bruce Shindler from Oregon State University who provided an international perspective to an audience of about 80 people; a forum on November 20, 2006, held in conjunction with LaTrobe University in Wodonga on **"Global Warming: What can we do? What do our pollies propose?"** which attracted about 170 people; and a **Rural Australia Without Petroleum** forum and workshop held in conjunction with the EH Graham Centre in March, 2008 with 50 people at the forum, and 25 at the workshop.

The Institute has also assisted its members who have wanted to hold photographic exhibitions and public talks. One of these was a photographic exhibition "Conflict in the Arctic : rem(a)inders of the Japanese invasion of Alaska " by A/Prof Dirk Spennemann at the Bandiana Army Museum, Wodonga with a public lecture on October 25, 2007 attended by 63 people.

Members of the Institute have also been involved in the running of conferences and workshops overseas. Prof Manohar Pawar who is the current president of the International Consortium for Social Development, Asia Pacific Branch, was one of the organisers of a conference in Thailand attended by 150 participants on the influence of globalisation on economic development and human security in the Asia-Pacific in October 2006; one in Korea on a Vision of Social Development in the Globalised Asia: Commonality and diversity in November 2010. In October 2010, A/Prof Robyn Watts co-convened an international workshop on Sustainable Dam Planning and Operations at UNESCO headquarters in Paris. The ILWS Director also participated in the organising committees for the INTECOL Wetland Conference in Brazil, July 2008, and the Pulse Flows Wetlands Conference in Botswana, February 2009.

Another significant national workshop organised by ILWS is the E-CreW Environmental and Resource Economics Early Career Researcher Workshops which were held at Bathurst Campus in 2005, 2007 and 2009 and attracted between 40-70 early career researchers from across Australian, New Zealand and internationally.

Media

Media coverage for Institute members has increased year by year since the Institute 2005. While one way to measure this increase is to count the number of "media hits" for Institute members in any one year (roughly 190 in 2005, 176 in 2006, 253 in 2007, 446 in 2008, and 437 in 2009). But more important than the number of media hits is the increased "quality" of these hits i.e. we have gone from stories appearing mainly in local regional papers to much more national and increasing international coverage.

As an example of increased "quality" of media hits A/Prof Ian Lunt's research on applying sugar as one way of controlling weeds when re-establishing native grasses was first featured in the media in rural publications such as *The Weekly Times* and *North East Farmer* in December 2006. Coverage from the initial media release has been extensive and culminated in a segment for ABC's science show **Catalyst** which is scheduled to go to air, February 2011.

There has been an increase in the number of researchers from the Institute whose work and/or opinions are featured in the media. Our ecologists, economists and social researchers from the three CSU campuses are well represented in terms of media coverage. For example, the latest three month period of [In the News](#) (August to October 2010) includes a wide variety of stories covering everything from Murray crayfish to the media and climate change to average incomes to absentee ownership trends.

Through the work of the ILWS Communications Officer, a greater number of Institute members have become more willing to use the media to make informed comments on topical issues such as prescribed burning, climate change and the draft Murray Darling Basin Plan. As an example in a three month period in 2008 there were four opinion pieces published in **Science Alert**. They include:

- Institute adjunct research fellow Barney Foran's commentary "[Regional areas must seize control of greener future](#)" was in response to the Government's new green paper on August 14;
- Dr Paul Humphries' piece "[The drought we had to have?](#)" put forward the view that perhaps the drought was a blessing in disguise as it has forced us to face up to the problems in our environment that have been developing for decades on August 14. This piece was picked up by eco2oh.com the following day and also resulted in an interview with ABC radio's Bush Telegraph on September 22;
- Prof Mark Morrison's opinion piece [Is it really worth cutting emissions?](#) Was published on September 19;
- Prof Max Finlayson's [Second Chance for Wetlands](#) was published on October 30.

The Institute has been working towards an increased Institute media profile (which enhances the University's profile) and the media now often actively seek member input to important policy issues. Members have also become more proactive in exploring opportunities for media coverage. ILWS has a close working relationship with CSU Media. Regular weekly meetings are held to discuss and plan media releases and responses. As a result, in 2009 about twenty percent of CSU media hits involved Institute members.

For the future the intention is to continue to develop the Institute's media profile in conjunction with CSU media with more targeted commentaries and stories, in particular around the Institute's Strategic Research Areas and in response to topical issues, such as carbon markets and water planning in the Murray-Darling Basin. The latter has seen a lot of media coverage with Institute members undertaking many media interviews covering the social, economic and ecological issues facing the Murray-Darling Basin and participating in the release of research-based consensus statements.

4.0 Future Directions and Vision

At the end of five years of operation, ILWS is well positioned to continue to explore its mission and goals and to support the strategic directions of the university. ILWS is one of the main providers of research in our region and particularly in the Murray Darling Basin. Our multidisciplinary nature means that we will be a contributor to work informing Government and community decisions over the coming difficult years for regional Australia. We hope to build on existing capacity to inform policy, planning and implementation of change and to work through our members' strong links with many of the major local organisations to secure funding and to inform the end users of our research.

Over the next five years ILWS expects to work with other researchers across CSU to assist in establishing the University as an internationally recognised teaching and research university, creating new knowledge and practice through critical enquiry in disciplinary and trans-disciplinary research. ILWS will also enhance its interaction with postgraduate students, nurturing them as future researchers and providing a stimulating environment for all staff and students. We will also further support the personal development of all staff to ensure we can better support our research and administrative functions.

Based on almost five years of experience in research development and management, ILWS has been able to streamline its operations and improve its capability to support CSU's administrative reporting and accounting processes while developing its team-based approach to multidisciplinary Strategic Research Areas. Our vision for the future includes further improvements to our administrative procedures including support for CSU reporting requirements, and staff development as a backdrop to further progress in our strategic approach to research. This will include the consolidation of existing research strengths and the progressive development of emerging strengths and new initiatives. The former can be seen as a continuing investment in identified staff and partners as well as responding

to new opportunities, including national and international priorities. The main directions expected in the next few years include:

- Continue to emphasise the development of early career researchers and our members more generally, through the current research (career) development program and other programs and workshops. This will involve members and postgraduate students with cooperative arrangements being extended across research disciplines and with selected Schools and Faculties. This will increase our base level of capacity and encourage greater collaboration within ILWS and across CSU (as these or similar programs are rolled out across CSU).
- Continue to focus on the development of viable Strategic Research Areas, including recruiting new members, developing new projects, and developing new partnerships and funding arrangements. As the SRAs are less than two years old we expect in coming years to see increased outputs in these flagship areas. All SRAs will be kept under regular review to ensure they remain viable and productive.
- Where appropriate develop further SRAs, but keeping in mind that this is not an open-ended process, unless of course they continue to improve and support the mission and goals agreed for ILWS and more widely for CSU. As an example, there has been discussion within CSU about whether ILWS could support a “lighthouse” theme on sustainability.
- Increase the profile of the SRAs through significant events and media, and the sourcing of significant grants. This may be done on an individual basis or through ILWS-wide processes, e.g. a members’ research meeting with invited partners and representatives from funding agencies. Cooperative arrangements within CSU, such as the mooted agricultural-environment nexus with the EH Graham Centre, and outside, such as substantial involvement in CRCs, will be encouraged and ILWS resources directed towards these.
- Develop a visiting Professor program, seeking visits from internationally recognised academics for each of the SRAs, and use these opportunities to increase research outputs and funding submissions.
- Increase engagement with the Faculties to optimise the research potential and development opportunities of our members, and strengthen the nexus between research and teaching. This could include the development of targeted postgraduate teaching by ILWS staff where specific teaching opportunities could increase the profile of research activities.
- Develop a more strategic approach to the allocation of ILWS financial resources, including Research Centre Fellowships, to support ILWS priorities. Greater flexibility in spending funds allocated by CSU will be negotiated with the Deputy Vice-Chancellor with the intent of providing wider support for key researchers. The Fellowships will also be considered as specific inputs to support research collaboration with other institutions. Discussions will be held to determine the parameters necessary to support longer-term financial planning for the Institute, with forward allocation of a minimum budget along with necessary accountability and reporting requirements.
- Encourage greater inter-disciplinary collegiality within ILWS and across CSU to support everyday mentoring and capacity building to expand research through the development of a wider skill base and provide wider experience for younger researchers, and encourage an exchange of ideas and network opportunities to assist established and emerging researchers to expand their productivity.
- Strengthen our capacity through effective partnerships within and outside CSU in relation to expanding our research coverage and ability to respond and construct bids for large projects.

The above points focus on activities to support research and research staff. These steps will be encompassed within a collaborative environment focussed on research productivity and supporting CSU's ambitions to expand its research activity and profile. In doing this we need to be aware of reporting and accountability requirements and opportunities within CSU's core constituencies. We believe the above is achievable with the processes and structures that have been developed in concert with the commitment and experience and skill of key researchers and within the remit of the Institute, including an emphasis on research performance and personal development of all staff.

Professor Max Finlayson

Professor for Ecology and Biodiversity
Director, Institute for Land, Water and Society
December 2010



APPENDIX 1:**ILWS Income and Financial Management:**

As an accredited Centre of Research Excellence within CSU, ILWS is supported by a range of income sources from within the University. A small quantum of external project funding is used to support the administration of these projects, however this is deliberately minimised to keep project costs low. Note all project and consulting income goes to the researcher(s) concerned. ILWS also has a practice of transferring any project surplus income to the researcher from the project at present, however this policy is under review.

Table A1 shows the income to ILWS from 2007 through to 2010. The decline in Performance Funding is due both to a reduction in ILWS outputs and to a reduction in the CSU allocation from this source over the last four years.

Table A1: Institute for Land Water and Society Income – 2007 - 2010

Income Category	2007 Actual	2008 Actual	2009 Actual	2010 Preliminary
Operating Funds				
CSU Base Level Allocation	\$100,000	\$100,000	\$125,000	\$125,000
CSU RIBG Allocation	\$100,000	\$100,000	\$100,000	\$100,000
Performance Funding - income based	\$147,115	\$153,142	\$120,253	\$81,578
Quality Assurance/RQF	\$49,000	n/a	n/a	n/a
Other*	\$41,801	\$20,000	\$7,087	\$6,103
Subtotal	\$437,916	\$373,142	\$352,340	\$312,681
Designated (Tied) Funding				
ILWS Research Centre Fellowships@ Business Manager Partial Salary (RIBG)	\$720,000	\$640,000	\$720,000	\$720,000
RIBG ILWS Allocation	\$60,000	\$60,000	\$60,000	\$60,000
Performance Funding - Publications based	\$0	\$0	\$70,000	\$70,000
Strategic Research Funds ILWS	\$38,145	\$57,475	\$37,659	\$27,380
Strategic Research Funds ILWS/EHG	\$0	\$0	\$0	\$187,000
Contingency (carried forward)#	\$0	\$0	\$0	\$92,000
Subtotal Tied Funding	\$818,145	\$757,475	\$887,659	\$1,180,849
Strategic Professorial Salaries**	n/a	n/a	n/a	\$24,469
Total Centre Income	\$1,518,431	\$1,669,068	\$1,799,800	\$2,079,384

*Project costs recovery for support, royalties, special grant for Rural Society transfer (2007), conference income, publications etc...

@ Fellowship data show income as belonging to ILWS, however all income went to the relevant School

Including redundancy provision. This funding was set aside in 2009 and will be carried forward (adjusted upwards for salary increases) unless used.

Fellowships pre-committed for 2011; Watts, Race, Watson, Spooner (not including Debra Da Silva)

** Strategic professorial salaries are currently paid from a Central fund as these are continuing positions and independent of Centre operations.

ILWS uses this centrally allocated funding to operate the Office and support activities of the Institute. Funded activities include:

- Mentoring meetings including writing workshops, planning meetings and members Forums
- Seed funding for research project activities
- Support for members to present papers at conferences, travel to meet with funding bodies and to undertake other research related activities
- Events, conferences and workshops
- Research assistance for Strategic Research Areas including support staff, travel and meeting expenses.
- Administrative, management and communication support salaries
- Management Meetings and meetings of the ILWS Advisory Board
- Promotional material and printing – ILWS newsletter, posters, brochures, graphic design
- Operational costs including IT support, computer and other IT equipment, office supplies

Annual decisions in relation to the ILWS budget are discussed in detail with the Management Team and monitored regularly throughout each financial year. All ILWS operational financial transactions are managed through the central office with a strong regard for University regulation and financial compliance.

Management of all ILWS research projects is undertaken by the ILWS Business Manager in conjunction with the principal researcher and with CRGT. Potential budget shortfalls are identified as early as possible for rectification but are rare, with ILWS staff generally showing a high level of financial responsibility.

Centre funding is provided on an annual basis and is dependent on allocations from the Office of the Deputy Vice-Chancellor (Research). The management of the institute would be easier if a longer term approach to financial planning were to be implemented within CSU. This would permit staff recruitment and project planning over a longer period than 12 months and lead to a greater level of certainty within the membership.

APPENDIX 2:

ILWS Membership Criteria:

There are several categories of membership of ILWS. The following discussion relates to staff of Charles Sturt University.

There are two categories of ILWS members: "Full Members" and "Early Career or Developing Members". Membership eligibility falls into two general areas – research activity and participation in and commitment to ILWS.

1. RESEARCH ACTIVITY REQUIREMENTS:

Full Members of ILWS:

The requirement for full membership relates to publications in the first instance - full members for 2009 should have at least **four** (single or co-authored) research papers over the **preceding three years**. Note that creative works points are also eligible on an equal basis with publications.

Special Cases:

CSU researchers who don't meet this requirement would be encouraged to make a special case for full membership. Acceptable reasons could include:

- Staff without the required publications over the three year period but who have **external** research income in the most recent reporting year or the current year relating to a research project;
- New staff members with a demonstrated publication record at a previous place of employment (provide paper citations);
- Staff who have successfully applied for an ILWS Research Centre Fellowship with a view to rapidly increasing their research output;
- Staff who have been participating in major research based activities which do not lead to reportable (points-based) publications or income such as major Government advisory roles and in some cases major consultancies.

Early Career or Developing Members of ILWS:

The requirements for early career membership will relate to the time since completion of the researcher's PhD, Professional Doctorate or Masters by Research. Staff who are within three years since submission will qualify for membership of ILWS and must achieve the above full membership criteria within the next three years. Staff who do not yet have a postgraduate qualification but are within three years of commencing their appointment with CSU in a teaching and research or research only position would also fall within this category.

A developing researcher would be admitted on the basis of the agreement of the Director. Such a member may have reasons why their publication and project record has been below the required level (such as periods of illness, maternity leave etc) but can demonstrate a capacity to move rapidly into a research active role.

2. ADDITIONAL PARTICIPATION REQUIREMENTS FOR MEMBERS:

In addition to the above criteria for membership it will be expected that ILWS full members and early career members actively participate in the community and activities of ILWS.

Required:

- Participation (over time) in one or more ILWS Strategic Research Area (SRA): Participation is defined as:
 - attendance at a majority of the SRA meetings and;
 - active participation in research proposal initiation, development and submission and;
 - other activities as defined by the SRA (note guidelines for SRAs are under development).

Note that this requirement will be implemented gradually, as the SRAs are developed over the next few years. In the interim staff will continue to be aligned with an ILWS Discipline Group and will be required to participate in Discipline activities. (Remember we don't want phantom members.)

- Participation in institute meetings, particularly the annual Research Forum of all ILWS members and;
- Responsiveness to ILWS information and engagement requests where required by University and Institute activities such as annual reporting, media liaison, maintenance of the ILWS website, engagement with visiting researchers, participation in community outreach events and other activities.

Other activities as appropriate:

- Organisation of major events or activities, such as national panels, conferences, reviews or;
- Participation in and support for management activities within ILWS or;
- Mentoring of less experienced researchers and supervision of postgraduate students in disciplines related to ILWS or;
- Other agreed contributions.