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Great Barrier Reef Study
Productivity Commission
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Industries in the Great Barrier Reef Catchment and Measures to Address Declining Water Quality
WWF Submission, September 2002.

1. Introduction

Matters on which the Commission seeks comment and information

Q.1-3

WWF believes that Australia is already in breach of our international and national obligations under the World Heritage Convention which require State Parties to conserve, protect, present and transmit the natural heritage of listed properties to future generations, and where necessary, rehabilitate degraded sites. Article 4 of the Convention states that each State Party will do all it can to conserve, protect, etc, to the utmost of its own resources.

Article 5 states that each State Party will endeavour to take the appropriate legal, scientific, technical, administrative and financial measures necessary for the protection, conservation, presentation and rehabilitation of the area's natural heritage.

Article 6 states that the State Parties to the Convention recognize that listed natural heritage constitutes a world heritage for whose protection it is the duty of the international community as a whole to co-operate. Article 6(3) states that each State Party to the Convention undertakes not to take any deliberate measures which might damage directly or indirectly the cultural and natural heritage of the listed area.

The listing of a property sets a very high bar for the State Party. Within this context, the degradation of inshore ecosystems in the Great Barrier Reef indicates that past and present management efforts to conserve and protect inshore ecosystems have failed to maintain the area's natural heritage values.

WWF believes that the ongoing degradation of inshore reef ecosystems will affect our economic, social and cultural values. In the year 2000-01, over 1.7 million tourists visited the Great Barrier Reef Marine Park. In the year 2001, just over 60% of tourists to the GBR were from overseas. Just under 40% were from within Australia, and of these about 32% were from outside the GBR catchment, and about 6% were from within the catchment. Degradation of inshore reefs, if allowed to continue, may cause a decline in international visitation (the bulk of Reef tourism), and non-GBR catchment tourism. Local tourism may be more resilient, however, with the vast majority of tourists coming from afar, the failure to reverse pollution problems may have significant economic effects on GBR catchment economies that depend on tourism.

Social and cultural values are likely to be affected by continuing Reef degradation. The Reef has traditionally been perceived as a pristine wonderland. Increasingly, the public is beginning to become aware of the inshore Reef as polluted and degraded. This is likely to lower its status as an icon within Australia. It is socially and culturally important to our identity as Australians that we restore and maintain the Reef as a great cultural icon.

Q.4
WWF recommends the Herbert River catchment as it has a mix of both significant beef cattle grazing pressure in the upper catchment and intensive cropping pressure in the lower catchment. It is also a River catchment that has been deemed as High Risk by GBRMPA in its Water Quality Action Plan of September 2001. It has had a significant loss of natural wetlands (around 70%). It is not only close to reefs, but also in close proximity to seagrass beds and one of the two most important dugong habitats in the Great Barrier Reef (the Hinchinbrook Region Dugong Protection Area). Finally, there has been a substantial volume of scientific work carried out in this catchment, particularly by CSIRO, which would be of great assistance if the Productivity Commission were to undertake a more detailed investigation of a catchment.

WWF also recommends that a region affecting water quality in the Whitsunday Islands also be chosen for investigation. We recommend the Proserpine and O'Connell River catchments as a region. These catchments were identified by GBRMPA as high risk and have very high levels of sediment, nitrogen and phosphorus discharge. These catchment are primarily occupied by agricultural activities rather than any major population centres. They are also close to reefs and seagrass beds. CSIRO has also published evidence of significant reef decline as a result of river discharge from the Proserpine and O'Connell River catchments. The paper is: van Woesik, R. et al, 1999, Marine Freshwater Research, Vol 50, 1999, CSIRO Publishing.

2. Economic and social importance of main industries
Q.5-7
WWF will not attempt to comment in this submission on the merits or otherwise of the proposed economic and social indicators. However, we point the Commission to a number of reports that have some bearing on this matter.

- Queensland Environmental Protection Agency, May 2002, Total Economic Values: The Great Barrier Reef Marine Park and other marine protected areas. This document has an excellent list of references.
- Driml, S., Protection for Profit, GBRMPA Research Publication No.35.
- Driml, S., Dollar Values and Trends of Major Direct Uses of the GBRMP, GBRMPA Research Publication No.56.
- KPMG Consulting, Economic and Financial Values of the GBRMP, GBRMPA Research Publication No.63.
- Hajkowicz S.A. and M.D. Young (eds), Values of returns to land and water and costs of degradation. (PDF 2.8 MB). Available at: http://audit.ea.gov.au/ANRA/people/people_frame.cfm?region_type=AUS&region_code=AUS&info=econ_agres

WWF also recommends that the Productivity Commission examine other relevant information available on the National Land and Water Resources Audit website. In addition, the approach taken by the Murray Darling Basin Commission (refer to www.mdbc.gov.au), for example, in relation to Social Assessment, is worth considering, in developing appropriate social indicators.

Further, there is an extensive literature on the economic values of Marine Protected Areas in Australia and internationally. References can be provided should the Commission be looking broadly into this area.

Q.8-9
WWF recommends that you approach the Queensland Fisheries Service in regards to the recreational fishing information. In regard to useful data sources in addition to ABS, ABARE and OESR, we again suggest that you examine the National Land and Water Resources Audit. In relation to the sugar industry, we recommend that you approach the Sugar Industry Commissioner.

Q.10.
No comment.

3. Economic importance of main industries in 2010 and 2020.
Q.11-14
WWF recommends that you speak to the consulting firm, Economic Strategies Pty Ltd, which is under contract to WWF to examine scenarios for future economic activity in the GBR catchment, including 2010, in order to assess the potential social and economic impacts of climate change. If you do not already have the contact details, please email Imogen Zethoven on izethoven@wwfqld.org. In addition, Greenpeace produced a report entitled *Pacific in Peril* which takes a similar approach in relation to the South Pacific.

4. Current management approaches
Q.15
With respect to the sugar industry, WWF refers you to the CSIRO Townsville submission to the Independent Assessment of the Australian Sugar Industry. The report outlines the economic and environmental challenges facing the industry and makes recommendations for reform.

WWF also highly recommends the Commission access a report entitled Ecologically Sustainable Development in a Global Economy: Environmental Management in the Sugarcane Assignment Process. Herbert River District, Queensland Australia, 1993-96, CSIRO and the University of Western Ontario.

A simple list of principal activities associated with intensive cropping that have the potential to change water quality in the GBR lagoon is:

- The clearing of native vegetation, particularly riparian vegetation;
- The clearing and draining of natural wetlands;
- Inappropriate irrigation and drainage systems;
- The inappropriate use of pesticides (type of pesticide, quantity, timing of application, location, how applied). Of particular concern are pesticides that are persistent, bio-accumulative and/or toxic;
- The inappropriate use of fertiliser (as above);
- Development of acid sulphate soils;
- Lack of on-farm water quality management actions.

Please also see the attached WWF submission to the Hildebrand inquiry into the sugar industry for more information on this matter.

With respect to the grazing industry, WWF identified three principal activities affecting water quality in its *Clear? … or present danger* report:

- The clearing of native vegetation;

- Stock access to streambanks;
- Overgrazing and soil compaction.

WWF again refers the Commission to the National Land and Water Resources Audit for more information on Q.15.

Although there are excellent examples of 'best practice' at a property level within each of the major agricultural industries in the GBR catchment (grazing, sugar, horticulture), the decline in water quality is due to the low level of uptake of these practices throughout these sectors.

Q.16
The extent of past loss of natural capital that maintains water quality (riparian vegetation, wetlands) is so great that current revegetation or wetland restoration efforts are disproportionately small to the task. Investment in restoration activities needs to be massively increased and needs to be much more targeted (eg at high-risk catchments). Financial and other incentives to adopt improved farming practices are either not present or not powerful enough to drive change.

Q.17
The sugar industry has developed a Code of Practice for Sustainable Cane Growing in Queensland, the COMPASS manual and the Fish Habitat Code of Practice. Other codes used by agricultural industries in the GBR catchment include the Code of Practice for Sustainable Fruit and Vegetation Production in Queensland, and the Queensland Dairy Farming Environmental Code of Practice. The QFF also has an overall Environmental Code of Practice for Agriculture. The effectiveness of these codes and extent of uptake are major challenges for industry.

5. Policy Options
Q.18
WWF proposes a number of policy options that should be given priority for further analysis by the Commission. These are presented below. However, it is important to state first that WWF recommends any policy response be based on a risk framework, already developed by the GBRMPA. This position was endorsed by the Great Barrier Reef Taskforce, established by the Queensland Premier in 2001. The strength of the policy response and the degree of investment need to match risk to the Reef. WWF also strongly supports end of river targets, however, these must be followed by a target setting process upstream in order to effectively monitor water quality improvements throughout the catchment, and allow more fine scale targeting of policy responses as the Reef Protection Plan is implemented.

18.1 Protection of existing natural habitat
There is ample evidence of the negative impacts on water quality of the loss of natural assets, particularly native vegetation and wetlands. WWF believes that unless remnant natural habitats in the catchment are protected, investment into repair works will not deliver value for money.

WWF refers the Commission to the recent report to the eighth meeting of the Prime Minister's Science, Engineering and Innovation Council entitled Sustaining our Natural Systems and Biodiversity, held on 31 May 2002. The report "rests on the principle that it is far cheaper to maintain our natural systems than it is to

allow them inadvertently to be damaged and, subsequently, to inherit a costly repair bill". The report states that "it costs between ten and a hundred times more to repair a damaged natural system than it does to maintain it".

The report argues for the need for ecosystem services to be economically recognised and priced so that public and private sector responsibilities become clear. WWF recognises that this would be impossible to do within the GBR catchment alone, and that a national response is required. However, it is possible to address the second priority action recommended by Working Group to PMSEIC, namely to reduce land clearance, within the GBR catchment alone. We would add to this, prevent the loss of GBR wetlands. CSIRO and many partner organisations are undertaking significant research into identifying and valuing ecosystem services. WWF recommends the Commission contact Steve Cork and Stuart Whitten in the CSIRO Centre for Sustainable Ecosystems for further information.

We strongly recommend that the Commission examine policy mechanisms that could be used to prevent the further loss of native vegetation in the GBR catchment. The Queensland *Vegetation Management Act 1999* and *Land Act 1994*, and associated codes, policies and planning processes will be critical to this. WWF believes that all native vegetation in the catchment should be protected immediately. We do not support delaying action until water quality targets may not be reached.

Of interest in this regard is the decision coming into effect on 13th September 2002 to prohibit clearing in 30% of catchments subject to salinity hazard in the Queensland Murray Darling Basin. A similar mechanism could be used linked to water quality instead of salinity hazard and could be applied either throughout the GBR catchment. A less preferred approach would be to apply such reforms to high-risk and medium-high risk catchments only, but this may produce perverse outcomes by shifting the pressure to clear to medium-low risk catchments.

We also strongly recommend that the Commission examine policy mechanisms that could be used to prevent the further loss of natural wetlands in the GBR catchment. The *Queensland Coastal Protection and Management Act 1995*, the State Coastal Management Plan, and regional coastal management plans will all be critical to this. Currently, however, agricultural activities are not listed as Environmentally Relevant Activities under the Queensland *Environmental Protection Act 1994* (other than intensive feedlotting and aquaculture) and therefore the loss of wetlands due to agricultural development does not trigger the provisions of the State Coastal Management Plan. This needs to be addressed as a high priority.

A program to fund the management of these natural assets (vegetation, wetlands) is critical. Again, the nature of such a program should be examined by the Commission. WWF does not support compensation for future loss or changes in property market value, but we do support assistance for sustainable management.

18.2 Comprehensive Review of Existing Farm Support Programs
If regulatory protection of native vegetation and natural wetlands throughout the GBR catchment were to prove unachievable in the short term, then WWF would recommend a second preferred approach, as follows.

There is a vast range of farm support programs at both a Commonwealth and Queensland level, ranging from direct natural resource management programs to business, marketing and export assistance programs. These

programs should be identified and their eligibility criteria reviewed. Access to these funds should be contingent on land- or leaseholders not having applied for a permit to clear leasehold land in the last five years or freehold land in the last two years (ie from the commencement of the *Vegetation Management Act* in September 2000). This could be verified by checking the DNR permit applications database. Another eligibility criteria should be to ensure no loss of on-farm natural wetlands in the last five years. This may need to be confirmed by a statutory declaration from the land- or leaseholder.

18.3 Strategic Reef Revegetation Program
Ideally, all riparian areas throughout the GBR catchment should be revegetated. However, for the purposes of an achievable Reef Protection Plan that could be implemented in full over the next ten years, WWF highly recommends the funding of a major Reef Revegetation Program. This should have two components:

- the GBRMPA identified high risk catchments; and
- areas of the GBR catchment with high sediment/nutrient losses.

The 'no regrets' measures announced in the MOU between the Prime Minister and Queensland Premier involve a commitment to map areas of the GBR catchment with high sediment/nutrient losses, making the above approach achievable.

18.4 Widespread adoption of best management practice
The Commission needs to examine policy tools that facilitate the widespread uptake of best management practice for improving Reef water quality. Such practices need to be codified (eg in a revised Code of Practice at an industry level), integrated into regional NRM plans and then translated into property based plans or Environmental Management Systems with process and performance/outcome measures. The performance/outcome measures will provide a higher level of assurance that implementing property based plans will deliver the desired natural resource management outcomes. Financial mechanisms and government support to ensure ongoing implementation of these plans also needs to be examined.

There are many actual and potential incentives and best practice initiatives in Australia which should be considered in the GBR catchments. The Market Based Instruments Working Group, under the National Action Plan for Salinity and Water Quality (contact Michelle Scocciamarro in Environment Australia for information) would be able to provide extensive information on the range of schemes available.

WWF does not support increased 'resource security' as a reward for the development and implementation of plans to protect Reef water quality, however, we do support an initial outlay of public funds to fund the first year or two of property plan implementation. For example, the installation of silt/sediment traps and artificial wetlands as nutrient soaks will require an outlay of money by the landholder. WWF believes government subsidisation of such initiatives is critical for widespread adoption.

WWF supports the setting of targets for adoption of property based plans within a risk-based framework. For example, the Commission could examine a high percentage of uptake within a short timeframe in high-risk catchments, and lower levels of uptake in a longer time frame in low-risk catchments. This could be achieved through intensively promoting an assistance scheme in high-risk catchments, matched by a commitment to invest more funds for implementation in high-risk catchments.

18.5 Phase out inappropriate incentives
There is a range of inappropriate programs that still result in perverse outcomes for the environment, eg the Sugar Industry Infrastructure Package, shire-based River Improvement Trusts and the low cost of water in Queensland. The Commission should identify these incentives, programs or structures and recommend their rapid phase out or substantial modification.

Further, the Commission should examine the National Competition Council findings in relation to water pricing in Queensland and the other states. The water pricing process is not transparent and makes it difficult for community participation in pricing decisions and for the inclusion of externalities in water prices. Water infrastructure decisions in Queensland also have a history of non-compliance with COAG Water Resource Policy principles. The impact of water policy in Queensland on the inappropriate use of water, and poor water quality outcomes should be investigated.

18.6 Facilitate the greater uptake of organic farming
Organic products are in high demand in many overseas markets, particularly Europe. Given the problems of nutrient and pesticide pollution in inshore Reef waters, organic farming is an attractive option in the GBR catchment. After conversion to organic farm systems, farmers can experience higher gross margins than conventional farmers, however, the transition period can be economically difficult.

In 1998, the British government introduced improved subsidies to help farmers switch to organic farming methods. This year, the European Commission has agreed to further measures to promote greater uptake of organic farming. Australian governments, however, have done very little in this regard. WWF recommends that the Commission examine policy mechanisms to assist farmers during the transition period to organic farming, within the GBR catchment specifically.

Q.19
WWF believes the Commission should distinguish between the various GBR catchments on the basis of risk to inshore marine ecosystems. As stated earlier, we support the largest proportion of investment being channelled into high-risk catchments and into areas that have been mapped as major sources of sediment-nutrient loss within GBRMPA's medium-high risk catchments. Although this approach has higher administrative costs, as recognised by the Commission, it is far more strategic and outcome orientated. An approach of treating the entire GBR catchment equally would produce very little, if any, measurable outcome.

Q.20
WWF refers you again to the National Land and Water Resources Audit and the PMSEIC report to assist in the Commission's analysis of costs and benefits of policy options.

Q.21
WWF recommends that the Commission examine the Moreton Bay partnership initiative as a model approach to potential GBR institutional arrangements. This initiative combines all three levels of government and has been very successful in integrating the science community with governments and the general public. The model has evolved over time and there are many lessons that could be learnt and applied to the GBR.

General comment on the PC Study and the generation of results
WWF is unclear about the way in which the information collected in the above questions will be used and conclusions drawn. The Issues Paper recognises (p.4) that there are substantial difficulties in linking human activities to water quality problems and their seriousness. Although the data and the methods of collection are vital, WWF is also very interested in the model and methodology (ie assumptions used) that will be used in generating a base case, and in determining the relevance of water quality to overall environmental degradation of the GBR.

Further, the model will presumably be used to estimate the results of applying policy options and projecting the costs and benefits over time. In some cases, there will be a need to combine a range of policy options. How will policy options be analysed, separately and in combination? Further, the results of the modelling will be highly sensitive to assumptions. WWF would appreciate more information, and an opportunity to comment, on the intended methodology and assumptions.

Conclusion
To reverse the annual increases in pollutant loads to the GBR lagoon, substantial outlays of government funding will be required. Jon Brodie, of the Australian Centre for Freshwater Research, and previously of GBRMPA, identified the cost of rehabilitating the catchment at around $300 million, and that was just to restore riparian areas and wetlands. However, annual income from the Great Barrier Reef is much greater than this. WWF therefore believes investment in protection and repair will produce long-term economic benefits to Queensland and Australia.

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WWF Australia

13 September 2002

Great Barrier Reef Campaign

Submission to the Independent Assessment of the Sugar Industry's Viability and Restructuring Needs

1. Introduction

1.1 The World Wide Fund for Nature Australia (WWF) established a campaign to highlight threats to the Great Barrier Reef World Heritage Area and to advocate for solutions to mitigate or prevent these threats. One of the key threats to the Great Barrier Reef (GBR) is from land-based sources of pollution. According to the scientific literature, agricultural run-off is the major source of pollution affecting the quality of inshore Reef waters. Run-off is primarily comprised of three components: sediment, nutrients and pesticides. There are three major sources of agricultural run-off: grazing lands, cane lands and horticultural properties. This submission focuses on cane lands, given the nature of the Independent Assessment.

1.2 WWF also has concerns about the effects of cane-farming on terrestrial biodiversity, including the loss of freshwater wetlands, riparian vegetation, coastal forests and woodlands, and habitats of rare and threatened species.

1.3 This submission will focus on the environmental drivers for reform and on policies that would deliver improved environmental outcomes.

2. WWF Vision for the Cane Growing Industry

2.1 WWF supports an ecologically sustainable and prosperous sugar industry. Our vision is that cane farms are managed in a truly sustainable way. This has four major components. Firstly, existing riparian areas and wetlands are conserved. Where these have been removed, riparian and wetland restoration is a pre-requisite to sustainable farming. Secondly, the nutrient cycle must be closed (as far as humanly practical). This would involve, amongst other things, establishment of silt traps and precision fertiliser management. Thirdly, minimum tillage must be implemented in order to conserve soils. Fourthly, integrated pest management must be introduced, in order to avoid the use of pesticides. Where pesticides continue to be used, precision use is essential.

3. Context

3.1 The Great Barrier Reef was inscribed on the World Heritage list in 1981. Australia's obligations under the Convention are to conserve, protect, present and transmit to future generations the natural heritage significance of the area. WWF believes that the natural heritage significance of inshore parts of the Great Barrier Reef adjacent to developed catchments is being degraded. The Commonwealth has legal obligations to abate and reverse that degradation, both as a party to the Convention and under the *Environment Protection and Biodiversity Conservation Act 1999*.

3.2 The Great Barrier Reef Marine Park Authority last September released a Catchment Water Quality Action Plan which contains pollutant reduction targets for each of the developed GBR catchments. If met within the 10 year timeframe to 2011, the targets will only abate the decline in water quality, not return inshore waters to levels that would allow rehabilitation of degraded ecosystems. The targets are therefore very modest. Even so, WWF strongly supports their achievement. Structural reform of the sugar industry provides a mechanism to contribute to meeting these targets.

3.3 The Queensland government's proposed Reef Protection Plan also presents an opportunity to deliver policy, program and regulatory reforms relating to the sugar industry that would enhance Reef protection.

4. Overview of Environmental Issues

4.1 Expansion of Cane Growing

4.1.1 The sugar industry in Queensland has expanded rapidly in recent years. The area assigned to cane in Queensland rose by over 40 per cent between 1989 and 1998 (Sheales, 2000/2001). Between 1990-99, there has been a 65% increase in the Herbert-Burdekin Mill region, a 26% increase in the Northern Mill region, and a 22% increase in the Central Mill region. By 2001, cane lands occupied 527,747 hectares. Table 1 shows the rate of expansion from 1996.

Table 1: Cane Production Areas

Cane Production Areas as at 30 June						
Mill Region	**1996**	**1997**	**1998**	**1999**	**2000***	**2001**
Northern	101,922	108,908	113,931	117,506	120,652	121,122
Herbert/ Burdekin	149,260	150,020	149,759	149,470	149,518	152,912
Central	137,807	139,937	143,733	145,088	145,871	148,201
Southern	94,789	99,112	100,654	103,345	105,792	105,512
TOTAL	483,778	497,977	508,077	515,409	521,832	527,747

* as at 31 March 2000
Source: Sugar Industry Commissioner, Annual Report, 1 July 2000 – 30 June 2001

4.1.2 Areas of continued significant growth, according to the Sugar Industry Commissioner Annual Report 2001, are: Tableland and Tully in the Northern Region, Invicta in the Herbert/Burdekin Region, Proserpine and Racecourse in the Central Region and Isis in the Southern Region. Pressure for growth in other Mill areas appears to have stabilised, or even contracted.

4.1.3 The major wave of expansion during the 1990's resulted in extensive environmental damage and loss. This resulted in significant community conflict over the loss of forests, wetlands, riparian vegetation and natural floodplains. Calls by conservation groups for action to ameliorate the damage resulted in the Sugar Coast Environment Rescue Package, jointly funded by the Commonwealth and Queensland governments.

4.1.4 The wave of expansion during the 1990's was precipitated by three major drivers: high world sugar prices; the joint Commonwealth/Queensland Sugar Industry Infrastructure Package which provided $38 million of public funds for cane rail expansion and new drainage schemes; and the Queensland regulatory regime which required physical expansion by the industry.

4.1.5. The Queensland *Sugar Act 1991* included a requirement for expansion of 2.5% annually (about 10,000 ha) statewide between 1991 and 1995 (Shrubsole and Johnson, 1999). This section was removed when the Act was rewritten in the late 1990's.

4.1.6 The *Sugar Act 1999* responded to the report of the Sugar Industry Review Working Party, *Sugar Winning Globally*. The Act was developed without any input from conservation groups. Repeated requests to the Queensland Minister for Primary Industries to participate in at the least the development of the environmental aspects of the legislation went unheeded. In WWF's view, the resultant legislation is well below best practice. It fails to include ecologically sustainable

development in the objects of the Act and therefore fails to operationalise how such an object could be met.

4.1.7 The *Sugar Winning Globally* report recommended that all cane production boards be required to develop and publish environmental and land use guidelines by 1 July 1998, for use in assessing proposed cane production areas to determine:

- If a cane production area should be granted at all;
- If granted, any conditions which should be imposed.

4.1.8 The report recommended that the Queensland Departments of Environment and Natural Resources "shall be consulted by each Cane Production Board in the course of developing these guidelines and assessing applications" (Recommendation 4.18).

4.1.9 Consistent with the report's recommendation, the Act delegates environmental responsibility away from the Queensland government and down to the local cane production boards. However, the report recommended that local cane production boards be *required* to develop and publish environmental and land use guidelines. Instead, the Queensland government made the development of guidelines a voluntary measure.

4.1.10 According to the Queensland Sugar Industry Commissioner (McNally pers. comm.), as at the beginning of April 2002, 24 out of the 26 cane production boards are known to have developed environmental guidelines. Under the Act, the state government is not required to approve the guidelines. State government agencies have involvement in their development, but the final decision rests with the industry. This 'hands-off' and voluntary approach by the Queensland government to environmental regulation is in stark contrast to the heavily regulated nature of the industry in all other matters.

4.1.11 The second part of Recommendation 4.18 by the Sugar Industry Review Working Party states that:

"The holders of all cane production areas issued after 1 July 1997 shall be required to submit a statutory declaration within twelve months of the area being planted as to their compliance with any conditions imposed on the area. The Cane Production Board is to arrange for a random sample of these declarations to be checked by people with appropriate expertise…

If the Cane Production Board becomes aware conditions on a cane production area have been breached, the Board is to attempt to have the cane grower comply with the conditions.

If rectification is not practical, or the holder of the cane production area declines to remedy the situation, the Cane Production Board will then cancel the cane production area forthwith, and no further cane production areas will be issued over that parcel of land for five years."

4.1.12 These recommendations were not incorporated into the Act. The resultant Act reflected the minimum possible approach that could be taken to environmental reform.

4.1.13 A Natural Heritage Trust grant (Bushcare project 97/2744) was provided by the Commonwealth in the late 1990's to assist the Queensland government to develop a set of state-wide environmental guidelines which could act as default guidelines where cane production boards had no guidelines in place. The guidelines (see Attachment 1) were developed by the Queensland EPA/QPWS.

4.1.14 A briefing from Environment Australia to the former Minister for Environment and Heritage, the Hon. Robert Hill, dated 11 October 2000, stated that the guidelines are in the form of a draft set of regulations under the Queensland *Sugar Act 1999* (Dickson, 2000). The former Minister was keen for these guidelines to be progressed as regulations under the *Sugar Act*, however, there has been no movement at a state level towards this goal. After repeated enquiries

by WWF, it appears that no one currently in the Queensland EPA/QPWS is aware of these guidelines.

4.1.15 Another major problem with the process of cane assignment is that the decision to grant increases in the number of hectares included in cane production areas is made by the cane production board, which is required to accept the advice of the local Negotiating Team on horizontal expansion. WWF is very concerned that decisions of major public interest often involving the loss and destruction of areas of high conservation value are devolved to the sugar industry and lie outside the realm of public governance and accountability.

4.1.16 WWF is also very concerned about the process for setting environmental conditions on new grants of cane productions areas or variations to cane production areas. These decisions are made by the cane production boards. Again, the process for determining environmental outcomes of potentially major public interest is left entirely to the industry. WWF believes there is a strong correlation between environmental self-regulation (in various forms over the years) and the widespread loss of wetlands and native vegetation cover, major reduction in lowland species abundance and major off-farm effects on river systems and increasingly on inshore Reef ecosystems.

4.1.17 WWF notes that a report on the industry by ABARE (Sheales 2000/2001) states that "The regulatory system is no longer regarded as hampering the industry's ability to expand". WWF believes that the issue of physical expansion of the industry requires a major overhaul and lies squarely within the scope of the independent assessment on the sugar industry's viability and restructuring.

4.2 Unviable Farm Size

4.2.1 The size of a farm is a basic variable that often raises questions about the ability or willingness of farmers to adopt more sustainable practices (Grasby *et al*, 2000). Larger farms allow the owner greater flexibility to implement more sustainable farm practices.

4.2.2 The average size of a cane farm is around 75 hectares. This figure is increasing, with cane farms now being 50 per cent larger on average than they were in 1980 (Sheales 2000/2001). Table 2 looks at average farm size of sugar farms surveyed by Grasby *et al* (as a frequency distribution):

Table 2

Farm Size Distribution		
Total farm size (hectares)	**Frequency**	**Percent**
0-49	206	21.5
50-99	310	32.3
100-199	260	27.1
200-299	92	9.6
300-5,999	91	9.5
TOTAL	959	100.00

Source: Grasby *et al*, 2000

4.2.3 Carden (pers. comm.) argues that there is a direct relationship between farm size and viability and that smaller than average farms are likely to be or become increasingly unviable. On the basis of the above survey results by the CRC Sugar, and on the basis of farm size alone, at least 21.5% of farms could be considered unviable either now or in the foreseeable future. Of course other factors such as whether the farm is fully or partly owned need to be taken into account. Nevertheless, there is a strong correlation between size, economic viability and the capacity to implement sustainable farming practices.

4.3 Management of Existing Cane Farms

4.3.1 WWF is very concerned about the environmental effects of management of existing cane lands. Much has been written on this subject, and so the description of effects below is brief.

4.3.2 *Nutrient and Sediment Run-off to the Great Barrier Reef*: In terms of farm inputs, fertiliser use is the major concern in the GBR catchment. Sugarcane is a major user of N, P and potassium (Taylor and Brodie, 2000). There is overwhelming evidence that at least 50-75 kg N/ha is being lost annually from the root zone within canelands, although not necessarily to water (Rayment, 2000). According to a recent scientific consensus statement published on the website of the CRC Reef Research Centre, "Run-off of sediment and nutrients to the Great Barrier Reef has increased several-fold as a result of past and current land-use practices. There is significant concern that coastal ecosystems in the Great Barrier Reef World Heritage Area (GBRWHA) are being adversely affected as a consequence of this increase" (Williams *et al,* 2002).

4.3.3 *Pesticide Run-off to the Great Barrier Reef*: A report by the CRC Reef states that insecticides and herbicides, heavy metals and polyaromatic hydrocarbons are all impinging on the health of the Great Barrier Reef. The report finds that studies to date have generally found low concentrations of these pollutants, indicative of a relatively unpolluted environment. Exceptions are coastal sites adjacent to human activity such as ports and harbours, urban centers and areas adjacent to intensive agricultural activity (Williams, 2001)

4.3.4 The report identifies that the pollutant of greatest concern in terms of its impact on the Great Barrier Reef (other than dissolved inorganic nitrogen) is the herbicide diuron. "Significant levels of diuron, used extensively in cropping, have been found in the sediments adjacent to all rivers examined in the high rainfall (Wet Tropics) coast between Port Douglas and Townsville and the Fitzroy River. Diuron has also been detected in inter-tidal seagrasses between Cairns and Townsville and is a potential threat to seagrasses" (Williams, 2001).

4.3.5 *Loss of Wetlands*: Wetlands are essential for maintaining the ecosystem health of a catchment. The expansion of the sugar industry has resulted in extensive loss of wetlands. Approximately 60-80% of coastal freshwater wetlands have been lost in the GBR developed catchments. Examples include:

- 60-70% of Melaleuca wetlands have been lost from Cairns to Ingham;
- approximately 60% of coastal wetlands have been lost in the Russell-Mulgrave Rivers catchment;
- approximately 65% of coastal wetlands have been lost in the South Johnstone and the Tully River catchments;
- approximately 70% of coastal wetlands have been lost in the Herbert River catchment;
- approximately 70-80% of wetlands have been lost on the Burdekin River floodplain.

Without wetlands, the capacity of the catchment to mitigate run-off by capturing and cycling sediments and nutrients is severely reduced.

4.3.6 *Loss of Native Vegetation*: About 50 per cent of the GBR catchment has been cleared or thinned for grazing and cropping. Most clearing is due to grazing expansion, however, during the wave of expansion in the 1990's, clearing of remnant patches of coastal forests and woodlands in cane dominated areas accelerated dramatically.

4.3.7 For example, the Plane Creek coastal catchment to the south of Mackay lost on average 1,200 ha of remnant old growth forest and bushland each year from 1991 to 1999. Nearly 600 ha of remnant old growth forest and bushland were cleared each year from 1991 to 1999 in the Proserpine catchment, nearly 400 in the Barron River catchment and 340 ha in the O'Connell catchment. All of these catchments are dominated by cane growing and all are deemed to be 'High Risk' catchments by GBRMPA (GBRMPA 2001). Significant levels of clearing are still occurring in some cane regions today.

4.3.8 Clearing of vulnerable or 'of concern' regional ecosystems is still permitted on freehold land in Queensland. This is a totally unsustainable activity that will push many ecosystems into the endangered category and many species to the brink of extinction.

4.3.9 *Rare and Threatened Species*: The extensive loss of remnant forests and woodlands for cane development has resulted in a large number of threatened species in cane growing regions. As mentioned earlier in this submission, the Commonwealth and Queensland governments recognised this problem in the mid-1990's and funded a Sugar Coast Environment Rescue Package, which was primarily aimed at conserving the habitat of the endangered mahogany glider. However, it also addressed to a limited extent habitat needs of a number of other rare and threatened species listed under the Queensland *Nature Conservation Act 1994*. The ongoing loss of remnant vegetation in cane regions continues the pressure on many rare and threatened species.

4.3.10 *Other Environmental Issues*: Inappropriate or inadequate drainage, acid sulphate soils, water use, use of mill wastes and potential heavy metal contamination are other issues which the sugar industry is dealing with, with varying forms of success. Collectively, these issues can have significant effects on water quality both at a surface and groundwater level.

5. Existing Industry Environmental Initiatives

5.1 Canegrowers have developed an *Environment Code of Practice for Sustainable Cane Growing in Queensland* (Canegrowers, September 1996). The Code was developed as a legal defence under the Queensland *Environmental Protection Act 1994*. Unlike all other industries in Queensland, agricultural industries were made exempt from the licensing system under the Act. If a third party alleges that a farmer, through cane farming activities, is causing environmental harm, the farmer can use compliance with the Code as a legal defence in Court.

5.2 The uptake of the Code has been very low. Presumably in response to this, Canegrowers developed COMPASS – a self-assessment industry workbook. COMPASS (COMbining Profitability And Sustainability in Sugar) is a laudable initiative to assist farmers with 'direction setting': "Part of this direction setting is an assessment of where you currently are in line with the Code of Practice for Sustainable Cane Growing in Queensland" (Canegrowers, 2001). However, WWF has little faith that individual growers will respond any differently to COMPASS, than they did to the Code. This is particularly so, given the strident denials in recent times from senior Canegrowers officers that the industry is not having any impact on the Great Barrier Reef, estuaries or rivers.

6. Recent Structural Reform in the Queensland East Coast Trawl Fishery

6.1 The Queensland East Coast Trawl Fishery was recently subject to a major structural adjustment process which was driven largely by environmental factors. Even though the fishery had limited-entry licensing, trawl effort (a combination of days fished and the size of the boat hull) was increasing annually and placing tremendous pressure on the Great Barrier Reef World Heritage Area. Although the fishery is managed by the Queensland government, the Commonwealth had a clear role to conserve and protect the natural heritage significance of the World Heritage Area.

6.2 The former Federal Environment Minister released a media release on 13th January 1999, which stated amongst other things:

- "Ensure the State management plan for the trawling industry requires trawling to be ecologically sustainable.
- If the plan is inadequate, GBRMPA to introduce its own management arrangements for trawling in the Marine Park.

- Commonwealth to ensure it is mandatory for all trawling vessels to be fitted with and operating satellite linked Vessel Monitoring Systems at all times.
- Commonwealth to make it compulsory for trawlers to have by-catch reduction devices and turtle excluder devices by March 2000".

6.3 The Commonwealth refined it's position over the 2.5 year negotiating period (1999, 2000 and the first half of 2001). Along with the above measures, the Commonwealth required that 5% of trawl effort be removed per annum over a five year period, which was to start from 1 January 2000. After extensive negotiations with the Queensland government, it was agreed that:

- trawl effort would be capped over the entire fishery;
- trawl effort would be further capped within the World Heritage Area;
- 15% of trawl effort would be bought out of the entire fishery by 1 January 2001;
- Before 2004, the Queensland government would review trawl effort in the fishery to decide whether it is ecologically sustainable. If effort is found not to be sustainable, the plan must be amended to reduce trawl effort in order to reduce the fishery's impact on the environment;
- $20 million would be provided jointly by the Commonwealth and Queensland governments to buy out 98 trawl licences (out of a total of about 750).

6.4 A number of statements can be made about this process which WWF believes have relevance to the sugar industry structural reform process:

1. Environment drivers were a major factor behind structural reform;
2. The Commonwealth's major goal of the structural reform process was to reduce pressure on the Great Barrier Reef World Heritage Area;
3. Expansion of the industry was unsustainable. The Commonwealth recognised that trawl effort had to be capped and reduced;
4. The Commonwealth and Queensland governments went beyond 'no regrets' measures and recognised that public funds should be provided to remove operators from the industry;
5. Those who were removed from the industry were economically unviable;
6. The majority of those who have remained in the industry have benefited financially from the reform process and now hold a more valuable licence.

7. Recommendations for Structural Reform of the Sugar Industry

7.1 Ecologically Sustainable Sugar Industry

WWF recommends that the structural reform process has an overarching environmental objective. WWF recommends that the overarching objective should be to achieve an ecologically sustainable sugar industry. Underlying this, should be a range of secondary objectives:

- **to reduce nutrient/sediment/pesticide flows to the Great Barrier Reef in order to assist the achievement of GBRMPA's pollutant reduction targets;**
- **to prevent the further loss of wetlands and native vegetation;**
- **to prevent disturbance to acid sulphate soils;**
- **to ensure effective property management planning;**
- **to ensure effective sustainable farm management practices are implemented.**

Environmental concerns about cane growing and its off-farm effects have become a significant issue in recent times. It is critical that the structural reform process addresses these concerns and attempts to place the industry on a more ecologically sustainable footing. Previous attempts to do so have failed.

The self-regulatory nature of the cane assignment process means that as soon as world prices for raw sugar increase, another wave of expansion will occur, at even greater environmental cost

as natural resources become more scarce. It is essential that governments assert their role through this structural reform process to protect the public's interest in the environment, both on land and in the Great Barrier Reef.

7.2 Cap Expansion of the Industry

WWF recommends that a cap be introduced on the number of hectares of canelands in Queensland. A cap should be set for each of the four mill regions (Northern, Herbert-Burdekin, Central, Southern) and, within these four regions, for each of the mill areas.

Given the Sugar Industry Commissioner statistics on cane expansion in the Annual Report 2000-2001, the cap will only affect a small number of areas:

- Potentially 2 areas out of 7 in the northern mill region (Tableland and Tully);
- Potentially 1 area out of 7 in the Herbert-Burdekin mill region (Invicta);
- Potentially 2 areas out of 6 in the Central mill region (Proserpine and Racecourse);
- Potentially 1 area out of 7 in the Southern mill region (Isis).

WWF believes that over-expansion of the industry has occurred at the expense of catchment health and that physical contraction is necessary in order to restore essential ecosystem services. Placing a cap on expansion will clearly have knock-on effects for mills. It will obviously be necessary to integrate this reform into a rationalisation of the milling industry.

7.3 Size of Cap

WWF recommends that the size of the cap should reflect less than the existing number of hectares occupied today by cane.

Expansion has occurred in areas that are marginal and yielding low CCS. These areas should be converted to other crops that require less fertiliser and pesticide inputs. The Queensland Department of Primary Industries is working with a number of cane growers in the Northern Mill region to grow plots of mixed hardwood plantations on parts of cane farms where productivity is low. The replacement of low yielding cane with land uses that are more compatible with land capability, and that reduce off-farm effects, would have strong support from WWF.

7.4 Audit of Environmental Conditions on Existing Cane Assignment

WWF recommends that an independent environmental audit be carried out into the environmental conditions that have been set through the assignment process on existing cane farms to examine compliance, enforcement and effectiveness.

The above recommendation was made by Shrubsole and Johnson in their report, *Ecologically Sustainable Development in a Global Economy* (Shrubsole and Johnson, 1999). WWF acknowledges the environmental audit commissioned in the early 1990's by Canegrowers. It is time for another audit to occur, specifically in relation to (but not exclusive to) cane assignment conditions.

7.5 Environmental Monitoring and Public Reporting

WWF recommends that an effective environmental monitoring system should be required under the Queensland *Sugar Act 1999* and that two-yearly public reporting of the industry's environmental performance should be required.

There has been a historic lack of ownership for environmental impacts at a general level within the industry and therefore a lack of support for an adequate policy response. This was recognised in a recent research proposal by the Bureau of Rural Sciences, as follows:

"A prevailing grower/industry culture within the sugar industry of resistance to change has been identified as a major impediment to the adoption of improved practices on-farm and off-farm (including environmental) and to the consideration of alternate industry structural arrangements." (BRS, 29/01/01).

The establishment of an environmental monitoring system would go a long way to encouraging ownership of industry effects on the environment and therefore more responsiveness to change.

7.6 Inventory of Unviable or Marginal Cane Growing Areas

WWF recommends that relevant agencies carry out an ecological assessment of the viability of existing cane lands in order to identify unviable areas and remove these from cane growing, as part of the structural reform process.

To achieve an ecological sustainable sugar industry, areas that are ecologically unviable or marginal for cane growing should be retired and put to other uses. Criteria should be developed against which the assessment should be made. Relevant criteria should include: soil suitability for cane growing, slope gradient, areas prone to acid sulphate soils, areas below a certain number of metres ASL, amongst other matters.

7.7 Removal of Unviable or Marginal Cane Growing Areas

WWF recommends that the Commonwealth and Queensland governments commit to a jointly funded structural adjustment program, targeted at cane growing areas that have been assessed as ecologically unviable or marginal.

Areas identified as unviable or marginal for cane growing need to be retired from cane growing and put to other uses. Appropriate, compatible and ecologically sustainable uses need to be determined. Some of these uses may be primarily commercial; some may be primarily for restoration of ecosystem health. Government assistance to achieve changes in land use is essential.

7.8 Property Size

WWF recommends that the structural reform process accelerates the existing trend towards an increase in average cane farm size by establishing a revolving land purchase scheme.

A cap on the physical size of the cane growing industry will accelerate the trend towards increased property size. The sugar industry will essentially become a limited-entry industry, with access only to the purchase of lands that are currently assigned to cane production.

Property build-up could be further assisted by a revolving land-purchase scheme. Properties below a certain size would be eligible for the scheme. The Queensland government, with the support of the Commonwealth, could offer to buy farms below the threshold size. The government could then apply a number of environmental or natural resource management conditions to the property before on-selling it to an existing cane landholder.

7.9 Vegetation Protection

WWF recommends a cap on the overall level of clearing in Queensland, with an immediate and permanent moratorium on clearing in the Great Barrier Reef catchment. The cap should be incorporated into the Queensland *Vegetation Management Act 1999*, and into the *Land Act 1994*.

If the above recommendations of a cap on the size of the industry is accepted, as it was in regard to the trawl industry for Reef protection reasons, then clearing threats to remnant native vegetation from cane industry expansion become redundant. WWF nevertheless has a policy developed independently of our concerns about cane industry expansion, for a permanent moratorium on clearing in the GBR catchment.

7.10 Wetland Protection

WWF recommends that no further loss of natural wetlands occurs within the GBR catchment. Full protection of wetlands identified in the Queensland EPA/QPWS wetland inventory be incorporated into the Queensland *Nature Conservation Act 1994*.

As above, if a cap on the size of the industry is accepted, then loss of natural wetlands from cane industry expansion also becomes redundant. WWF nevertheless has a policy developed independently of our concerns about cane industry expansion, for permanent protection of wetlands in the GBR catchment.

7.11 Property Management Planning

WWF recommends that the Queensland *Sugar Act 1999* should be amended to incorporate a requirement that each canegrower develops a property management plan by a certain date. The Act should set out a number of components of the plan including:

- **Riparian restoration**
- **Artificial wetland construction (as a sediment/nutrient sink)**
- **Sediment traps**
- **Minimum tillage**
- **Precision fertiliser management**
- **Integrated pest management**
- **Precision pesticide management**
- **Management of acid sulphate soils**
- **Water use efficiency**
- **Drainage**
- **Use of mill waste products**

The Queensland EPA, DPI and DNR should jointly approve the PMPs. The Sugar Industry Assistance Package should only be provided to farmers who have developed property management plans, as recommended above.

The cost of this initiative will be significant, but can be spread over a number of years. Funding through the National Action Plan for Salinity and Water Quality and NHT2 could be integrated into this reform process. Implementation of the above measures throughout the cane industry would go a very long way to removing the problem of land-based pollution of the Great Barrier Reef.

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