Australian Government

CRC for Coastal Zone
Estuary & Waterway Management

Sustainable Land Management and Wetlands Conservation on Freehold and Leasehold Land in the Great Barrier Reef Catchment

VOLUME 2

Review of Incentives Encouraging Improved Land Management in the GBR Catchment: Criteria for Effective Incentives

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1 Introduction

This report reviews existing incentives available in Queensland to encourage sustainable land management practices and biodiversity conservation on private land. It concentrates on incentives that encourage or compel, through the application of a range of policy instruments, improved land management practices that impact on the condition of the environment, specifically referring to incentives designed to improve water quality entering the Great Barrier Reef (GBR) lagoon. It reviews regulations that incorporate penalties for failure to meet a basic duty of care, a range of voluntary, facilitative initiatives as well as programs and incentives that offer financial inducements to reward the implementation of improved land use management. Where appropriate, incentive programs implemented elsewhere in Australia or overseas are drawn on to demonstrate alternative approaches.

Government intervention in the market allocation of resources is generally regarded as justified when the market fails in some way. Markets frequently fail in efficiently allocating resources to the production of public goods; markets can be distorted by externalities that are unaccounted for in market transactions; and may not efficiently allocate resources due to incomplete or asymmetric information. Although unsuccessful market allocation provides a justification for government intervention, there is no guarantee that intervention will bring about an environmental improvement or an economically efficient outcome. In short, although the objective of intervention may be to bring about a more efficient allocation of resources, the outcome might have the effect of moving the economy even further away from this goal, particularly where there are unintended consequences arising from intervention.

The objective of this review is to identify the criteria for the creation of new incentives or for the adjustment of existing incentives that would improve their efficacy. Although wetland conservation and restoration has been identified as a primary target for this study, land-use practices including "grazing practices in drier catchments and overgrazing in general, urban development, agricultural production, water use practices, extensive vegetation clearing, wetland drainage on coastal plains, and development on acid sulphate soils" have all been identified in the Reef Water Quality Protection Plan (Australian Government and Queensland Government 2003) as contributing towards the nutrient and sediment loads entering the waterways. For the purpose of this report, effective incentives are defined as having a relatively high take-up, minimal unintended outcomes and that they effectively meet their stated objectives.

Interviews were undertaken with government agencies and industry groups to assist with the identification of criteria for the creation of successful incentive programs. This information has been particularly informative, providing a range of perspectives on incentive programs that are not available from published sources. Attachment 1 provides a summary account of the interviews conducted with industry representatives.

1.1 Policy design

Ideally, government policy should be designed to bring about change that results in a collective gain for the greater community (Bromley 1997: 50), that is, the provision or conservation of public goods. To achieve this aim, policy makers attempting to modify behaviour can use three basic mechanisms: they can design policy that facilitates, induces or compels change (Bromley

1997: 50–51) or they can design policy that is a combination of these mechanisms.

Although this report categorises incentives according to whether they induce, facilitate or compel change, it is important at the outset to establish that apart from regulations that set and enforce environmental standards, the incentives reviewed demonstrated elements of all three mechanisms. For example, although an incentive program might be directed towards inducing land managers to change their management practices by providing a financial incentive, there are often associated elements of compulsion that set the minimum standard that must be achieved as well as elements of facilitation that inform land managers about the merits of change.

1.1.1 Regulations to compel compliance

Legislation regulates for management behaviour that results in the minimum level of environmental protection (i.e., the level does not necessarily erode the resource in question, or improve its condition).

Regulations can be effective in penalising gross breaches of an environmental duty of care, particularly against those resource users who are unresponsive to facilitative or inducement mechanisms. However, regulations rapidly lose popular and political support when used to coerce natural resource users into adopting longer term sustainable management practices due to the additional costs that they impose, the perception that they erode existing property rights and that those bearing the costs of regulatory compliance rarely have exclusive rights to benefits arising from any improvement in the condition of the environment.

Regulation is most effective where the polluter is known and the pollution is easily measured (i.e., point source emitters such as power and sewage treatment plants). Where the source of pollution is diffuse (e.g., agricultural land), regulation can be prohibitively expensive to enforce and is, therefore, less effective. Regulations are relatively inflexible, in that they are difficult to revise as new information comes available. However, with regard to ensuring environmental protection and guaranteeing sustainable outcomes, strong and effective regulation incorporating strict monitoring and enforcement carried out without fear or favour is relatively more able to guarantee compliance, when compared to other non-regulatory mechanisms.

1.1.2 Facilitative or voluntary mechanisms

Instruments that facilitate change, relying on moral suasion through community engagement can encourage natural resource users to meet and exceed an environmental duty of care. Facilitative mechanisms, also known as motivational or persuasive measures, involve policy designed to increase the supply of, or create a flow of new and useful information (Bromley 1997: 51). That is, they are designed to educate and expand an individual's knowledge base.

Compliance with facilitative policy is entirely voluntary, however, if used effectively, facilitative mechanisms have the potential to engage the community in resource management by marketing the full range of incentives and subsequently improve the uptake of programs. Specifically, they provide information about what exists: regulations, financial incentives and informational tools; and why they exist: essentially to ensure and facilitate sustainable use of natural resources.

Due to their voluntary nature, facilitative mechanisms are likely to be most successful where it can be demonstrated that the desired behaviour modification will directly or indirectly result in increased returns to the targeted industry or individual (PC 2003: 189); in short, in situations

where public interest and private benefits are closely aligned. Where self-interest is lacking, the success of facilitative mechanisms used in isolation is likely to be limited (Gunningham and Sinclair 2004).

A key problem with facilitative mechanisms is that it can be difficult to target a specific issue and monitoring of outcomes incurs high administrative costs. Gunningham and Young (1997: 263) recommend that mechanisms supporting and harnessing altruism and respect for conservation play a supporting role in the mix of policies but should not be used in isolation.

1.1.3 Incentives to induce change

The limitations of regulatory and facilitative mechanisms reinforce the need for the use of incentives that induce change. Mechanisms that induce change are designed to encourage the implementation of sustainable management practices that subsequently contribute to an improvement in the condition of the environment.

Policies that seek to induce change are effective because they involve provision of a financial incentive to encourage compliance. This type of policy is needed to "…deal with the fact that farmers see no particular benefit from undertaking these new behaviours." (Bromley 1997)
Policies designed to induce change include fiscal instruments such as tax incentives, fees, subsidies, grants and management payments as well as offset schemes. An alternative inducement mechanism adopts a property rights approach to establish markets for pollution or resource rights. This approach is popular with government and industry alike because a well-designed market mechanism reduces the need for government intervention while leaving the industry free to determine the path of least cost via the market (Gunningham et al. 1998: 71–72). Instruments inducing change need to be underpinned by legislation and to be wholly effective they must be appropriately marketed towards resource users.

1.1.4 Policies and incentives that could result in unintended outcomes or consequences

Humphreys et al. (2003) estimated that of the US$600 billion paid annually in global farm subsidies, over 80% have perverse or unintended outcomes that damage the environment and the economies of the countries paying the subsidies, predominately the US, Japan and the European Union, as well as the economies of other countries. Unintended outcomes are often the result of poor public governance meaning that subsidies are rarely evaluated to assess their social, economic and environmental costs and benefits (Humphreys et al. 2003).

In Queensland, 22 incentives and four policies have been identified as having the potential to result in outcomes that could adversely affect the waters entering the GBR lagoon (pers. comm. NR&M). Subsidies and grants, focused on agricultural production, were identified as making a substantial contribution to this list. It has been suggested that more collaborative planning, risk assessment and monitoring of policies and incentives would go someway towards addressing unintended outcomes.

1.2 Report outline

The review of incentivesis categorised according to whether they induce, compel or facilitate behaviour change and is provided in the next three sections of this report (2–4). Each section provides an initial summary list of incentives followed by a more thorough description and in

some cases a critique of relevant incentive programs. Where an incentive has been identified as having an unintended outcome or consequence, this is discussed briefly.

Section 5, considers a number of criteria identified as important ingredients for the effectiveness of incentives.

2. Incentives that induce change

2.1 Direct devolved grants and subsidies

2.1.1 Natural Heritage Trust II

The Natural Heritage Trust was set up by the Australian Government in 1997 to help restore and conserve Australia's environment and natural resources. There has been a fundamental shift in the Trust towards a more targeted approach to environmental and natural resource management (NRM) in Australia. The Trust will deliver important resource condition outcomes including improved water quality, less erosion, improved estuarine health, improved vegetation management and improved soil condition.

Funding is distributed under the following five classifications:

- *RiverCare*. To improve water quality and environmental condition in our river systems and wetlands; http://www.nht.gov.au/extension/framework/rivercare.html#rivercare
- *Landcare*. To reverse land degradation and promote sustainable agriculture http://www.nht.gov.au/extension/framework/landcare.html;
- *Bushcare*. To conserve and restore habitat for Australia's unique native flora and fauna that underpin the health of our landscapes http://www.nht.gov.au/extension/framework/bushcare.html;
- *Coastcare*. To protect our coastal catchments, ecosystems and the marine environment http://www.nht.gov.au/extension/framework/coastcare.html; and
- *Envirofund*. The Australian government's Envirofund is the local action component of the Australian Government's $2.7 billion Natural Heritage Trust. It helps communities undertake local projects aimed at conserving biodiversity and promoting sustainable resource use. The Australian Government Envirofund enables community groups and individuals to apply for grants of up to $30,000 to carry out on-ground and other actions to target local problems http://www.nht.gov.au/envirofund/index.html

Regional bodies
The regional bodies are responsible for the creation of NRM strategies or plans that incorporate the aspirations of all stakeholders and they are designed to better coordinate conservation actions at the regional and local level. Provision of funding for the regional bodies under NHT2 and NAPSWQ is dependent on State and Commonwealth approval of NRM plans.

For a full list of Regional/Catchment Management Boards click on the following link:
http://www.nrm.qld.gov.au/regional

The NRM regional bodies are currently in the process of creating their regional NRM plans. Monthly updates can be found on the Queensland NR&M website and on individual websites:

http://www.nrm.qld.gov.au/salinity/updates.html.

Incentive programs administered or jointly funded by NRM groups might include the following: rate rebates, grants, expert advice, awards, mitigation schemes, the development of markets for tradeable rights in water, carbon, biodiversity and salinity and investigation into market potential for accredited products (e.g., EMS, Eco-friendly, Reef-friendly, etc.).
Possible issues:

Consultation with industry and government has raised a number of issues with regards to the potential future effectiveness of the NRM groups:

- Industry representatives specifically have indicated that there is strong potential for the NRM groups to be viewed negatively by farmers due to the perceived notion that they represent another arm of government. However, the NRM groups in Queensland have no statutory authority, which is in contrast to the equivalent regional groups in Victoria. Rather than seeing this as a disadvantage the NRM groups consider this a potential strength as it provides an indication to land managers that they are not an agent of the government (pers. comm., FBA);

- Industry groups regard themselves as being aware of the NRM issues in the GBR catchment. There is a strong feeling amongst these groups that they are best positioned to use NHT funding to assist landholders to achieve conservation outcomes via funding incentive programs, extension officers, training days and management packages. At this stage, some regional groups are working with industry organisations to implement their priority actions;
- Landholders appear to support the NRM groups because they perceive them as being more flexible and discretionary in terms of delivering incentives compared to government agencies (See Volume 3, for a community perspective). However, it has also been suggested that some of the NRM groups have largely ignored local landholders during the planning process, particularly for the creation of vegetation management plans and that this has effectively put many leading producers off side (pers. comm., AgForce Qld). This reinforces the need for NRM groups to effectively embrace, through consultation, all industry and community stakeholders; and

- Funding for NRM groups is sourced from NHT programs. The administration costs of these bodies are a substantial drain on available funding, leaving less for on-ground works. It has been suggested that NRM groups are allocating excessive amounts of time and money towards creating plans, and too little is actually finding its way into the community (refer to Volume 3 for further discussion).

2.1.2 FarmBis

FarmBis is a joint State and Commonwealth initiative under the Advancing Australian Agriculture scheme administered and funded by DAFF. It is a training program that "provides subsidies to primary producers, spouses, farm family members, partners and professional farm managers to improve their business and natural resource management skills to meet the challenges and opportunities ahead."[1]

[1] http://www.affa.gov.au/content/output.cfm?ObjectID=D2C48F86-BA1A-11A1-A2200060B0A00228

Training courses cover management topics in human relations, finance, business, marketing, production and natural resources and are offered by external training organisations (operating to make a profit). The current round of FarmBis funding expires at the end of June 2004 (funding in Queensland was exhausted in December 2003). The program has been extended for another 4 years with an allocation of $67 million (to be matched by the states) provided by the Commonwealth.

See the following link for a comprehensive list of eligible programs:
http://www.qraa.qld.gov.au/farmbis/naturalresourcemanagement.jsp?parentpage=47

FarmBis has been a popular program throughout Australia. Over 21,000 participants were registered in Queensland (Jul 2001–Dec 2003) while the cumulative figure Australia wide is in excess of 100,000. In Queensland in 2002–03, there were over 10,000 registered FarmBis participants. This represents an 85% increase on 2001–02 figures. Courses in general business management were the most popular accounting for approximately one-third of participants,[2] while courses devoted to NRM attracted 12%, or just over 1200 participants. Statistics for major industries in the GBR catchments are reproduced below in Table 1.0 (however, the geographical location of participants cannot be confirmed). In total, the beef, fruit and sugar industries accounted for 5703 FarmBis participants.

Table 1 Participation in FarmBis activities in Queensland, 2002–03 (GBRC relevant only)

Industry	HR Mgt	Fin Mgt	Business Mgt	Marketing	Production Mgt	NRM
Beef	689	637	888	116	668	297
Sheep Beef	101	142	168	35	144	53
Grain–Sheep–Beef	80	79	101	15	72	61
Vegetable	99	66	219	31	36	78
Sugar	221	264	626	2	60	175
Fruit	268	96	424	61	73	138
Total	1458	1284	2426	260	1053	802

Source: QRAA Annual Report 2002–03: 22

Greening Australia Victoria currently runs a one-week, highly comprehensive wetland ecology and management course that is eligible for FarmBis funding. A similar, abbreviated course is offered in Queensland. However, the main participants appear to be from industry (i.e., construction and housing, power plants, water treatment, local councils etc) rather than primary producers (pers. comm., Greening Australia).

Farmers appear to be unaware of the benefits of wetland conservation and therefore disinterested in opportunities for improving their management of wetlands[3]. An effective awareness campaign that highlights the benefits of on-farm wetlands could increase interest in relevant courses that would subsequently inform management, construction and rehabilitation techniques to land managers.

[2] Queensland DPI&F suggested that the introduction of the GST in 2000 might have been a major driver of enrolment levels in business management courses.
[3] This is supported by the findings of the attitudinal survey. See Volume 3: 14, 22, 24, 33.

Key Issues
Queensland DPI&F and Greening Australia have both suggested that the marketing of the FarmBis program needs to be improved. Both organisations indicated that FarmBis could be more effective as an information delivery mechanism if the full breadth of eligible subject areas were marketed in a manner that emphasized that an understanding across a range of programs is relevant to farm managers running a viable and profitable farm business. Further, the Drought Review Panel (2004: 52) suggested that government "may wish to…ensure that the program's focus includes business, production, risk and natural resource management components, superannuation, climate forecasting tools and drought recovery."

Marketing for specific FarmBis modules is primarily undertaken by the individual training organisations, however, these organisation must incorporate their costs (including marketing costs) into the price of the module making it more expensive and, therefore, less desirable to primary producers. Arguably, it would be more cost effective for either the Commonwealth Government (through DAFF) or state facilitators of the program (government or non-government organizations and industry groups) to market FarmBis in the context outlined above, rather than putting the onus on the individual training organizations.

Potential for wetland promotion
The FarmBis program has the potential to be an important vehicle to promote wetland education and preservation. Subsidised training courses emphasising the economic value of wetland ecosystems to agricultural production (and the possible future value with regard to markets for biodiversity), on-farm wetland management and integration into the farming business, for example, may prove effective.

2.1.3 Rural Water Use Efficiency Initiative (RWUEI)

The RWUEI, administered by NRM&W, was announced by the Queensland Government in 1999 and has recently entered its second stage. The aim of the initiative is to improve water use efficiency on farms in the sugar, cotton, grains, dairy, lucerne, and horticulture industries.

The first phase of the initiative (1999–2003) involved a joint government and industry extension program,[4] a financial incentives scheme (FIS) as well as a research and development program[5] and the compilation of a database of irrigation fact sheets.[6] Total funds earmarked for the first phase of the project were $41 million, with $23 million allocated to the adoption programs and $10.5 million to the FIS.[7]

Outcomes from the first four years of the RWUEI (1999–2003):

[4] The initiative was split into four program areas. The horticulture adoption program (known as 'Water for Profit'), the Dairy and Lucerne adoption program (known as 'Irrigation for Profit'), the sugar industry adoption program and the Cotton and Grains adoption program.
[5] http://www.nrw.qld.gov.au/rwue/
http://www.nrw.qld.gov.au/rwue/factsheets.html
[7] At 3 March 2003, the remaining funds were unallocated. These funds might have been rolled over into phase two of the RWUEI.

Cotton and Grains ((http://www.nrm.qld.gov.au/rwue/cotton.html):)

- More than 78% of potential growers were involved with the program;
- Water Use Efficiencies (WUE) in the cotton and grains industries increased by 11.3%;
- Irrigation application efficiency increased from around 70% to just over 80% during the life of the program; and
- Water savings of 67,855 ML provides the capacity for the production of 113,996 extra bales of cotton with a value of $57 million (at $500 bale) adding approximately $855 million to Queensland's economy.

Dairy and Lucerne (http://www.nrw.qld.gov.au/rwue/factsheets.htm)

- Water use efficiency in the dairy industry increased 14%;
- Water use efficiency in the lucerne industry increased 9%;
- 45% of dairy farmers have participated in workshops;
- Introducing the Dairying Better and Better Decision Support CD;and
- 72% of farmers have participated in, or are aware of the Irrigation for Profit program.

Horticulture (http://www.nrw.qld.gov.au/rwue/factsheets.htm)

- Over 90% of growers have an awareness of the program;
- Almost 45% of growers have participated in changed irrigation management practices and improvements;
- 1400 growers received funding under the Financial Incentives Scheme;
- More than $162 million of gains in water savings and productivity has been generated; and
- $23 in efficiency gains has been returned for every $1 invested in the program by the State government.

Sugar (http://www.nrm.qld.gov.au/rwue/sugar.html):

- Around 3,100 growers (93% of possible growers) were involved in the program;
- An estimated 210,000 ML was saved due to the Sugar WUE program;
- An extra $135 million in production was generated by the sugar industry;
- 63% of cane growers received funding under the Financial Incentives Scheme; and
- For every dollar invested by the state, cane growers have invested around $3.30.

2.1.3.1 RWUEI: A successful initiative

The RWUEI has proven to be a highly popular policy initiative that has managed to engage almost its entire target audience. Additionally, the RWUEI has effected significant change in the way people value water as noted by Coutts (2003: 38):

> Perhaps more important than the actual physical changes made to date, are the changes in people's 'values' in relation to water use efficiency. In some ways, immediate equipment and practice change are the easy gains. Sustainable change – or continuous improvement in water efficiency – will depend more on irrigators' understanding and motivation about the issue.

A large part of the popular success of the RWUEI can be attributed to the way in which it combined and integrated the expertise and administrative capabilities of various government departments (e.g., DPI and DNRM&W) and key industry organisations. Integration was clearly appreciated as a key ingredient influencing the success of the RWUEI as illustrated by various comments from industry milestone reports:

Sugar industry:

> The sugar WUE program has been a great success as a pioneering partnership program between government and industry. The capacity of government and industry to truly embrace partnerships will largely determine the success of our natural resource management achievements in the next decade. (Milestone Report 5 for the sugar industry 2003: 1)

Fruit and vegetable industry:

> The success of the partnership approach between Queensland Fruit & Vegetable Growers and the Department of Natural Resources and Water has largely been due to…A grower interactive approach through the industry representative body, Queensland Fruit & Vegetable Growers Ltd, which has given the program flexibility, credibility and a sense of ownership by grower [and] linkages to other government agencies such as the DPI, EPA and private sector interests. (QFVG 2003: 7)

Dairy and Lucerne industries:

> The program has benefited greatly by all staff and all organizations involvement addressing the issues at hand in a positive and collaborative manner. If this model is developed, any continuing program will be successful. Programs such as this need continuation and are more of a ten-year program rather than a three-year plan [sic]. (Martin 2003: 16)

The RWUEI successfully used a range of extension mechanisms designed to meet the needs and desires of the targeted industries as identified during preliminary stakeholder consultation. Extension included the following broad actions (outlined in Okello-Okanya 2004: 10):

- Demonstration sites;
- On-farm trials and field days;
- Workshops, grower meetings and discussion groups;
- Development of crop models and plans;
- Creation of newsletters, fliers, information sheets and modules;
- On-farm water storage consultancy;
- Training in farm planning;
- Self evaluation workbooks;
- Provision of test equipment;
- Farm tours; and
- Award programs for outstanding achievers.

The extension program and the dedication of extension officers was clearly appreciated by program participants:

> A significant feature of the RWUEI project has been the generation of development extension officers, whose working relationship with growers has proven so successful that they have become recognized as local ‘water use experts’. Many of these staff have remained with the program for all of the 4 years and worked long days to collect data from field trials and report back to growers. Growers developed confidence in their skills and knowledge and have won growers’ admiration for their efforts and the one-to-one service to wherever possible. (Okello-Okanya 2004: 10).

Financial assistance in the form of infrastructure subsidies were available under stage one for irrigators to increase water use efficiencies within the following broad categories: Consultancy & training, Irrigation systems improvement, scheduling equipment, water meters, soil/water monitoring equipment, weather stations and recycling systems (CANEGROWERS 2003: 13; QFVG 2003: 16; Martin 2003: 24; Wigginton 2003: 126). The level of the subsidy varied across the different industry adoption programs and according to the spending category. For example, subsidies for general expenditure within the dairy and lucerne adoption program were worth 75% of total expenditure to a maximum of $3000. The subsidy for entire system improvements or replacement was generally available to a maximum of between $10,000 and $20,000. The FIS successfully fulfilled its objectives: between January 2001 and June 2003, 4618 irrigators across the four adoption programs invested $31.42 million on top of the total government contribution to the FIS of $10.5 million (Coutts 2003: 19).

Some shortcomings and criticisms

Integration of the Commercial sector

The RWUEI was well integrated at the government and industry level. However, NRM&W officers commented that integration of the commercial sector into the delivery of extension was lacking (pers. comm.). This is supported by Coutts (2003: 43):

> The focus on the program was on working directly with irrigators to bring about changes. This provided limitations to industry capacity to support on-going changes when supporting services were based in temporary extension staff. The Cotton and Grains Report argued that the irrigation industry needed irrigation specific consultants to provide specific services. *If the project had focused for four years on equipping such consultants with the tools to perform fee for service consultancies, at least some form of work within the industry would continue…even though it may not be as widespread.* Certainly there was a case for a stronger focus on developing capacity of consultants and equipment suppliers as an Initiative outcome… Encouragement for temporary staff trained through the Initiative to move into private irrigation consultancy could have also been an initiative outcome.

Environmental outcomes

Quantified environmental outcomes attributable to the RWUEI and the FIS in particular, were lacking:

> More efficient use of on-farm water was also expected to yield direct environmental benefits in terms of…*reduced run off and drainage of pesticides, salts and nutrients into rivers, aquifers and streams.* This benefit was raised by the reports and through the trials although there was little direct measuring or estimating of the degree of these benefits. (Coutts 2003: 34)

Considering that the stated aim of the RWUEI is "to improve the use and management of available irrigation water, thereby improving the competitiveness, profitability, and environmental sustainability of Queensland's rural industries", the fact that there are very few quantifiable environmental outcomes means that the magnitude of the programs contribution towards improving industry environmental sustainability (e.g., improving off-farm water quality) remains unknown and, therefore, success is difficult to assess.

Unintended outcomes

To date, water allocations have not been reduced in line with water savings resulting from on-farm efficiency gains in irrigation regions. This might be problematic if as a result, croplands under irrigation expand, leading to a situation in which waterways become over allocated at the expense of environmental flows (Young & McColl 2003: 62). Where irrigation

does expand and this expansion occurs into remnant vegetation, loss of biodiversity might also be problematic.

With regards to the FIS, there were a number of potentially perverse outcomes. First, the payment of subsidies and their effect on industry competitiveness: Arguably, paying irrigators to improve efficiency has the potential to decrease competitiveness in the long run by distorting risk: Subsidising expenditure on capital infrastructure now, might encourage some producers to rundown their capital until, at some point in the future, they again become uncompetitive signalling the need for further government assistance. Where subsidies are deemed necessary, tying incentive payments for infrastructure investment to the provision of environmental benefits would be more effective and where outdated infrastructure is actually causing environmental damage or is failing to meet a minimum standard the threat of regulation at a later date would ensure long term benefit and achieve value for money attached to public funds.

Second, Coutts (2003: 30) estimates that investment outside the FIS, beyond the influence of the RWUEI was approximately $27.6 million compared with $36.8 million under the RWUEI. (The latter figure includes the $31.42 million jointly contributed directly by irrigators to complement FIS subsidies plus an additional $5.38 million from participants who were unable to obtain FIS funding.) Given this figure, that suggests that there is industry capacity to fund investment without government assistance, the need for an FIS is questionable. The $10.5 million might have been more effectively spent extending the duration of the adoption programs and expanding extension services. This is particularly pertinent given that growers might not have been well advised about how to best utilise FIS funding either in terms of improving profitability or reducing off-farm impacts, rather, "growers received broad advice on the types of equipment available and the benefits of undertaking specific tasks but did not often receive advice tailoring solutions to their specific situations" (Wigginton & Goyne 2003: 127). If the $10.5 million allocated to the FIS was spent providing detailed information to irrigators regarding how to invest their funds to achieve maximum efficiency outcomes, total private investment in the short term might have been reduced, but compensated to some extent by increased cost effectiveness. [The horticulture milestone report (2003: 16) makes the point that without the FIS "a substantial number of growers…would not have been able to make any changes."] Funding to enable the provision of accurate information regarding where and how to invest in water efficiency might be a more important outcome for facilitating long-term industry profitability than subsidising potentially ill-informed investment in the short term.

2.1.4 Water for Growth

The Water for Growth (WG) program was an initiative designed to improve water use efficiency in Victoria (administered by Victorian DPI, funding exhausted in 2003). Conceptually, the WG program is different to the RWUEI in Queensland. The WG program targets all farmers rather than just irrigators. The emphasis is on cost effectiveness and environmental benefits over private benefits, which is clearly enunciated throughout the application documentation across all three programs:

> Grants will only be considered where significant public benefits can be demonstrated to exceed the private benefits for new infrastructure. This program should not be seen as an alternative to renewal of aging irrigation infrastructure or on-going asset refurbishment and replacement, which is the normal responsibility of water authorities. (NRE Sustainable Irrigation Development Team 2003: 8)

Further, there is clear emphasis on regional and catchment planning including concurrence with the NAPSWQ: "Generally all projects must provide catchment and sub catchment scale

benefits linked to action plan targets" (NRE Sustainable Irrigation Development Team 2003: 6).

There are opportunities for farmers to receive funding for private infrastructure enhancement and improved management (as per the FIS component of the RWUEI). However, funding is generally bundled as part of a local or regional initiative where the overarching public benefits of such actions have been clearly outlined. For example, a project planned for the Goulburn–Broken, North Central and Mallee regions:

> This project will examine market mechanisms as a policy instrument of the CMAs [Catchment Management Authorities] including revision and modification of the Bush Tender process to link with WUE. The project will also provide a generic process for implementation of policy instruments by the CMAs and a draft package of policy instruments aimed at increasing implementation of evaporation basins and practices that increase WUE. A benefit scoring system for WUE values will be obtained and a defined monitoring process established for the case studies. (Department of Sustainability and Environment 2003).

Another example from the same region:

> Stream flow management plans address low flow environmental concerns but increased environmental flows are likely to impact on summer flows for historical consumptive use for irrigation purposes. This study will investigate opportunities for winter fill dam storages, where and how to be built and identify cost share arrangements and level of security for existing irrigators. In addition the project will consider ground water access options. (Department of Sustainability and Environment 2003)

As part of the WG program, the Water Act 1989 was amended to extend licensing arrangements to cover all irrigation and commercial water-use in all Victorian catchments. This initiative was designed to bring off-waterway dams under the same licensing and regulatory environment as other irrigation and commercial infrastructure. The new amendment signalled a significant change to licensing in the state and it was deemed appropriate to allocate compensation on a 'first come, first served' basis until 14,500 ML had been purchased. Farmers were also given one year to comply with the new laws prior to full implementation.

- http://www.dse.vic.gov.au/dse/nrenlwm.nsf/FID/F3E141B20B9A9773CA256BB20013A69D?OpenDocument

There were three main programs and these are outlined below (NRE Sustainable Irrigation Development Team 2003: 4):

> *Regional Water Resource Planning Program*
> This program will provide safeguards for water dependent ecosystems by supporting projects that assist in improving the management and allocation of catchment water such as streamflow management plans. This category of funding also applies to other regional resource management planning such as ground water management, investigations into re-cycled water schemes and water policy research.
>
> *Farm Irrigation Efficiency and Development Program*
> This program will support projects that will improve on-farm water use efficiency and sustainable use of water resources, including groundwater, and provide significant environmental and social benefits.
>
> *Water Infrastructure Efficiency Program*
> Infrastructure support will be provided for detailed regional feasibility studies and to facilitate new and existing sustainable growth projects, including piping and water efficiency infrastructure. Grants will only be considered where significant public benefits can be demonstrated to exceed the

benefits to individuals for new infrastructure.

A summary list of Successful WG third-round project bids are available on the DSE website: http://www.dse.vic.gov.au/dse/nrenlwm.nsf/childdocs/.

2.1.5 Conservation auctions

[The following information regarding conservation auctions and the BushTender program was provided by Emma Comerford from Queensland NRM&3E and appears in Comerford (2004).]

Auctions of conservation contracts are a relatively new method of providing incentives for landholders to improve NRM on their properties. This process involves asking landholders to submit bids nominating a management plan for their property and a price for undertaking the plan. Assistance is provided for creating a management plan. An index is constructed to evaluate the current and future (after management actions are undertaken) ecological significance of a property. This allows properties to be ranked according to their ecological importance. Winning bids are chosen on a best ecological value for money basis. Auctions may be based on desirable environmental outcomes such as conservation of remnant vegetation, improved biodiversity or water quality. An index could conceivably be targeted at more than one outcome.

The greatest advantage of an auction process is that it may be more cost efficient than a flat fee stewardship payment, as the level of funding needed by the landholder is revealed in the tendering process. Competition helps ensure the heterogeneous opportunity costs of landholders are reflected in their bids. Like the stewardship payment, auctions are very flexible. If the process is well explained and landholders supported in the bidding process, an auction should be popular. However, designing a multi-benefit auction could become complicated, especially if the scientific knowledge underpinning the environmental outcome is uncertain, or if the environmental improvement is difficult to determine.

There are some circumstances that favour the use of auctions of conservation contracts. Preferably, there should be a number of sellers to foster competition and thus cost-effectiveness. However, it should be noted that auctions over a very large area of land are likely to be too complex to manage, and so a balance between competition and practicality must be achieved. If this seems as though it may be a problem, key sub-regions and properties could be targeted. Auctions may be less suited to problems that require a coordinated response, although it may be possible to favour bids that take neighbour actions into account. Unlike stewardship payments, auctions suit areas where the opportunity costs of undertaking the management actions differ between landholders.

There are four conservation auction pilots being conducted under the National Action Plan for Salinity and Water Quality's (NAPSWQ) National Market Based Instruments Program. These pilots are attempting to test different concepts of auctions such as encouraging complementary bids between neighbours and multiple benefit auctions. These pilot programs are expected to be completed in 2005. BushTender and Carbon Tender are two of these programs.

2.1.5.1 BushTender

The first trials of auctions for conservation contracts in Australia (known as BushTender) were undertaken in Victoria in 2001/02 by the then Department of Natural Resources and Environment (DNRE) (Stoneham et al. 2003). [The Department was disbanded in 2002 and split into two new departments: the Department of Primary Industries (www.dpi.vic.gov.au) and

the Department of Sustainability and the Environment (www.dse.vic.gov.au).] Landholders were asked to submit a sealed bid for providing services that improved the quality or extent of native vegetation on their land. The bids were chosen based on value for money and environmental priority. Some 3,200 hectares of vegetation was placed under 3-year agreements for $400,000. Administration costs were not high due to the streamlined application process and the high conversion rate between expressions of interest (which required a site visit) and actual bids. A survey of participants found high levels of satisfaction with the process. It was estimated that a fixed price scheme might have cost seven times the amount as the discretionary price scheme used in BushTender (Stoneham et al. 2003: 495). Another trial followed in Gippsland in 2002/03, where a key difference was that landholders were given a choice between a 3- or 6-year contract. Interestingly, only 2.5% of landholders chose the shorter contract (Crowe 2003).

Carbon Tender, a $2.3 million program that pays landholders to create carbon sinks on their property, is similar to the BushTender scheme. Landholders are able to place bids for funding to create carbon sinks using trees and shrubs.

- http://www.greenhouse.vic.gov.au/carbontender.htm

2.1.6 Environmental Management Systems Incentive Program (EMS)

The EMS incentive program, administered by DAFF, was designed to encourage primary producers to design, implement and carry out an EMS for their farm business. A maximum $3000 subsidy (covering up to 50% of expenditure) is available to cover the following:

- obtain professional advice required to develop an EMS, such as salinity;
- mapping, biodiversity assessments, water quality assessments, etc.;
- establish trees and shrubs for biodiversity or erosion control;
- fence to exclude stock or vermin, establish or protect native vegetation and wildlife habitat, protect remnant vegetation, or to separate land classes; and
- eradicate/exterminate weeds or pests that are detrimental to the land.

To be eligible for incentive payments, farm income must not exceed $45,000 (reduced payments apply to income levels between $40,000 and $45,000).

- http://www.affa.gov.au/content/output.cfm?ObjectID=E829A081-A4A1-46E9-B648DDA452EA1ED4

DAFF is also funding an $8.5 million pilot scheme to assess the ability of EMS to be used as a whole farm planning system integrating fertiliser, water, pest management, financial and cash flow issues as well as natural resource and biodiversity management. The pilot program will investigate the potential market for goods produced using an accredited EMS (i.e., environmentally friendly goods). Pilot projects are due for completion in 2006.

- http://www.affa.gov.au/content/output.cfm?ObjectID=595F2527-986C-4259-96B1B593E7977B15

Issues

- Consultation with the Queensland Fruit and Vegetable Growers organisation (supported by the Grains Research and Development Council, see GRDC 2003: 1) indicated that the current means testing and incentive payment associated with the Commonwealth EMS incentive program was inappropriate, insufficient and unpopular. The threshold income level has been raised by $10,000 (from the original $35,000); however; the most successful producers (i.e., those earning in excess of $45,000 pa) remain ineligible for funding
- The government has allocated considerable funds toward the EMS pilot scheme prior to the completion of the various studies that make up the pilot program. If the

associated pilot programs prove to be successful, demonstrating the financial benefits of incorporating an EMS into farm planning, then arguably, farmers will adopt EMS regardless of associated incentive packages

- The objectives of the EMS incentive program are too broad. With reference to the activities eligible for funding, only one specifically deals with the creation of an EMS. Hiring a consultant to create an EMS for a specific property is specifically forbidden. Presumably this was done to preclude an ingenuous landowner from simply creating an EMS to access funding. However, it also precludes interested and genuine landholders from accessing expert advice that appears otherwise, to be unavailable
- Is Centrelink the appropriate agency for allocating funding? To receive funding, applicants must satisfy the following criterion: there must be a plan in place for the primary production enterprise that documents essential EMS elements and is consistent with existing Catchment/Regional plans. It is not necessary to have a certified EMS in place
- How will the local Centrelink officer determine the authenticity of a supplied EMS? Surely this requires an in-depth understanding of the property in question and the relevant local and regional landcare issues? At a minimum, it requires a working knowledge of what an EMS is, and how it is intended to operate, which is likely to be beyond the capacity of a Centrelink officer
- Making $3000 available for lower income landholders, when the funding is clearly not restricted to the creation of a viable EMS, appears to amount to a 'landcare' subsidy in disguise. Further, funding for most of the eligible activities under the EMS scheme are already covered by NHT programs (e.g., Envirofund, Landcare, Bushcare, etc.)
- The incentive program is inflexible and inequitable (income restrictions) and the funding insufficient ($3000) with respect to meeting its objective. Considering the potential strength of EMS with respect to its ability to realise biodiversity outcomes on agricultural land; the planning and administration of the EMS incentive scheme is disappointing.

2.1.7 Queensland Government productivity loans

The productivity loan scheme (also known as the Primary Industries Productivity Enhancement Scheme or PIPES) is a State initiative, administered by the Queensland Rural Adjustment Authority (QRAA). It is designed to help achieve long-term sustainability and enhance productivity and profitability in the agricultural sector. The productivity loans scheme was introduced in 1989 and since then approximately 1500 producers have used the facility. There are three programs linked to the productivity loan scheme: Landcare loans (assessed in more detail below), Development loans and First-start loans.

Landcare loans are non-means tested, low interest (relative to commercial rates) concessional loans of up to $100,000 per annum ($300,000 cumulative) provided to landholders for expenditure in the following broad areas: Reclamation of degraded areas; pest plant and animal control; fencing; soil erosion control; salinity prevention and control; water supplies; vegetation management; effluent control and disposal; machinery for land care purposes (Landcare loans guidelines, link below).

The purpose and objective of the landcare loans program (LLP), as set out in the guidelines, are to strengthen the economy of regional Queensland and facilitate sustainable development by preventing land degradation and encouraging the adoption of appropriate resource management practices and the rehabilitation of degraded areas.

- http://www.qraa.qld.gov.au/productitem.jsp?product=250
- http://www.qraa.qld.gov.au/pipes.htm

Statistics for 2002–2003 on the Landcare Loans program (QRAA 2003: 12–13)

- $2.25 million in loans approved to 35 applicants representing an increase of 58% from 2001–02;
- Water supply activities account for approximately $2million (90%) of approved funding
  – Establishing additional water points ($672 K)
  – Improve water use efficiencies ($661 K)
  – Replacement of bore drains ($592 K);
- 28 applications (80%) originated within the Grazing industry with the sugar, fruit, vegetable, dairy and cotton sectors accounting for the remainder;
- Ten loans totalling approximately $800k were approved for expenditure within the GBR catchments; and
- The Maranoa/Western Downs region accounts for approximately one third of approved funding and QRAA attributes this to the awareness created via the Great Artesian Bore Sustainability Initiative. Effective marketing of this program within the GBR catchment is required to increase applications.

The LLP has not been a success in Queensland. Compared to 2001–02, the application rate has increased (35 successful applications, up from 22); however, considering that there are approximately 30,000 potentially eligible primary producers (ABS 2001a), those numbers are not substantial. Given the low take-up rate, the LLP will have a negligible effect on Queensland's $7.3 billion agricultural economy (ABS 2004) and it is unlikely to facilitate improved sustainability or reduce land degradation on a substantial scale in rural Queensland.

The NSW Rural Adjustment Authority (NSWRAA) runs a similar scheme to the LLP called the Special Conservation Scheme (SCS). (For eligibility requirements, see http://www.raa.nsw.gov.au/reader/2 It targets activities covered by the LLP in addition to the following activities: serrated tussock control, livestock effluent control, flying fox exclusion netting, de-silting of dams, planting of perennial species, construction of fodder green houses and construction of silos and haysheds. In 2002–03, the NSW RAA received 1081 applications, and approved 541 loans worth $22million. The breakdown of expenditure between the two programs is remarkably similar: water supply and efficiency activities account for approximately 90% of approved funding. In terms of average expenditure, QRAA approved approximately $60,000 per applicant compared to just over $40,000 by NSWRAA. The SCS is clearly more popular than the LLP despite being means tested (net total assets not exceeding $2.5million). However, the NSWRAA interest rates are significantly lower than the QRAA rates (4.5%, 2% lower than the QRAA rates).

Based on the results of the SCS, lowering the interest rates applicable to the LLP might encourage increased take-up in Queensland. However, the costs and benefits of implementing such an initiative would need to be carefully evaluated to assess whether low interest loans are the most cost efficient way of achieving the LLP's overall goals. The distortionary effects of concessional loans are well documented (see for example Industries Assistance Commission 1976, the Australian Financial System Inquiry, 1981) including by the Productivity Commission (1996: xi) in its submission to the mid-term review of the Rural Adjustment Scheme:

The rationale for interest subsidies on efficiency grounds is not strong. There is little evidence that farmers as a group have difficulty in gaining access to finance. The fact that some farmers

may not be able to attract the finance they need is more likely to be an indication of dubious financial viability rather than a market failure warranting government support.
The recent National Drought Policy Review (Drought Review Panel 2004: 69) was similarly against the provision of low-interest loans stating that their use should be contingent on establishing …

> whether there is a problem in the commercial finance sector, of possible effects on the future operation of commercial finance sources, and the possible distortion of markets by such measures…previous…documented effects have included price rises for agricultural land and inequities between loan recipients and others in their ability to finance purchase of further land.

The fact that capital improvements, such as those subsidised under the LLP, are effectively capitalised into the value of the land, means that the outcomes noted above are applicable to the LLP and the PIPES program in general.

2.2 Tax mechanisms

2.2.1 Landcare tax deduction and other tax mechanisms

Primary Producers (owners or lessees) are eligible for tax deductions for expenditure on landcare operations. This incentive is administered by the Australian Taxation Office (ATO). A landcare operation is defined by the ATO as one of the following operations:

- eradicating or exterminating animal pests from the land;
- eradicating, exterminating or destroying plant growth detrimental to the land;
- preventing or combating land degradation other than by the use of fences;
- erecting fences to keep out animals from areas affected by land degradation to prevent or limit further damage and assist in reclaiming the areas;
- erecting fences to separate different land classes in accordance with an approved land management plan;
- constructing a levee or similar improvement; and
- constructing drainage works (other than the draining of swamps or low-lying areas) to control salinity or assist in drainage control.

Deductions can be carried forward and offset against future tax liabilities if the offset exceeds taxable income in the original year of expenditure. Primary Producers also have access to tax deductions for water facilities, Farm Management Deposits (FMDs) and income averaging.

- http://www.ato.gov.au/businesses/content.asp?doc=/content/33531.htm
- http://www.affa.gov.au/content/output.cfm?ObjectID=D2C48F86-BA1A-11A1-A2200060B0A05703

Rather than directly encouraging biodiversity conservation, tax mechanisms are useful vehicles to facilitate increased profitability of Australia's agricultural community. Ashby and Polkinghorne (2004: 55) recommend:

> It is desirable for the majority of Australia's farmland to be managed by large profitable businesses, which demonstrate concern for the environment. Appropriate incentives are needed to ensure that they invest in NRM. A significant area of land is owned by small primary producers and other landholders and they too need appropriately crafted tax incentives.

At present, tax mechanisms are not being used to their full potential for a variety of reasons and in some cases, tax legislation is providing a clear disincentive both to conserve native

biodiversity and manage agricultural land appropriately (Douglas 2002: x):

> Some taxation arrangements may have potential impacts on the environment:
> expenditure on certain environmental management activities is only deductible from income taxation – if undertaken by a business, and this may discourage private environmental activities that are not conducted for profit;
> – the definition of 'primary production' generally excludes activities such as conservation of biodiversity. This may discourage primary producers from undertaking these activities if they think they are not eligible for primary producer related tax deductions;
> – the definition of 'Landcare' is targeted at land degradation and generally excludes other activities, such as conservation of biodiversity. This may discourage primary producers and other natural resource-based businesses from undertaking such conservation activities as they are not eligible for 'Landcare' tax deductions; and
> – income taxation provisions for valuing the natural increase of livestock may encourage heavier stocking of land.

Ashby and Polkinghorne (2004: x), in relation to the Landcare tax provision stated:

> The *landcare provision* of the Act is not widely enough defined to include nature conservation as part of a farm system. This landcare provision is not well known nor understood by most farmers and many accountants.

The drought review panel (2004: 67) also noted a general lack of awareness of available concessions, suggesting that the government, "Conduct an information and education campaign for producers, professional advisors and rural financial counsellors, etc., on existing taxation initiatives…"

Ashby and Polkinghorne (2004: 39–42) are strong supporters of land planning (capital costs of preparing and implementing land plans are mostly tax deductible), particularly where they are linked to regional plans:

> Given that many regions have in excess of 90% of land managed by farmers, there is a pressing need to link farm plans to regional NRM strategies so that work on private land compliments the regional plan.

Further (2004: xi), they recommend the following in relation to land planning:

> DAFF publish a list of qualified land planners by regions [and that] each region produce a list of principles linking NRM strategies to land plans [and that] assistance be provided 'one on one' to landholders to complete land plans.

2.2.2 Community Nature Conservation Program

This incentive is administered by Queensland Parks and Wildlife Service, within EPA. It includes the Nature Refuge program, provision of extension officers and 'Land for Wildlife':

> *Nature Refuges* The objective of the Nature Refuge Initiative (NRI) is to encourage conservation on private land to protect "rare and threatened ecosystems, plants and animals, while maintaining and enhancing property enterprises as diverse as grazing, cropping, horticulture and ecotourism. (http://www.epa.qld.gov.au/nature_conservation/nature_refuges/)

Landowners or lessees can apply to the Queensland Parks and Wildlife Service (QPWS) to have their property, or part of their property, classified as a nature refuge. A nature refuge is a protected area under the Queensland Nature Conservation Act 1992. A nature refuge is protected perpetually in the case of freehold land, or for the duration of the lease in the case of leasehold land. Nature refuges are managed according to a written agreement negotiated between the QPWS and the landowner/lessee and are designed to be sympathetic to the needs of production and conservation. For example, 800 ha of regionally significant vegetation on a 14,500 ha cattle property in Mitchell, Central Queensland has been fenced off as a nature refuge, however, the agreement allows for the protected area to be grazed for a maximum of three months during the growing season and three months during the non-growing season (http://www.epa.qld.gov.au/nature_conservation/community_role/landholders/case_studies/nature_refuges/#rainbow).
Landowners also benefit from on-going contact and management assistance from QPWS officers including invitations to field days and workshops.

There are two dedicated financial incentives available for land classified as a nature refuge:
– State transfer duty reimbursement
– State land tax reimbursement.

The amount of money reimbursed is dependent on the extent or proportion of the property protected. There is also a one off Commonwealth income tax deduction available for covenanted land (including nature refuges) on private property protected in perpetuity (http://www.edo.org.au/edoqld/new/oct03.pdf). The income tax deduction allows any loss in market value as a result of entering into a covenant agreement to be deducted from income earned (see http://www.ato.gov.au/content/downloads/N6539.pdf for more detail). The two state incentives are available for land purchased on or after 1 July 2003 and the Commonwealth income tax deduction is backdated for agreements entered into on or after the 1 July 2002.

Some local governments provide additional incentives in the form of rate rebates for covenanted land (e.g., Johnstone Shire Council: http://www.jsc.qld.gov.au/structure/environ.html). The QPWS might also provide discretionary funding to aid in the establishment of a nature refuge. Non-government organisations including Conservation Volunteers Australia can also provide assistance in the form of manual labour (e.g., erecting fences, clearing weeds, etc.).

Evaluation of the Nature Refuge program
At February 2004, the QPWS had approved 94,000 ha of land on 112 properties as nature refuges (pers. comm., QPWS). The NRI has been in existence since 1992, indicating a subscription rate of approximately 8000 ha per year. However, there has been a substantial increase in the total area designated as nature refuges in the past two years with the total area increasing from just 33,000 ha in July 2002.

Impact of incentives on primary producers
Prior to the introduction of the land tax reimbursement incentive, land classified as a nature refuge was liable for land tax providing a disincentive for primary producers in particular (who are effectively exempt from land tax in Queensland), to enter into a conservation management agreement. (Land in primary production is effectively exempt from land tax in Queensland whereas land classified for conservation is not.) Therefore, primary producers entering into a nature refuge agreement become liable for land tax. Effectively then, the new provisions have removed this disincentive, however, there is still no real incentive provided by the state government to enter into a nature refuge agreement. Rather, as stated above, the onus is on

local governments to provide encouragement, for example as outlined above, via the provision of rate rebates for private conservation.

The Commonwealth income tax deduction is unlikely to provide a major incentive to primary producers for at least two reasons. First, because primary producers already benefit from a number of provisions under the Tax Act including income averaging, farm management deposits, landcare and water facilities deductions, etc. (for further information see Ashby and Polkinghorne 2004: 10–20; Douglas 2002: 21). Second, the management agreements allow conservation areas to remain in limited production meaning that the impact on land values are likely to be minimal.

Indirect benefits

Entering into a nature refuge agreement can indirectly benefit primary producers by enabling them to better access funding for related capital investment. For example, the QPWS website identifies two properties that benefited from government grants to erect fencing around their nature refuges to facilitate improved management (http://www.epa.qld.gov.au/nature_conservation/nature_refuges/)

Beef cattle graziers in particular, with access to relatively large properties (see Table 1), might benefit from a nature refuge if it improves their ability to access government funding provided by programs including the Commonwealth Envirofund. The fact that the land is not 'locked away' enables producers to trade off reduced access to parts of their land with the potential benefits from having their capital costs for fencing and relocation of watering points subsidised as well as additional management assistance from QPWS extension officers.

Conversely, the nature refuge incentives offer few direct or indirect benefits for other primary producers, for example horticulturalists, sugarcane farmers and wheat and grain growers, who have relatively less access to productive land. Indeed, the loss of productive land in non-grazing industries, where gross returns can be as high as $15,000/ha, provides a very large disincentive.

Table 1. Returns per hectare for farms in Queensland

Farm Activity	Average farm size (ha)	Return per ha (gross $)	Total area (ha)
Horticulture	24	$15,014	90,095
Sugar	82	$1,139	527,651
Wheat crops, grains and	1,692	$1,596	2,088,882
Beef, sheep and mixed livestock	16,366	$23	146,509,533

Source: ABS 2001b; Rural Press Queensland 2002; ABARE 2003. All figures are approximations and subject to error

Rate rebates for conservation

Rate rebates are provided by some local councils to encourage landowners to enter into conservation agreements. Generally a rate rebate is payable over the portion of land classified under conservation. Rate rebates have been comprehensively studied by Binning (1999, 2001) and Young (2001) et al. Binning and Young (2001: 34) concluded, first, that rate rebates are likely to be relatively ineffective as an incentive in rural areas where land values and rates are relatively low. Second, in areas where there is urban development potential or high value agricultural production, rate rebates might offset the management costs of conservation, but do not offer viable compensation to landowners for the foregone production and potential development costs.

The impact of rate rebates on local government finances is also an issue. The local government association of NSW (2003) in its submission to the Productivity Commission inquiry into the

impacts of native vegetation and biodiversity regulations stated:

> We do not support the use of rate rebates or concessions as a mechanism to fund natural resource management planning, programs or projects unless financial assistance is provided to offset this loss of income to councils.

The submission raised the important point that conservation agreements can benefit the wider community across local boundaries and calls for state assistance to compensate the financial loss to councils in forgone rates.

Extension Officers

QPWS extension officers are available to assist in the provision of management advice, property assessments and negotiating conservation agreements, such as nature refuges (see above). Landholders and community groups can contact extension officers for advice, information and site inspections, or to find out what events are planned in their local area.

Land for wildlife/Community Conservation case studies and fact sheets

Fact sheets and case studies are available online free of charge. These items may be useful for creating and building awareness of biodiversity on the farm.

- http://www.epa.qld.gov.au/nature conservation/community role/landholders/resources/fact sheets/
- http://www.epa.qld.gov.au/nature conservation/community role/landholders/case studies/

The QLD EPA website also maintains a list of resources (CD-Rom, books, reports) that may be useful for land managers.

- http://www.epa.qld.gov.au/nature_conservation/community_role/landholders/resources/

The Land for Wildlife program (LfW) is a voluntary, non-binding property registration and extension program designed to encourage nature conservation on private land. LfW was introduced to Queensland in the southeast region in 1998 before expanding into the rest of the state under the coordination of the QPWS. At Apri1 2003, approximately 286,754 ha were registered as LfW terrestrial habitats. There were 2,225 registered LfW landholders across Queensland, with total landholdings of approximately 1.5 million ha. In the GBR catchment, there were approximately 618 registered landholders and approximately 177,000 ha of land were registered as terrestrial habitats. With reference to Figure 1, numbers of landholder registration in the GBR catchment has risen steadily since the program's implementation, although hectares of registered terrestrial habitats actually fell between 2002 and 2003.

The LfW scheme is no longer coordinated at the state level by QPWS due to budgetary constraints. QPWS has instead decided to concentrate on the relatively less popular NRI due to its perceived ability to more adequately guarantee long term outcomes via the use of statutory management agreements. Greening Australia may take up the state coordination role in the future. Currently, local government and regional organisations are administering the LfW scheme (pers. comm., QPWS officer).

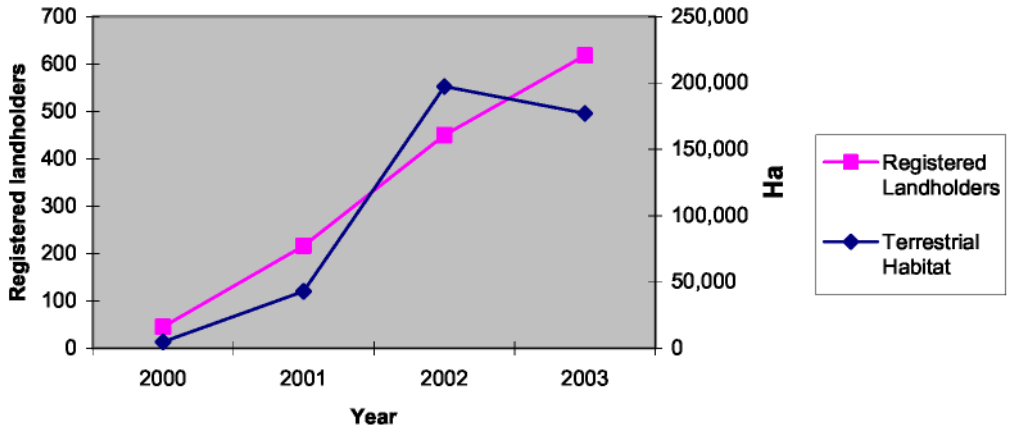

Figure. 1 Number of registered landholders and area of terrestrial habitat under the Land for Wildlife program in the GBR zone 2000–2003

2.2.3 Heritage agreement scheme

The South Australian Heritage Agreement Scheme (HAS), created in 1980, is designed to protect biodiversity via a perpetual covenant. Incentives for take-up include grants for fencing, management and pest control of covenanted land as well as exemption from land tax and rates. In early 2004, there were 1282 Agreements in existence protecting approximately 565,000 ha of land. The HAS succeeded in encouraging substantially more landholders to enter covenant agreements than the comparable Nature Refuge scheme in Queensland. However, the South Australian government has invested over $80 million into the scheme including direct payments to landholders. The South Australian government views this investment as "a cost-effective and economical investment; for in the long-term it is cheaper to keep remnant bush rather than to try to rehabilitate degraded land in later years."

- http://www.environment.sa.gov.au/biodiversity/heritage_education.html

There is also a wetlands covenant scheme called 'Wetlands Waterlink' administered by South Australia's Department of Primary Industries and Resources. Grants are available for funding with the amount varying depending on the ecological state of the wetland.

- http://www.dwlbc.sa.gov.au/bio/pdfs/private land cons schemes sa.pdf

2.3 Tradable rights and offset schemes

Tradable rights and offset schemes are a form of market-based incentive. They require the government to delineate property rights over the use of resources, including the goods and services provided by ecosystems. A freely operating market is expected to determine an economically efficient allocation of rights. By establishing a market in the ecosystem services provided by ecosystems, including carbon sequestration, nutrient cycling, water filtration and nursery grounds for fish, it is anticipated that landowners will invest in the maintenance and protection of ecosystems.

A factor limiting the legitimacy of incentive payments is the need for flexibility to adjust to changing community preferences and to allow for scientific uncertainty. Incentive programs, particularly those subsidised by the government, can entrench current practices. For example, if a landholder conserves and maintains habitat in order to obtain ecosystem service payments, it may be difficult in the future for conservation to be regarded as part of the duty of care. These

changes could seriously undermine confidence in an incentive system.

Trading of permits or rights to use a resource operates by authorities determining the sustainable rate of use of a resource, for example, water rights, and allocating rights or permits for use up to that level. By making the rights or permits tradable, operators who use the resource efficiently can sell excess rights or buy out inefficient users. The outcome is that the use of the resource passes to the more efficient users or highest value uses and the environmentally sustainable limits to the use of the resource are met.

Offsets and conservation banks are market-based incentives encouraging the trade and transfer of goods and services provided by ecosystems. They have the overall objective of 'no net loss' or 'net gain' to the environment as a result of development pressure.

2.3.1 Wetland mitigation banking

Wetland banking is a market based, tradable offset scheme operating in the United States. It is a system designed to facilitate 'no net loss' of total wetland area. If wetlands are destroyed due to permitted development, the loss of land, regarded as a debit, is compensated via investment in the form of a credit, in a wetland banking system. Wetland banks contain an interconnected area of rejuvenated or wholly manufactured wetlands designed to replace destroyed or modified wetland ecosystems. Section 404, F(2) of the USA Federal *Clean Water Act* (USACE) states:

> Any discharge of dredged or fill material into the navigable waters incidental to any activity having as its purpose bringing an area of the navigable waters into a use to which it was not previously subject, where the flow or circulation of navigable waters may be impaired or the reach of such waters be reduced, shall be required to have a permit under this section.

Wetland banking allows the substantial alteration of a wetland if it is accompanied by the purchase of credits earned by another party for the protection, restoration and/or enhancement of another wetland. These credits are traded through a wetland bank. The objective is to ensure no net reduction in ecosystem services due to land use changes, such as for property development and the expansion of farming. This approach is similar to Tradable Development Rights, which were particularly successful for protecting conservation areas in the Malibu area, California.

Shortcomings of the wetland banking system in the USA

Scientific uncertainty
Lack of scientific knowledge about wetlands and biodiversity in general means there is uncertainty about whether like is replaced with like. Since biodiversity can often be highly localised or unique to an area, it would not be rational to propose offsetting the loss of one type of ecosystem for another. For instance, it may be unacceptable to offset wetland with forest, or to offset natural habitat with revegetated areas.

Risk of environmental harm
There is a substantial risk of significant environmental harm if the policy fails by permitting wetland degradation before effective and sustainable offset credits have been generated.

Using economic value as an incentive?
The current system does not attempt to quantify the economic value of wetlands within a regional and local context (i.e., within the watershed and proximity to human population centres).

The various assessment methodologies suggested by the US Army Corps of Engineers (USACE) Guide (USACE & USEPA 1995) can provide an effective estimate of the lost biodiversity and ecological functions. However, the methodologies make no attempt to value the lost ecosystem benefits in terms of their total economic value (TEV) to downstream users (indeed the CWA does not require this). This is a major deficiency, as it inhibits the use of positive financial incentives for wetland preservation based on their TEV under the CWA.

There are a number of areas where measuring (or at least attempting to measure) the TEV of wetland sites could be an extremely effective management tool. For example:

> On-site mitigation may be preferable where there is a practicable opportunity to compensate for important local functions including local flood control functions, habitat for a species or population with a very limited geographic range or narrow environmental requirements, or where local water quality concerns dominate. (USACE & USEPA 1995: Section D4)

Flood control, endangered or exceptional species habitat and water quality control are ecosystem services provided by wetlands that can be quantified into approximate dollar values. The value of flood control can be measured by predicting the replacement costs of capital (housing, roads etc) associated with a flood event. The value of clean water can be measured by assessing the cost of an engineering solution (i.e., the cost of installation and maintenance of a filtration plant) and the value of species habitat (the non-use value) using contingent valuation.

Problems of aggregation

Aggregating wetlands that are naturally dispersed throughout a watershed or catchment area into a single 'bank' is problematic for a number of reasons. Boyd and Wainger (2002: 1371-1378) undertook a study showing how aggregation can, at times, effectively replace lost ecological value but destroy the overall economic value provided by ecosystem services (the sum does not exceed or even equal the parts). The location of individual wetlands is important. A wetland located near a major city provides filtration services for drinking water, recreation (fishing, bird watching, swimming etc) and flood control among many others. Removing this wetland and its associated services and transplanting them upstream can completely negate the localised benefit of the ecosystem service. This lost value is quantifiable (as outlined above) but it is not measured (nor is it required to be) under the current regime.

Artificial wetlands

Critics claim that the mitigation banking system has become a first resort, rather than a last resort for developers resulting in the destruction of natural wetlands and their replacement with sub-optimal human made ecosystems.

Wetlands are highly evolved interconnected ecosystems whose functions cannot simply be built and replaced. Indeed, "creating wetlands remains generally regarded as an experimental technique among knowledgeable scientists" (Zinn 1997). Wetlands are not fully understood and destruction may unwittingly destroy unique ecosystems. Evaluation of wetlands should be conducted over a number of years and therefore, USACE and the EPA should not allow development in advance of mitigation (it currently is allowed under certain circumstances, see USACE 2002: Section 2M, 2N).

The Credit/Debit System

The credit/debit system is based on the USACE assessment of the level of services provided and the biodiversity supported by the wetland.

> On an acreage basis, the ratio should be greater than one-to-one where the impacted functions are demonstrably high and the replacement wetlands are of lower function. Conversely, the ratio may

> be less than one-to-one where the functions associated with the area being impacted are demonstrably low and the replacement wetlands are of higher function. (USACE 2002: section 2D-2).

However, "in the absence of definitive information" a 1:1 ratio is deemed suitable (USACE 2002: section 2D-4). This is clearly problematic. Destroying wetlands and replacing them with what may be a completely different ecosystem in terms of function and biodiversity due to lack of information clearly favours development over conservation and could result in the extinction of certain species. Application of the precautionary principle in these cases would be advisable.

Potential for wetland banking under MBI Scheme in Australia

In April 2003, $5 million was made available to fund a pilot market based instruments program in Australia. The pilots are due for completion in mid-2005. A project list is available at: http://www.napswq.gov.au/mbi/index.html. In 2002, the NAPSWQ published a paper exploring the economic rationale behind MBIs and looking at conservation projects currently utilising or planning to utilise MBIs around Australia. This paper is available at:http://www.napswq.gov.au/about/mbi/pubs/review-full.pdf.. There may be some scope for the creation of a long-term pilot wetland banking scheme in Australia. The scheme would need to involve a long-term commitment of resources.

Conclusion

Wetland banking in the US could result in a move towards large constructed wetlands at the expense of relatively small native wetlands in areas where development pressures are high. The no net loss principle will likely maintain the real extent of wetlands, however, there may be a net loss of biodiversity in the long run as species-rich ecosystems are replaced by relatively poor, human-made environments.

An alternative to the current system could be created by valuing wetland ecosystem services and expanding property rights enabling landholders to either charge for, or receive, compensation for the services rendered by wetlands on their property. In the long run, farmers may find that it is in their best interest to maintain wetlands in-situ rather than destroy them for agriculture or other development.

2.3.2 Upper South East Dryland (USE) Salinity and Flood Management Program: Drainage Levy – Biodiversity Trading Program

The USE drainage levy and biodiversity trading program in South Australia is designed to allow landholders in the USE to offset their levy obligations (under the USE Act) by entering management agreements to conserve native vegetation on their property. The levy is calculated on a$/ha basis depending on which zone the property is located. The value of the offset is calculated using a biodiversity significance index that rates biodiversity according to whether it is in low, moderate, high, very high or pristine condition. The value of the offset can be enhanced where the land manager agrees to improve the condition of the land. Management agreements will nominally be in perpetuity or for 15 years. The scheme is still being fine-tuned and a final implementation date is unknown.

- http://www.saltcontrolsa.com/pdfs/march%202004%20USE%20newsletter.pdf
- http://www.saltcontrolsa.com/pdfs/USE_FS_bioD_tradinq.pdf

2.4 Product accreditation and diversification schemes

2.4.1 Environmental labels

Environmental labels are voluntary instruments designed to enable consumers to discriminate between like goods based on some kind of implied environmental impact. Environmental labels can be split into three distinct categories as defined by the International Organisation for Standardisation (ISO).

Definition of Type 1 environmental label (Pahl 2004a: 24):

> Type I labels (also called seal-of-approval) are based on environmental criteria established by a third party, such as a board or committee, in consultation with a broad range of stakeholders. Type I labels are usually awarded for a fixed period of time, and there is often a fee or cost involved in using the label on products. Products awarded the label are often restricted to 10–30 per cent of all products in the category (USEPA 1998).
>
> Type I programs tend to have varying levels of government involvement, with most decisions made by an eco-labelling committee that consists of scientists and representatives from business and trade, consumer groups, environmental groups and government agencies. These committees also access technical advice from other expert committees, standards organisations and consultants.
>
> Type I programs license the use of a logo on products that are considered to have less environmental impact than comparable products, based on specific award criteria. These programs follow a three-step process, beginning with the establishment of a product category, development of the award criteria, and then product evaluation.

Definition of Type 2 environmental label (Pahl 2004a: 26):

> Type II labels are based on producers' or manufacturers' own claims that their products have specific 'environment-friendly' attributes. These are in effect self-declarations about the environmentally preferable features of a product. There are no pre-established environmental and other product criteria that Type II labels must comply with, although they need at least to comply with truth in advertising or other relevant product regulations. These are probably the most commonly used type of environmental label in the market place, and are generally concerned with a single high-profile environmental issue. Examples of these are labels bearing claims about recycling, biodegradability, phosphates, greenhouse gases and dolphins. Private companies have developed many of these with little reference to a standard, sometimes resulting in confusing and misleading claims. This prompted the development of standards to guide Type II labelling.

Definition of Type 3 environmental label (Pahl 2004a: 28):

> Type III labels provide standardised information on environmental aspects of products, but do not make a judgement on their environmental performance relative to other products in the same category. Quantitative data on environmental aspects relevant to a product are often summarised on Type III labels, which are then interpreted by potential purchasers. These purchasers need to take time to consider labels, and have the capacity to interpret the quantitative information provided on the label. Hence, Type III labels are suitable for only some consumer purchasing decisions.

Potential for environmental labels to drive conservation on agricultural land

Biodiversity is a common resource (i.e., it is non-exclusive but rival) and the external cost of its destruction to provide agricultural land is generally not accounted for in the price paid for consumer goods produced on that land. The use of an environmental label can potentially help overcome this problem by incorporating the cost of production related externalities (in the form of a price premium) and passing them onto the consumer who consequently contributes via the price mechanism for the preservation of the environment (see Fig. 2).

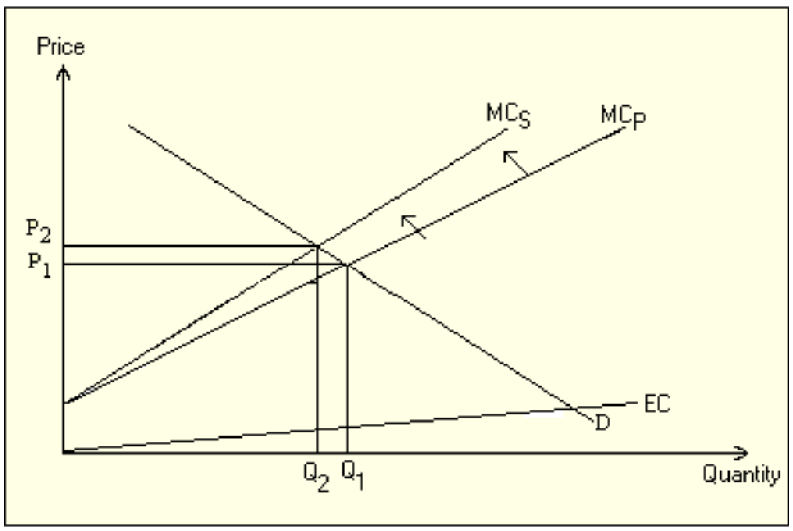

Figure. 2. Relationship between price and quantity

In a market where externalities exist, the private marginal cost of supply (MC_P) does not account for the cost of the production of those externalities (EC). This means that factors of production are priced inappropriately and consumer goods are oversupplied and under priced (Q_1, P_1). By adding the external cost of production (EC) to the private cost of production, the externality is effectively internalised. The new supply line becomes MC_S, and the new market equilibrium results in fewer goods being produced but sold at a higher price (Q_2,P_2).

For environmental labels to be successful there needs to be sufficient demand for the particular environmental goods or services affected by the production of externalities. Where consumer demand for environmental accountability exists (where accountability is defined as equating consumer demand with the marginal social cost of supply), then environmental labels become a viable tool for conservation.

Demand for environmentally friendly goods

The cost of production of environmentally friendly goods increases because the costs associated with internalising the externalities must be compensated for. As a result, labelled goods tend to be more expensive than conventional goods.

Ideally, consumers will be willing to pay a price premium for a labelled product. In this way, producers are rewarded for their extra costs of production. Where demand is sufficient, it is anticipated that, in the long run, labelled products would dominate the market, forcing conventional suppliers to either exit the market or conform to the relevant standards resulting in an environmentally beneficial outcome. However, in practice, this rarely occurs and the potential for labelled goods to change supplier behaviour is limited.

The EcoRange study (Pahl 2004b: xii) elucidates some important facts:

> …to some degree the environment now influences the purchasing decisions of mainstream consumers, but it remains the most important consideration only for a niche segment of consumers. For most consumers, the environmental impact of the production system is just one issue that motivates their purchase decision but is rarely the major issue.

Consumers appear to be more concerned with price, brand and intrinsic characteristics such as taste and appearance and perceived individual health benefits from consuming certain goods (Pahl 2004b: xii). The population of consumers willing to pay a premium for labelled goods is limited (Pahl 2004b: xvii):

Consumers who value the environmental credentials of products to the extent where this overrides other attributes make up 5–15 per cent of the population, and these are also often willing to pay premiums of around 10 per cent for products that have high levels of environmental performance. However for a number of reasons these consumers purchase very few 'environment-friendly' products, placing these in the niche market category. Market share for these 'green' products is mostly around one per cent, and consequently there are limited market opportunities for producers of these products.

2.4.2 Environmental Management Systems (EMS) and environmental labelling

EMS is a management system based on following several key steps, as set out by Adcock (2003) and summarised in the box over page. An excellent (and concise) overview of EMS is available from the NSW Agriculture website:
http://www.agric.nsw.gov.au/reader/about-ems/nswag-ems.htm.

- *Commitment and policy*. Develop a commitment to the system in all levels of the business. A governing environmental policy is defined and demonstrated with a one-page document. (PLAN)
- *Planning.* Conduct a review of the impacts of your business on the environment (an environmental audit), and identify legal requirements, industry codes of practice and relevant regional guidelines (such as catchment targets), and then set environmental targets. (PLAN)
- *Implementation.* This is the 'doing' part of the EMS. It includes the identification of resources, staff training, the documentation and recording systems, and communication systems for EMS implementation. (DO)
- *Measurement and evaluation*. This step is a check to see if the targets being chased are, in fact, being met. (CHECK)
- *Review and improvement*. The data gathered in the previous step is put to use. Were the targets met? If not, why not? What can be improved? What worked well and and why? This leads to continuous improvement of the management system and the environment. (REVIEW)

Using a combination of EMS and environmental labelling as a mechanism for receiving recognition for environmentally sound production might be more effective than environmental labels in isolation. EMS is an organisation oriented standard (OOS, ISO14001) as opposed to a production oriented standard (POS, eco-labels) that allows the producer to decide how to pursue environmental objectives.

Relying on a prescriptive POS to achieve environmentally friendly production may be deficient for at least two reasons. First, the conditions for achieving sustainability are not the same in the various regions, catchments and sub-catchments that comprise the greater GBR catchment. Therefore, utilising a label indicating the use of a specific sustainable technique may be relevant in one area but not in another. This necessitates different labels for alternative areas that could result in a single product being covered by large numbers of labels leading to confusion, apathy and perhaps a loss of consumer confidence at the retail level. A single environmental label, underpinned by a certified EMS could potentially diminish confusion at the retail level.

Second, production oriented standards require that certain parameters be met, generally using certain technologies or techniques, thus stifling innovation to some extent at the local level. Organisation oriented standards, such as EMS on the other hand, prescribe an organisational or management system that promotes innovation via cost minimisation and the search for more efficient, environmentally friendly technologies.

Potential

When compared to environmental labels, a certified EMS has the capacity to provide a stronger guarantee of sustainability with a single label, no matter what the product is, or where it is produced despite the fact that the techniques and technologies employed may be different. An environmental label signifies that a product is (in the case of Type 1 labels), or might (in the case of Type 2 labels) be meeting the guidelines prescribed by the conditions of the label, but is relatively inflexible in terms of ease of application (geographically and climatically) and in terms of minimising the number of labels required for 'like' products.

Further, a property level EMS can be used to better integrate whole farm management potentially making it more efficient, productive and profitable. In the near future, EMS might also be used to simplify regulatory compliance for producers and government agencies alike by providing a platform that enables the integration of quality assurance, food safety and environmental requirements into the EMS certification framework.

A certified EMS might also provide a credible mechanism to inform government and the business sector that may be interested in purchasing public-good ecosystem services for the benefit of the general population (via NHT funding, for example). In this way, it can be used as a marketing tool or to facilitate a legitimate business expense (i.e., paying for ecosystem services that produce clean water replacing the need for mechanical filtration).

Recommended action

The auditing process that certifies EMS14001 and the marketing tools (i.e., product labels) are not necessarily well known either at the retail or producer level. Consumers may be aware of the labels but have little comprehension of what they mean.

> Communication of the environmental assurance scheme to consumers is vital. This must emphasise stakeholder support for the scheme, environmental and personal benefits, how it operates, and that the organisations responsible for regulating it are reliable. Consumers need to be able to visualise production practices associated with food and fibre and appreciate the superiority of labelled products (Pahl 2004b: xviiixix).

This raises the issue of marketing and producer and consumer engagement. The reliability and legitimacy of certified products is vital for any form of product differentiation to capture market share. There is likely to be a lead role for industry groups working with producers to ensure that the labels on products are legitimate and credible.

There needs to be a concerted effort by industry groups and government agencies to streamline the auditing process for Quality Assurance and Food Safety (of which there are over 400) so that they can be encompassed by a single management protocol such as EMS or the Euro-Retailers Produce Working Group on Good Agricultural Practice (EUREPGAP). (See for example, the EUREPGAP Integrated Farm Assurance program: http://www.eurep.org/farm/Lan~ages/English/news/141.htm1 This is important, as the audit process is both expensive and time consuming.

EMS is not a tool designed to facilitate the extraction of price premiums from any given market. EMS is a management protocol similar to that found in any small or large business entity and

consumers do not pay a price premium simply because a product was produced by a business with a plan. Indeed, businesses with an innovative management plan produce relatively cheap goods, leading to increased market share and profits as a result.

2.4.3 Queensland Sugar Reform Package

The State government $30 million Sugar Reform Package, administered by the Department of State Development (DSD), includes three financial incentive schemes: An innovation fund, a change-management program and farm-consolidation loans. None are specifically tailored towards achieving conservation outcomes. However, the aim of the package is to create an economically and environmentally sustainable industry.

- http://www.sd.qld.gov.au/dsdweb/docs-bin/v2/industry_dev/sugar_doc.pdf

Commonwealth Sugar Industry Reform

As part of the latest reform package, the Commonwealth Government has made available income support until March 2005. As a condition of receiving payments, growers and harvesters must obtain business advice (grant of $2500 available) "to improve the financial position of their sugar operation or to assist in moving to some form of alternative operation." Recipients need to create an activity plan based on this advice and inform Centrelink of their progress towards achieving the listed goals.

- http://www.centrelink.gov.au/internet/internet.nsf/filestores/se016_0403/$file/se016_0403en.pdf.

3. Incentives that compel change

3.1 Regulations

Given the importance of wetlands to the environment and community, it is imperative that they are adequately protected. Though many pieces of legislation in Australia impact on the management of wetlands, none have protecting wetlands as their primary aim. To protect wetlands through existing legislation therefore requires an informed understanding of how the statutory regime relates to the management of these areas. The objective of this section of the report is to identify the main statutes and policy documents that affect the management of Queensland's coastal wetlands. The volume of legislation is enormous with numerous areas of overlap requiring coordination between the different levels of government.

While national policies are not legally binding, they set the context for coordinating Commonwealth and State legislation. The major national policies and programs as well as State legislation that impact on the management of wetlands are outlined. (A more comprehensive review of national and state policies, programs and legislation impacting upon wetlands can be found at:
http://www.coastal.crc.org.au/Publications/index.asp?list=CRC&selSearchWhat=2&txtSearchFor=Regulatory%20controls%20for%20Queensland%20Wetlands.)

Initially, a brief description is provided of the objectives of the legislation, how it is applied, the agency responsible for its implementation and the spatial coverage. This is followed by an account of any specific activities that might trigger the application of the Act. Finally, the range of constraints likely to be available to implement the Act is identified.

Figure 3 provides a schematic presentation of the interrelationships between international conventions and agreements for the management of wetlands, a number of national policies that

set the context for the regulation of wetlands and Commonwealth legislation implementing these conventions and policies. In addition, it shows how State legislation regulating activities impacting on wetlands within the jurisdiction of the state fits within the overall policy framework as well as an indication of the ordinances and by-laws of local authorities managing wetland areas.

Issues

A particular strength of regulations (a point made by a number of industry groups) is that they assist in clarifying what is expected of land-managers. In addition, market-based instruments, such as water trading, nutrient trading or wetland offset incentives require property rights over the resource in question to be clearly delineated and enforced. This requires regulation to underpin the created market.

Regulations are often limited by their ability to encourage continued improvement in resource use. Regulations typically set standards designed to bring resource users up to a minimum level of acceptable use. In this way they cannot in isolation, encourage resource users to improve their performance beyond that minimum. Further, in Queensland in particular, enforcement of regulations is predominantly directed towards point sources of discharge rather than towards diffuse agricultural sources. This lack of enforcement, evidenced by the absence of prosecutions, particularly for regulations pertaining to agricultural land management, has greatly reduced their efficacy.

An issue of particular importance for the management of wetland areas, largely overlooked in regulations, is that they remain poorly defined. There is no commonly, mutually agreed definition of wetlands apart from the very broad Ramsar definition. This makes legislation difficult for landholders to understand and for agencies to enforce. The Queensland EPA is currently attempting to formulate a whole-of-government definition of wetlands.

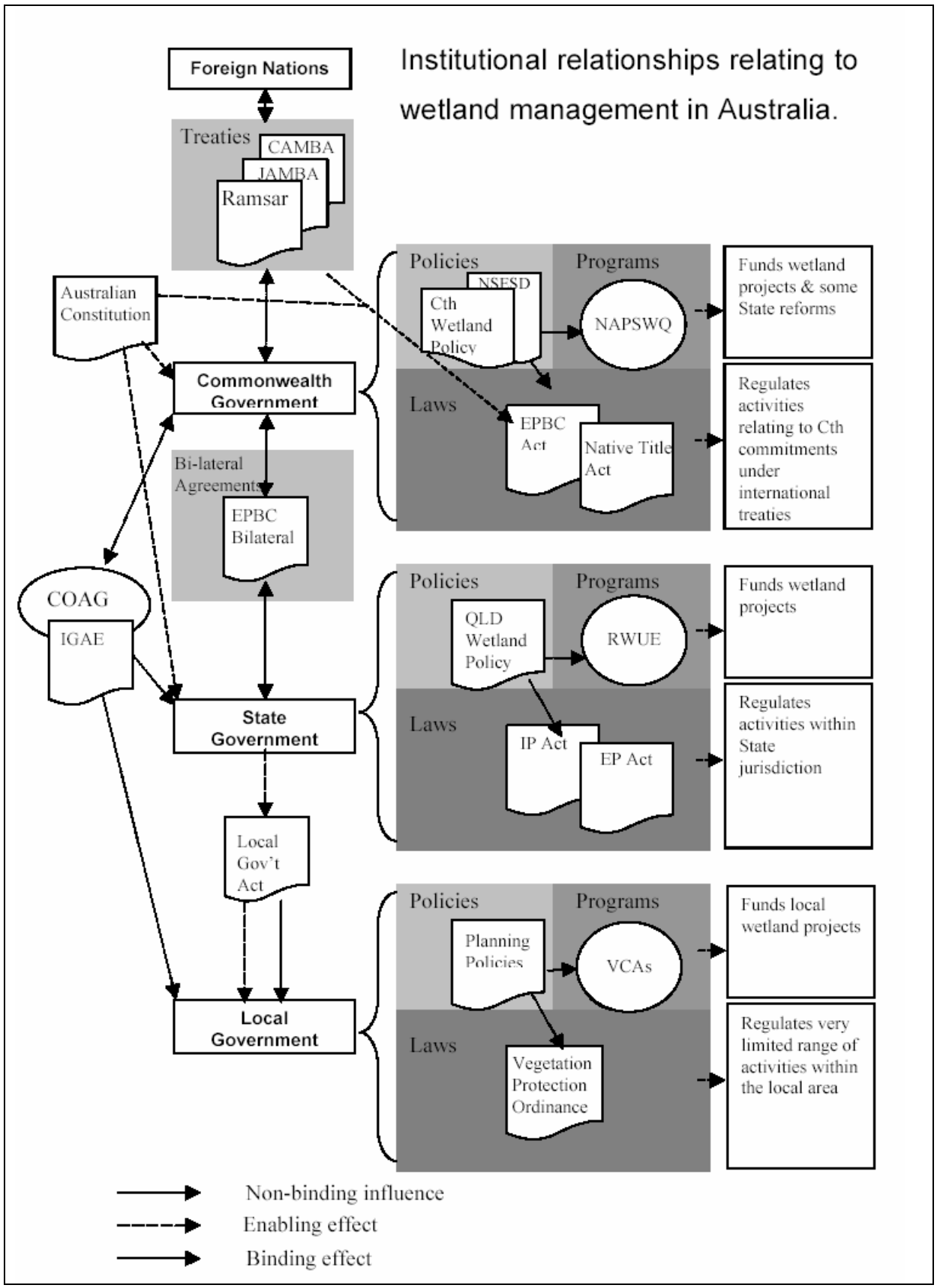

Figure. 3. Institutional relationships relating to wetland management in Australia.

3.2 International conventions

International conventions and agreements play a key role in the regulation of wetlands in Australia. Conventions, or treaties, become binding on Australia when they are signed and ratified by the Australian Government. The enforcement provisions for most treaties rely on international goodwill and political pressure. Even when ratified, conventions have little effect on Australia's domestic legal system until implemented by legislation. For this reason most conventions relating to wetland are implemented through federal legislation.

The Australian Government is a signatory to several international agreements that aim to protect and manage wetlands directly or indirectly as habitats for migratory species. While the Department of Foreign Affairs and Trade (DFAT), is the lead agency for the formation of such agreements, the Department of the Environment, Water, Heritage and the Arts has some responsibilities for reporting on their implementation. DEWHA also administers the majority of national legislation, policies and programs implementing conventions in relation to wetlands. CAMBA, JAMBA and Bonn all have the objective of protecting migratory animal species and their habitats. As wetlands provide critical habitat areas for migrating bird species these conventions go someway to protecting these areas.

The convention specifically protecting wetlands include the Ramsar Convention and the Biological Diversity and World Heritage Convention. The Ramsar Convention includes providing wetland conservation within national land-use planning, establishing nature reserves on wetlands and promoting wetland education. The protection and management of Ramsar wetlands is conducted through State and Territory legislation, such as Queensland's Marine Parks Act 1982 and Coastal Protection and Management Act 1995. The EPBC Act is the key national legislation for Ramsar wetlands while national policies that provide protection to these wetlands include, the Wetlands Policy of the Commonwealth Government of Australia, the Ramsar Convention Strategic Plan 1997–2002, and the Natural Heritage Trust.

3.3 Commonwealth policies, programs and legislation

Policies and programs

While not legally binding, national policies can be instrumental in setting the context for and coordinating Commonwealth and State regulation of wetlands. National programs can also have a strong influence on sustainable management of wetlands through, among other things, the financial assistance they provide to land managers.

National policies include:

- National Strategy for Ecologically Sustainable Development;
- Intergovernmental Agreement on the Environment;
- National Strategy for the Conservation of Australia's Biological Diversity;
- National Water Quality Management Strategy (NWQMS);
- Council of Australian Governments (COAG) Water Reform Framework;
- National Action Plan for Salinity and Water Quality; and
- Wetlands Policy of the Commonwealth Government of Australia.

Commonwealth legislation

The major Commonwealth legislation likely to protect wetland areas include:

- *Environment Protection and Biodiversity Conservation Act 1999;*
- *Great Barrier Reef Marine Park Act 197; and*
- *Native Title Act 1993.*

3.3.1 The Environment Protection and Biodiversity Conservation Act 1999

Objectives and application

The objectives of the EPBC Act include:

(a) to promote ecologically sustainable development through the conservation and ecologically sustainable use of natural resources
(b) to promote the conservation of biodiversity
(c) to assist in the cooperative implementation of Australia's international environmental responsibilities.

The EPBC Act is the key statute for implementing Australia's commitments to international conventions. The two main mechanisms employed by the act to achieve its objectives are a system of development assessments and approvals and a system for the identification, protection and recovery of threatened biodiversity.

Responsible agency: the Department of the Environment , Water, Heritage and the Arts.

Spatial coverage: The Act potentially applies to all activities within Australia's territorial boundaries but it is in effect limited to those activities related to matters of national significance.

In determining sites of national significance the Department of the Environment, Water. Heritage and the Arts relies on several different inventories including the "Directory of Important Wetlands in Australia" (third edition) and the Ramsar Sites Database. The Directory of Important Wetlands uses a classification system and criteria developed by ANZECC in 1994. The directory identified 165 Queensland wetlands as important and 83 of these are found in the coastal zone (EPA1999). The Ramsar Sites Database contains those site considered internationally important and listed under Ramsar convention. The database includes four coastal wetlands in Queensland: Moreton Bay, Bowling Green Bay, Great Sandy Strait, Shoalwater and Corio Bays.

Factors that trigger application: To trigger Commonwealth assessments or approvals it must be likely that the action will result in a "significant impact" on a "matter of national environmental significance". The Act currently identifies seven matters of national environmental significance:

- World Heritage properties;
- National Heritage places
- Ramsar wetlands of international significance;
- Listed threatened species and ecological communities;
- Listed migratory species (including those listed under the CAMBA, JAMBA and Bonn Conventions);
- Commonwealth marine areas; and
- Nuclear actions (including uranium mining).

Constraints applied: Any action likely to have a significant impact on these areas requires an application to the Commonwealth for approval before proceeding. To avoid duplication of the State's approval requirements, the Act provides for bilateral agreements that accredit State assessment and/or approval processes.

In additional to the approvals regime the act also provides for a number of tools to assist with the conservation of listed species and habitats including:

- the identification of key threatening processes;
- the preparation of: recovery plans, threat abatement plans and conservation agreements; and
- the issuing of conservation orders.

Enforcement of the Act
McGrath (2003) has written up a case note on a recent injunction under s 475 of the EPBC Act. The injunction restrained a wheat farmer from "engaging in land clearing, ploughing or cropping activities, or any works altering the flow regime of waters, affecting the wetlands." The wheat farm in question contains approximately 100 ha of the Ramsar-listed Gwydir Wetlands.

McGrath (2003: 477) notes the significance of the case as "the first civil action by the minister under the EPBC Act" where previously it has been left to conservationists acting independently to restrain offences against the Act. The action might have signalled an emerging willingness from within the Australian government to take a more proactive stance against the previously "immune" (McGrath 2002: 31) agricultural industry to halt environmental degradation.

3.4 State legislation and policy

While the Commonwealth has primary responsibility for implementing international conventions the States have the primary responsibility for land management. In the case of wetlands, these responsibilities often overlap, leading to the need for coordination between the levels of government. This is achieved partly through general intergovernmental agreements such as the Intergovernmental Agreement on the Environment 1992 (IGAE). The lead agency for wetlands management in Queensland is the Environmental Protection Agency (EPA). The EPA is responsible for implementing the *Queensland Government's Strategy for the Conservation and Management of Queensland Wetlands* as well as most other wetland related policies, programs and legislation.

3.4.1 Strategy for the conservation management of Queensland wetlands 1999

The strategy has four objectives in relation to wetlands management; they are:

1. Avoid further loss and degradation of natural wetlands unless overriding public interest can be shown
2. Ensure a comprehensive and adequate representation of wetlands in the conservation reserve system
3. Base the management and use of natural wetlands on ecologically sustainable

management and integrated catchment management practices
4. Develop community awareness of and respect for the value and benefits of wetlands and involvement in management.

The policy aims to use existing legislation, policies and programs to protect wetlands. These tools include inventory programs, regional planning, local planning schemes, industry policies, and whole-property planning.

There are approximately 22 pieces of State legislation in Queensland likely to be relevant for wetland management, including:

- *Fisheries Act 1994;*
- *Environmental Protection Act 1994;*
- *Integrated Planning Act 1997;*
- *Coastal Protection and Management Act 1995;*
- *Water Act 2000;*
- *Nature Conservation Act 1992;*
- *Marine Parks Act 1982;*
- *Vegetation Management Act 1999; and*
- *Land Act 1994.*

An overview of all the legislation identified as impacting on the management of wetlands is provided at:http://www.coastal.crc.org.au/Publications/index.asp?list=CRC&selSearchWhat=2&txtSearchFor=Regulatory%20controls%20for%20Queensland%20Wetlands. Comment is made about a number of these below.

Issue
A major issue with this strategy is encompassed in the first objective. Specifically, "overriding public interest" enables any development proposal to be successful as long as there is a public interest. No definition of "overriding" or "public interest" is provided. This effectively offers developers impacting on wetlands a strong argument to justify the destruction of wetlands. For example, airport runways are commonly located on coastal flood plains. Any extension to a runway is likely to require the destruction of wetland areas. In the same way, port facilities frequently require dredging of areas within estuaries, which reduces or destroys the ecosystems contained in these areas.

3.4.1 Fisheries Act 1994

Objectives and techniques: The main objective of the Fisheries Act 1994 is to provide for the use, conservation and enhancement of the community's fisheries resources and fish habitats. This is to be done in a manner that seeks to apply and balance the principles of ecologically sustainable development and to promote ecologically sustainable development.

There are several mechanisms that the Act employs to achieve its objectives. These mechanisms include the management and protection of fish habitats through the declaration of fish habitat areas, the protection of marine plants and the restoration of fish habitats. Also, the Act aims to achieve its objectives by managing commercial, recreational and Indigenous fishing, preventing, controlling and eradicating disease in fish and managing aquaculture.

Responsible agency: Department of Primary Industries (DPI&F).

Spatial coverage: The Act applies to the limits of the state and to Queensland waters.
In administering the Act the DPI, relies on maps of coastal wetlands contained in the Coastal Habitat Resource Information System, CHRIS. These maps classify wetland types predominantly on the basis of associated vegetation such as mangrove families.

Factors that trigger application: The Act prohibits the removal, damaging or destruction of marine plants without approval. According to the Act, Marine plants are generally considered to be plants that grow on, or adjacent to, tidal lands. Tidal land is any land that is at or below the HAT or land permanently or periodically submerged by waters subject to tidal influence, including many tidal wetlands. Marine plants can also be protected in declared marine habitat areas or when the restoration of a marine habitat is ordered.

The Act will also be triggered if works and related activities are conducted without approval in a declared fish habitat area. This is a prohibited act. Fish habitat areas can be declared on the basis of specific habitats and fisheries values. Additionally, the Act is triggered if waterway barriers preventing fish passage are constructed without approval, which is an issue for farmers wanting to build bund walls, and is particularly relevant to farmers located on the Fitzroy flood plains.

Applicable constraints: The DPI may issue permits for works in fish habitat areas or to permit interference with marine plants.

3.4.2 Environmental Protection Act 1994

Objectives and techniques: The objective of the EP Act is to protect Queensland's environment while allowing for development that improves total quality of life both now and in the future, in a way that maintains the ecological processes on which life depends.

Mechanisms used to achieve the objective of the Act include the use of licenses to control certain environmentally relevant activities (ERAs), the creation of environmental offences and the requirement for environmental plans to be created and followed under the environmental protection policies.

Responsible agency: EPA

Spatial coverage: The EP Act potentially applies to all actions conducted within Queensland.

Factors that trigger application: There are several broad ways in which this Act can be triggered in relation to the protection of wetlands. First, a commencing ERA will require either an authority (licence) under the EP Act or a development approval under IPA.

Second, willfully and unlawfully creating serious or material environmental harm or environmental nuisance are offences under the Act if they are not authorised under instruments such as an environmental authority or development approval. It is a defence to these offences to show that the defendant complied with the general environmental duty. The general environmental duty applies to all persons in Queensland and states that "a person must not carry out any activity that causes, or is likely to cause, environmental harm unless the person takes all

reasonable and practicable measures to prevent or minimise the harm".

It is also an offence under the Act to contravene an environmental protection policy. This could become relevant in wetlands protection if elements of the Environmental Protection (Water) Policy 1997 were to be contravened. The Act also regulates the release of certain proscribed contaminants.

Applicable constraints: An authority or development approval is required prior to undertaking a proscribed environmentally relevant activity. The conditions on the authority may, amongst other things, require the holder to:

- Take measures to minimise the likelihood of environmental harm being caused
- Install and operate plant or equipment in a stated way
- Carry out and report an annual monitoring program.

For activities not covered by an environmental authority, voluntary industry codes of practice (CoP) can help avoid creating environmental harm and demonstrate compliance with the general environmental duty. Current approved codes include the Environmental CoP for Agriculture, Australian Prawn Farmers, Dairy Farming, Native Forest Timber Production, Sustainable Fruit and Vegetable Production in Queensland and Sustainable Cane Growing in Queensland.

3.4.3 Integrated Planning Act 1997

Objectives and techniques: The objective of IPA is to seek to achieve ecological sustainability through:

- Coordinating and integrating planning at the local, regional, and state levels;
- Managing the process by which the development occurs; and
- Managing the effects of development on the environment.

The two main mechanisms employed by the act are the creation of local planning schemes and a system of development assessment.

Responsible agency: Department of Local Government and Planning (DLGP).

Spatial coverage: The Act applies to the limits of the State. Local government boundaries and their planning scheme maps are most important for determining applicable constraints.

Factors that trigger application: Only certain types and degrees of development require approval through IPA. Self-assessable development, such as minor building work, does not require a permit but must comply with applicable planning scheme codes. Assessable development requires development approval through IDAS. The main difference between these types of assessment is that impact assessable developments are required to engage in public consultation on the proposed development. IDAS includes provision to coordinate all approvals required for the development by involving other agencies. Approvals and permits associated with development, but required under other Acts, are intended to be 'rolled in' to the IDAS process. When these 'roll ins' are complete, the IDAS process is likely to become paramount for assessing and mitigating the impact of development on wetlands.

Applicable constraints: IPA requires all local governments to develop planning schemes, which seek to achieve desired environmental outcomes (DEOs) through a development assessment process. The IPA planning schemes cannot prohibit development outright in most cases.

Instead, each development application must be assessed, on its merits, against the desired environmental outcomes. Planning schemes also contain a number of codes that specify in greater detail the performance criteria required to achieve DEOs. Codes can relate to the requirements of a specific area (such as wetlands), activity (such as subdivision) or element (such as biodiversity) within the local government area. These codes can contain provisions specific to the requirements of wetlands such as Brisbane City Council's Wetlands Codes.

Effective land-use planning issues
Land-use planning, in general, involves identifying strategies to achieve future desired outcomes for land-use and balancing the competing objectives associated with land use.

In Queensland, land-use planning is based on the concept of Ecological Sustainable Development (ESD) (development that improves the quality of life, both now and in the future, in a way that maintains the ecological processes on which life depends) implemented primarily through the EP Act and the IPA. More specifically, the stated purpose of the IPA is to achieve ESD by coordinating and integrating planning at the local, regional and state level. The object of the EP Act on the other hand is to protect Queensland's environment while allowing for ESD. The mandate of the EP Act is to protect the 'environment', defined in section 8 of the Act as:

(a) ecosystems and their constituent parts, including people and communities
(b) all natural and physical resources
(c) the qualities and characteristics of locations, places and areas, however large or small, that contribute to their biological diversity and integrity, intrinsic or attributed scientific value or interest, amenity, harmony and sense of community
(d) the social, economic, aesthetic and cultural conditions that affect, or are affected by, things mentioned in paragraphs (a) to (c).

The three elements of sustainable development: social, cultural and economic well-being; ecological processes and natural systems; and, economic development, are the responsibility of different government agencies in Queensland. For example, economic development is primarily the responsibility of State Development, as well as the Departments of Natural Resources and Water, and Primary Industries whereas the Environmental Protection Agency (EPA) is responsible for setting the required standards to maintain ecological processes and natural systems.

Although all government agencies are required to ensure that they consider the other elements of ESD to achieve a balanced outcome, EPA and Department of Local Government and Planning (DLGP), who administer the EP Act and IPA respectively, have a statutory objective to balance the three elements within their own activities. This has led to a challenging situation for the DLGP responsible for delivering integrated planning at the state, regional and local level consistent with ESD principles and the EPA who is expected to take a natural systems focus in its activities.

3.5 Revolving funds and land acquisition

In isolation, organisations administering revolving funds do not compel change (i.e., organisations operating revolving funds do not possess the legislative power to compulsorily acquire land). However, once land is acquired, it is often resold with a covenant attached. It is this element (i.e., the covenant) that compels change with regard to NRM.

Where land is designated to be of particular conservation significance, National, State and

Local governments have the authority to compulsorily acquire the land. This land will generally be incorporated into the existing range of national, state and local parks and managed by the appropriate authorities. However, this is a relatively expensive approach to resource management and government will not always be willing or able (e.g., with regard to raising funds to purchase and manage the land effectively) to undertake compulsory acquisition. There are a number of Non Government Organisations (NGOs) that collect donations to acquire and manage land that they deem to be of significant conservation value in relation to their particular cause (e.g., Bush heritage fund, see below).

3.5.1 Trust for Nature (TfN)

The TfN (www.tfn.org.au) is a not-for-profit organisation that collects tax-deductible donations with which it operates a revolving fund for the purchase of properties with conservation values. The organisation also purchases, retains and manages properties deemed to be of significant conservation values. The TfN is also authorised to declare covenants over private land as well as covering the administrative costs if the land is deemed to be of significant conservation value. The Bushbank program in South Australia provides a similar service to the TfN (see link below).

- http://www.environment.sa.gov.au/data/press/bushbank.pdf

The Ipswich local council in Queensland operates a revolving fund in its area of governance, funded initially by ratepayers (pers. comm., QLGA).

3.5.2 Australian Bush Heritage Fund

The Australian Bush Heritage Fund is a not-for-profit operation that collects donations to purchase and manage properties with signifcant conservation values. The ABHF currently manages 131,000 hectares throughout Australia.

- http://www.bushheritage.org.au/

3.6 Lease provisions

3.6.1 Draft State Rural Leasehold Land Strategy (SRLLS, Qld NRM&W)

http://dnr.qld.gov.au/land/state/pdf/draft_leasehold_land_mar03.pdf

The draft SRLLS proposes to reward those landholders that improve their land with more generous lease conditions (i.e., it provides a mechanism to reward sustainable land managers) while punishing those landholders that degrade their land by decreasing the duration of their lease. This mechanism is referred to as a rolling lease, whereby a system of 5-year audits is used to assess suitability for extension or reduction (generally in 10 year segments) in the term of the lease (i.e., two consecutive favourable audits will result in a lease being extended from 30 to 40 years, or conversely, two negative audits will result in the term of the lease being reduced from 30 to 20 years). The Strategy is based on the introduction of property resource management plans for all leasehold land that will (presumably) contain benchmark criteria against which the auditors can assess NRM progress (NRM&W 2003: 15):

Planned approach to property management

- Use property resource management plans (PRMPs) as standard new lease requirements to assist in clarifying rights and responsibilities, and in encouraging duty of care responsibilities:
  – Adopt a landscape approach to natural resource planning and management. (Landscape sustainability criterial targets taken from regional natural resource management (NRM) planning processes can guide the development of a PRMP, particularly the expected outcomes and performance indicators.)
  – Use third party certification of PRMPs against standards, codes and plans, and performance verification auditing by third parties and reporting at 5-yearly intervals.
  – Ensure that PRMPs can be used by lessees to assist in meeting other government requirements.

- Assist lessees to respond more efficiently and effectively to the multiple regulatory requirements affecting leases by using the PRMP.

- Manage the productive values of SRLL:
  – Discourage on-property degradation through the prevention of soil loss, acidity and salinity; the protection of biodiversity; the management of pest and weed infestation; appropriate fire management practices, etc.
  – Maintain viable property sizes by preventing subdivision of leases into less than a 'living area', and encouraging property build-ups/amalgamations in relation to term leases and perpetual leases
  – Encourage the remediation of degraded lands, wetlands and waterways by providing incentives (such as early lease renewal) for on-farm restoration or remediation projects.

- Integrate industry codes of practice/best practice in PRMP in line with regional NRM and other plans

- Identify and manage areas with nature conservation and cultural heritage significance

- Support preparation of PRMPs with coordinated information and technical guidelines

- The approved performance outcomes in the PRMP will be included as conditions in the lease document.

Potential issues

First and foremost, the SRLLS is applicable only to leasehold land. In the GBR catchment, leasehold land is located inland in the Burdekin and Fitzroy NRM regions. The most important land, with regard to wetlands is located predominantly on the coastal fringes that are almost exclusively freehold (Fig. 4).

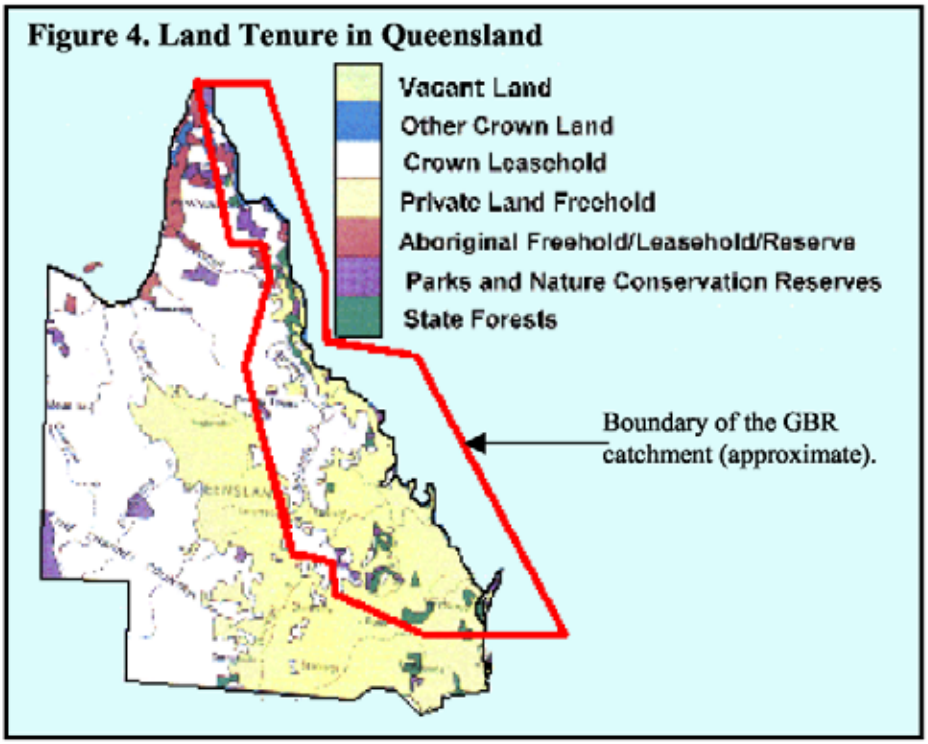

Figure 4. Land tenure in Queensland. Adapted from a land tenure map created by Geosciences Australia (http://www.ga.gov.au/education/facts/tenure.htm).

Non-Compliance

Dealing with and detecting non-compliance (i.e., breaches of existing regulations and obligations under PRMPs) under the SRLLS needs to be clarified. There are a number of potential issues that could undermine the effectiveness of the strategy.

First, a breach of regulations or obligations under the PRMP will result in a failed audit. However, other than a forfeiture of the right to have the lease extended for at least ten years (i.e., after another two 5-year audits; which is a relatively weak deterrent if the lease has anything more than 10 years to run) there does not appear to be any automatic penalty applied or remedial action required of the lessee (even in the case of illegal tree clearing, the draft SRLLS states only that a 10-year lease upgrade 'may' be removed). If 10 years is all that remains on the term of the rolling lease at the time of the failed audit the SRLLS states that: "the rolling lease will be discontinued, automatically becoming a term lease (NRM &E 38 2003)". However, if the lessee is relatively unconcerned about renewal of the lease (i.e., because they plan on retiring or have experienced continuing losses), then he/she is unlikely to comply with the audit and subsequently manage the land in a desired fashion (i.e., sustainably). Normal regulatory restrictions will still apply to the lessee's land under various State and Commonwealth regulations (i.e., the Land Act, EPBC Act, EP Act, etc.); however, the

obligations under the PRMP can effectively be ignored.

Second, there is a need to clarify what actions will result in a failed audit. With regard to the overall aim of the audit strategy:

> Throughout the life of a lease the target for every lessee will be to achieve some improvement in the overall condition of the natural resource, however small, every 5 years. The aim is to produce continuous improvement by achieving and maintaining the 'good condition' of the natural resource. (DNRM 2003: 18).

The meaning of "overall condition", in particular needs to be clarified. Does this accommodate actions that offset actions? This means that destruction of biodiversity in one area could be compensated by conservation in another area as long as the "overall condition" is maintained. For example, a lessee may decide that on-farm wetlands are taking up valuable cropland and fill them in while fencing off a relatively less productive, yet similar, nonwetland area on another part of the property. Is this acceptable under the SRLLS? Are there scientifically robust guidelines in place that would enable the comparison of areas of differing ecological value? How is the condition going to be monitored and what are the criteria for an improvement? How is a distinction going to be made between change of condition resulting from climatic impacts, such as drought and those that are management induced?

Third, the draft SRLLS mentions the use of 'forfeiture action', presumably as a means of deterring actions that will result in a negative breach (NRM&W 2003: 37–38):

> If a lessee fails to undertake two consecutive performance verifications, or three in total over any 20-year period, the lease would become liable to forfeiture action. If the remaining term of a rolling lease reaches 10 years and a negative performance verification occurs, or no performance verification is carried out, the rolling lease will be discontinued, automatically becoming a term lease. Consideration will be given also to a specified remediation program or, possibly, forfeiture.

The above is problematic for a number of reasons. First, in a 20-year period, a lessee could arguably cause irreparable damage not only to his or her own land but also neighbouring land and downstream ecosystems. Consecutive breaches over a 20-year period is simply too long a timeframe before remedial action is taken. By the time remedial action is taken, the ecosystem could have been damaged beyond reconstruction. Second, the ability to implement 'forfeiture action' (which presumably refers to the Minister's discretionary powers under the Queensland Land Act 1994 to issue a compulsory notice for remedial action) has been available in Queensland for at least 10 years and has not been implemented in a single case. Given this information, and with Queensland's historically poor record of regulatory enforcement in mind, why should the threat of forfeiture action be taken seriously in this instance?

4. Incentives that facilitate change

4.1 Management advice

4.1.1 Joint Sponsorship Research and Development Corporations

There are 16 joint Federal Government and industry sponsored RDCs in Australia administered by DAFF. The goal of the RDC program is to encourage innovation in the agricultural sector via research (or the funding of research) and the provision of extension designed to increase the productivity, marketability, sustainability and economic viability of targeted industries. RDC publications are available (for a fee or for free) to the public and industry participants. The individual RDCs also maintain websites containing general industry information and statistics. Links to all RDCs can be found at the following site:

- http://www.innovateaustralia.com/corp.htm.

Land and Water Australia RDC

"Land & Water Australia is specifically responsible for research and development (R&D) aimed at the productive and sustainable management of the land, water and vegetation resources underpinning Australia's primary industries and regional communities." LWA's Rivers division has published a substantial report looking at riparian management on sugarcane farms. The report talks about the importance of riparian and wetland management including some references to cost and benefits of appropriate management with regard to pest control and flood mitigation.

- http://www.rivers.gov.au/industry/mrlsi/index.htm

The LWA Riparian lands research program is currently in its second phase, project descriptions can be found at the following link along with reports from the first phase of work.

- http://www.rivers.gov.au/research/projects.htm

Meat and Livestock Australia RDC

MLA launched the Sustainable Grazing Systems initiative and has produced a producers guide to "management of grazing, soil, water resources, pastures, weeds, biodiversity and meeting market specifications". A number of fact sheets are also available on NRM and pest and weed control. Producer Initiated Research Development Grants (PIRDGs) are available to farmer groups for projects designed to increase productivity and sustainability.

- http://www.mla.com.au/content.cfm?sid=1429
- http://www.mla.com.au/content.cfm?sid=1426
- http://www.mla.com.au/content.cfm?sid=1427

Also supplies a number of best practice guides in relation to wastewater management, eco-efficiency and EMS (go to 'publications' and choose 'environment' category). A full list of links to rural industry bodies is at:

- https://www.mla.com.au/content.cfm?sid=260

Refer to Volume 1, Chapter 2, Appendix 2 of this report for further identification and description of MLA programs in NRM regions.

4.1.2 Cooperative Research Centres Program

"The CRC Programme (administered by the Commonwealth DEST) was established in 1990 to improve the effectiveness of Australia's research and development effort. It links researchers

with industry to focus R&D efforts on progress towards utilisation and commercialisation. The close interaction between researchers and the users of research is a key feature of the programme." Full list of CRCs: https//www.crc.gov.au/Information/about CRCs.aspx

CRC Sugar

Undertook research (prior to its winding up in 2003) into industry related topics including ways to improve cane yield, and reduce the environmental impacts of cane farming. All information is publicly available. The CRC website contains over 100 publications that may assist cane farmers and land managers as well as regional and local planners to achieve conservation outcomes on cane farms.

- http://www-sugar.jcu.edu.au/

CRC sugar completed a review titled "Riparian areas and on-farm wetlands in the Australian Sugar Industry" in 2002. The report contains a review of the legislative environment governing riparian and wetland management as well as the state of, and options and constraints facing wetland and riparian management. The report also briefly examines management options for riparian and wetland environments including market based and financial instruments such as tax rebates and tradeable credits.

4.1.3 Victorian Department of Primary Industries / Department of Sustainability and Environment

The DPI and DSE provide a number of services to landholders regarding sustainable farming and on farm conservation outcomes. It appears that the Victorian government is attempting to drive sustainability via the provision of information rather than offering farmer's direct grants or subsidies to implement certain management techniques or invest in certain infrastructure. Where compensation or subsidies are offered, they are generally administered for a set period and are designed to compensate for lost property rights or a significant change in the regulatory environment (see Water for Growth Initiative).

Agriculture and Landcare Notes

DPI provides numerous informational papers on the following topics: animals and livestock, crops and pastures, general farming, horticulture, landcare groups, soil and water, trees and native vegetation, weeds, fisheries and aquaculture, flora and fauna, forests, Land for Wildlife and minerals. Information is available in both PDF and html form. The 'notes' appear to be an excellent and wide-ranging bank of information for farmers interested in best management practice on their farms. DPI also maintains a webpage dedicated to new industries/products to aid on farm diversification.

- http://www.nre.vic.gov.au/web%2Froot%2Fdomino%2Fcm da%2Fnreninf.nsf/frameset/NRE+Information+Series?OpenDocument
- http://www.dpi.vic.gov.au/web/root/domino/cm da/nrenfa.nsf/frameset/NRE+Farminq+and+Aqriculture?OpenDocument

Further, the DPI runs 12 affiliated research corporations (funded by state and federal governments as well as offering commercial services to paying clients) around Victoria developing innovative and sustainable approaches to natural resource management. These research facilities (including working farms) are used to undertake pilot studies and farm trials (among other things) and are used as demonstration sites to illustrate research findings firsthand to interested producers.

- http://www.dpi.vic.gov.au/web/root/domino/cm da/nrecfa.nsf/67dfe622a27a81634a256a1d002b4401/49bb2b1972299c7cca256cdf000af984?OpenDocument

Naturally Victorian

Naturally Victorian is a state government export initiative designed to "demonstrate to the

world that Victoria is a reliable supplier of high quality, safe food products from environmentally responsible and ethically sound agricultural systems." The initiative is designed to create innovative ways of achieving sustainable outcomes on farms around Victoria so as to make them appealing to consumers in Japan, Europe and the US. The Naturally Victorian project encourages and supports a broad range of research, demonstration and communication activities addressing food safety and quality, animal welfare and environmental assurance. The project coordinates activities between major industry groups, government and landholders utilising favourable results from field trials as incentives for sustainable management rather than grants or subsidies.

- http://www.dpi.vic.gov.au/web/root/domino/cm da/nrenti.nsf/frameset/NRE+Trade+and+Investment?OpenDocument

Farm Monitor Project

"The Project provides a financial analysis of 70 farms from across south west Victoria in order to establish benchmarks for agriculture in the region, monitor trends in farm productivity and profitability, provide data to evaluate differences between top performers and other farms, and provide individual feedback to participants." Undertaking a similar type of study in Queensland may be beneficial to producers in the different industries (knowledge exchange and capacity building) as well as for government agencies and industry groups.

Environmental Management in Agriculture – Native Biodiversity Resource kit and related projects

The DSE program is an EMS-related initiative that aims to enable farmers to incorporate biodiversity management or the green, in 'clean and green' management systems. The research includes an exploration of the market potential for clean and green products.

- http://www.dse.vic.gov.au/web/root/domino/cm da/nrence.nsf/frameset/NRE+Conservation+and+Environment?OpenDocument

4.1.4 Queensland Environmental Protection Agency

The EPA is responsible for overseeing, among other pieces of legislation, the Environmental Protection Act 1994. With regard to the regulation of agriculture, there are only four environmentally relevant activities (Aquaculture, Feedlotting, Pig and Poultry) proscribed under the EP Act and they can all be classed as point source polluters. The EPA recognises a number of industry best practice guidelines under the EP Act (Codes of Practice). Farmers operating in an industry with an accredited code of practice are deemed to be fulfilling their 'duty of care' under the act and are, therefore, effectively immune from prosecution. See link below for full list. EPA is currently undertaking a review of the codes of practice and their continued relevance under the EP Act, due for release in May 2004.

- http://www.epa.qld.gov.au/environmental_management/planning_and_guidelines/codes_of_practice/industry_environmental_codes

4.1.5 Queensland Department of Primary Industries and Fisheries

The DPIF maintains a website containing information on NRM and sustainability for primary industries in Queensland. It carries out and sponsors research and is currently involved in a project investigating EMS and eco-labelling in Queensland's pastoral industries.

- http://www.dpi.qld.gov.au/sheep/14537.html

Also investigates potential markets for environmentally friendly goods and other innovative products. Access links to various industry pages and research from the following address:

- www.dpi.qld.gov.au

Refer to Volume 1, Chapter 2, Appendix 2 of this report for basic description of DPIF programs in NRM regions. Additionally, DPI&F provides fact sheets (DPI notes) dealing with some sustainable land management issues and access to information on EMS.

4.1.6 Conservation Volunteers Australia

CVA is a not-for-profit NGO involved in various conservation activities including tree-planting and training, appear to be available to assist private land owners (fencing, weed eradication, etc.). CVA currently administers the Commonwealth government 'green reserve' work for the dole scheme program.

http://www.conservationvolunteers.com.au •

CVA is currently involved in a joint venture program with BHP Billiton called 'Revive our Wetlands'. The program has contributed approximately $2.5 million worth of assistance and 15,000 volunteer days revitalising 100 of Australia's most significant wetlands.

- http://www.reviveourwetlands.net/revive/index.htm

4.1.7 Greening Australia (GA)

GA runs a number of programs aimed at achieving conservation outcomes on private land around Australia. GA Victoria, in conjunction with regional catchment management groups, private companies (e.g., Alcoa) and government bodies (DPI, DNE) assists landholders and community groups (Landcare) to coordinate and undertake various conservation activities including revegetation, remnant bushland protection and biodiversity conservation. Funding for operations comes from donations, private sponsorship and NHT grants. GA administered the Bushcare component of the NHT until June 2003. GA are currently involved with Farm forestry (funded through DAFF), and public/private farming finance leverage schemes with the CSIRO. Greening Australia, Queensland currently runs wetland management and related courses (some eligible for FarmBis subsidies) including: Riparian ecology and Management, Wetland ecology and Management, Weed control practices and principles, Species Identification field days, Hardware Field days.

See web links to on-ground action under national and state websites:

Farming Finance:

- http://www.greeningaustralia.org.au/GA/NAT/OnGroundAction/NationalPrograms/MBI.htm

Farm Forestry:

http://www.greeningaustralia.org.au/GA/NAT/OnGroundAction/NationalPrograms/FFS/ •

Green Corps:

http://www.greeningaustralia.org.au/GA/NAT/OnGroundAction/NationalPrograms/GreenCorps.htm •

Alcoa Revegetation Assistance Scheme: GA Victoria provides technical advice to landholders to facilitate on farm revegetation and manages access to machinery supplied with funding from Alcoa.

- http://www.greeningaustralia.org.au/GA/VIC/TipsAndTools/LandTechniques/AlcoaMachinery.htm

Borrel-a-Kandeloop Program: The Borrel program is a collaboration between GA Vic, Parks Victoria and the Corangamite Catchment Management Authority to rehabilitate and protect Ramsar Wetlands. The project was designed to involve the entire community including local landholders, community and indigenous groups, schools and the general public.

- http://www.greeningaustralia.org.au/GA/VIC/OngroundAction/SustainableLandscapes/Water/

4.1.8 Landcare Australia

Landcare Australia is a not-for-profit NGO that supports and promotes the landcare community movement by attracting corporate sponsors for landcare projects. State Landcare organisations are available to advise on how to form a landcare community group in any given area (as well as advising where groups already exist) and can supply technical and management advice.

- www.landcareaustralia.com.au

In Queensland, accredited landcare groups are supported by the state landcare office as well as

the DNRM&W. Members are insured for public liability and accidents and are able to apply for NHT funding as a landcare group.

- http://www.landcareqld.org.au/index.php

4.1.9 Land for Wildlife (LfW)

LfW was originally a Victorian initiative designed to encourage the maintenance of biodiversity on private land as well as raising awareness and signalling the importance of conservation – and possibly providing a stepping-stone to more permanent outcomes (covenants). Provides landholders with advice and a sign to display on their property.

- htto://www.nre.vic.oov.au/web/root/domino/cm da/nrenoa.nsf/frameset/NRE+PIants+and+Animals?Ope nDocument&f/4A25676D00283C7B/BCVIEW/34933B99F789EFOE4A25677800115944?OPENDOCUMENT]

See *Community Nature Conservation* program for link to Queensland LfW.

4.1.10 Agforce Queensland

Agforce Queensland is a peak industry representative for Queensland's rural producers "which strives to ensure the long term growth, viability, competitiveness and profitability of broadacre industries of cattle, grain, sheep and wool in Queensland." See section 6.3 for a review of consultation with Agforce.

4.1.11 Environs Australia

Non-profit organisation designed to support local governments in Australia to implement sustainable practices and conservation initiatives. Website provides links to other councils as well as case studies that may assist local councils to learn from each other.

- htto://www.environs.org.au

4.1.12 Banksia Foundation

Annual, national award for innovation in environmental management (see links to state awards).
http://www.banksiafdn.com/
Regional bodies and local government also provide awards to landholders for various achievements (e.g., The Wet tropics Management Authority awards the 'Cassowary Award' on an annual basis to those deemed to have made a significant contribution to the preservation of the wet tropics environment).

- htto://www.wettrooics.oov.au/odf/media/cassowarv awards.pdf

4.1.13 Australian Conservation Foundation

The Australian Conservation Foundation is a not-for-profit, membership-based environmental organisation. The ACF is a lobby group whose aim is to protect the Australian environment from unsustainable development. ACF has a number of standing campaigns (e.g., anti-nuclear, biodiversity, land management, land clearing and woodlands, etc.) and publishes reports and exposes on various topics.
http://www.acfonline.oro.au/aso/oaoes/home.asp

4.1.14 Wetland Care Australia

Wetland Care Australia is a non-profit company dedicated to halting the destruction of, conserving and repairing Australia's wetland habitats. It works nationally connecting government agencies, industry, communities and landholders to enhance and conserve

wetlands. WCA can assist private landholders by providing management advice, on ground assistance for repair and mitigation works as well as locating funding from various government and corporate sponsors. WCA employs specialised project officers with expertise in regional areas and able to provide support to specific industries including cane farming and grazing. Wetland Care Australia has a project with DPI&F Rangelands to Reef initiative with funding of around $60,000. Websites are:

- www.wetlandcare.com.au

The websites that contains a number of useful case studies as well as various information resources such as fact sheets is:

- www.wetlandcare.com.au
- http://www.wetlandcare.com.au/Content/anmviewer.asp?a=338z=4
- http://www.wetlandcare.com.au/Content/anmviewer.asp?a=348z=4

4.1.15 CANEGROWERS

CANEGROWERS is the peak representative body for Queensland cane farmers. CANEGROWERS has developed an environmental program for 2003–2006 designed to make the industry more sustainable: "The destination for 2006 will be one where the cane growing industry 'lives and breathes' sustainability. It will have 'developed a culture where strategic thinking and continuous improvement is internalised so that quality, efficiency and innovation become business as usual (CANEGROWERS 2003: weblink)'." See link below for program details:

- http://www.caneorowers.com.au/environment/Our%20Environmental%20Prooram%202003.pdf

CANEGROWERS founded the 'Mangrove Jack Award' for producers in the Proserpine and Tully cane growing regions. The award "recognises and rewards excellence in compliance with environmental best practice". There is a$1000 cash prize for the winner as well a trophy.

- http://www.canegrowers.com.au/offices/proserpine/AWARD.htm

For a descriptive list of CANEGROWRERS duties as the peak representative for Queensland cane farmers, refer to the following webpage:

- http://www.caneorowers.com.au/canegrowers.htm
-

4.1.16 Bureau of Sugar Experiment Stations

The BSES is an industry owned and funded research organisation. BSES created the COMPASS profitability and sustainability program in 2001 and has committed $5 million to its PROSPER initiative designed to boost production of Australian sugar towards 40 million tones per year.

See Volume 1, for more detail regarding BSES initiatives.

- http://www.bses.oro.au/bses 01 home.asp?page id=0

4.1.17 Queensland Fruit and Vegetable Growers

QFVG is the peak body representing Horticulturalists in Queensland. QFVG developed the 'Farmcare' best practice management booklet for farmers in 1998. QFVG is responsible for the management of the Water for Proft scheme as part of the state RWUEI. Their current and future goals for achieving inproved NRM on farms in the fruit and vegetable industry can be viewed on p. 4 of their submission to the Reef water quality protection plan (link below).

http://www.ofvo.oro.au/NewOFVG/ourpolicies/submissions/ReefWOPlanJuIv2003.pdf

4.1.18 Ecotourism Australia

"The Ecotourism Australia vision – To be leaders in assisting ecotourism and other committed tourism operations to become environmentally sustainable, economically viable, and socially and

culturally responsible." On larger properties (particularly beef), Eco-tourism can potentially act as an alternative or supplementary source of income for primary production activities (e.g., Banrock Station Winery).

- http://www.ecotourism.oro.au/index.asp
- http://www.banrockstation.com/
-

5. Concluding discussion

The objective of this report was to identify the criteria for the creation of new incentives or for the adjustment of existing incentives to improve their efficacy. Following a review of a range of regulatory and incentive measures designed to enhance land management practices, together with extensive consultation with industry and government agencies involved in promoting sustainable land management, a number of criteria were identified. Although wetland conservation and restoration was identified as a primary target for this study, there are limited incentives that specifically target wetlands (although there are a number of currently available incentives that could adversely impact on wetlands). Following consultation with industry and government representatives, effective implementation of incentives has been defined as achieving a relatively high take-up, minimal unintended outcomes and that they effectively meet their stated objectives.

In general, the incentives reviewed were not designed to be region specific; actions undertaken in one region may result in unintended outcomes in a different region; and, the efficacy of incentives varied when applied in the same way but in a different geographical location. In addition, environmental outcomes are rarely acknowledged in the objectives of the incentive.

A central finding from this study is that there are positive aspects to all the incentives reviewed. Existing programs that have failed to be taken-up or have the potential to result in unintended consequences or where the efficacy of the incentive to meet its stated objective is obscure, require an evaluation to identify how they could be adjusted and in some cases, redesigned, to improve their efficacy. Minor adjustment to existing incentives might be all that is required to address deficiencies. For example, where take-up or participation is poor, marketing through well-directed community engagement is likely to substantially improve uptake.

Individually, or in isolation, incentives offering an inducement, incentives that facilitate change and regulations relying on compulsion, result in improvements in sustainable land management. However, their efficacy could be substantially improved when at least one other mechanism and preferably all three are incorporated within the same policy. The following discusses a number of criteria for improving the take-up and efficacy of incentive policies.

5.1 Public benefit

Public funding for NRM incentives is a scarce resource. It is important that available funds are allocated to produce the most economically efficient, as well as the most environmentally effective, outcome.

Where financial incentives are provided to private landholders, payments should be restricted to a contribution to the provision of public goods. Ideally, private benefits should not be funded from the public purse. However, in particular situations, financial incentives can be used as a 'circuit breaker', offered for a limited period of time and set at a level that encourages investment, but does not provide full funding for on ground, capital works.

When financial incentives are provided for capital works, ensuring the longevity of the initial investment is important. This is particularly relevant to wetlands, where the long-term provision of the ecosystem services provided by these areas can be eroded easily (e.g., weed infestation). Provision should be incorporated within incentives for on-going management payments to ensure the continued supply of public benefits. Depositing funds into a trust account could address the impact of changes in political direction in long term funding arrangements.

5.2 Monitoring of outcomes

On-going monitoring of on ground outcomes associated with incentive payments is an essential ingredient for incentives. Monitoring provides justification for the provision of public funding and data collection facilitates determination of whether regional or catchment targets, as well as program objectives, are being met. Often, on-going monitoring of property level processes and management tools is non-existent. For example, the myriad of property management plans currently required from resource users are checked once, however no monitoring is currently undertaken to determine whether documented plans have been implemented, making an assessment of outcomes against stated NRM targets impossible.

Monitoring and data collection, analysis and compilation would aid the evaluation of current incentive programs and the creation of new, more cost effective programs in the future.

If the outcomes from incentive programs are to be monitored with respect to NRM, then the objective of the program must be made explicit. In addition, a statement within the objectives of what aspect of the program is to be monitored will provide encouragement for policy makers to be explicit about the purpose of the incentives. For example, if the objective is for all land managers to develop property management plans then monitoring would focus on the number of properties with plans in place. If the objective is for the plans to be implemented, then monitoring would be directed towards identifying on-ground progress towards meeting NRM targets.

5.3 Flexibility

Industry consultation identified a number of components of flexibility associated with access, delivery and eligible on-farm works that would improve the effectiveness of incentive programs

Access to financial incentives is often means tested, excluding those whose earnings or capital assets exceed a certain threshold. Means testing effectively rewards less efficient producers while ignoring industry standouts (i.e., those earning above the threshold rate). Means testing is important with regard to the provision of income support, however, when applied to programs designed to bring about the provision of public benefits, it is less applicable. Means testing can result in an artificial allocation of funding with little or no relevance to the level of public benefits likely to be earned. Where funding for NRM is allocated for specific purposes, then use of a number of criteria including level of ecosystem services to be provided, is recommended. However, broad-based projects, such as the Commonwealth EMS incentive scheme, should not be means tested.

Flexibility with regard to how incentive funding can be spent at the farm level is also important. Those programs that incorporate this aspect of flexibility (RWUEI, FarmBis) appear to have

been extremely successful at achieving high take-up rates. For example, FarmBis provides subsidised payments for enrolment in a wide range of business and NRM management courses but leaves the individual to decide in which particular courses to enrol. Further, the RWUEI included a financial incentive scheme that provided funding for investment in water use efficiencies. How the money was spent at the farm level was left largely to the discretion of the land manager (however, decisions were often informed by the assistance of an industry or government supplied extension officer).

Landholders and farmers are often suspicious of government motives behind the implementation of policy and incentive programs and resent the perceived 'top down' approach used by policy makers. To some extent, this can be overcome by building capacity at the local, catchment and regional level and delegating responsibility for the implementation of policy initiatives to the lowest possible effective level. A combination of top-down and bottom-up implementation processes is likely to be the most flexible with local or regional groups having more capacity for discretionary funding than organisations centred in Canberra or Brisbane.

Incentive payments also need to be flexible to adjust to changing community preferences and to allow for scientific uncertainty. Incentive programs, particularly those subsidised by the government, can entrench current practices. For example, if a landholder conserves and maintains habitat in order to obtain ecosystem service payments, it may be difficult in the future for conservation to be regarded as part of the duty of care. These changes could seriously undermine confidence in an incentive system.

5.4 Marketing incentives: Extension, education and community engagement

Marketing is an essential component of successful incentive programs. Incentives need to be marketed and they need to be marketed directly to the target resource users. It is not enough for programs to be announced through the popular media, nor is it enough simply to announce that funding is available for a particular purpose. For example, where a financial incentive for wetland conservation is proposed, it is important to explain to landholders how they negatively impact upon wetlands (e.g., illustrating cause: inappropriate NRM, and effect: wetland loss leading to degraded water quality) and conversely, how the incentive will help landholders to avoid causing damage and subsequently benefit from wetland conservation.

Marketing broad-based programs (such as FarmBis) in a manner that overcomes 'unconscious incompetence' is extremely important. It cannot be expected that land managers would enrol in a course in sustainable production or NRM if they have no understanding of why this would be beneficial to their farm business. For example, the FarmBis program, although highly successful in terms of overall participation, needs to encourage enrolment across the entire range of courses (i.e., NRM, marketing, management etc), as opposed to participation in financial management courses only.

It is essential that marketing of the Reef water quality program clearly promotes the link between on-farm actions and the quality of water entering the reef to landholders. This is vital if incentives to improve the quality of water entering the GBR lagoon are going to be effective. Additionally, the link between unsustainable management practices and loss of farm resources needs to be made clear, as landowners surveyed for Volume 3 identified profitability and maintenance of productivity as their major land management objectives.

Education and community engagement should be managed and implemented at the local level.

Land managers appear to respond favourably to direct engagement through workshops and grower group meetings where there is peer motivation and exchange of local knowledge.

Discussions with industry suggest that if the importance of specific NRM management techniques is conveyed effectively, the need for financial inducements might be reduced and conversely, enforcement of regulation made much easier.

5.5 Comprehensive risk analysis

An effective risk analysis is an important ingredient for all incentives as it has the potential to identify all the outcomes (both intended and unintended) that might occur. It is critical that the risk analysis extends outside of the government agency or division responsible for implementing the policy or incentive program to include all relevant stakeholders. This should include other divisions within the responsible government department, other government departments, industry, the community and landholders.

Comprehensive risk analysis is potentially time consuming. Any imperative to 'get something out quickly', particularly when the incentive is reactive rather than proactive, means that frequently the risk analysis is far from comprehensive. A well-conducted risk analysis could avoid unnecessary re-evaluation and review. Incentives subjected to reviews and refurbishment to address avoidable outcomes, run the risk of losing credibility with industry charged with their promotion and with resource users who regard government commitment to incentives as critical for their involvement.

6. Attachment 1: Industry discussions

6.1 Queensland Fruit and Vegetable Growers (QFVG)

The QFVG described their members as professional producers producing a high quality product using the most efficient technologies available. It was claimed that fruit and vegetable farmers are, on average, operating with very tight margins and therefore, do not have cash reserves for expenditure on sustainable resource management unless it can be demonstrated that there are productivity or financial gains. QFVG was enthusiastic about extension officers working out of DPI&F's Queensland horticulture Institute. This association provided QFVG with the technical background to underpin their education and extension work with growers.

The possibility of promoting product differentiation and diversification (eco-labelling) was discussed. The domestic market for sustainably grown produce was described as limited. Any opportunities to enter these markets had been investigated by the QFVG. The major retailers, particularly Coles and Woolworths controlling 70% of the wholesale market are a major driver and need to be interested for this product to be successful (i.e., they won't market the product unless there is demand). There are price premiums available for organic produce, and it appears that consumers may actually be buying organic produce believing that it is an environmentally sustainable product. This confusion may hamper sales of produce subsequently labelled as being produced on sustainable farms. Therefore, there needs to be a campaign to educate the consumer about the virtues of sustainable production and noting the difference between sustainable and organic produce.

At present, retailers are far more concerned with food safety and quality assurance (FSQA) rather than extrinsic characteristics such as environmental production and management techniques. Producers need to meet certain FSQA standards to be sold through Coles and Woolworths; however, it is unclear whether they are receiving a price premium for achieving these standards.

The overseas market for sustainably grown and in particular for organically grown fruit and vegetables is driven by the European Union. QFVG indicated that this market had already been fully exploited and accounted for a minor volume of produce.

The issue of cane farmers diversifying into fruit and vegetable production was discussed. Fruit and Vegetable growers are concerned that cane farmers in particular may be having a detrimental effect on industry QA systems and farm gate prices by expanding their production into fruit and vegetable commodities such as melons. There is the perception that cane farmers are dumping substandard products onto the market and eroding prices available to professional growers. The creation of fruit and vegetable accreditation programs (e.g., Freshcare) may help to overcome this problem and reward industry standouts with price premiums thus enabling them to invest in NRM.

Identification of incentive programs that had been effective.

The QFVG representative was enthusiastic about the Queensland government Rural Water Use Efficiency Initiative (RWUEI). The RWUEI has been effectively marketed by the QFVG to irrigators in the industry. Interestingly, participation in the financial incentive scheme within the RWUEI was initially poor. This was because water is a relatively small part of farm

expenditure (approximately 3–5%) and growers could not identify private benefits from participation. QFVG remarketed the scheme by emphasising the increase in yields attributable to more efficient irrigation systems and renaming the scheme "Water for Profit". QFVG showed that by watering crops more evenly (using more efficient irrigation systems) the yield and uniformity of the crop increased dramatically. The QFVG experience with the RWUEI shows the value of including industry when creating and marketing government policy. The FarmBis incentive has also been a highly successful and popular program (indeed the Horticulture RWUEI program won a DPI award) with producers mainly because of its flexibility, ease of application and the spread of training programs covered by the initiative.

The QFVG representative raised concerns regarding the DAFF EMS incentive scheme stating that the $3000 subsidy was insufficient and poorly targeted. The means testing was seen as ineffective because it means that the most efficient producers are unable to access the subsidy (and more particularly professional advice and training) and the incentive maybe acting as another form of income support for struggling producers.

QFVG do not want to be seen to be funded by government as this could give growers the impression that the organisation is implementing government policy. QFVG is keen to become entirely independent of government, relying instead on grower and industry contributions. They are attempting to gain industry sponsorship from fertiliser and professional extension companies. This may further enhance their reputation within the industry and this is particularly important where there is producer mistrust of government and government-sponsored bodies.

6.2 The sugar industry

Discussions were held with Queensland Canegrowers, Qld Sugar limited and the Qld Sugar Millers Council.

6.2.1 Queensland CANEGROWERS

CANEGROWERS (CG) made the point that creating wetlands on cane land is not the most cost effective way of improving the quality of water leaving cane farms. Rather trash blanketing, more efficient use of pesticides and fertilisers as well as crop rotation were cited as being more appropriate. CG pointed out that wetland creation on small farms is prohibitively expensive and would make already marginal farms essentially unviable (due to the need to remove land from production).

CG suggested that the creation of wetlands would only be possible on larger properties and consolidated smaller properties (the creation of community wetlands was mentioned). Cane drains were considered to provide a possible environment for the creation of wetlands. It was suggested that weed control would also be facilitated if wetlands were created in these environments.

Both information delivery and financial incentives were regarded by CG as essential requirements for up-take of improved land management practices. For the most part, marginal cane producers were regarded as the least likely to take-up changes in farm management and it was recommended that they be assisted to leave the industry or to diversify into other crops.
CG suggested that off-farm work was increasingly becoming necessary to supplement farm incomes. In some circumstances, off farm income is substantially higher than farm income, which might lead to a situation in which farmers become less inclined to manage their farms in

a sustainable manner.

6.2.2 Queensland Sugar Millers Council (QSMC)

The QSMC was asked to respond to questions concerning the opportunities for differentiating the product and in particular, the capacity of the mills in Queensland to pay a premium to growers and to differentiate the product. It would appear that the mills do have this capacity but that they are reluctant to undertake a role as a "policeman" for the industry.

QSMC suggested that there could be a market for green sugar and that Queensland Sugar needed to investigate this further.

The millers council is concerned that any further erosion of the profitability of cane farmers will lead to extensive reduction in cane supply, which will ultimately result in mill closures.

6.2.3 Queensland Sugar Limited

International buyers of Queensland sugar (85% of Australia's sugar is exported) are interested in price, quality and reliability of supply above all else. Australia is a supplier of high quality sugar and QSL is able to extract minor premiums for this characteristic because it improves the refining process (i.e., there are cost advantages to the buyers for obtaining quality sugar). According to QSL, there is no demand for sugar produced from 'green' cane (because consumers are not interested in green sugar). This is at odds with what has been conveyed to us from CANEGROWERS and the sugar millers association who appear to be interested in the idea of pursuing green cane and any associated premiums and believe that the product is marketable. Australia's main markets for sugar are in Asia (Japan, Malaysia, Korea, China). From the literature, there is very little demand for green products in Asia let alone green sugar.

There may be scope for obtaining price premiums for green sugar on the domestic market, although only a very small percentage of sugar produced is sold through supermarkets and corner stores etc (3%). The remainder of sugar sold domestically, to industry users, is sold at export price parity. Any suggestion that this might change has been met with threats from commercial users to "go offshore" or relocate operations overseas. Organic sugar has been sold at both Coles and Woolworths within the last year; however, consumer interest appears to have been insufficient evidenced by both retailers removing the product from their shelves.

There is a market for organic sugar; however, any price premiums available may well be quickly eroded as struggling cane farmers flood the market in the hope of securing a share of the profits. Organic cane production occurs in Brazil and is heavily subsidised in the United States and Japan.

Attaching a levy to retail sugar to create a fund for sugar producers to take-up resource management improvements (sugar has an inelastic demand) may be possible if marketing green sugar is unworkable. The money can be distributed through the sugar mills (the mills already have detailed access to farm and cane characteristics) at the same time as payments for cane. Another option is to use levied money to fund capital expansion within cooperative mills into diversified fields (cogeneration, bio-polymers, etc.). Subsequent profits generated can then be distributed back to farmers to supplement their payments for cane (at present proceeds from cogeneration, mill mud etc are retained by the mills) increasing on farm profit margins and allowing expenditure on sustainable resource management.

6.3 AGFORCE

Graziers are suspicious of the processes for government money allocation. Consequently, they may not want to hand over sensitive information (financial and farm specific) to access government funding. Many government programs are seen as excessively bureaucratic involving large amounts of red tape and this is a major deterrent to farmers considering accessing funding for conservation. Policy needs to be flexible (non-prescriptive) and easy to access.

It would appear that producers would more readily accept funding via government funded incentive programs if they were devolved via industry groups (such as Agforce). The Agforce representative made the point that many industry organisations are also government funded and growers are aware of this and may be just as wary of industry extension as they are of government programs. Perhaps major groups such as Agforce need to consider the option of becoming fully or partially independent of government funding (QFVG is considering this step).

An important point was made in relation to Sustainable Grazing Systems program (an MLA, CSIRO and government sponsored economic management and sustainability farm management program), along the lines that if farmers think the program is a good idea, makes sense and rewards them financially (and this can be illustrated first hand via visiting pilot properties, training days etc) then they are more likely to adopt it on their properties. Further, attaching a financial incentive to promote take-up of these programs may well have the opposite effect (i.e., the perception being that government is attempting to tell landholders how to manage their land). Further investigation of this point needs to be made.

Voluntary vegetation management groups created management plans prior to the creation of the new NRM groups (created under NHT2 following the lead from NAPSWQ). The original plans were not endorsed by DNRM and appear to have been sidelined in favour of the new NRM regional plans. The original voluntary groups contained leading (perhaps highly respected) producers in the grazing industry (and other pastoral industries) who now appear to be disenchanted with the planning and management process (indeed, their original plans may have been left out of the new NRM plans altogether). Further, there is the perception that the newly created NRM groups are simply another arm of government and this (when viewed in the context of suspicion and mistrust eluded to above) may negatively impact on future programs designed by and devolved through the new NRM regional groups.

The Agforce representative was enthusiastic about the idea of using extension to drive more effective and sustainable land management. Extension has been rolled back by DPI and DNRM in recent years as government departments endeavour to cut costs. This may have contributed to the erosion of trust between producers and government. Graziers find extension to be a valuable exercise particularly when they have the opportunity to build up a professional relationship and understanding over time with particular officers (capacity building). Again, extension officers may be more effective than financial incentives when it comes to encouraging landholders to take-up more sustainable and more economically rewarding land management practices because they are trusted by the farmer and are not viewed as an authority figure (i.e., the government) attempting to control or coerce certain practices and outcomes.

6.4 Queensland Local Government Association (QLGA)

The QLGA representative argued strongly that all local authorities have the capacity to

undertake NRM improvements if they are sufficiently informed and motivated. He cited examples where local authorities in central Queensland, with a relatively small rate base and limited funds, had been able to undertake on-ground works to improve the condition of the environment. It would appear that local authorities respond to quality information in a similar way to land managers. The suggestion was made that funding be allocated to inform local authorities.

Covenants and Rate Rebates: The idea of using covenants to achieve on farm biodiversity outcomes is being marketed by the EPA in particular as part of its Community Nature Conservation program. However there are several issues that need to be addressed in relation to land valuation and rate rebates. When land is covenanted, the zoning changes (from primary production to conservation), land values increase (when valued using DNRM unimproved value methodology) and subsequently rates increase. The solution to this problem is the use of differential rating. However, the QLGA representative stated that this is not straightforward. Differential rating involves shifting taxes from one ratepayer onto another and this is something that local governments are reluctant to undertake. Further, some local councils (particularly the smaller ones) do not have the expertise to undertake differential rating. Local councils are in favour of DNRM changing the way that it values land rather than them employing differential rating. (It is interesting to note that Queensland is the only state that relies solely on unimproved land value for rating and land tax purposes). Making rate rebates available, as an incentive for landholders to place covenants on their land is also an issue for local government. Smaller councils in particular operate with limited budgets and cannot afford to forego rates for conservation.

The QLGA representative put forward the idea of using NAP and NHT2 money to fund local extension officers. As mentioned above, extension officers may be a highly effective way of keeping landholders abreast of industry developments and providing management and technical advice.

It appears that there may be a lack of understanding concerning the workings of the Integrated Planning Act on behalf of local government. The QLGA is currently putting together a working paper designed to outline the full power of the IPA and its ability to help local government achieve desired environmental outcomes.

The QLGA representative viewed unfavourably the EPA's decision to scrap the land for wildlife scheme in favour of the Community Nature Conservation program. Land for Wildlife, although only voluntary, has been a highly effective capacity building tool. Landholders appreciate monthly and quarterly newsletters, finding them informative and practical as well as benefiting from field days and extension officers from QPWS. Some (although not all) landholders are enthusiastic about their involvement with the program, proudly displaying their Land for Wildlife sign on the front gate of their property.

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