



REPORT
on
EFFECTIVENESS OF THE EPBC ACT
&
CLIMATE CHANGE

DATE OF REPORT: 29TH JANUARY 2008

by

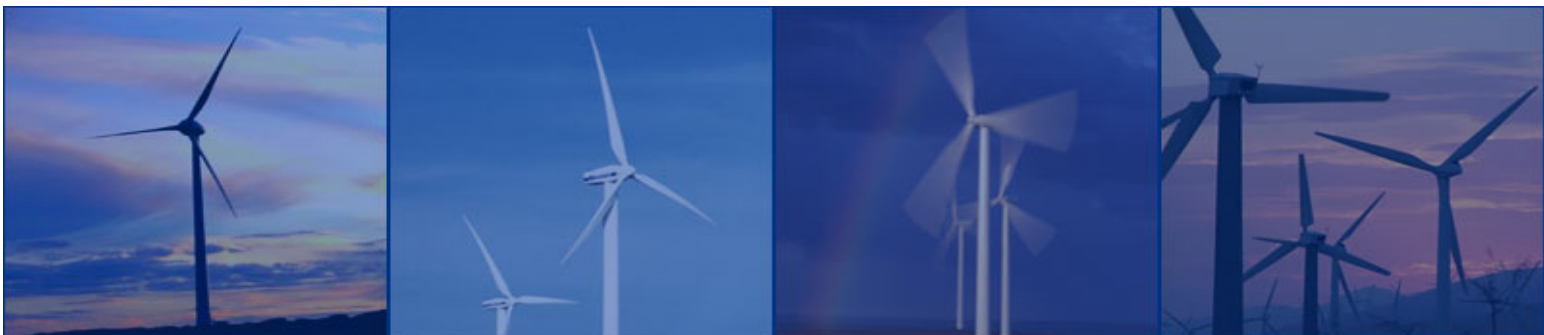
Ian Lee

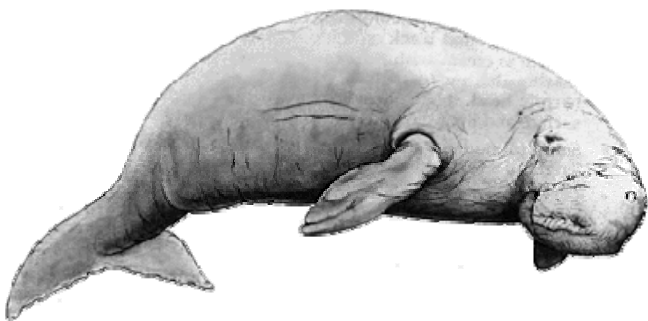
Member of the Wildlife Preservation Society of Queensland

&

Member of the Australian Conservation Foundation

**The comments expressed in this document are not necessarily the views of the
Wildlife Preservation Society of Queensland or the Australian Conservation Foundation**





FRONT COVER

Top left: Stanwell Power Station

Top right: Dragline at Xstrata's Newlands mine

Bottom: The way of the future – Wind farms

THIS PAGE

Top: Brigalow ecosystem stretching across the Arcadia Valley in the 1960s. Possibly less than 7% of Brigalow remain.

Bottom left: Dugong. On the East Coast, down to only 3% of the 1960s' population.

Bottom right: Loggerhead turtle. The turtle has lost 50-80% of its natural nesting population in the last decade.



FOREWORD

This foreword is a brief insight into the conservation background of me and my involvement in Queensland Regional Management Strategies and conservation of the Australian environment.

As the President of the now defunct conservation organisation Wildlife Whitsunday, I was a member of the steering committee for the Burdekin Dry Tropics Regional Natural Resource Management Plan. During that period I had a significant input into the drafting of the plan and also presented a report to the planning team: *Report on Natural Resource Management: The conservationists' point of view*, October 2003.

Similarly, I was involved in the planning associated with the Mackay Whitsunday Natural Resource Management, as our organisation was the only conservation group who covered the Shires of the Whitsundays, Bowen and the Burdekin.

In 2005 my wife and I were honoured to receive the inaugural Pride of Australia Medal for the Environment. This was awarded to us for our conservation work not only with Wildlife Whitsunday but also with our restoration and rehabilitation work on a degraded dune system at Queens Beach in Bowen. This restoration work was carried out by a volunteer group, the Queens Beach Action Group, of which my wife and I were founding members.

Because of my many reports and submissions on environmental issues, particularly on the coastal region, I was requested by the Hon. Desley Boyle, the then Queensland Minister for the Environment, to assist in formulating the Draft Dry Tropics Coast Regional Coastal Management Plan. I presented a report *Matters for Consideration in the Preparation of the Draft Dry Tropical Coast Regional Coastal Management Plan*, October 2005. Much of this report is being considered for utilisation in the draft plan.

I was also requested by the Queensland Parks and Wildlife Service to provide input into the *Whitsunday and Mackay Islands Visitor Management Strategy*. I prepared and presented a report to QPWS in March 2007. The report was well received by the Project Co-ordinator and those in the planning team.

In 2005, as then the President of the Wildlife Preservation Society of Queensland Proserpine/Whitsunday Branch (Wildlife Whitsunday), I was instrumental in instigating court proceedings against the Minister for the Environment and Heritage for what I firmly believed to be a wrongful decision regarding the approval of two coal mining operations without considering the resultant greenhouse gas emissions from the mining, transport and ultimate burning of the coal. The Federal Court case (*Wildlife Preservation Society of Queensland Proserpine/Whitsunday Branch Inc v Minister for the Environment and Heritage* [2006] FCA 736) created a great deal of publicity and although we lost the case and also our Branch of WPSQ, founded in 1968, it was not all in vain:

FOREWORD

- It sparked the first debate on climate change in the Senate resulting in ‘the finger’ incident
- It gained worldwide notoriety and is mentioned in court cases involving climate change in overseas countries
- The judgement handed down by Justice Dowsett was deemed to be inappropriate by Justice Pain (Gray v The Minister for Planning and Ors [2006] NSWLEC 720). The decision handed down by Justice Pain deemed that greenhouse gas emissions resulting from the actions of coal mining activities must form part of an environmental impact assessment
- Some mining companies, including BHP Billiton, are now considering GHG emissions resulting from their mining operations

However, one of the main purposes of the court case was to highlight the drastic effects that climate change is having on our World Heritage Areas, other matters of national environmental significance, and our environment. Unfortunately, those impacts have fallen on deaf ears and still nothing is done to allay the onslaught of climate change and the Federal and Queensland governments appear hell bent on continuing to push for the very industries that are the root cause of climate change.

My most recent submissions, reports and comments have been:

- Submission on the Queensland Government’s Northern Economic Triangle Blueprint, 26th March 2007;
- Comments on Climate Smart 2050: Queensland Climate Strategy 2007: a low-carbon future, 4th July 2007;
- Comments on the new EPBC Referral Form, 17th August 2007;
- Comments on Chalco Australia Pty Ltd, Mining, Western Cape Region, Qld., Aurukun Bauxite Mine Project, EPBC Reference No 2007/3764, 23rd October 2007;
- Comments on Anglo Coal (Grosvenor) Pty Ltd, Mining, Moranbah, Qld., the Grosvenor Coal Mine Project, EPBC reference No 2007/3785, 1st November 2007; and
- Comments on Queensland Government’s proposed Abbot Point State Development Area, 14th November 2007;

I am an active conservationist and a member of the Wildlife Preservation Society of Queensland and a member of the Australian Conservation Foundation.

Jan Lee
29th January 2008



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1. INTRODUCTION

I could not comprehend the bloody mindedness of the Howard government which insisted on allowing development at all cost and continued to accommodate some of the world's most polluting industries.

It would appear that the Howard government was looking either at *Markets First* - where government supports the private sector in pursuing maximum economic growth as the best way towards the goal of improving the environment and human well-being for all; or *Security First* - this entails government and the private sector competing for control, mainly to improve or maintain human well-being for the rich and powerful. It could also be described as "Me First".

However, what the Australian Government should be looking towards is *Sustainability First*, which involves collaboration by government, civil society and the private sector to improve the **environment** and **human well-being** for all, with a strong emphasis on **equity**.

1.1 OVERVIEW – THE ENVIRONMENT UNDER REVIEW

1.1.1 GLOBAL ENVIRONMENT OUTLOOK: GEO4

GEO-4 (2007),¹ the latest in the United Nations Environment Programme's (UNEP) series of flagship reports, assesses the current state of the global atmosphere; land; water and biodiversity; describes the changes since 1987; and identifies priorities for action. *GEO-4* is the most comprehensive UN report on the environment, prepared by about 390 experts and reviewed by more than 1,000 others across the world.

On climate change the report says the threat is now so urgent that large cuts in greenhouse gases by mid-century are needed. Negotiations are due to start in December on a treaty to replace the Kyoto Protocol, the international climate agreement which obligates countries to control anthropogenic greenhouse gas emissions. Although it exempts all developing countries from emission reduction commitments, there is growing pressure for some rapidly-industrializing countries, now substantial emitters themselves, to agree to emission reductions.

GEO-4 also warns that we are living far beyond our means. The human population is now so large that "the amount of resources needed to sustain it exceeds what is available... humanity's footprint [its environmental demand] is 21.9 hectares per person while the Earth's biological capacity is, on average, only 15.7 ha/person.

GEO-4 says climate change is a "global priority", demanding political will and leadership. Yet it finds "a remarkable lack of urgency", and a "woefully inadequate" global response.

¹ United Nations Environment Programme. *Global Environment Outlook GEO4: Environment for Development*. (UNEP, Nairobi, Kenya, 2007)

Several highly-polluting countries have refused to ratify the Kyoto Protocol. *GEO-4* says: "... some industrial sectors that were unfavourable to the Protocol managed successfully to undermine the political will to ratify it." It says: "Fundamental changes in social and economic structures, including lifestyle changes, are crucial if rapid progress is to be achieved." Those industrial sectors that were unfavourable to the Protocol were the oil and coal mining industries.

1.1.2 MASS EXTINCTION

HUMANS SPUR WORST EXTINCTIONS SINCE DINOSAURS

Prior to *GEO4* the UN released a report stating that humans are responsible for the worst spate of extinctions since the dinosaurs and must make unprecedented extra efforts to reach a goal of slowing losses by 2010.

Habitats ranging from coral reefs to tropical rainforests face mounting threats, the Secretariat of the UN Convention on Biological Diversity said in the report, issued at the start of a March 20-31 UN meeting in Curitiba, Brazil.

"In effect, we are currently responsible for the sixth major extinction event in the history of earth, and the greatest since the dinosaurs disappeared, 65 million years ago," said the 92-page Global Biodiversity Outlook 2 report.²

Apart from the disappearance of the dinosaurs, the other "Big Five" extinctions were about 205, 250, 375 and 440 million years ago. Scientists suspect that asteroid strikes, volcanic eruptions or sudden climate shifts may explain the five.

A rising human population of 6.5 billion was undermining the environment for animals and plants via pollution, expanding cities, deforestation, introduction of "alien species" and global warming, it said.

It estimated the current pace of extinctions was 1,000 times faster than historical rates, jeopardising a global goal set at a 2002 UN summit in Johannesburg "to achieve, by 2010, a significant reduction in the current rate of biodiversity loss".

"Unprecedented additional efforts' will be needed to achieve the 2010 biodiversity target at national, regional and global levels," it said. The report was bleaker than a first UN review of the diversity of life issued in 2001.

NOT ABATING

According to a "Red List" compiled by the World Conservation Union, 844 animals and plants are known to have gone extinct in the last 500 years, ranging from the dodo to the golden toad in Costa Rica. It says the figures are probably a big underestimate.

² Secretariat on the Convention of Biological Diversity. *Global Biodiversity Outlook 2*. (UNEP, Montreal, Canada, 2006)

"The direct causes of biodiversity loss - habitat change, over-exploitation, the introduction of invasive alien species, nutrient loading and climate change – show no sign of abating," the report said.

Despite the threats, it said the 2010 goal was "by no means an impossible one".

It urged better efforts to safeguard habitats ranging from deserts to jungles and better management of resources from fresh water to timber.

About 12 per cent of the earth's land surface is in protected areas, against just 0.6 per cent of the oceans.

It also recommended more work to curb pollution and to rein in industrial emissions of gases released by burning fossil fuels and widely blamed for global warming.

The report said, for instance, that the annual net loss of forests was 7.3 million hectares - an area the size of Panama or Ireland - from 2000-2005. Still, the figure was slightly less than 8.9 million hectares a year from 1990-2000.

And it said that annual environmental losses from introduced pests in the United States, Australia, Britain, South Africa, India and Brazil had been estimated at more than \$US100 billion (\$138.8 billion).

About 300 "invasive species" - molluscs, crustaceans and fish - have been introduced to the Mediterranean from the Red Sea since the late 19th century when the Suez Canal opened.

It gave mixed overall marks for progress on four key goals.

It said there was "reasonable progress" towards global cooperation but "limited" advances in ensuring enough cash and research.

It estimated that annual aid to help slow biodiversity losses sank to \$US750 million from \$US1 billion since 1998.

And it said there was "far from sufficient" progress in better planning and implementation of biodiversity decisions and a "mixed" record in better understanding of biodiversity.

1.1.3 10 YEARS TO CLIMATE 'TIPPING POINT'

We have the highest rate of mammal extinctions in the world and are beginning to drive more threatened species to the 'Tipping Point'.³ When climate change scientists talk about a 'tipping point', it means a point of no return, a level of global warming that irreversibly changes the living conditions on earth. Seemingly tiny increases in temperature are already tipping the balance of survival for Australian wildlife. Frogs in the rainforest (the Mountain Nursery Frog vulnerable to rising temperatures), seabirds on the reef (Heron Island is one of the main breeding sites for shearwaters on the reef, but in 2002, the population crashed), and possums in the snow (the Mountain Pygmy Possum is one of only 2,000 left in the wild - the only

³ Catalyst. *Tipping Point*. (ABC TV, 25 May 2006)

marsupial in the world that hibernates during winter), are the new 'canaries in the coalmine'.

Even "moderate additional" greenhouse emissions are likely to push Earth past "critical tipping points". Recent climate reports underestimated how soon. NASA is endorsing science that places considerably more urgency on the need to reduce emissions to avoid "disastrous effects" of global warming than was evident in the recent reports from the world's scientists coordinated by the Intergovernmental Panel on Climate Change. Scientists have been warning for several years that such tipping points are the greatest threat from manmade global warming — and what makes it potentially catastrophic for civilization.

1.1.4 AUSTRALIAN ICONS UNDER THREAT

- Great Barrier Reef - The spectacular coral formations off the Queensland coast are showing alarming signs of decline, according to scientists.
- The rainforest - Rising temperatures could spell doom for many of the delicate creatures in Queensland's wet tropical rainforest.
- Kakadu - The bountiful life in the Northern Territory's famed national park is at risk, scientists warn, because of rising sea levels.

1.2 ISSUES AND CONCERNS

Why is Australia's environment in such a sorry state of disrepair? Don't we have the *Environment Protection and Biodiversity Act* in place to purportedly protect the Australian environment? But is this Act truly effective or has it been purely used with an ulterior motive to permit developments and truly disregard the very thing it was put in place to protect? Hopefully I will endeavour to answer these questions and others in the section: Effectiveness of the EPBC Act.

Why is the Australian Government reluctant to take immediate action to halt our greenhouse gas emissions? Why do we have to wait for further reports until we can make a decision on which action we will take? Haven't there been enough reports telling us what is needed and needed NOW? Why do we still insist on protecting the coal industry? Why aren't renewable energy industries coming on-line faster? Why the delays? I will endeavour to answer these questions and hopefully provide some solutions in the section: Climate Change.



MOUNTAIN PYGMY POSSUM



GREY NURSE SHARK

EFFECTIVENESS OF THE EPBC ACT



NORTHERN HAIRY-NOSED WOMBAT



SOUTHERN CASSOWARY



To feed the furnace of progress we seek out the great trees that reach to heaven, hack them down at the ankles, and shred them into chips and flakes. A gigantic emerald spear hundreds of years in the making can now be reduced to dandruff in a matter of minutes ... Today, every distinctive ecosystem on the planet each containing unique plants and animals, is gradually shrinking except for deserts, which grow larger and larger every year.

Bradley Trevor Greive ⁴

*If we just lie back and do nothing, then countless lives will be lost. Forever.
For endangered species we are both their greatest enemy and their only hope.*

These wonderful creatures will not argue their case.

They will not put up a fight.

They will not beg for reprieve.

They will not say goodbye.

They will not cry out.

They will just vanish.

And after they are gone, there will be silence. And there will be stillness. And there will be empty places. And nothing you can say will change this.

Nothing you can do will bring them back.

Bradley Trevor Greive ⁵

At a time when matters of ecology and the environment are so much public concern, an increased awareness and knowledge of the impact upon it by human activities is of vital importance.

Joseph F Ryan PhD ⁶

⁴ Greive, Bradley, Trevor. *Priceless: The vanishing beauty of a fragile planet*. (Random House, Australia, 2002)

⁵ Greive, Bradley, Trevor. *ibid*.

⁶ Ryan, Joseph F. (ed). *World Atlas of Wildlife*. (Bromley Books, England, 1997)



2. EFFECTIVENESS OF THE EPBC ACT

Under the guise of the EPBC Act the Department of the Environment, Water, Heritage and the Arts and its predecessors have been approving the further destruction of our environment. They are consistently approving:

- clearing of threatened ecological communities;
- clearing of habitat vital for the survival of threatened species and migratory species; and
- continually approve developments that see the degradation of the values and attributes of World Heritage areas.

The Department, through the EPBC Act's approval process, has become one of the main contributors to Australia's ever-decreasing threatened species' and ecological communities' populations.

The word **NO** was never on the lips of the previous Ministers or their delegates when it comes to developments. The developers and the mining industry are given every opportunity to prove that their development will not have an impact on matters of national environmental significance. They are even permitted to lie to gain approval.

However, the word **NO** certainly comes in to play when we the environmentalists put forward submissions, comments and reports. The public is only granted one opportunity to get things right, there are no second chances, as is the case with the developers.

The previous Ministers and the delegates of the Department, have consistently raced in blinkers and have only looked at the small picture when dealing with individual referrals. There is the much larger picture which **must** be considered, for although it may be that a particular development in a specific area may not have a significant impact, if you combine all the developments in the area that have been approved under the Act then the impact is **certainly** significant.

The Minister and the Department have a duty of care under the Act:⁷

3 Objects of Act

(a) to provide for the protection of the environment, especially those aspects of the environment that are matters of national environmental significance; and

(b) to promote ecologically sustainable development through the conservation and ecologically sustainable use of natural resources; and

⁷ Department of the Environment and Water Resources. *Environment Protection and Biodiversity Conservation Act 1999*. (Act No. 91 of 99 as amended, prepared by the Office of Legislative Drafting and Publishing, Attorney-General's Department, Canberra, 19th February 2007, Vol. 1, pp. 1,2 & 3)



- (c) to promote the conservation of biodiversity; and*
- (ca) to provide for the protection and conservation of heritage; and*
- (d) to promote a co-operative approach to the protection and management of the environment involving governments, the community, land-holders and indigenous peoples; and*
- (e) to assist in the co-operative implementation of Australia's international environmental responsibilities; and*
- (f) to recognise the role of indigenous people in the conservation and ecologically sustainable use of Australia's biodiversity; and*
- (g) to promote the use of indigenous peoples' knowledge of biodiversity with the involvement of, and in co-operation with, the owners of the knowledge*

3A Principles of ecologically sustainable development

The following principles are principles of ecologically sustainable development:

- (a) decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations;*
- (b) if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation;*
- (c) the principle of inter-generational equity—that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations;*
- (d) the conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making;*
- (e) improved valuation, pricing and incentive mechanisms should be promoted.*

4 Act to bind Crown

This Act binds the Crown in each of its capacities.

But they are failing in this duty of care, and are consistently ignoring the Objects of the Act and the Principles of Ecologically Sustainable Development. If the Minister and his Department continue at this approval rate what, if any, of our precious environment will be left for future generations? Don't forget Australia has the highest rate of extinction of any other country.

It behoves me to remind the Ministers and their Department that over the past seven years since the introduction of the Act, referral after referral after referral has been approved (only four (4) have been disallowed), and our land is in a sorry state of disrepair. Land clearing continues at an alarming rate with ever-increasing loss of habitat for our threatened species and creates further loss of ecological communities and threatened flora.

Coastal development for industry, tourism and residential estates is placing ever-increasing pressures on our threatened marine creatures and the Great Barrier Reef World Heritage Area.

It is clearly obvious that the EPBC Act has been put in place for the benefit of the developers and the mining sector for it certainly is not benefiting the Australian environment.

Fundamental to better management and planning is the recognition that the environment, including our cultural and natural heritage, is everyone's business. Caring for country has long been entrenched in the traditional beliefs and practices of Indigenous Australians. The Industry Commission (1998) presents a strong case for a more formal and widespread adoption of the concept of duty of care for our lands, waters, seas and air. The *State of the Environment (2001)* used this concept as a focus to encourage all Australians to take responsibility for our actions by caring for country.

The fundamental value underlying ecologically sustainable use of resources is that current society should meet its needs in ways that ensure that the health and diversity of ecosystems on which life depends is maintained, and does not reduce the capacity of future generations to meet their needs. Our use of resources should not cause our descendants to inherit a diminished natural and cultural heritage, less potable water, polluted air, contaminated soils, reduced variety of foods, and degraded landscapes. Environmental management in all its aspects should aim for '*Ecologically Sustainable Development*' outcomes.

So why are we witnessing an increased loss of habitat for endangered and migratory species? Why is so much of our endangered ecological communities still being lost to developments and the mining sector? Why are many of the values and attributes of our World Heritage Areas still disappearing at an alarming rate? Why do the Departmental officers go out of their way to assist the developers in anyway they can so that the development can eventually be approved? Why are the developers Referrals and other documents taken on face value?

- Is it because the Referrals and Assessment Branch of the Department are not truly adhering to the objects of the EPBC Act?
- Is it as a close friend of mine who works for GBRMPA advised that when they spoke to personnel at the Department of the Environment that they were advised that they (the Departmental officer) had instructions from higher up that no development was to be disapproved?
- Are developers and/or their consultants who frequently visit the Department influencing the outcome of the assessment process?
- Is the 'Environment' being overlooked in the assessment process?
- Is the Department ignoring the EPBC Act and the EPBC Regulations and as such overlooking matters that MUST be considered in the assessment process?

2.1 THE ENVIRONMENT

The main object of the EPBC Act is the protection of the environment. This is clearly stated by the Department:⁸

The objectives of the Environment Protection and Biodiversity Conservation (EPBC) Act 1999 and principles of ecological sustainable development contained within the Act are provided at Attachment 1. In short, the EPBC Act provides for the protection of the environment. One means of meeting this objective is to require that actions that will, or are likely to have, a significant impact on the environment are not taken without the approval of the Minister for the Environment and Heritage. Such an approval is not given without an assessment of environmental impact having been carried out and the outcomes of the assessment having been taken into account.

Section 528 of the EPBC Act defines the 'environment' as including:⁹

- (a) ecosystems and their constituent parts, including people and communities; and*
- (b) natural and physical resources; and*
- (c) the qualities and characteristics of locations, places and areas; and*
- (d) the social, economic and cultural aspects of a thing mentioned in paragraph (a), (b) or (c)*

So why is the Department so adamant that the only matters to be considered are those matters of national environmental significance?

Is it because over the past several years the Referral Forms that have been produced by the Department have not been in accord with the EPBC Regulations?

2.1.1 REFERRAL FORM

In a letter to the Department on the 17th August 2007 I pointed out the discrepancies between the Old Referral Form, the New Referral Form and the EPBC Regs. (I have attached a copy of that letter for your information). To date I have not received any response to that correspondence.

The Regulation 4.03 of the EPBC Regs states:¹⁰

4.03 Information that must be included in referrals

- (1) A referral **must include** the information mentioned in Schedule 2. (My highlight)*

⁸ Department of the Environment and Heritage. *Draft Guidelines for an Environmental Impact Statement for the proposed development of the Vincent Petroleum Field in WA – 28 – L and WA – 271 – P, Woodside Energy Ltd.* (Australian Government, Canberra, EPBC 2005/2110, July 2005)

⁹ Department of the Environment and Water Resources. *Environment Protection and Biodiversity Conservation Act 1999.* (Act No. 91 of 99 as amended, prepared by the Office of Legislative Drafting and Publishing, Attorney-general's Department, Canberra, 19th February 2007, Vol. 2, p. 461)

¹⁰ Department of the Environment and Water Resources. *Environment Protection and Biodiversity Conservation Regulations 2000.* (Statutory Rules 2000 No. 181 as amended, prepared by the Office of Legislative Drafting and Publishing, Attorney-General's Department, Canberra, 19th February 2007, Part 4, p. 26)

Schedule 2 of the Regs. goes on to state:¹¹

5.03 The nature and extent of the likely impact on the environment, and whether the action is:

(a) a nuclear action; or

(b) an action by the Commonwealth or a Commonwealth agency; or

(c) to be taken in a Commonwealth marine area; or

(d) to be taken on Commonwealth land.

The wording of this section of Schedule 2 of the Regulations is specific: *“The nature and extent of the **likely impact on the environment, and whether the action is ...**”* it is not as the old Referral Form stated: *“Describe, as relevant to your project, the nature and extent of likely impacts on the environment for the following category of proposed actions (in addition to the specific matters addressed above in 4.1) ...”*, nor is it as the new Referral Form puts it: *“Likely impacts for nuclear actions, actions affecting Commonwealth land or actions taken by the Commonwealth.”*

The main part of the Regulation that is being missed is **the nature and extent of the likely impact on the environment**. It does not specify those parts of the environment that are matters of national environmental significance but the environment in general.

This means impacts in addition to impacts on matters of national environmental significance such as:

- Key Threatening Processes - Land clearing and greenhouse gas emissions
- Introduction of noxious weeds and pests
- Potential impacts to the receiving environment's unique flora and fauna
- Potential impacts of the proposal at a local, regional and national level

So why have the previous Ministers for the Environment and their delegates been ignoring such an important Regulation?

2.2 ECOLOGICALLY SUSTAINABLE DEVELOPMENT

Often when I read Statement of Reasons for decisions I note that only very rarely do the assessment officers take into consideration the 'Principles of Ecologically Sustainable Development'. I note however that on many occasions they do consider the 'Precautionary Principle' which forms only one part of the Principles of Ecologically Sustainable Development.

Is there any consideration given to the Principles of Intergenerational Equity or the conservation of biological diversity and ecological integrity? I don't think so. I am

¹¹ Department of the Environment and Water Resources. *Environment Protection and Biodiversity Conservation Regulations 2000*. (Statutory Rules 2000 No. 181 as amended, prepared by the Office of Legislative Drafting and Publishing, Attorney-General's Department, Canberra, 19th February 2007, Schedule 2, p. 206)

still of the firm belief that the Department of the Environment, Water, Heritage and the Arts is still purely looking toward 'Economically Sustainable Development' or as I mentioned in the Introduction – *Markets First* or *Security First*.

2.2.1 PRINCIPLES OF INTERGENERATIONAL EQUITY

We are artless when it comes to thinking about the state of the Earth in 100 or 200 years time. Yet if we look back on the environmental history of this continent over the last 200 years, we can see that massive changes have been wrought on the biophysical environment and that if our forebears had known some of the implications of their decisions they would have behaved differently.

AN OMBUDSMAN FOR FUTURE GENERATIONS

What can we do to encourage ourselves and our political representatives to think more seriously about the interests of future generations?

The stark fact is that only the current generation can make the decisions. The question then is how do we change our attitudes and our institutions to allow more strident expression of the interests of future generations?

First we must ask what is in the interest of future generations?

When we think about this issue we actually think in very vague terms. When we ask what is in the interests of future generations we tend to have a lot of ill-defined images of a cleaner environment which uses resources more carefully. But this is not enough. We need answers to questions like these:

- In 100 years time, what value systems will people adopt? What will be their attitudes to material consumption and the natural environment?
- In 100 years time, how will biodiversity be seen? Will it be seen as something enormously valuable, something sacred, or something that is so resilient that it need be of little concern?
- In 100 years time, what will the world order be like and what are the implications for environmental decision making?

These are visionary questions. They are also intensely practical, not least because what we do now will have a very big influence on all of these questions. My point is that if we are serious about how our decisions will affect future generations then we need to have much better methods and institutions for thinking about them. They should be worked out and argued tooth and nail in each major decision - greenhouse, building regulations, forest management, land care, water pollution, and koalas in Coffs Harbour.

Given that future generations cannot voice their interests, the present generation must somehow do it for them. I would like to take up a proposal that has been suggested in one or two places, the idea of an Ombudsman¹² for Future Generations.

¹² The word 'ombudsman' has been declared politically correct. In Swedish it means simply a legal representative.

The role of the Ombudsman for Future Generations would be to act on behalf of those who will inherit the planet.

The functions would include the following:

- The Ombudsman would represent the interests of future generations in government decision-making processes affecting the environment. For example, it would have been extremely useful to have a body making out a strong case for future generations in greenhouse policy by reminding us, with the backing of impeccable scientific analysis, of the implications of failing to cut emissions;
- the Ombudsman could, where appropriate, investigate complaints from citizens about public and private decisions that might have a major impact on future generations;
- the Ombudsman could make submissions to key environmental impact statements; and
- the Ombudsman could serve as a watchdog to alert the community to impending problems for future generations arising out of public and private activities.

The Ombudsman would carry out investigations, prepare reports and submissions, talk to the most forward-looking people in the community and constantly remind us of our obligations to the Earth.

Governments might claim that they already take account of the impacts of decisions on future generations. But I think most would agree that they do not do it adequately, perhaps because they are responding to many differing constituencies. The Ombudsman for Future Generations would have a specific, institutionally defined responsibility to represent the interests of the citizens of the future. This is a form of 'bureaucratic capture' that one could endorse.

We would see the new Office of the Ombudsman for Future Generations over time develop concepts and procedures that would be unique to its functions and would start to change the way we all think about the impacts of decisions. In particular, the broadest role of the Ombudsman would be to lengthen our time horizons and make us think very concretely about the effects of our decisions now on our great grandchildren at the end of the next century.

In essence, proper consideration must be given in terms of '*Intergenerational Equity*'.

2.2.2 CONSERVATION OF BIOLOGICAL DIVERSITY AND ECOLOGICAL INTEGRITY

Biological diversity or biodiversity refers to the variety of life of earth - plants, animals, micro organisms - as well as the variety of genetic material they contain and of the ecological systems in which they occur. The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* defines biodiversity as:¹³

The variability among living organisms from all sources (including terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part) and includes:

¹³ Department of the Environment and Water Resources. *Environment Protection and Biodiversity Conservation Act 1999*. (Act No. 91 of 99 as amended, prepared by the Office of Legislative Drafting and Publishing, Attorney-General's Department, Canberra, 19th February 2007, Vol. 2, s528, p. 454)

(a) *diversity within species and between species; and*

(b) *diversity of ecosystems.*

Biodiversity is a simple concept, but one which also has great complexity and significance.

Biodiversity is fundamental to the future sustainability of the world's natural resources. A recent report by the World Resources Institute values the 'free' ecosystem services at over \$30 trillion to the global economy each year. Conservation of biodiversity, on economic grounds alone, needs to become core business in the management of our natural resources.

These ecosystem services are under threat, globally and nationally, because the world is facing a wave of extinctions at a scale not seen before in human history. Australia has a unique responsibility to conserve our biodiversity: we are a wealthy nation and are custodians of one of 17 mega diverse nations. Over 80 per cent of our plants and animals are endemic to Australia – that is, they are found nowhere else in the world.

In 2001 the Australian Government committed to national targets and objectives for biodiversity conservation. The priority actions were to:¹⁴

1. *Protect and restore native vegetation and terrestrial ecosystems;*
2. *protect and restore freshwater ecosystems;*
3. *protect and restore marine and estuarine ecosystems;*
4. *control invasive species;*
5. *mitigate dryland salinity;*
6. *promote ecologically sustainable grazing;*
7. *minimise impacts of climate change on biodiversity;*
8. *maintain and record indigenous peoples' ethnobiological knowledge;*
9. *improve scientific knowledge and access to information; and*
10. *introduce institutional reform.*

The key findings of the *Australian Terrestrial Biodiversity Assessment* (2002) clearly showed that Australia's wetlands and riparian zones, mammals and birds, and eucalypts and acacias are under severe threat and that management across all lands is essential to fully conserve biodiversity and to protect ecosystem functions.

Since the national targets and objectives were laid out and the biodiversity assessment was presented the Australian Government has done nothing to protect or conserve Australia's biodiversity. Matters have only got worse.

Wetlands and riparian zones are under ever increasing pressure from development. In my region, the Dry Tropics, the Queensland Government is looking to create a State Development Area to the north of Bowen at Abbot Point, a coal loading

¹⁴ National Heritage Trust and Biodiversity Policy Branch. *National Objectives and Targets for Biodiversity Conservation 2001-2005*. (Environment Australia, Canberra, 2001)

terminal. The proposed State Development Area is to be home to such heavy industries as an Aluminium Smelter and an Iron Ore Smelter and if and when it is given the go ahead will make the Gunn's Pulp Mill pale into insignificance. The area chosen is home to one of Australia's nationally significant wetlands, the Abbot Point – Caley Valley Wetland Aggregation, Queensland Wetland Reference Number QWR#: 6130100 (BBN001QL), as described in *A Directory of Important Wetlands in Australia* (ANCA 1993, 1996; EA 2001).

The significance of the site is that it provides an outstanding example of wetlands on a tropical prograding coast. Permanent water, a wide range of wetland habitats, very rich food resources and sheltered roosting and breeding sites cause the site to be exceptionally important for waterbirds. The importance of the site is such that it meets criteria for identifying wetlands of international importance adopted by the Ramsar Convention.

The site plays an important role in maintaining biological diversity in the region, particularly by providing one of Queensland's largest and most northerly coastal nesting areas for black swans, *Cygnus atratus*, and because it is one of the most important post breeding concentration area for waterfowl in eastern Queensland. The permanent water of the site provides drought refuge for a number of species. The number of waterbirds using the site can regularly exceed 20,000.

Further, the site is directly adjacent to the Great Barrier Reef World Heritage Area and the impact of placing such a large industrial estate adjacent to the fragile Great Barrier Reef is unconscionable. The impacts will be unmanageable and irreversible. The Queensland Department of Infrastructure and Planning has already stated:¹⁵

The type of development to be undertaken in the area will involve considerable alteration of the physical environment and will change the local air shed, surface water movement, noise levels, the landscape of the area and transport infrastructure.

and yet it is obviously willing to continue with its objectives of this proposed Development Area.

- The altered landscape, the changed hydrological regime, the pollutants and high run-off from this industrial park will add dramatically to the already embattled reef water quality.
- The building of a new wharf and associated facilities will see the loss of further values and attributes of the WHA (fringing coral reefs, seagrass beds, etc.).
- Increased shipping activities will place further pressures on the reef.
- The building of an aluminium smelter with its associated high pollutants – for example the key emissions from the Tomago smelter in NSW in 2004 sourced from the National Pollutant Inventory Database were:
 - Carbon monoxide – 40,000,000 kgs

¹⁵ Department of Infrastructure and Planning. *Development Scheme Policies: Abbot Point State Development Area*. (Queensland Government, 2007, s2.2, p. 2)

- Fluoride compounds – 330,000 kgs
- Oxides of nitrogen – 220,000 kgs
- Particulates PM10 – 140,000 kgs
- Polycyclic aromatic hydrocarbons – 6,300 kgs
- Sulfur dioxide – 8,900,000 kgs

These pollutants will find their way into the reef water and will severely impact on the water quality and hence the corals, marine creatures and commercial fish stocks of the Great Barrier Reef.

The indirect impacts of the greenhouse gas emissions from the proposed aluminium smelter must also be considered. There is strong scientific evidence of severe impacts on the Great Barrier Reef World Heritage Area in coming decades due to global warming. A comprehensive study by Hoegh-Guldberg and Hoegh-Guldberg¹⁶ indicated the best case scenario for the GBRWHA is recoverable loss if global temperature increases remain below 2 degrees. Under the worst case scenario, coral populations will collapse by 2100 and the re-establishment of coral reefs will be highly unlikely over the following 200-500 years. We are already witnessing dramatic bleaching of the reef due to climate change and the latest evidence suggests that the reef has very little time left. Say goodbye to the tourism industry and say goodbye to the commercial fishing industry.

There are many other impacts that I cannot go into in the short space of time but I think that the Ministers should get the gist of where I am coming from.

Pressure is also mounting for the building of a dam at Urannah to supply water to the exceptionally water hungry coal industry. Queensland State MPs and the local government are persisting with pushing for just such a dam. The site of the dam will destroy the Broken River, Urannah Creek and Massey Creek Aggregation - QLD199, a wetland listed in the *Directory of Important Wetlands in Australia*. This wetland is described as:¹⁷

***Significance:** This site contains some of the best and least disturbed examples of riverine wetland occurring in Central Queensland. This includes areas of high wilderness quality, Massey Gorge being the most prominent example of these. The site encompasses a relatively undisturbed gradient across the boundary zone between the northern Brigalow Belt and the Central Queensland Coast bioregions.*

The Broken River makes a major contribution to the quality and flow of water in the Bowen and lower Burdekin rivers. The streams of the site flow through vegetation types ranging from high altitude rainforest on the top of Clarke Range to vine thickets, open forest and woodland. This results in outstanding biological diversity. The area supports at least 11 species listed in international, federal and/or state lists of

¹⁶ Hoegh-Guldberg O. & Hoegh-Guldberg H. *Implications of Climate Change for Australia's great Barrier Reef*. (WWF Australia and the Queensland Tourism Industry, Brisbane, 2004)

¹⁷ Department of the Environment and Water Resources. *A Directory of Important Wetlands In Australia: Broken River, Urannah Creek and Massey creek Aggregation – QLD199*. (Australian Wetland Data Base – Information Sheet, Australian Government, Canberra, downloaded from the website 18th December 2007)

threatened species. Water is transported from the high rainfall upper catchment to the lower rainfall western side of the site providing a reliable source of water and refuge in times of drought.

Notable flora: *Eucalyptus raveretiana* (Nv, Sv) is prominent in riparian vegetation throughout the site, particularly on the larger streams. The site represents a stronghold for this species and supports more than one percent of its total population.

....

Notable fauna: *The eastern portion of the site supports a number of frogs of high conservation significance. These include two frog species endemic to the area, the Eungella dayfrog (Taudactylus eungellensis) (Ne, Se and VU B1+2e on 2000 IUCN Red List), Eungella tinkersfrog (Taudactylus liemi) (Sr), and also the whirring treefrog (Litoria revelata) (Sr). It is possible that the northern gastric brooding frog (Rheobatrachus vitellinus) (Se, listed as extinct in the Federal Environment Protection and Biodiversity Conservation Act 1999 and EN B1+2be on 2000 IUCN Red List) still exists on the site.*

There are two records of the red goshawk (Erythrotriorchis radiatus) (Nv, Se) from the eastern margins of the site. It is highly probable that at least one pair uses the site. The powerful owl (Ninox strenua) (Sv) has been recorded in the headwaters of Grant Creek. There are several records of the Eungella honeyeater (Lichenostomus hindwoodi) (Sr) on the eastern side of the site. Records are not conclusive, but it is highly likely that the grey goshawk (Accipiter novaehollandiae) (Sr) uses streams at least on the eastern side of the site.

As can be seen from the above the conservation of this site is extremely important for the protection of some of Australia's most endangered species.

CLIMATE CHANGE

As stated on numerous occasions by many scientists, climate change is having and will have an enormous impact on our biological diversity and ecological integrity.

Climate change today differs from past climatic variability in two ways that suggest it may have more serious effects on biodiversity. First, the rate of temperature change recorded in the late twentieth century and predicted to continue, is considered by many scientists to be unprecedented in the past 10,000 years. Second, these changes are impacting on ecosystems already stressed by other human impacts, such as land clearing and the consequent fragmentation of natural vegetation.

The impact of such changes on biodiversity in Australia is likely to be very serious and could be catastrophic under some scenarios. Even moderate levels of warming, well within the envelope defined by the Intergovernmental Panel on Climate Change have the potential to pose serious threats to biodiversity.

Our protected area estate and the biodiversity it contains, is not protected from global climate change and is just as vulnerable as the rest of the landscape.

INTERNATIONAL RESPONSIBILITY

The encouragement of people to think internationally, to regard the culture of their own country as part of world culture, to conceive a physical, spiritual and intellectual world heritage, is important in the endeavour to avoid the destruction of humanity.¹⁸

Australia is a signatory to the 'Convention on Biological Diversity' and as such is bound by the articles of the Convention.¹⁹

States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction. (My highlight)

For example, is it right for us to export coal knowing that it will be burnt; knowing that it will contribute to greenhouse gas emissions; and knowing that it will have impacts on other countries?

We have a responsibility to ensure we do not knowingly cause damage to the environment (biological diversity and ecological integrity) of "other States or of areas beyond the limits of national jurisdiction."

2.2.3 PRECAUTIONARY PRINCIPLE

I truly doubt if any of the delegates of the Department know what they are saying when they state "I took into account the precautionary principle as required under section 391 of the EPBC Act" when making a decision to approve the taking of an action.

Many of the decisions that are made under the Act and purportedly take into account the precautionary principle have been made without full scientific certainty that the action will not cause serious or irreversible environmental damage.

CASE STUDY – BOWEN CENTRAL COAL MANAGEMENT PTY LTD, EPBC REF. 2005/2070

In April 2005 I submitted Comments on the above Referral. In those Comments I clearly pointed out the lack of evidence associated with two (2) listed threatened species:²⁰

Squatter pigeon (southern) – present and observed in the area

The proponent summarily dismisses the loss of 45ha of habitat as having little or no effect on the vulnerable squatter pigeon:

.... given the limited extent and poor condition of remnant habitats within the study area, it is not anticipated that the study area represents critical habitat

¹⁸ The late Justice Lionel Murphy in his judgement on the Franklin Dam Case (1983)

¹⁹ Secretariat on the Convention on Biological Diversity. *Convention on Biological Diversity*. (United Nations Environment Program, Article 3. Principle, 2004)

²⁰ Lee, Ian & Lee, Dymrna. *Comments on Bowen Central Coal Management Pty Ltd, Mining, Moranbah Qld, EPBC Ref. No. 2005/2070*. (Wildlife Preservation Society of Queensland Proserpine/Whitsunday Branch Inc. [Wildlife Whitsunday], April 2005, pp. 4 & 5)

for any rare, threatened or migratory species (bullet points 3 and 4)..... Furthermore, given the proposed minimal disturbance of remnant vegetation (approximately 45 ha), and considering the mitigation measures that will be employed, it is not anticipated that the project will lead to significant impacts on local rare, threatened or migratory species, communities or populations listed under the EPBC Act.

EPBC Referral p.16

Potential impacts to the EPBC-listed Squatter pigeon (Geophaps scripta scripta) found on the project site should be minimal as only 45 ha of woodland habitat known to be utilised by the species will be removed. The balance (215 ha) of suitable woodland habitat within the study area will not be affected by the proposal, including the continuous riparian woodland along Smoky Creek. More extensive areas of potential woodland habitat occur in the surrounding area, particularly the broad band of riparian woodlands along the nearby Isaac River. Retaining the balance of woodland would also protect other EPBC-listed species not sighted but which may potentially occur in the area. The rehabilitation program involves restoring native bushland post-mining.

EPBC Referral p.17

We contend that the loss of habitat, however small or large, will have a significant impact on the squatter pigeon. The Australian Biodiversity Assessment 2002 recommended that protection and conservation of threatened species is needed to prevent species being raised to a higher category of 'threat'. Currently the squatter pigeon is listed as vulnerable, but if small parcels of land are continually given over to development then it is obvious that sooner or later the squatter pigeon will become critically endangered and on the path to extinction.

DON'T LET THE SQUATTER PIGEON BECOME ANOTHER STATISTIC SIMILAR TO THE NORTHERN HAIRY-NOSED WOMBAT

Fitzroy tortoise

The proponent describes the likelihood of the species occurring in the area as:

Unlikely; *suitable aquatic habitat is not available within or adjacent to the study area. Study area is outside of the known distribution of the species.*

EPBC Referral p.9

The proponent further states:

The proposed project area is approximately 5 km to the northeast of the Isaac River and the coal seams (proposed open pits) strike parallel to its course (Figure 2). Smoky Creek watercourse flows in a north-east/south-west direction through the proposed mining lease. A smaller tributary of the Isaac, referred to as the 'Unnamed Watercourse', flows through the southern portion of the proposed mining lease.....

EPBC Referral p.2

It is clear that the proponent has done insufficient research into the known distribution of the tortoise as it can be found in the Isaac River, but sightings of the specie are rare:

*The Fitzroy River tortoise (*Rheodytes leukops*) can only be found in the Fitzroy basin including the Fitzroy, Mackenzie, Dawson, Connors and Isaac Rivers. Sightings of the species is rare as it does not bask and rarely surfaces.....*

.... The Fitzroy river turtle is listed as vulnerable by both Environment Australia and the Environmental Protection Agency (Queensland). The species was only first discovered in 1980 and more research is needed to understand both the biology and the conservation issues affecting this unique creature.

Queensland Conservation Council, Rivers Alive, 2004

Further, the EPA (Qld) is aware of the threats and actions required to protect this unique creature:

Threatening processes: *This turtle is threatened by the pollution and siltation of rivers and creeks, and the modification of riparian (waterway) vegetation by grazing and agricultural practices, mining, and timber harvesting. It is also likely that foxes eat their eggs.*

Actions: *The Action Plan for Australian Reptiles identifies a number of actions to protect the Fitzroy River turtle. These are:*

- To prevent pollution and silting of the Fitzroy River and its tributaries,*
- To increase public awareness of the species,*
- To reduce erosion, and*
- To increase the amount of native vegetation along the river edges.*

Environmental Protection Agency (Qld), Endangered Animals, Fitzroy Turtle, 2004

In a Statement of Reasons received from the Delegate one must note the following:²¹

7. One public submission was received from the Proserpine/Whitsunday Branch of the Wildlife Preservation Society of Queensland. This submission raised concerns regarding the loss of habitat for threatened and migratory species and impacts upon the Shoalwater and Corio Bays Ramsar site, and considered that the proposal should be a controlled action.

*14. I found that fauna surveys carried out in the area have recorded the presence of the listed vulnerable Squatter Pigeon (Southern) (*Geophaps scripta scripta*) several times and that approximately 45ha of potential habitat for the Squatter Pigeon will be cleared by the proposed action. I found that this species is reported as relatively common in the area, and utilises habitat areas within and adjacent to the action site, such as woodland and continuous riparian woodland along Smoky Creek. I found that extensive areas of similar suitable habitat will remain in the locality and that none of the riparian habitats, which are likely to be of most importance to the pigeon, will be*

²¹ Flanigan, Mark. *Statement of Reason for Decision on Not Controlled Action under the Environment Protection and Biodiversity Conservation Act 1999*. (Department of the Environment and Heritage, Bowen Central Coal Management Pty Ltd, EPBC 2005/2070, 2nd June 2005)

significantly disturbed (apart the clearing of a small area for a crossing on Smoky Creek). I therefore found that a significant impact on this species is not likely.

In the Delegate's "Findings on material questions of fact and reasons for my decision", there is no mention of impacts on the Fitzroy River Tortoise and yet the Delegate has the audacity to go on and state:

18. In making my decision on whether the proposed action is a controlled action, I took account of the precautionary principle and public comments received on the referral from the Proserpine/Whitsunday Branch of the Wildlife Preservation Society of Queensland.

"I took account of the precautionary principle", what a load of hogwash? This is pure 'lip service'. As no Environmental Impact Statement was to be forthcoming because this Delegate took it upon himself to unconditionally approve this mining operation then what scientific certainty is there that this action will not have a significant impact on the listed threatened species and that that action will cause serious and irreversible damage to the environment? How can he justify in stating that he took account of the precautionary principle and the public comments received when he clearly failed to look at the impacts on the Fitzroy River Tortoise.

This is but one example of the blatant misuse of the power granted to these Delegates and how they totally ignore their responsibilities and their duty of care when it comes to the EPBC Act and the precautionary principle.

I will discuss further implications regarding mining operations in this area of Queensland in s2.3 *Cumulative Impacts*.

THE CONCEPT

The precautionary principle in the context of environmental protection is essentially about the management of scientific risk. It is a fundamental component of the concept of ecologically sustainable development (ESD) and has been defined in Principle 15 of the *Rio Declaration (1992)*:²²

In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.

Although the term "measures" is not entirely clear it has generally been accepted to include actions by regulators such as the use of statutory powers to refuse environmental approvals to proposed developments or activities.

There are many definitions of the precautionary principle. They all have two key elements.

The first is an expression of a need by decision-makers to anticipate harm before it occurs. Within this element lies an implicit reversal of the onus of proof: under the

²² United Nations General Assembly. *Rio Declaration on Environment and Development*. (Report of the United Nations Conference on Environment and Development, Rio de Janeiro, 3-14 June 1992)

precautionary approach it is the responsibility of an activity proponent to establish that the proposed activity will not result in significant harm. The second key element is the establishment of an obligation, if the level of harm may be high, for cautious action to prevent such harm even in the absence of scientific certainty.

The precautionary principle rests on history and ethics rather than logic or science. It incorporates the concept that a person or agency should take responsibility for unintentional damage which may (directly or indirectly) result from actions taken by this person or agency. It is also a principle based on experience. According to Ludwig et al. (1993):²³

Although there is considerable variation in detail, there is remarkable consistency in the history of resource exploitation: resources are inevitably overexploited, often to the point of collapse or extinction.

Even though the medium and long-term costs far outweigh short-term benefits, resource overexploitation continues today. *“The need for caution is a clear message from recent history”* (Harremoës et al. 2002)²⁴.

In summary, the Precautionary Principle applies when the following conditions are met:

- There exist considerable scientific uncertainties;
- there exist scenarios (or models) of possible harm
- that are scientifically reasonable (that is based on some scientifically plausible reasoning);
- uncertainties cannot be reduced in the short term without at the same time increasing ignorance of other relevant factors by higher levels of abstraction and idealization;
- the potential harm is sufficiently serious or even irreversible for present or future generations or otherwise morally unacceptable; and
- there is a need to act now, since effective counteraction later will be made significantly more difficult or costly at any later time.

2.2.4 COMMENTS

Much of the Australian environment is being turned over to developers and the mining sector and this is being done at an alarming rate. Two of the main objects of the EPBC Act are *“to promote ecologically sustainable development through the conservation and ecologically sustainable use of natural resources; and to promote the*

²³ Ludwig, Donald, Hilborn, Ray and Walters, Carl. *Uncertainty, resource exploitation, and conservation: Lessons from History*. (Science 260:17, 2 April 1993)

²⁴ Harremoës, P., Gee, D., MacGavin, M., Stirling, A., Keys, J., Wynne, B. and Guedes Vas, S. (eds). *The Precautionary Principle in the 20th Century: Late lessons from early warnings*. (Earthscan, London. 2002)

conservation of biodiversity". However, the Department appears to be more concerned about the economy than it does the environment:²⁵

I noted that the action has an estimated value of \$150 million, would directly employ approximately 220 construction workers and at its peak 317 permanent employees, and that when full capacity is reached (year four) the estimated tax revenue to the Australian Government would total approximately \$59 million. Together with payroll tax and coal royalties the total public sector benefit is estimated at more than \$10 million per annum.

It is a pity that ecologically sustainable development and the conservation of biodiversity weren't given as much note.

THE COURTS

It is a damn disgrace and an indictment on the previous Ministers for the Environment and the Department that the only true way that the *EPBC Act* can be enacted to its designed efficiency is for environmentalists to consistently go to court to battle for the environment and in particular *matters of national environmental significance* the very things that the *EPBC Act* was designed to protect.

The findings by Justice Marshall in a recent Federal Court case truly outline the *EPBC Act* with regard to Australian Law and its obligations regarding the conservation of biodiversity:²⁶

THE EPBC ACT – APPROACH TO CONSTRUCTION

294 The view I have taken about the construction of the EPBC Act is informed by the following matters.

295 Construction of the EPBC Act is informed by the Conventions which it implements in compliance with Australia's international obligations. So much was recognised by a Full Court of this Court in Minister for Environment and Heritage v Queensland Conservation Council Inc and Anor (2004) 139 FCR 24 ('Queensland Conservation Council') at [2]:

'The EPBC Act was enacted to implement the provisions of the Convention on Biological Diversity 1992, and other international environmental agreements into Australian law. It also represents an attempt to consolidate and clarify the Commonwealth's responsibilities for environmental protection within the Australian Federation (see Second Reading Speech, House of Representatives, Hansard, 29 June 1999, at 7770). The objects of the EPBC Act are set out in s 3(1) as follows:

The objects of this Act are:

(a) to provide for the protection of the environment, especially those aspects of the environment that are matters of national environmental significance; and

²⁵ Middleton, Vicki. *Statement of Reasons – Approval under the Environment Protection and Biodiversity Conservation Act 1999*. (Department of the Environment and Water Resources, Moolarben Coal Mine Pty Ltd, EPBC 2007/3297, 26th November 2007, p. 11)

²⁶ Marshall J. *Brown v Forestry Tasmania (No. 4) [2006]*. (FCA 1729, 19 December 2006)

(b) to promote ecologically sustainable development through the conservation and ecologically sustainable use of natural resources; and

(c) to promote the conservation of biodiversity; and

(ca) to provide for the protection and conservation of heritage; and

(d) to promote a co-operative approach to the protection and management of the environment involving governments, the community, land-holders and indigenous peoples; and

(e) to assist in the co-operative implementation of Australia's international environmental responsibilities; and

(f) to recognise the role of indigenous people in the conservation and ecologically sustainable use of Australia's biodiversity; and

(g) to promote the use of indigenous peoples' knowledge of biodiversity with the involvement of, and in co-operation with, the owners of the knowledge.'

296 *In Booth v Bosworth* (2001) 114 FCR 39 at [115], Branson J states:

'In weighing the factors which support an exercise of the Court's discretion in favour of the grant of an injunction under s 475(2) of the Act against those factors which tell against the grant of such an injunction, it seems to me that it would be a rare case in which a Court could be satisfied that the financial interests of private individuals, or even the interests of a local community, should prevail over interests recognised by the international community and the Parliament of Australia as being of international importance.'

297 *The Biodiversity Convention referred to by the Full Court in Queensland Conservation Council underpins the EPBC Act. It obliges Australia to take steps to promote conservation and the recovery of threatened species; see Arts 8(d), (e) and (f).*

298 *Australia is also a signatory to the Convention on Conservation of Nature in the South Pacific (done at Apia, Western Samoa on 12 June 1976), otherwise known as the Apia Convention. Australia acceded to the Apia Convention on 28 March 1990 and it came into force in Australia on 26 June 1990. It requires Contracting Parties to:*

'1. ... in addition to the protection given to indigenous fauna and flora in protected areas, use their best endeavours to protect such fauna and flora (special attention being given to migratory species) so as to safeguard them from unwise exploitation and other threats that may lead to their extinction.

2. ... establish and maintain a list of species of its indigenous fauna and flora that are threatened with extinction. Such lists shall be prepared as soon as possible after this Convention has come into force and shall be communicated to the body charged with the continuing bureau duties under this Convention.

3. ... protect as completely as possible as a matter of special urgency and importance the species included in the list it has established in accordance with the provisions of the last preceding paragraph. The hunting, killing, capture or collection of specimens (including eggs and shells) of such species shall be allowed only with the permission of the appropriate authority. Such permission shall be granted only under special

circumstances, in order to further scientific purposes or when essential for the maintenance of the equilibrium of the ecosystem or for the administration of the area in which the animal or plant is found.

4. ... carefully consider the consequences of the deliberate introduction into ecosystems of species which have not previously occurred therein.'

299 Section 139 of the EPBC Act implements these two Conventions by providing:

'In deciding whether or not to approve for the purposes of a subsection of section 18 or section 18A the taking of an action, and what conditions to attach to such an approval, the Minister must not act inconsistently with:

(a) Australia's obligations under:

(i) the Biodiversity Convention; or

(ii) the Apia Convention; or

(iii) CITES; or

(b) a recovery plan or threat abatement plan.'

300 Promotion of the conservation of biodiversity, as s 3(1)(c) of the EPBC Act requires, in context, can only be achieved by favouring a construction of the EPBC Act which views protection of the environment as an act of not merely keeping threatened species alive, but actually restoring their populations so that they cease to be threatened. Section 3(2)(e)(i) says it all when it stresses the promotion of the recovery of threatened species.

*3001 The requirement in s 18(3) of the EPBC Act that an action not occur which is likely to have a significant impact on a listed threatened species must be seen in the context of an Act and Conventions which underlie the promotion of recovery of threatened species. Similarly, the exemption for RFA forestry operations in s 38 of the EPBC Act must be seen, in context, as providing an exception only if an alternative means of promoting the recovery of a species is achieved by a Regional Forest Agreement. Such an approach is consistent with the High Court's view of the influence of Conventions as an aid in interpreting domestic legislation designed to give effect to them; see *Minister for Immigration and Ethnic Affairs v Ah Hin Teoh* (1995) 183 CLR 273 at 287 where Mason CJ and Deane J said:*

'It is accepted that a statute is to be interpreted and applied, as far as its language permits, so that it is in conformity and not in conflict with the established rules of international law.'

That proposition, their Honours said, required courts to:

'...favour a construction, as far as the language of the legislation permits, that is in conformity and not in conflict with Australia's international obligations.'

I have adopted that approach in this judgment.

If the courts view the EPBC Act as an Act not merely for protecting the environment to keep threatened species alive but to actually restore the population of these threatened species so that they cease to be threatened then why is so much habitat for these threatened species being permitted to be lost under the guise of the EPBC Act?

Is it because the previous Ministers and the Department are not truly adhering to the Objects of the Act? Or is there a more devious underlying account for the loss of habitat for endangered and migratory species; increased loss of threatened ecological communities; and increased loss of values and attributes of our World Heritage Properties? My good friend in GBRMPA may very well be right about there being an instruction not to disapprove a development.

What are the Department's goals and objectives? Should they not be the same as the Objects of the EPBC Act?

2.3 CUMULATIVE IMPACTS

I have been arguing for a long time now that cumulative impacts must be taken into consideration when considering whether an action is a controlled action or not. The Department when it comes to assessing an action is purely looking at that action and not looking at the big picture, that is, what other actions or proposals are taking place in the region that this action is related to.

It may be all very well to state that the "*clearing of the estimated 58 hectares of Brigalow vegetation is not likely to have a significant impact on the listed Brigalow community (Acacia harpophylla dominant and co-dominant)*"²⁷ however, was there any consideration to other activities in the area or region? **NO.**

What about all the approvals granted for the clearing of Brigalow by other mining companies within the region? 156 hectares here (not significant), another 98 hectares here (not significant), a further 200 hectares here (not significant), another couple of hundred hectares here, another few hectares here, and so on and so on until pretty soon all the brigalow within the region has disappeared, why, because the Department hasn't considered cumulative impacts.

In 2000 it was estimated that the endangered ecological community, Brigalow, had been devastated to the point that it now had less than 10% coverage. Since 2000 clearing of Brigalow has continued at an alarming rate the culprits being the agriculture sector and the mining sector. It would be safe to say that the coverage of Brigalow could well be less than 7%, and yet this Department that is suppose to protect the Australian environment and in particular matters of national environmental significance is continuing to permit the loss of this endangered ecological community.

The same could be said for Bluegrass another endangered ecological community of the Brigalow Belt that has been consistently cleared by the agricultural industry and the mining sector.

²⁷ Flanigan, Mark. *Statement of Reasons for Decision on Not Controlled Action under the Environment Protection and Biodiversity Conservation Act 1999*. (Australian Department of the Environment and Heritage, Sonoma Coal Project, EPBC 2005/2080, 21st June 2005, p. 3)

As an example, in my recent Comments on a Referral regarding a proposed coal mine at Moranbah I noted the following:²⁸

There are already several large coal mining operations active in the Bowen Basin where approx. 85% of Queensland's coal comes from. These mining operations have seen the clearing of land and the loss of endangered ecological communities (bluegrass and brigalow) and the increased loss of habitat for endangered species (eg. Squatter pigeon).

The coal mining operations in the region which have been approved by the Minister for the Environment and Water Resources are:

<i>MIM – Rolleston operation</i>	<i>Hard Creek – Nebo</i>
<i>Ensham – Emerald</i>	<i>Wollombi – Suttor Creek</i>
<i>XStrata – Glenden</i>	<i>Olive Downs – Bowen Basin</i>
<i>Poitrel – Moranbah</i>	<i>Pacific Coal – Clermont</i>
<i>Kestrel – Moranbah</i>	<i>Minerva Coal – Springsure</i>
<i>Ellensfield – Nth Bowen basin</i>	<i>Goonyella Riverside – near Moranbah</i>
<i>Carborough Downs – Moranbah</i>	
<i>IP Coal – Moranbah</i>	<i>Broadlea Coal project – near Moranbah</i>
<i>Sonoma – Collinsville</i>	<i>Bowen Central – Moranbah</i>
<i>Isaac Plain – Moranbah</i>	

It can be clearly seen how all the clearing of endangered ecological communities and habitat for endangered species can all of a sudden become significant.

Also, these coal mining companies each produce on average 6 million tonnes of coal per annum the majority of which is exported. That is an approximate total of 108 million tonnes of coal per annum.

The same approach by the Department is adopted for greenhouse gas emissions:²⁹

I found that contributions from the proposed coal mine operations and the burning of the coal by third parties are likely to be negligible compared to total Australian greenhouse gas emissions.

The same approach was adopted by Mark Flanigan when considering the Referrals associated with the Sonoma Coal Project and the Isaac Plains Coal Project.³⁰ However, if you consider that the above coal mining companies of the Bowen Basin each produce on average 6 million tonnes of coal per annum the majority of which is exported then that is an approximate total of 108 million tonnes of coal per annum.

²⁸ Lee, Ian. *Comments on Anglo Coal (Grosvenor) Pty Ltd, Mining, Moranbah, Qld: The Grosvenor Coal Mine Project, Reference No. EPBC 2007/3785.* (1st November 2007, s2.2.1, p. 5)

²⁹ Middleton, Vicki. *op. cit.* (p. 11)

³⁰ Flanigan, Mark. *Affidavit of Mark Flanigan.* (Filed in the Federal Court of Australia, 5th October 2005)

When this amount of coal is burnt the full fuel cycle of greenhouse gas emissions as per the formula from the *AGO Factors and Method Workbook* ³¹ would be:

- If used in the production of electricity
 - $108 \times 27 \times 93.8 / 1000 = 273.5$ million tonnes of CO₂ per annum
- If used in the production of steel
 - $108 \times 30 \times 111 / 1000 = 359.6$ million tonnes of CO₂ per annum

This means that these current mining operations in the Bowen Basin, all approved by the Minister, produce on average 316.57 million tonnes of CO₂ per annum or, 56.6% of Australia's greenhouse gas emissions in 2005.

Another example of the Departments failure to consider cumulative impacts comes in the form of the loss of seagrass beds and mangroves to coastal developments. Within the Whitsunday region the loss of seagrass beds and mangroves to developments and marinas is of particular concern. Not only are these habitats vital for the survival of many EPBC listed marine species but they also play an enormously vital role in contributing to the values and attributes of the Great Barrier Reef World Heritage Area. Again when considering impacts the Department purely looks at and assesses the individual development.

Could this be why the dugong population on the east coast of Queensland is in rapid decline – Dugong populations are now estimated to be only approx. 3% of the 1960s population? Is this why the marine turtles are all under serious threat - The numbers of marine turtles nesting on Australian shores have declined dramatically in the past 25 years, for example, in 1976 around 3500 loggerhead females nested on the Queensland coast, whereas only 300 nested in 1997?

Why does the Department ignore cumulative impacts? Is it because it is not part of the legislation? Or is it merely because the Department is remiss when it comes right down to it?

2.3.1 COMMENTS

Since the EPBC Act came into force in 2000, the Department has been producing Referral Forms that do not comply with the EPBC Regulations. Schedule 2 of the Regulations, *Information that MUST be included in Referrals*, clearly states:³²

4 Description of the proposal

4.01 A description of the proposed action, including:

(a) details of the location of the project area;

³¹ Department of the Environment and Heritage. *AGO Factors and Method Workbook*. (Australian Greenhouse Office, Canberra, 2006)

³² Department of the Environment and Water Resources. *Environment Protection and Biodiversity Conservation Regulations 2000*. (Statutory Rules 2000 No. 181 as amended, prepared by the Office of Legislative Drafting and Publishing, Attorney-General's Department, Canberra, 19th February 2007, Schedule 2, p. 206)

- (b) *the latitude and longitude of the action;*
- (c) *the timeframe in which the action is proposed to be taken;*
- (d) *activities proposed to be carried out in the action;*
- (e) *an explanation of the context, including any relevant planning framework, in which the action is proposed;*
- (f) *whether the action is related to other actions or proposals in the region.*

Section 4.01 (f) of Schedule 2 of the Regulations, “*whether the action is related to other actions or proposals in the region*”, never formed part of the old Referral Form nor does it form part of the new Referral Form. Why has the Department seen fit to exclude this very important section which by its very wording relates to cumulative impacts?

Cumulative impacts, where potential project impacts are in addition to existing impacts of other activities, (including those known potential future expansions or developments by the proponent and/or its joint venture partner and other proponents in the vicinity), should also be identified and addressed (and include but not be limited to disturbance area, noise, liquid and solid discharges, greenhouse gases, spills and marine pests). Where relevant to the potential impact, risk assessment should be conducted and documented. To the extent practicable the risk evaluation should include known potential future expansions or developments by the proponent and/or its joint venture partner and other proponents.

2.4 FALSE AND MISLEADING INFORMATION

It is an offence under the Act to provide false and misleading information to obtain approval or a permit. The EPBC Act is specific about providing false and misleading information to obtain an approval or a permit:³³

DIVISION 17—DUTY TO PROVIDE ACCURATE INFORMATION

489 Providing false or misleading information to obtain approval or permit

(1) A person is guilty of an offence if:

(a) the person provides information in response to a requirement or request under Part 7, 8, 9, 13 or 13A; and

(b) the person is reckless as to whether the information is false or misleading in a material particular.

Note: The fault element in paragraph (1)(b) can be demonstrated by proof of knowledge. See subsection 5.4(4) of the Criminal Code.

(2A) A person is guilty of an offence if:

(a) the person provides information in response to a requirement or request under Part 7, 8, 9, 13 or 13A; and

³³ Department of the Environment and Water Resources. *Environment Protection and Biodiversity Conservation Act 1999*. (Act No. 91 of 99 as amended, prepared by the Office of Legislative Drafting and Publishing, Attorney-General’s Department, Canberra, 19th February 2007, Vol. 2, s489, p. 395)

(b) the person is negligent as to whether the information is false or misleading in a material particular.

Note: Chapter 2 of the Criminal Code sets out the general principles of criminal responsibility.

However, it would appear that the Department is not of that opinion or it would appear that the Department is reluctant to enforce s489 of the Act.

2.4.1 CASE STUDY – JAG MARINE GROUP PTY LTD, BOWEN MARINA, EPBC 2006/2602

CHRONOLOGY OF EVENTS

1. On the 10th February 2006 JAG Marine Group Pty Ltd lodged a referral as per the requirements of Section 68 of the Act.
2. On the 14th February 2006 as per the requirements of Section 74 (3) of the Act the Minister called for public comments on the referral.
3. On the 3rd March 2006 I forwarded Comments on the Referral to the Referrals Section of the Department. This document contained serious allegations that the proponent had provided false and misleading information in the Referral.
4. On the 14th March 2006 the proposed marina development was declared to be a controlled action. The controlling provisions under Part 3, Division 1 of the Act were:

Sections 12 and 15A (World Heritage values)

Sections 18 and 18A (Listed threatened species and communities)

Sections 20 and 20A (Listed migratory species).

5. On the 3rd April 2006 I wrote to Ms Alex Rankin, Assistant Secretary, Environment & Assessment Branch, requesting that the assessment approach to be adopted be that of an Environmental Impact Statement as per Division 6 of the Act.

In that letter I provided the following information:

This proposed development is such that it falls into the category of an extensive marina development not unlike that of the proposed Port of Airlie Marina Development (EPBC 2001/298). For this proposed development to be assessed by either Preliminary Documentation or by a Public Environment Report would in our opinion provide insufficient evidence for the Minister to make an informed decision on the proposed action.

We have already pointed out in our Comments on the Referral (3rd March 2006) that this proposed development would require a proper Environmental Impact Statement to fully ascertain the likely impacts of significance that this development would have on matters of national environmental significance. We further pointed out in that document that the proponent had already supplied misleading information and was prone to do so.

For the community to be assured that this development will not have significant impacts on matters of national environmental significance and to satisfy the

Queensland Commercial Fishermen's Organisation, who have a particular invested interest in protecting the extensive mangroves adjacent to the development, the Minister must decide that the only appropriate approach to assessment is by environmental impact statement under division 6 of the Act.

To assist, we have attached a copy of our Comments on the Referral and a recent photo showing the position of the Abbot Point Coal Terminal with relation to Bowen. As one of our concerns regarded justification for such a large marina we have attached several photos which will clearly demonstrate our concerns.

6. On the 30th November 2006, a delegate of the Department, Ms. Marina Walkington, declared that the approach for assessment was by Preliminary Documentation.
7. On the 4th December 2006 I requested a Statement of Reasons re the assessment approach by Preliminary Documentation.
8. On the 11th December 2006 a public notice was displayed in the local paper as per the provisions of section 93 of the Act. The notice called for public submissions on the Preliminary Documentation to be provided to the proponent by 4pm on the 10th January 2006.
9. On the 15th December 2006 I forwarded an email to an officer in the Assessment Branch requesting an extension of time as I was unable to gain copies of the Preliminary Documentation from the Bowen Shire Council as they had to check with the proponent if copies could be released to the public and then photocopying would take extra time as the office staff were rather busy.
10. On the 18th December I received a response from the officer stating:

The EPBC Act process requires the public comments be submitted to the proponent to be addressed, in this case the consultant Cardno. So we are not able to extend the time frame, however, you can contact Cardno to request an extension. If Cardno will not accept the submission at the latter date, you can still submit your comments to the Department and your comments will be taken into consideration under the EPBC Act.

11. For several days following the receipt of the above information I tried on several occasions to contact the proponent to request an extension. On each occasion I left contact information with the proponent's secretary. I received no responses.
12. On the 28th December 2006 I received a copy of the Statement of Reasons from your Delegate. The Statement of Reasons was dated 20th December 2006.
13. On the 3rd January 2007 I forwarded an email to the proponent requesting an extension of time.
14. On the 3rd January 2007 I received a response from the proponent stating:

Sorry to not return your calls because the pre Christmas period is very hectic for me. Regarding your request, I will include your submission in the report to the Department and it will be marked the date it is received. I plan to submit my report on 20 January so need your submission as soon as possible.

15. On the 15th January 2007 I completed my Submission on the Preliminary Documentation and emailed a complete copy to the Department. This copy contained sensitive and confidential information namely allegations that the proponent had consistently provided false and misleading information in contravention of s489 of the Act and that was not to be released to third parties without the author's permission. A copy minus the sensitive and confidential information was emailed to the proponent.

16. On the 24th January 2007 I wrote a letter to the then Minister for the Environment and Heritage, Senator Ian Campbell. A courtesy copy was also forwarded to the Hon. Malcolm Turnbull as it was during the period of change over of portfolio. In the letter I stated:

Also Minister I believe action needs to be taken against the proponent of this development for making false and misleading statements in an attempt to gain approval for this development. For far too long developers frequently provide false and misleading information in the knowledge that they will more than likely get away with it as the Department is probably not familiar with the locale and what ever the developers state is taken on face value.

This situation cannot be allowed to continue and strong action is needed to prevent any further reoccurrences of such matters.

A courtesy copy was also forwarded to Christine Milne, Senator for Tasmania, and the then Shadow Minister for the Environment, Peter Garrett MP.

17. On the 5th July 2007 I received a letter from Ms Tania Rishniw dated 25 June 2007 advising that:

With regard to your claim that the assessment document provided by the proponent contained false and misleading information, this information has been reviewed in light of your claims and I do not consider that the assessment document is in breach of s489 of the EPBC Act.

18. On the 9th July 2007 I forwarded to the Minister a Request for a Statement of Reasons regarding the decision that the assessment document was not in breach of s489 of the Act.

19. On the 9th August 2007 I received a letter from Ms Tania Rishniw dated 3rd August 2007 advising that:

My consideration of the information you provided alleging that false and misleading information had been provided by Cardno Pty Ltd in relation to the Bowen Marina, was not a decision under an enactment and therefore it is not a decision to which the ADJR Act applies."

Ms Rishniw went on to state:

You may be sure, however, that the department takes any allegations of false and misleading information seriously. In this instance, a review of all the information provided was undertaken in light of your submission and it was determined that the

information appropriately represented the proponent's actions as they relate to the EPBC Act.

20. On the 28th September 2007 I again wrote to the Minister and in my Summary in that letter I stated:

Minister, I firmly believe that there is strong evidence that the proponent has provided false and misleading information in an endeavour to gain approval for this development. I cannot believe that responsible people within your Department can claim to take "allegations of false and misleading information seriously" when in this instance they dismiss a blatant breach of s489 of the Act and determined that "the information appropriately represented the proponent's actions as they relate to the EPBC Act."

Further, the decision made by your Department that "this information has been reviewed in light of your claims and I do not consider that the assessment document is in breach of s489 of the EPBC Act" is a decision under s489 of the Act and as such must be deemed as a decision under an enactment and therefore I certainly should be entitled to a Statement of Reasons for that decision.

Minister, for far too long you and your Department have consistently ignored the Objects of the EPBC Act and this situation is yet another example of this.

This situation cannot be allowed to continue and strong action is needed to prevent any further reoccurrences of such matters.

21. On the 9th November 2007 this major development was approved by the Assistant Secretary of the Environment Assessment Branch, Approvals and Wildlife Division.

It must be noted that this approval for this major development was given just prior to the elections and during a period when the Government was in caretaker mode.

22. On the 15th November 2007 I forwarded a request for a Statement of Reasons regarding this decision to the Hon. Malcolm Turnbull.
23. On the 4th January 2008 I received a Statement of Reasons from the Acting Assistant Secretary of the Environment Assessment Branch.

CLEAR AND UNEQUIVOCABLE EVIDENCE OF FALSE AND MISLEADING INFORMATION

1. The proponent stated in the Referral Document:³⁴

The primary source of potential water quality impacts associated with the operation of the expanded marina relates to the storage and handling of contaminants such as fuels, anti-fouling compounds, and other pollutants associated with the commercial components of the marina development. In this respect it is relevant to note the following:

³⁴ Chessells, Michael. *EPBC Referral Document* (CARDNO (Qld) Pty Ltd, 10th February 2006, p. 8)

- *the project area is an existing marina located adjacent to the waters of the Point Abbott Port which is a major facility for the export of coal and as such accommodates significant marine industries and activities ...*

... Given the above, the operation of the expanded marina is unlikely to result in any significant water quality-related impacts to the values of the GBRWHA, listed threatened species, listed migratory species, or their habitat.

FACT

A) The Abbot Point Port and Coal Loading Facility is located some 21km to the north of this project area and is under the jurisdiction of the Ports Corporation of Queensland. (for further information regarding the location and size of Abbot Point Coal terminal, see EPBC 2005/2154).

B) The Abbot Point Coal terminal is purely for the on-loading of coal onto bulk carriers and there are no such “significant marine industries and activities” associated with the terminal.

2. The proponent makes a false statement in relation to boating activities:³⁵

In respect of the above it is noted that the use of waters immediately adjacent to the marina are subject to various forms of regulations associated with the facts that these waters form part of:

- *the regulated waters of Point Abbott Port ...*

FACT

The Abbot Point Port and Coal Loading Facility is located some 21km to the north of this project area.

3. Preliminary Information

In paragraph 6 of the Form³⁶ in response to:

Describe:

(a) any options for how the proposed action may be taken; and

(b) any alternatives to the proposed action, including not taking the action; and

(c) the relative effect of the options and alternatives on the relative impacts of the action

the proponent states:

As part of the process to obtain relevant State approvals for the proposed action, consideration has been given to the various alternatives, including the option of not proceeding with the action. The outcome of this process indicated that the proposed action provides the appropriate balance between providing the desired environmental/economic/social benefits.

³⁵ Chessells, Michael. *Ibid.* (p. 9)

³⁶ Cardno. *Preliminary Information Form.* (EPBC Preliminary Documentation for Publication: Preliminary Documentation – Vol 1, 2nd November 2006, p. 5)

FACT

Ministers, if the proponent as he states: *“As part of the process to obtain relevant State approvals for the proposed action, consideration has been given to the various alternatives”*, then why when requested to supply information on alternatives to the proposed action by the Queensland Department of Primary Industries and Fisheries could the proponent not come up with any alternatives when he has clearly stated that *“consideration has been given to the various alternatives”*.

In *Appendix G: Further Particulars and Response to Information Request* the proponent avoids mentioning any possible development alternatives in response to information requested by the Queensland Department of Primary Industries and Fisheries.³⁷

Provide discussion and rationale of possible development alternatives that may minimise the area of disturbance to marine plants; justification for the area of disturbance; and reasons why larger areas of marine plants cannot be retained. DPI&F officers have inspected the marine plant communities on the site. Within the subject site, Marine Vegetation Community numbers 3 (northern end), 4 (inside marina), 11, 12, 13 (near area 12) and 14 (inside marina) contain relatively dense and healthy mangrove communities with high fish habitat values (evidence of fish and invertebrates). Discuss the opportunities, constraints and alternatives in design that may assist in retaining more of the marine plants in these areas, especially through alteration to dredge and fill areas.

7.6.1 Response

The option of not taking the action would impede the planned development of the new marina and hence reduce potential for economic growth and employment opportunities within the Bowen Township.

2.4.2 COMMENTS

Ministers, there were many other instances throughout the Preliminary Documentation where the proponent provided false and misleading information and these were pointed out to your Department in my Comments on the Referral and my Submission on the Preliminary Documentation. Why has the Department summarily dismissed these blatant false and misleading statements which are clearly a breach of s489 of the Act? On how many other occasions has the Department ignored obvious blatant breaches of s489 of the Act?

Ministers, it is also very alarming, and I believe totally inappropriate that the developer was in Canberra and spoke to your Department approximately two (2) weeks prior to the decision of the assessment approach being made. What went on behind closed doors? Has the proponent visited Canberra since? Does this proponent wine and dine the Department’s hierarchy? Can we the public be certain no deals were struck?

³⁷ Cardno (Qld) Pty Ltd. *Appendix G: Further Particulars and Response to Information Request*. (6 September 2006, s7.6, pp. 19 & 20)

2.5 SIGNIFICANT IMPACT

If a person bulldozes a road through the bush some 70 metres wide and approx. 100 kilometres long and in the process clears parts of two endangered ecological communities, knocks down and destroys several endangered trees, and clears habitat vital for a listed vulnerable species all without a permit or without approval from the Commonwealth Minister for the Environment then under Part 3 of the Act this person could be deemed to have committed an offence as surely this action is a significant impact on matters of national environmental significance.

If that person however, is granted a permit by the Queensland Department of Natural Resources and Mines for the action but the permit is only for clearing of a path 30 to 40 metres wide and also stipulates that as far as possible the clearing of endangered species and endangered regional ecosystems or ecosystems of concern to be avoided, but still does not receive approval from the Commonwealth Minister for the Environment and carries out the activities as described in the previous paragraph, then is that person not only in breach of the EPBC Act but also in breach of the *Vegetation Management Act 1999* (Qld), the *Environment Protection Act 1994* (Qld), and the *Nature Conservation Act 1992* (Qld). Surely this action still must be deemed as having a significant impact on matters of national environmental significance.

But wait, if that person happens to be a giant coal mining company, who is moving a massive dragline from one coal mine to another and cannot be bothered with disassembling the monster and transporting by road, even though this company is one of the world's largest mining companies who makes billions of dollars profit each year, they would rather destroy some of Australia's endangered ecological communities and habitat for endangered species and knock over endangered trees.

So does this action warrant prosecution by the Queensland and Commonwealth governments? So does this action have a significant impact on matters of national environmental significance?

The answer Ministers is, according to the Queensland government and the Department of the Environment, no.

Why was this blatant breach of the Act deemed not to be a significant impact? Why didn't the Department or the Queensland government take legal action? Don't forget that only a couple of years ago three brothers were prosecuted for clearing just a couple of hectares of the Wet Tropics World Heritage Area at Tully. Also the Queensland Department of Natural Resources and Mines only a year ago prosecuted a farmer for clearing a small amount of vegetation from his property at Sonoma near Collinsville the very property that is now home to the approved Sonoma Coal Project that will see the loss of habitat for the listed vulnerable squatter pigeon and further loss of two endangered ecological communities, brigalow and bluegrass.

It would appear that this coal mining company, that has not long been granted approval for the expansion of its mining operation at Glenden, that will see a further

loss of endangered ecological communities and habitat for endangered species, is above the law.

Significant impact, what's it really all about?

2.5.1 CASE STUDIES

DUGONG

Dugongs, sometimes called sea cows, are marine animals which can grow to about three metres in length and weigh as much as 400 kilograms. They are the only marine mammals in Australia that live mainly on plants. The name sea cow refers to the fact that they graze on the seagrasses, which form meadows in sheltered coastal waters. As dugongs feed, whole plants are uprooted and a telltale-feeding trail is left. The slow breeding rate and long life span mean that dugongs are particularly susceptible to factors that threaten their survival. Throughout their worldwide range they are threatened by human impacts, particularly on their habitat.

DECLINING NUMBERS

Dugong numbers have declined dramatically in recent years in the southern part of the Great Barrier Reef World Heritage Area south of Cooktown and the species is facing the threat of disappearing from this area. The Great Barrier Reef Ministerial Council, comprising the Commonwealth and Queensland Ministers for the Environment and for Tourism, is concerned about the decline and has instigated a number of actions to reverse the trend. Government departments, community groups and industry organisations are working to minimise the number of dugong deaths from human-related causes.

Aerial surveys commissioned by the Great Barrier Reef Marine Park Authority covered 39,000 square kilometres of the inshore waters of the southern World Heritage Area in 1986–87, 1992, 1994 and 1999. Between 1986 and 1994, they detected a significant population decline from an estimated 3480 (+/- 460) to an estimated 1680 (+/- 240) within eight years. Whilst the results of the 1999 surveys showed that numbers in the southern Area were back at 1986-87 levels (3993 ± 644), an analysis of dugongs caught unintentionally in shark nets at bathing beaches has confirmed that the dugong population in urban areas of the Queensland coast is 3% of that in 1962.

Experts consider that the decline in dugong numbers is due to unsustainable mortality from human-related causes such as habitat loss or degradation, commercial mesh nets (fish nets), shark nets set for bather protection, indigenous hunting, boat strikes, defence activities and illegal take.

The dugong population in the southern Great Barrier Reef can only cope with a human-caused mortality of less than 1–2% each year. This means that if there are 200 dugongs in a bay, the population can only cope with the loss of two to four dugongs per year from all human causes (i.e. fishing, boat strikes and indigenous hunting).

OFFICIAL STATUS

Worldwide, the dugong is listed under the 2000 IUCN - the World Conservation Union - Red List of Threatened Animals as being vulnerable to extinction - criteria A1cd.

In Australia, dugongs are not presently listed as threatened under the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999*; however, they are protected because they are a 'listed migratory' and a 'listed marine' species. They also are protected by other Commonwealth legislation such as the *Great Barrier Reef Marine Park Act 1975*. The Queensland Government's *Nature Conservation Act 1992* lists dugongs as 'vulnerable to extinction' in the State's waters.

The IUCN and Australian listings reflect the fact that, while dugongs are threatened on a worldwide scale, Australia has a large proportion of the remaining population. This makes Australia the largest, and globally most important, refuge for dugongs. The sensitive ecological status of these animals globally highlights the need for effective management strategies to protect and conserve the Australian population.

THE PORT OF AIRLIE MARINA DEVELOPMENT (EPBC 2001/298)

This marina and residential development will, when complete, occupy approximately a third of Boathaven Bay (locally known as Muddy Bay) at Airlie Beach, Queensland.

The adjacent Shingley Bay has already been developed as an extensive marina and was recently extended to accommodate another 150 berths. The Shingley Bay marina development saw the loss of major seagrass beds during the development stage and then during the expansion of the marina saw further degradation and possible loss of seagrass beds in the larger Pioneer Bay due to the loss of high quantities of silt from the dredging silt screens that were incapable of holding all silt and so collapsed and allowed the silt to flow into the seagrass beds of Pioneer Bay. This action was reported to the authorities by the volunteer seagrass watch people of Airlie but of course no action was ever taken against the developer.

The Muddy Bay development, just around the corner, has seen the loss of several hectares of seagrass beds and also the loss of many mature mangroves. Dugongs were often seen in the bay feeding on the seagrass but due to the activities of the development have possibly now disappeared from the area.

This year it was brought to the attention of the Department that the silt screen being used by the developer during dredging operations also collapsed and allowed large quantities of silt to escape and the large plume was seen to engulf the whole bay and even escaped to the adjacent waters of the larger Pioneer Bay. There are still or were seagrass beds remaining in the undisturbed areas of the Bay and also there are associated fringing corals just off Mandalay Point, all of these would have been covered by the silt and would have been severely degraded or lost altogether.

This development was approved by the Minister on the 14th July 2004.

On the 27th July 2004 as the then President of Wildlife Whitsunday, I requested a Statement of Reasons for the decision from the then Commonwealth Minister for the Environment. The *Statement of Reasons* contained the following:³⁸

26. *I found that Boathaven Bay has more than 105ha of seagrass beds. I found that seagrass beds may be lost over an area of 16ha as a result of the proposed action. However I also found that the seagrass cover varies significantly throughout the 16ha, and that the 16ha represents a maximum seagrass area that may fluctuate on a seasonal and annual basis. I found that seagrass beds provide important habitat for syngathid species (sea horse and pipefish species), Dugongs, Green Turtles and other marine species. I found that although Dugongs occur in the Whitsunday area, it is not considered a major Dugong area. I also found that the Dugongs that use the area may be able to relocate to other areas if a large portion of the seagrass is lost. I found that the loss of the seagrass beds will reduce the total area of habitat of other species that rely on the seagrass ecosystem.*

31. *I found that dredging will increase the turbidity of the surrounding water and result in sediment deposition. I found that those impacts attenuate light and can smother coral and seagrass beds. I found that corals in coastal habitats are more efficient at clearing sediment and coping with periodic impacts from turbidity than those found in offshore reefs. I found that measures may be taken to mitigate the impacts of turbidity and sediment deposition on marine species. Those measures include dredging the channel between March and August and using silt curtains.*

61. *In making the decision on whether to approve the taking of the proposed action, I took into account (among other matters) the principles of ecologically sustainable development as required under section 136(2)(a) of the EPBC Act, and the precautionary principle as required under section 391 of the EPBC Act.*

62. *In making the decision on whether to approve the taking of the proposed action, I also took account of the impacts of the proposed action, and the commitments made by the proponent to mitigate and compensate for the impacts of the action and the requirements of the Queensland Government. I found that if I approved the proposed action subject to conditions reflecting those commitments and requirements plus additional requirements in relation to the preparation and implementation of plans, the impacts of the action on the world heritage values of the GBRWHA, listed migratory species and listed threatened species would be sufficiently mitigated such as not to have an unacceptable impact. I found that if the proposed action is taken in accordance with my approval it will not contravene the relevant requirements for decisions under sections 137, 139 and 140 of the EPBC Act.*

The approval of this development is proving to be an ongoing headache for the Department.

³⁸ Gerard Early. *Statement of Reasons for Decision under Section 133 of the Environment Protection and Biodiversity Conservation Act.* (Department of the Environment and Heritage, Transtate Airlie Beach Pty Ltd, Port of Airlie Integrated Tourist Resort and Marina, EPBC 2001/298, 13th September 2004, pp. 10, 11 & 16)

LOGGERHEAD TURTLES

The township of Bowen in north Queensland sits on Edgumbe Bay, a dugong protected area. The bay is also home to marine turtles, both green and loggerhead. Bowen has a marina with 142 moorings and 33 private berths. It was expected that future expansion would accommodate 100 extra berths.³⁹

The loggerhead turtle is listed as an endangered species and as a migratory species under the EPBC Act. The species is severely threatened:⁴⁰

Based on information collected from the east coast, the loggerhead turtle has lost 50-80% of its annual nesting population in the last decade. Further loss of only hundreds of large loggerhead turtles annually may threaten the survival of the species in eastern Australia.

Under the Recovery Plan for Marine Turtles in Australia, the loggerhead was singled out as an issue of importance:⁴¹

The Recovery Team identified this decline as an issue of importance prompting the following guiding statement.

In view of the apparent drastic decline of loggerhead turtles in Australia, the lead conservation and fisheries management agencies in each jurisdiction will make every effort, care and precaution to reduce loggerhead mortality to almost zero.

The *Recovery Team* also noted the continued decline of the eastern Australian population of the loggerhead turtle and identified the need for ***“its conservation to be implicit in all actions.”***

However, with total disregard for marine turtles of Edgumbe Bay and the adjacent creeks and mangroves, vital habitat for the survival of these endangered species, a delegate of the Department, note I stated a delegate of the Department and not the Minister, saw fit to approve the expansion of the Bowen Marina to include 600 + berths, and major residential and commercial developments.

This approval will see major alteration to the flows in and out of the extensive mangrove area of the Magazine creek which is directly behind the marina. Further, it will see a major loss of mature and regrowth mangroves and a major benthic community which provides a vital food source for the turtles. I have on many occasions witnessed turtles transiting the marina and have witnessed the turtles in the magazine creek area. Also, I have noted the turtles in a nearby channel, a channel which is to be heavily excavated to allow some form of flow to the Magazine creek

³⁹ Department of State Development and Department of Tourism, Racing and Fair Trading. *Marina Demand Study*. (Commissioned by Whitsunday Region Interdepartmental Committee, Queensland Government, 2001)

⁴⁰ Department of the Environment, Water, Heritage and the Arts. *Marine Species Conservation: Loggerhead turtle*. (Commonwealth of Australia, 19 July 2007, downloaded from the website 25th December 2007)

⁴¹ Environment Australia. *Recovery Plan for Marine Turtles in Australia*. (Prepared by the Marine Species Section, Approvals and Wildlife Division, Environment Australia, in consultation with the Marine Turtle Recovery Team, Canberra, July 2003)

while excavation operations are carried out in an area locally known as 'the duckhole'. I advised the Department of my concerns regarding the marine turtles in my Submission on the Preliminary Information Assessment for the Marina Development (EPBC 2006/2602).

These turtles that utilise the area could be either green or loggerhead, but as no appropriate surveys were undertaken during the assessment process it remains uncertain as to the species.

The approval for this marina development, which I also spoke of in s2.4, contains no conditions about the protection of the turtles.

Again I stipulate that the approval decision was made at a time that the government was in caretaker mode and as such may be deemed as having implications for or repercussions on the in-coming government. Believe me Ministers you haven't heard the last of this development.

2.5.2 COMMENTS

The *Threatened Species Scientific Committee* in deciding to list a species as *vulnerable* states that the species requires protection and conservation so as it is not raised to a higher level of threat. The *Committee* uses the same wording for listing a species as *endangered*. In other words any loss of habitat or other threats to a listed endangered species cannot be tolerated as it may cause that species to become:

- If vulnerable, endangered;
- if endangered, critically endangered; and
- if critically endangered, extinct.

Is it not so obviously clear that any action that poses a threat, especially that of the clearing of habitat, to a listed threatened species must be deemed as significant and as such should not be approved at any cost.

Mitigation measures on many occasions don't mean a thing when it comes to protecting every little bit of habitat vital for the survival of our listed threatened species. It maybe all very well for a developer to give several thousands of dollars to aid in research into mangroves and then be permitted to clear a large area of mangroves to facilitate the building of a marina (Port of Airlie). Not much research can be carried out on the mangroves that are gone.

Another underhanded deal is the one done by the Queensland Government. The push by Professor Jean Joss from Sydney's Macquarie University who was at the forefront of an international campaign to save the Queensland lungfish, the world's oldest living link to the first animals to walk on land, which is under threat by a dam proposed for the Mary River, one of its few remaining natural habitats, has seen Anna Bligh and her Government put up \$35 million to build a centre for the fish's study and preservation, along with a similarly threatened local turtle and cod fish.⁴²

⁴² Mike Safe. *The Prof & The Lungfish*. (The Weekend Australian Magazine, December 15-16, 2007)

However, this has not deterred the Queensland Government from its push to build the dam and destroy vital habitat for this living fossil.

CASE STUDIES

DUGONG

The *Statement of Reasons* for the Approval of the Port of Airlie reads like an extract from the proponents Supplementary EIS and the Addendum to the Supplementary EIS.

Statement of Reasons:

I found that although Dugongs occur in the Whitsunday area, it is not considered a major Dugong area. I also found that the Dugongs that use the area may be able to relocate to other areas if a large portion of the seagrass is lost.

Addendum to Supplementary EIS:

Dr Marsh, an international expert on dugong, notes that Boathaven Bay is probably not regionally important dugong habitat. ...

Marsh notes that "the dugongs would certainly be able to relocate to other areas", dugongs are "regional" animals and cannot be considered on a localised basis. ...

What a pity that Gerard Early didn't do his homework properly and purely derived his decision from information provided by the proponent and not by information provided by the public and the Conservation Organisations. The proponent of the Port of Airlie development had been very selective in what they chose from the Marsh Report and the Delegate continued in the same vein with total disregard for the Principles of Ecologically Sustainable Development, particularly the Precautionary Principle.

Dr Helene Marsh's report that was commissioned by the Queensland Environment Protection Agency clearly outlined the lack of scientific evidence and the potential harmful and irreversible impacts on the dugongs of the bay:⁴³

The level of use of seagrass by the dugong

*Knowledge of the use of the proposed site by dugongs is anecdotal at best. The EIS (Windward 2002) reports incidental sightings of dugongs at this site. The aerial survey for dugongs conducted by Marsh and her co-workers (eg, Marsh et al. 1996, Marsh and Lawler, 2001), are not a reliable indicator of local scale use of a small area such as Boathaven Bay by dugongs as these surveys are designed to provide a regional scale picture of dugong distribution and abundance at 5-year intervals. However these surveys suggest that, although dugongs occur in the Whitsunday area, it is not a major dugong area in the context of the eastern coast of Queensland as a whole. Given that Boathaven Bay can support meadows of *Halodule* and *Halophila* species, preferred foods of the dugong (Marsh et al. 1982), I would expect that small numbers of*

⁴³ Helene Marsh. *Consultancy Report on Dugongs in the Boathaven Bay Area*. (Commissioned by the Environment Protection Agency, 2003, in Sinclair Knight Merz, Addendum to the Supplementary EIS, 2003)

dugongs use the area. A conclusion supported by the observations of local residents (Winwood 2002). It should be noted however, that dugongs prefer to graze on sparse seagrass (pre-1992) and so seagrass biomass may not be a reliable indicator of the quality of seagrass as habitat for dugong. As pointed out by Campbell et al. (2002), seagrass meadows which support the species which are the preferred food of dugongs are patchy in the Whitsundays, and thus the loss of any of these meadows is likely to have some impacts on the Whitsundays as habitat for dugongs and as a staging post for dugongs moving between the major dugong habitats such as Shoalwater Bay and Hinchinbrook. The cumulative impact of such seagrass beds is also of concern, given the evidence of a substantial reduction in dugong numbers on the urban coast of Queensland since the 1960s (Marsh et al. 2001).

Potential impacts on the loss of seagrass by the dugong

Given that the area of seagrass in Boathaven Bay is relatively small (10s hectares) I would expect that most of the dugongs, which now use the area would cease to do so if a significant proportion of the seagrass was lost due to the development construction and maintenance dredging. Whether this would cause these animals to delay breeding would depend on the availability of alternative seagrass habitat.

As for other long-lived species, the rate of population change of the dugong is most sensitive to changes in adult survivorship. Even a slight reduction in adult survivorship as a result of habitat loss, disease, hunting or incidental drowning in nets, can cause a chronic decline in a dugong population. ... Dugongs may be short of food for several reasons, including habitat loss, seagrass dieback, decline in the nutrient quality of available seagrass, or a reduction in the time available for feeding because of acoustic disturbance such as boat traffic.

An opinion on whether the dugongs would be able to relocate to other areas

Forty-three dugongs have been tracked using telemetry off the coast of Queensland for periods ranging from 15 – 483 days (Marsh and Lawler, unpublished data). ... Twelve trips were made of more than 30km beyond the area regularly used by these animals, 6 trips of more than 100km, and one trip of more than 600km (Preen 2001). Most of these movements were return trips. ... The reasons for these movements are unknown, but a plausible explanation is that dugongs have to have a comprehensive spatial knowledge of the seagrass beds in their region because of the temporal variability in the availability of their seagrass food.

An opinion on whether the presence of the marina would be likely to increase mortality of dugongs should they continue to use the nearby remaining areas of seagrass

The simple answer to this question is yes. Even if the marina does not substantially increase the number of boats using the Whitsunday area, it will act as a hub from which boats will travel to and from the remainder of the region. It thus seems inevitable that boat traffic in Boathaven Bay will increase. ...

As the information available suggests that Boathaven Bay area is not regionally important dugong habitat, I expect the absolute number of vessel strikes to be low. Nonetheless, it could be regionally significant in view of the relatively low dugong density in the Whitsunday area. ...

Acoustic pollution could be particularly important in areas such as Boathaven Bay with large tidal ranges and relatively small seagrass meadows. Presumably, high levels of vessel traffic in such areas could prevent dugongs from accessing the available seagrass. This could be regionally significant given the limited aerial extent of seagrass usually considered high-quality dugong habitat in the Whitsunday region.

Significant impact? Most certainly and it is proving to be just that.

LOGGERHEAD TURTLES

The EPBC Act has been in force for 7 years that is 7 years out of the last decade that has seen a drastic decline in the loggerhead turtle population. Says a lot for the effectiveness of the Act? Or is it simply the case that the Department's Policy is to approve development at all cost and the word NO will not be part of that Policy?

But still this Department approves the loss of vital habitat for this endangered species and it will continue unless the Objects of the Act become the Policy of the Department.

The only obvious consideration given to impacts on the marine turtles is in regard to boat strikes:⁴⁴

24. I found that direct impacts on marine species from boat strikes may occur as a result of the increased traffic in the area. I found a number of mitigation measures are proposed by the proponent for boat strike, including enforcing 6 knot speed limits within the entrance channel; directing boat traffic away from shallow areas using markers and signs; and educating the public about the importance of driving slowly over shallow areas.

25. I found that further mitigation measures would be required to reduce the risk of boat strikes on marine turtles and dugong. These mitigation measures include:

- ensuring tourism operators are made aware and advise clients of measures to reduce the risks associated with boat traffic to marine turtles and dugong;*
- monitoring the incidences of boat strike involving dugong or marine turtles. Requiring boat strike incidents to be reported to the Department within 2 weeks and that the report must include a full investigation of the circumstances of the strike and actions recommended to reduce the risk of subsequent strikes. The report must also include the measures carried out for managing injured marine turtles and dugongs; and*
- providing the public and commercial operators with contingency measures for managing injured marine turtles and dugongs, including responsive procedures for injured animals and reporting mechanisms.*

I find that there is apparently no measures to protect the marine turtles that transit the marina to go the Magazine Creek mangrove complex for feeding. I also note no mention of protection of the marine turtles that utilise the small channel that is

⁴⁴ Campbell, Dr. Jane. *Statement of Reasons for Decision under Section 133 of the Environment Protection and Biodiversity Conservation Act 1999.* (Department of the Environment, Water, Heritage and the Arts, Jag Marine Group Pty Ltd, EPBC 2006/2602, 21 December 2007, p. 11)

approximately 100 metres to the east of the main marina entrance channel. This channel is to be excavated and widened to purported allow a tidal flow to the Magazine Creek area whilst operational works are being carried out on the 'duck hole'.

Also I note there is no true or positive identification of what species of marine turtles may utilise Edgecumbe Bay or the marine turtles that utilise Magazine Creek. The only statement is non-specific:⁴⁵

I found that marine turtles (Green, Flatback, Leathery, Hawksbill, Loggerhead and Olive Ridley) and dugong are species that may occur in the vicinity of the action area.

No studies were undertaken by the proponent to ascertain what impacts the development would have on the marine turtles or for that matter other listed threatened species that utilise the marina, the channel to the east of the marina, and the Magazine Creek area.

This massive marina development in Bowen could never be justified and for the Department to obviously blatantly ignore all the advice and information that I provided in my Submission plus my letters to the previous Ministers for the Environment shows total disdain for the public and also validates my firm belief that the EPBC Act is purely for development and economic gain and is in no way for the protection of the environment.

THE COURTS

Justice Branson⁴⁶ in *Booth v Bosworth* found that "significant" meant "an impact that is important, notable or of consequence, having regard to its **context** or intensity".

Justice Branson went on to state:

103 I am satisfied that the disappearance of the Spectacled Flying Fox from the Wet Tropics World Heritage Area, or an appreciable reduction in the numbers of Spectacled Flying Foxes within the Wet Tropics World Heritage Area, would impact on the world heritage values of the area. Either such event would tend to detract from the biological diversity of the area and from the importance and significance of the habitats contained within it for in situ conservation of biological diversity. Further, I am satisfied that the disappearance of the Spectacled Flying Fox from the World Heritage Area, or a dramatic reduction in its numbers in the area, would detract from the record contained in that area of the mixing of the faunas of the Australian and Asian continental plates.

104 In my view the finding that the operation of the Grid during the 2000-2001 lychee season had the consequence that approximately 20% of the population of adult female Spectacled Flying Foxes were killed leads inevitably to the conclusion that the operation of the Grid had a significant impact on the population of Spectacled Flying Foxes. Further I find, on the balance of probabilities, that the probable impact of the operation of the Grid, if allowed to continue on an annual basis during future lychee

⁴⁵ Campbell, Dr. Jane. *ibid.* (p. 11)

⁴⁶ Branson J. *Booth v Bosworth* [2001]. (FCA 1453, 17 October 2001)

seasons, will be an ongoing dramatic decline in the Spectacled Flying Fox population leading to a halving of the population of Spectacled Flying Foxes in less than five years. The paper by Garnett, Whybird and Spencer indicates that under IUCN criteria a species may be listed as endangered if it has "undergone an observed, estimated, inferred or suspected decline of at least 50%... over the last 10 years or 3 generations whichever is longer". A "generation" for the IUCN criteria is relevantly four years. I therefore conclude on the balance of probabilities that the probable impact of the operation of the Grid, if allowed to continue in the manner mentioned, will be to render the Spectacled Flying Fox an endangered species in the Wet Tropics World Heritage Area and in Australia in less than five years.

105 Is this impact on the population of Spectacled Flying Foxes to be equated in the context of the Act with a significant impact on the world heritage values of the Wet Tropics World Heritage Area? This is an issue on which virtually no authoritative guidance appears to be available. Having regard to the objects of the Act, which include the conservation of biodiversity, and the terms of the World Heritage Convention, which include a recital which emphasises the international recognition of the significance of the "deterioration" of natural heritage (see [113] below), I have concluded that in the circumstances of the present case it is. In this context, in my view, a dramatic decline in the population of a species, so as to render the species endangered, where that species forms a part (other than an inconsequential part) of the record of the Earth's evolutionary history or of the biological diversity of a most important and significant habitat for in-situ conservation of biological diversity is to be understood as having an impact that is important, notable or of consequence. I reject the submission of the respondents that before this conclusion can properly be reached it would have to be established that the Spectacled Flying Fox is itself, when compared with other species, a species of outstanding universal value. In any event, I note that outside of Australia the Spectacled Flying Fox is found only in Papua New Guinea and there only from less than ten locations (see [52'] above). In this context, the loss of the Spectacled Flying Fox from the Wet Tropics World Heritage Area and from Australia would, in my view, be a matter of considerable consequence.

106 I find that the continued operation of the Grid is likely to have a significant impact on the world heritage values of the Wet Tropics World Heritage Area.

As Justice Branson stated: "Having regard to the objects of the Act, which include the conservation of biodiversity", and "a dramatic decline in the population of a species, so as to render the species endangered, where that species forms a part (other than an inconsequential part) of the record of the Earth's evolutionary history or of the biological diversity of a most important and significant habitat for in-situ conservation of biological diversity is to be understood as having an impact that is important, notable or of consequence", clearly emphasises the importance of protecting the habitat of listed threatened species and how important it is to recognise the Objects of the Act and not be so involved in utilising the term 'significant impact' as a means of approving developments.

Also, a recent Federal Court case has certainly altered the way one looks at 'significant impacts', and it would behove the Ministers and their Departments to pay particular attention to these findings for future decisions which affect listed threatened species. The precedence set in this instance could also be legally

interpreted to apply to listed migratory species, listed ecological communities, and could even be extended to include World Heritage Areas.

In the decision Justice Marshall states:⁴⁷

8 The Court has found that the forestry operations and proposed forestry operations of Forestry Tasmania in the Wielangta area are likely to have a significant impact on all three species, having regard to their endangered status and all other threats to them.

Significant impact

91 Mr Mooney's evidence supports the view that the forestry operations in Wielangta in coupes 17E and 19D and the proposed forestry operations in Wielangta in coupes other than 17E and 19D are not likely to have a significant impact on the eagle, having regard to its endangered status and all other threats to the eagle.

However, despite that view, a question arises about whether, as a matter of law, an impact may be significant because of its 'cumulative' or 'potential' impacts; see Minister for Environment and Heritage v Queensland Conservation Council Inc and Another ('Queensland Conservation Council') (2004) 139 FCR 24 at [60].

92 As a Full Court said in Queensland Conservation Council at [53]:

'It is unhelpful, we consider, to attempt to paraphrase the expression "all adverse impacts" in s75(2)(a) of the EPBC Act by recourse to phrases like "inextricably involved" or "natural consequence". "Impact" in the relevant sense means the influence or effect of an action: Oxford English Dictionary, [2nd ed] 5. As the respondents submitted, the word "impact" is often used with regard to ideas, concepts and ideologies: "impact" in its ordinary meaning can readily include the "indirect" consequences of an action and may include the results of acts done by persons other than the principal actor. Expressions such as "the impact of science on society" or "the impact of drought on the economy" serve to illustrate the point. Accordingly, we take s75(2) to require the Environment Minister to consider each way in which a proposed action will, or is likely to, adversely influence or effect the world heritage values of a declared World Heritage property or listed migratory species. As a matter of ordinary usage that influence or effect may be direct or indirect. "Impact" in this sense is not confined to direct physical effects of the action on the matter protected by the relevant provision of Pt 3 of Ch 2 of the EPBC Act. It includes effects which are sufficiently close to the action to allow it to be said, without straining the language, that they are, or would be, the consequences of the action on the protected matter. Provided that the concept is understood and applied correctly in this way, it is a question of fact for the Environment Minister whether a particular adverse effect is an "impact" of a proposed action. However, we do not consider that the Environment Minister did apply the correct test in answering the question of fact which had arisen in the present case.'

94 Even though forestry operations in Wielangta (in coupes 17E and 19D) and the proposed forestry operations in coupes other than 17E and 19D will cause a loss of breeding and foraging habitat for the eagle which is relatively insignificant in the

⁴⁷ Marshall J. *Brown v Forestry Tasmania (No 4)* [2006]. (FCA 1729, 19 December 2006)

context of other factors causing loss to such habitat, that loss can still be considered 'significant' in the context of legislation which is designed 'to protect native species (and in particular prevent the extinction, and promote the recovery, of threatened species)...'. Loss of habitat caused by forestry operations, while small when compared to other causes, has a significant impact on a threatened species where 'to protect' is seen as a duty not just to maintain population levels of threatened species but to restore the species.

101 Disturbance to any eagle nesting areas in circumstances where population numbers are low and breeding success is fickle is a 'significant impact'.

So, in context of the court's findings, consideration has to be given to the *legislation which is designed 'to protect native species (and in particular prevent the extinction, and promote the recovery, of threatened species)'*.

Therefore it is safe to say that given the threats that already exist to Marine turtles and other listed threatened species, and to listed migratory species such as the dugong and the cumulative impacts of other developments that may be proceeding in the area or region, then any loss of habitat caused by a development will have a *significant impact on a threatened species where 'to protect' is seen as a duty not just to maintain population levels of threatened species but to restore the species.*

2.6 CONCLUSION

It is common knowledge that frequently developers visit the Department and negotiate in relation to developments that will affect *matters of national environmental significance*. Is this appropriate? Is this the reason why approximately 99% of developments are approved? Is this the reason why our environment - endangered ecological communities, habitat vital for the existence of threatened and migratory species - is being lost at an alarming rate to developments?

Currently the EPBC Act is totally ineffective and the Objects of the Act are being ignored to the detriment of the environment purely for economic gain. This Act is purely in place to permit development to be seen as compliant with the Act and the Principles of Ecologically Sustainable Development when it is so clearly obvious that currently it is being utilised as a 'tool' for development and mining to be permitted to destroy the very thing the Act was put in place to protect – the **ENVIRONMENT**.

The Department, through the EPBC Act's approval process, has become one of the main contributors to Australia's ever-decreasing threatened species' and ecological communities' populations.

The word **NO** has never been on the lips of the previous Ministers or their delegates when it comes to developers and the mining companies. The developers and the mining industry are given every opportunity to prove that their development will not have an impact on matters of national environmental significance. They are even permitted to lie to gain approval.

However, the word **NO** certainly comes in to play when we the environmentalists put forward submissions, comments and reports. The public is only granted one

opportunity to get things right, there are no second, third or fourth chances as is the case with the developers.

If our environment and matters of national environmental significance is to be protected as per the requirements of the EPBC Act then there must be a drastic change of policy. The Department cannot go on approving development after development and continue to allow listed threatened species, threatened ecological communities, listed migratory species to continue to spiral down the path of extinction. Also, more emphasis needs to be placed on protecting the value and attributes of our World Heritage Areas.

On the matter of World Heritage Areas the Ministers and the Department need to look more carefully at Australia's International obligations and note "*that the loss of or deterioration of any item of cultural or natural heritage constitutes an impoverishment of the heritage of all the nations of the world*". Justice Branson mentioned this very issue in her summing up:⁴⁸

113 *The World Heritage Convention commences with the following recitals:*

"The General Conference of the United Nations Educational, Scientific and Cultural Organisation meeting in Paris from 17 October to 21 November 1972, at its seventeenth session,

NOTING that the cultural heritage and the natural heritage are increasingly threatened with destruction not only by the traditional causes of decay, but also by changing social and economic conditions which aggravate the situation with even more formidable phenomena of damage or destruction,

CONSIDERING that deterioration or disappearance of any item of the cultural or natural heritage constitutes a harmful impoverishment of the heritage of all the nations of the world,"

114 *As is mentioned above, the World Heritage Convention entered into force for Australia and generally on 17 December 1975. The Act reflects, amongst other things, recognition by the Australian Parliament of Australia's international obligations under the World Heritage Convention.*

115 *In weighing the factors which support an exercise of the Court's discretion in favour of the grant of an injunction under subs 475(2) of the Act against those factors which tell against the grant of such an injunction, it seems to me that it would be a rare case in which a Court could be satisfied that the financial interests of private individuals, or even the interests of a local community, should prevail over interests recognised by the international community and the Parliament of Australia as being of international importance.*

The proof of the lack of total consideration for the Principles of Ecologically Sustainable Development and the deeming of a development to not have a significant impact on matters of national environmental significance is in the

⁴⁸ Branson J. *op. cit.*

information provided by the delegate in her *Statement of Reasons* for the approval of the Bowen marina:⁴⁹

Findings on material questions of fact

World Heritage Values, Listed Threatened Species and Ecological Communities and Listed Migratory Species

21. Based on information in the assessment report including an assessment of the targeted False Water Rat (*Xeromys myoides*) survey conducted by the proponents, I was satisfied that the False Water Rat is not present in the action area and therefore no further assessment of the False Water Rat and its habitat was required.

22. I found that the site of the proposed action is adjacent to the shoreline of Edgumbe Bay which is within the Great Barrier Reef World Heritage Area (GBRWHA) and is also a Dugong Protection Area Zone B. I found that marine turtles (Green, Flatback, Leather, Hawksbill, Loggerhead and Olive Ridley) and dugong are species that may occur in the vicinity of the action area.

23. I found that the impacts from construction and operation of the marina may potentially affect the GBRWHA, listed threatened species and listed migratory species, in particular marine turtles and dugong.

24. I found that direct impacts on marine species from boat strikes may occur as a result of the increased traffic in the area. I found a number of mitigation measures are proposed by the proponent for boat strike, including enforcing 6 knot speed limits within the entrance channel; directing boat traffic away from shallow areas using markers and signs; and educating the public about the importance of driving slowly over shallow areas.

25. I found that further mitigation measures would be required to reduce the risk of boat strikes on marine turtles and dugong. These mitigation measures include:

- ensuring tourism operators are made aware and advise clients of measures to reduce the risks associated with boat traffic to marine turtles and dugong;
- monitoring the incidences of boat strike involving dugong or marine turtles. Requiring boat strike incidents to be reported to the Department within 2 weeks and that the report must include a full investigation of the circumstances of the strike and actions recommended to reduce the risk of subsequent strikes. The report must also include the measures carried out for managing injured marine turtles and dugongs; and
- providing the public and commercial operators with contingency measures for managing injured marine turtles and dugongs, including responsive procedures for injured animals and reporting mechanisms.

26. I found that a number of indirect impacts, such as water quality degradation and acid sulfate soils may adversely affect the GBRWHA and potential habitat for listed threatened and migratory marine species as a result of the construction of the marina.

⁴⁹ Campbell, Dr. Jane. *Statement of Reasons for Decision under Section 133 of the Environment Protection and Biodiversity Conservation Act 1999*. (Department of the Environment, Water, Heritage and the Arts, Jag Marine Group Pty Ltd, EPBC 2006/2602, 21 December 2007)

I found that management plans to impact these impacts have been prepared or are being prepared by the proponent. I found that the draft Acid Sulfate Management Plan will adequately manage any potential acid sulfate soils during the construction of the marina. I found that in order to ensure that water quality is appropriately addressed, the Environmental Management Plan, being prepared as a condition for the Bowen Shire Council, must include corrective actions for the possible impacts of stormwater, erosion, sediment and residence times should specific triggers be exceeded.

27. Based on my findings of paragraph 21-26, I found that any risk posed by the action to the GBRWHA, marine turtles and dugong could be adequately addressed if the mitigation measures and conditions imposing water quality monitoring, contingency and corrective actions. and boat strike monitoring, reporting and investigating corrective actions and contingency measures described above were included in the approval.

28. I found, based on my findings in paragraph 21-27 above, that the taking of action will not jeopardise or infringe upon Australia's legal obligations under the World Heritage Convention, the Biodiversity Convention, the Apia Convention, the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), or any recovery plan or threat abatement; or under the Bonn Convention, China-Australia Migratory Bird Agreement (CAMBA), Japan-Australia Migratory Bird Agreement (JAMBA) or any international agreement approved under subsection 209(4).

In my Submission on the development I pointed out the following facts which I believe have been ignored by the Department during their assessment process.

1. False water rat (Water mouse):⁵⁰

The vulnerable water mouse is possibly present in the Magazine Creek area and may be present in the actual development area. Due to the shy nature of this creature sightings are rare.

The proponent has carried out field studies to ascertain the presence of the mouse in the area. No evidence of the Water mouse being present on the site was recorded during this investigation.

Due to the very shy and elusive nature of the mouse there cannot be certainty that this little vulnerable creature is not present in the area. The precautionary principle should be adopted in this instance.

There is very little information on the false water rat; their habitat is not humanly accessible due to the saltwater crocodiles that also live there. False water rats are classified as a "vulnerable species". The only populations of this species are located on the coasts of Queensland and the Northern Territory. Interestingly enough, the false water rat is really a mouse. The "false" in the common name is attributed to the lack of webbing on the feet which are present on the true water rat.

⁵⁰ Lee, Ian, & Lee, Dymrna. *Submission on Jag Marine Group Preliminary Documentation New Bowen Marina, EPBC 2006/2602*. (15th January 2007, s10.2, p. 52)

Nests are made of mud and mangrove leaves far enough away from the water to escape the high tide as the false water rat can not swim. False water rats do prefer to be near a water source, preferably a shallow one.

This species is nocturnal (mainly due to the low tide) and likes to find food amongst the mangroves. Crabs are a favourite food for the false water rat; it likes to first remove the limbs of the crab first and then consume the body. Shellfish and worms are also components of the false water rat's diet that can be found in the mangrove forests. Since the food of the false water rat is found amongst the mangroves, the lifespan of the species is highly dependent on the preservation of the mangrove forests.

Breeding patterns of this species are unknown.

Can the Delegate be certain that the water mouse is not present in the extensive mangrove area of the Magazine Creek? The Port of Airlie marina development (EPBC 2001/298) posed a similar problem regarding the water mouse:⁵¹

Surveys undertaken by the Proponent as part of the SEIS showed no indication of water mice using habitat within the footprint of the proposed development. However, it was acknowledged that water mice might be using habitat within Campbell's Creek.

The Campbell's Creek area will not be directly disturbed by the development. However, indirect impacts such as changes in water quality leading to a reduction in crustacean numbers, an important food source for water mice, could affect the viability of the possible water mouse population. This is especially likely to be the case if significant Acid Sulphate Soils are encountered during construction.

Concern has been expressed about the water mouse population in the area and it was recommended that further surveys be undertaken to establish whether there are any water mice in the vicinity. If water mice are present, specific mitigation measures and a program to monitor the health of the population should be developed.

The Proponent has committed to:

- undertake further surveys, during the preconstruction stage of the project, to identify whether water mice might occur in the Campbell's Creek area, if significant Acid Sulphate Soil is encountered during preconstruction surveys; and*
- if water mice are identified in Campbell's Creek, to establish a targeted monitoring and management program to ensure that the excavation of Acid Sulfate Soil and discharge of water from the site does not adversely impact on the species.*

In response to the above evidence presented by the Coordinator-General I forwarded the following:⁵²

⁵¹ Deputy Coordinator-General. *Coordinator-General's Report on the Supplementary Environmental Impact Statement for the Port of Airlie Marina Development Project.* (Department of State Development, Queensland Government, December 2003, pp. 19 & 20)

⁵² Lee, Ian & Lee, Dymrna. *Comments on the Addendum to the Coordinator-General's Report on the Supplementary Impact Statement for the Port of Airlie Marina Development Project.* (Wildlife Preservation Society of Queensland Proserpine/Whitsunday Branch Inc. [Wildlife Whitsunday], May 2004, p. 37)

The vulnerable water mouse is possibly present in the Campbell's Creek area and may be present in the actual development area. Due to the shy nature of this creature sightings are rare.

Once again it is clear that the proponent has failed to provide a detailed assessment of the impacts that this development will have on the vulnerable water mouse. The failure to carry out appropriate Acid Sulfate Soil tests, proper hydrodynamic modelling and proper investigations and surveys to identify whether water mice are present is evident from the CoG's Report (p. 19, 20) and the Addendum to the CoG's (p. 19, 20). The undertaking of further surveys during the preconstruction stage to identify whether water mice might occur in the Campbell's Creek area, the proponent's commitment to conduct a full Acid Sulfate Soil investigation after the impact assessment process and prior to the commencement of site works, and the commitment to undertake hydrodynamic modelling prior to site works is inappropriate to say the least. All of these undertakings should have been carried out during the impact assessment process. We must assume the worst case scenario and that there are water mice present in Boathaven Bay and Campbell's Creek and that this development will have a significant impact on this listed threatened species.

Although I was not too pleased about the decision to approve the project nonetheless the Minister saw fit to include the following conditions with regard to the water mouse and other listed threatened and migratory species.⁵³

1. Prior to the commencement of the action, the person taking the action must prepare and submit for the Minister's approval a plan or plans to manage the impacts of construction on the Great Barrier Reef World Heritage Values, listed threatened species and communities and listed migratory species. The plan or plans must address the matters listed below and state the environmental objectives, performance criteria, monitoring, reporting, corrective action, responsibility and timing of each of these matters.

- Management of reclamation and dredging activities (including hydrodynamic modelling of Boathaven Bay, sediment control, turtle exclusion devices, disposal of dredge material especially contaminated sediment).*
- Measures to protect water quality (including baseline monitoring of turbidity, sediment pollutant concentrations within Boathaven Bay, Pioneer Bay and Campbell's Creek estuary).*
- Measures to protect listed protected habitat within Boathaven Bay (including seagrass, intertidal mudflats, mangrove communities and coral communities).*
- Measures to protect listed threatened and migratory species (including the False Water Rat, migratory birds, dugong and turtle species, and including measures for nesting and breeding seasons). Any measures to protect turtle species must be consistent with the 'Recovery Plan for Marine Turtles in Australia, July 2003.*

⁵³ Early, Gerard Patrick. *Decision to Approve the taking of an Action pursuant to section 133 of the Environment Protection and Biodiversity Conservation Act 1999: Transtate Airlie Beach Pty Ltd, EPBC 2001/298.* (First Assistant Secretary, Wildlife)

- *Emergency response measures.*

Construction must not commence before the above plan(s) is approved. The approved plan(s) must be implemented and made publicly available.

5. Prior to the commencement of operations, the person taking the action must submit for the Minister's approval a plan or plans to manage operational impacts on the Great Barrier Reef World Heritage Values, listed threatened species and communities and listed migratory species. The plan or plans must address the matters listed below and state the environmental objectives, performance criteria, monitoring, reporting, corrective action, responsibility and timing of each of these matters.

- *Long-term maintenance dredging plan of the marina and access channel, including the management of contaminants, use of turtle exclusion devices, and the dredge spoil rehandling area.*
- *Water quality (including the stormwater runoff and quality).*
- *Measures to protect seagrass beds, coral communities, mangroves and mudflats within Boathaven Bay.*
- *Measures to protect dugong and turtles, including records of sightings, boat strike and mitigating measures to respond to increase in vessel strikes or decline in numbers sighted in the vicinity of the development. Any measures to protect turtle species must be consistent with the 'Recovery Plan for Marine Turtles in Australia, July 2003.*
- *Measures to protect False Water Rat habitat.*
- *Measures to deal with sewerage treatment.*
- *Emergency response measures.*

Operations must not commence before the above plan(s) is approved. The approved plan(s) must be implemented and made publicly available.

Where is the use of the precautionary principle in the Delegates approach to approving the Bowen marina? If there is a development within the region very similar to the Bowen marina that has had extensive conditions placed on it why is this marina so different? Could it be that an inconclusive assessment was carried out?

2. World Heritage Area:⁵⁴

The site is adjacent to the Great Barrier Reef World Heritage Area and the Edgumbe Bay Dugong Protection Area (protected under Commonwealth law).

It is clear that actions requiring referral to the Minister are not limited to those taking place within the boundaries of the declared World Heritage Area but include activities outside the World Heritage property which affect the World Heritage values.

Several aspects of the proposed action are likely to have a significant impact on the values of the Great Barrier Reef World Heritage Area:

⁵⁴ Lee, Ian, & Lee, Dympna. *Submission on Jag Marine Group Preliminary Documentation New Bowen Marina, EPBC 2006/2602*. (15th January 2007, s9, p. 52)

1. The footprint of this development and any excavation activities associated with construction will result in significant alterations to existing water movement pathways (landscape hydrological regimes) across the site. This may result in increased erosion leading to potentially higher sediment loads being transported to the adjacent Great Barrier Reef World Heritage Area and the extensive mangrove system of the Magazine creek area. This is likely to be a significant adverse impact upon the quality of the reef water and the mangrove community and as such, the values and attributes of the Great Barrier Reef World Heritage Area.

2. The general impacts of urban development must also be considered:

(i) Increase in impervious surfaces (rooftops, roads) which increases the volume, content and velocity of stormwater run-off;

(ii) the impacts of more people being in the area (an estimated up to 4,000 people) – will have recreational needs which will likely mean more boats etc in the Bay which will impact upon seagrass, threatened and migratory species.

In the *Nathan Dam case* (*Minister for the Environment and Heritage v QCC and WWF Australia* [2004] FCAFC 190 (30 July 2004)) there is a pre-emptory requirement that:

.....the Minister **must** consider **all** adverse impacts which the proposed action has or will have or is likely to have. Consistently with what her Honour had held, "all" was said to embrace the whole of the relevant impacts to the greatest possible extent. In the same context, it was argued that "impacts" connoted the influence or effect of an action and was wide enough to include consequences brought about indirectly through the actions of persons other than the primary or original actor. By using "impacts" in the plural, the legislature had acknowledged that "adverse impacts may be many and varied, direct and indirect.

Therefore, there is a requirement that these impacts of the proposed development should also have been considered.

3. The context of the proposed action is also relevant to the question of whether the combined impacts of the proposed action are likely to be significant - Justice Branson in *Booth v Bosworth* found that "significant" meant "an impact that is important, notable or of consequence, having regard to its **context** or intensity".

4. Council has recently approved applications for Material Change of Use for several new developments in Bowen – 9 dwelling units, tourist accommodation of 20 cabins and manager's residence, a 41 lot subdivision, a 37 residential lot subdivision, the Harbourside tourist/unit development (a unit style development encompassing a restaurant and shops), and the Coral Cove apartments. These, along with the recently Council approved 35 unit accommodation complex at Rose Bay, and the planned Horseshoe Bay Resort development will place pressure upon the existing STP, which in the words of the Bowen Shire Council "there was a need to augment/replace the Flagstaff Hill WWTP to increase capacity and quality of effluent".

9.1.1 Natural Attributes which match Criterion (i)

A) Impacts

The areas to be reclaimed, the loss of intact closed mangrove communities and the likely impacts on the mangrove communities of the Magazine creek area (these mangroves are estimated to be between 200 and 300 years old) will diminish the historical, geological and climatological record of the WHA, and will impact on the values of the World Heritage Area.

9.1.2 Natural Attributes which match Criterion (ii)

A) Impacts

i) Seagrass

- *Important nursery for many fishes and penaeid prawns;*
- *Important food resource for threatened dugong and green turtle; and*
- *Important roles in sediment stabilisation and nutrient capture.*

*Seagrass meadows provide an essential food resource for the dugong and the green sea turtle (*Chelonia mydas*) which are listed respectively as vulnerable and endangered by the IUCN (IUCN, 1994).*

Primary and secondary productivity in seagrass meadows provide support for extended food chains and links to other ecosystems.

Intertidal seagrass meadows are important habitats for the food of shorebirds and support fish and prawn populations which migrate to other habitats.

Seagrass meadows are particularly important as nursery grounds for a range of penaeid prawns and fish.^{55 & 56}

Seagrasses play an important role in sediment trapping and stabilisation. It is likely that the success in trapping sediments will explain the function of seagrass meadows as nutrient sinks in this region. Furthermore, seagrass meadows make important regional contributions to net primary production.⁵⁷

None of these factors have been considered as significant by the proponent. However, it is the belief of the experts of the Department of Primary Industries and Fisheries, the Environmental Protection Agency and Dr. Helene Marsh that these factors are significant.

Also, loss of seagrass in this area is expected to have a significant impact on the dugong population of the Whitsundays.⁵⁸

As pointed out by Campbell et al. (2002), seagrass meadows which support the species which are the preferred food of dugongs are patchy in the Whitsundays,

⁵⁵ Coles, R., Mellors, J., Bibby, J. and Squire, B. *Seagrass beds and juvenile prawn nursery grounds between Bowen and Water Park Point.* (Qld Department of Primary Industries and Fisheries, Information Series No. Q187021, 1987)

⁵⁶ Coles, R.G., Lee Long, W.J., Helmke, S.A., Bennett, R.E., Miller, K.J. and Derbyshire, K.J. *Seagrass beds and juvenile prawn and fish nursery grounds.* (Qld Department of Primary Industries and Fisheries, Information Series No. Q192012, 1992)

⁵⁷ Lee Long, W.J., Mellors, J.E. and Coles, R.G. *Seagrasses between Cape York and Hervey Bay, Queensland, Australia.* (Australian Journal of marine and Freshwater Research, Vol. 44, 1993)

⁵⁸ Marsh, Helene. *Consultancy Report for the Queensland Environment Protection Agency.* (As published in the Supplementary EIS for the Port of Airlie Marina, EPBC 2001/298, 2003)

and thus the loss of any of these meadows is likely to have some impacts on the Whitsundays as habitat for dugongs and as a staging post for dugongs moving between the major dugong habitats such as Shoalwater Bay and Hinchinbrook. The cumulative impact of such seagrass beds is also of concern, given the evidence of a substantial reduction in dugong numbers on the urban coast of Queensland since the 1960s (Marsh et al. 2001).

Scenario – Dugong populations have decreased dramatically on the urban coast of Queensland since the 1960s to the point that there is only approx 3% of the 60s population left. If for argument's sake there were some 30,000 dugongs in the 60s then currently there would be only 9,000 left. That is a severe loss and if that current trend continues then we could expect to see no dugongs on the urban coast of Queensland within the next 5 to 10 years. So if this is not a significant loss and if impacts of this development on seagrass beds is not considered significant, then all the experts must be talking nonsense!

The proponent points out that the majority of seagrass to be lost are short term losses and that it is expected that the seagrass beds will recover following the dredging operations. This is an uncertainty and there is no true evidence that these beds will recover. They certainly have no understanding of the values and attributes of the World Heritage Area for if they did they would know that the seagrass beds of Edgumbe Bay contribute greatly to the values and attributes of the WHA, for so many marine creatures who are part of the World Heritage values are dependent on these seagrass beds.

ii) Mangroves

- 2069 km² of mangroves occur in or directly adjacent to the Great Barrier Reef World Heritage Area;*
- 37 species recorded in the Great Barrier Reef World Heritage Area, being 54% of world flora;*
- Great Barrier Reef World Heritage Area has a comparable and complementary diversity to other areas of high diversity;*
- important trends at a range of spatial scales makes the Great Barrier Reef World Heritage Area the prime location for research into mangrove ecology and evolution;*
- habitat for a range of taxa, in particular the juveniles of some species; and*
- important contributors to ecological processes.*

The importance of mangroves to the integrity of neighbouring marine ecosystems cannot be understated. Mangroves offer feeding grounds and nurseries for a range of fauna, and contribute to a number of other important processes, such as bank and shore stabilisation, and primary production.

The mangrove trees form a structure upon which a whole range of biota is dependent. Importantly also, mangroves need to be seen as a system that is a part of a much larger estuarine system along the coast.

A number of fish families numerically dominate the waters of mangroves. These include Ambassidae, Clupeidae, Engraulididae, Gobiidae and Leiognathidae. Species

of the families Sparidae, Haemulidae, Lutjanidae, Carcharhinidae, Centropomidae and Carangidae also contribute to the biomass of mangrove fish communities.⁵⁹

Furthermore, mangroves play an important role as nursery sites to many fishes and crustaceans.^{60 & 61} A number of bird species are considered to be mangrove specialists, including some that are considered to be endemic to mangrove habitat.

Given the limited extent of mangroves (less than 1% of the Great Barrier Reef World Heritage Area), and the important roles they play it is difficult to identify specific regions or areas of special or more noteworthy importance. **Indeed the local variations in mangrove distribution ensure that each system is unique and is worthy in itself.**

The proponent is intending to interfere with the natural flow into Magazine creek by placing weirs under the bridges of Peter Wyche drive. This will not only affect the extensive mangrove area of Magazine creek but also impact on the marine creatures that transit between the mangrove system and the WHA. It should be pointed out that juvenile turtles have often been seen in Magazine creek.

Also the proponent intends to remove several intact and regrowth mangroves vital to the value and attributes of the WHA.

This is supported by the following statements made by the Delegate in her Statement of Reasons.⁶²

I found that regrowth mangroves and other marine plants, such as saltwater couch grasslands have established over most of the tidally influenced portions of the site and that these vegetative communities are likely to contribute to local marine ecosystem values. I found that such areas may be used by various marine species as breeding, nursery, feeding or refuge habitats. I found that the loss of these vegetative communities through marina expansion and infilling works is likely to contribute to degradation of local ecosystem values of the adjacent GBRWHA. ...

I found that the proposed action is likely to result in the degradation or eventual loss of adjacent habitat areas supporting ecosystems within the GBRWHA. In particular, I found that clearly of regrowth mangrove vegetation, release of sediments and potential acid leachate during capital earthworks, release of stormwater and contaminants during the operational phase, and increased risk of boat strike affecting turtles and dugong are likely to contribute to an overall

⁵⁹ Robertson, A.I. and Alongi, D.M. *Mangrove systems in Australia: Structure, function and status*. (In Zann, L.P. & Kailola, P. eds. *The State of the Marine Environment Report for Australia Technical Annex 1, the Marine Environment*, Great Barrier Reef Marine Park Authority, Townsville, 1995)

⁶⁰ Robertson, A.I. and Duke, N.C. *Mangroves as nursery sites: Comparison of the abundance and species composition of fish and crustaceans in mangroves and other near shore habitats in tropical Australia*. (Marine Biology, Vol. 96, 1987)

⁶¹ Robertson, A.I. and Blaber, S.J.M. *Plankton, epibenthos and fish communities*. (In Robertson, A.I. and Alongi, D.M. eds. *Tropical Mangrove Ecosystems*, American Geophysical Union, Washington, 1992)

⁶² Rankin, Alex. *Statement of Reasons for Decision on Controlled Action under the Environment Protection and Biodiversity Conservation Act 1999*. (Department of the Environment and Heritage, 27 April 2006, pp. 3 &4)

significant impact on the World Heritage values of the adjacent GBRWHA, in the absence of appropriate controls.

In light of my findings at paragraphs 13-20 above, I found that the proposed action is likely to have a significant impact on the world heritage values of the GBRWHA.

The developer is ignoring the significant impact that the loss of this mangrove system will have on the value and attributes of the WHA. They are of the opinion that the mangroves play no important role in contributing to the values and attributes of the WHA.

Here again, we stress that the importance of mangroves to the integrity of neighbouring marine ecosystems cannot be understated, as they offer feeding grounds, nurseries, and refuge for a range of fauna, and contribute to a number of other important processes, such as bank and shore stabilisation, and primary production.

Mangrove communities form a structure upon which a whole range of biota is dependent. Importantly also, mangroves need to be seen as a system that is a part of a much larger estuarine system along the coast.

It is clearly obvious that the proponent has totally overlooked the importance of the mangrove system of the marina and Magazine creek and that each system is unique and worthy in itself.

iii) The integrity of ecosystems, ecological processes or interconnections

Seagrass beds and mangroves provide outstanding examples of the ecological interaction between plants and animals including communities with numerous fish species, prawns and other animals including green turtles and dugongs.

The intertidal area supports a population of migratory birds and a community of shorebirds. These birds may play a crucial role in the dispersal and establishment of much of the coral cay and continental island floras.

The development will have a significant impact on the integrity of the ecosystems and will impact further on the integrity of the ecosystem of the Great Barrier Reef.

*Be mindful the World Heritage value of the Great Barrier Reef is a consequence of many attributes combining to produce a whole which **cannot be reduced, without loss, to disconnected components.***

iv) Tourism and development

The lack of appropriate planning regimes over World Heritage properties leaves them open to considerable threats that may devalue the property. Tourism may be particularly threatening to World Heritage Areas. The very status of World Heritage is a powerful attraction to tourists. In the case of the Great Barrier Reef World Heritage Area, terrestrial development has great potential to threaten the basis of the Great Barrier Reef World Heritage Area.⁶³

9.1.3 Natural Attributes which match Criterion (iii)

⁶³ Lucas, P.H.C., Webb, T., Valentin, P.S. and Marsh, H. *The Outstanding Universal Value of the Great Barrier Reef World Heritage Area.* (Great Barrier Reef Marine Park Authority, Townsville, 1997)

A) Impacts

The obvious ignorance of the Delegate and the proponent regarding the aesthetic values of the area as a significant contributing factor to the overall aesthetic qualities of the Great Barrier Reef World Heritage Area is clearly demonstrated in their statements:^{64 & 65}

I found that the world heritage values of the GBRWHA include visual and other amenity values. However, I found that the site of the proposed action is within a generally developed area and that the construction of buildings in adjacent onshore precincts is not likely to have a significant impact on such values.

DEH found that the proposed development is not likely to have a significant impact on the visual and other amenity values of the GBRWHA, therefore there is no requirement to further address this issue.

Just because an area has already been modified by buildings and other developments surrounding the marina does not justify further high modification, reclamation and destruction of the area for a marina and residential and tourist development.

The aesthetic values of Bowen come in the form of the perception by the community and the majority of tourists that visit the region of an historic and relatively undisturbed environment and the landscape character of the bay which gives an atmosphere of a 'sense of place'.

The following are the Desired Environmental Outcomes (DEOs) for Bowen:⁶⁶

(a) Development does not adversely affect the values of the Shire's natural environment including coastal areas, wetlands, beaches, headlands, waterways, Protected Areas, undeveloped hillslopes, and areas of significant native vegetation, from any adverse effects accruing from clearing, soil degradation and pollution due to erosion and contamination, acidification, salinity, waste disposal and any modifications to natural processes.

(n) Development reflects the community's reasonable expectations and harmonises with the natural environment and does not prejudice the Shire's existing scenic amenity, particularly along the coastal plain.

(o) The community values of places and landscapes reflecting the community's history and identity are not detrimentally affected by development.

To reflect the historic and scenic nature of Bowen it has been chosen as the ideal location for the filming of Australia, not because it resembles the Gold Coast or Hamilton Island, or Airlie Beach, but as Baz Luhrmann puts it:⁶⁷

⁶⁴ Rankin, Alex. *op. cit.* (p. 3)

⁶⁵ Cardno (Qld) Pty Ltd. *Report on Matters of National Environmental Significance – The New Bowen Marina.* (2 November 2006, p.18)

⁶⁶ Bowen Shire Council. *Bowen Shire Council Planning Scheme 2006 – Statutory Instrument.* (Bowen Shire Council, July 2006, s2.2, pp. 2-1 & 2-2)

⁶⁷ Bowen Independent. *Bowen has 'romance, feeling' for film.* (Wednesday, December 13, 2006, p. 2)

What won Bowen over was the way which the land ran onto the wharf, the historical buildings – and finally, and most importantly, Jocheims Pie Shop was the deciding factor. ...

It is also incredible to see that beauty in terms of the beaches and the turquoise water and the deep port and the buildings.

The Queensland Government's photograph of the current marina espousing the area says it all, really, and it the words from Peter Beattie:⁶⁸

As Queenslanders we all know about Bowen's beauty and the friendliness of its people. Now it's our chance to make sure the rest of the world sees it for themselves.

This statement is directly below a photograph of the current tranquil Bowen Marina.

Further evidence of the historic nature of Bowen can be derived from the Statement of Significance of Seaward House which is on the Register of the National Estate.⁶⁹

The house is one of the earliest surviving buildings in the region constructed only three years after the founding of the settlement at Bowen. Its association with William Seaward, early merchant of North Queensland and Francis Clarke, a former colonial architect of New South Wales, adds to its historic significance. The town of Bowen was founded in 1861. It was the first town settled in North Queensland and was firmly believed, at the time, to be the future capital of a new State which would arise in the north. Unfortunately, Bowen was too far to the south of the fast spreading pastoral settlement. In the north the Kennedy and Flinders district and the turbulent waters of the Burdekin River cut it off all too frequently from the northern properties to make it a viable source of supply for them. Townsville eventually supplanted Bowen as the major port of the north. Until 1864 however, it remained the only port on the North Queensland coast.

Several other buildings in Bowen are either listed on the register of the National Heritage or the Queensland Register of Heritage Listed Buildings.

A marina development of this scale and building height will detract from the scenic and historic amenities of Bowen and therefore impact on the aesthetic values of the GBRWHA.

Bowen is a wonderful Queensland-style fishing village, leave it that way.

9.1.4 Natural Attributes which match Criterion (iv)

A) Impacts

i) Seagrass

Dr. Helene Marsh in a Consultancy Report prepared for the Qld. EPA in relation to loss of seagrass beds in Boathaven Bay near Airlie Beach made the following statements which we believe are relevant to the Bowen Marina Project and the impacts

⁶⁸ Bowen Independent. *Want to be part of Baz Luhrmann's new production?* (Advertisement, Friday, December 15, 2006, p. 8)

⁶⁹ The Australian Heritage Database. *Seaward House, 11 Thomas St., Bowen, Qld.* (Department of the Environment and Heritage, EPBC Act Protected Matters Report, 7 January 2007)

that the development will have on the seagrass beds and dugong populations of Edgumbe bay and the WHA:⁷⁰

The level of use of seagrass by the dugong

It should be noted however, that dugongs prefer to graze on sparse seagrass (pre-1992) and so seagrass biomass may not be a reliable indicator of the quality of seagrass as habitat for dugong. As pointed out by Campbell et al. (2002), seagrass meadows which support the species which are the preferred food of dugongs are patchy in the Whitsundays, and thus the loss of any of these meadows is likely to have some impacts on the Whitsundays as habitat for dugongs and as a staging post for dugongs moving between the major dugong habitats such as Shoalwater Bay and Hinchinbrook. The cumulative impact of such seagrass beds is also of concern, given the evidence of a substantial reduction in dugong numbers on the urban coast of Queensland since the 1960s (Marsh et al. 2001).

Potential impacts on the loss of seagrass by the dugong

Given that the area of seagrass in Boathaven Bay is relatively small (10s hectares) I would expect that most of the dugongs, which now use the area would cease to do so if a significant proportion of the seagrass was lost due to the development construction and maintenance dredging. Whether this would cause these animals to delay breeding would depend on the availability of alternative seagrass habitat.

As for other long-lived species, the rate of population change of the dugong is most sensitive to changes in adult survivorship. Even a slight reduction in adult survivorship as a result of habitat loss, disease, hunting or incidental drowning in nets, can cause a chronic decline in a dugong population. ... Dugongs may be short of food for several reasons, including habitat loss, seagrass dieback, decline in the nutrient quality of available seagrass, or a reduction in the time available for feeding because of acoustic disturbance such as boat traffic.

An opinion on whether the dugongs would be able to relocate to other areas

Forty-three dugongs have been tracked using telemetry off the coast of Queensland for periods ranging from 15 – 483 days (Marsh and Lawler, unpublished data). ... Twelve trips were made of more than 30km beyond the area regularly used by these animals, 6 trips of more than 100km, and one trip of more than 600km (Preen 2001). Most of these movements were return trips. ... The reasons for these movements are unknown, but a plausible explanation is that dugongs have to have a comprehensive spatial knowledge of the seagrass beds in their region because of the temporal variability in the availability of their seagrass food.

⁷⁰ Marsh, Helene. *Consultancy Report for the Queensland Environment Protection Agency*. (As published in the Supplementary EIS for the Port of Airlie Marina, EPBC 2001/298, 2003)

An opinion on whether the presence of the marina would be likely to increase mortality of dugongs should they continue to use the nearby remaining areas of seagrass

The simple answer to this question is yes. Even if the marina does not substantially increase the number of boats using the Whitsunday area, it will act as a hub from which boats will travel to and from the remainder of the region. It thus seems inevitable that boat traffic in Boathaven Bay will increase.

...

As the information available suggests that Boathaven Bay area is not regionally important dugong habitat, I expect the absolute number of vessel strikes to be low. Nonetheless, it could be regionally significant in view of the relatively low dugong density in the Whitsunday area. ...

Acoustic pollution could be particularly important in areas such as Boathaven Bay with large tidal ranges and relatively small seagrass meadows. Presumably, high levels of vessel traffic in such areas could prevent dugongs from accessing the available seagrass. This could be regionally significant given the limited aerial extent of seagrass usually considered high-quality dugong habitat in the Whitsunday region.

Clearly the loss of seagrass will have a significant impact on the threatened and universally significant marine creatures that depend on this habitat for their survival. The loss of any further habitat for these marine creatures must be deemed as significant for their survival depends on every bit of remaining natural habitat.

ii) *Mangroves*

As has been already pointed out in this Submission, the loss of mangroves is considered significant due to the importance and significance of natural habitats for in situ conservation of species of Australian and international significance.

The significance of mangroves as a contributor to the values and attributes of the World Heritage Area cannot be underestimated or under-valued. The Department of Primary Industries places a very high value on marine plants to the point:⁷¹

It is Departmental Policy that a permit to remove, destroy or damage marine plants will NOT be granted for:

- 1. Reclamation of tidal wetlands and marine plants for creation of car parks, etc;*
- 2. Reclamation or use of tidal lands for non-marine oriented purposes, eg, restaurants, hotel construction, residential premises, etc.'*

Given the limited extent of mangroves (less than 1% of the Great Barrier Reef World Heritage Area), and the important roles they play it is difficult to identify specific regions or areas of special or more noteworthy importance:⁷²

⁷¹ Senior Principal Scientist, Fisheries Resource Management (North). *Letter to Manager (Planning and Assessment), Department of the Environment, 29th March 1999.* (From information obtained from the Department of Primary Industries and Fisheries under the Freedom of Information Act, 2003)

⁷² Lucas, P.H.C., Webb, T., Valentin, P.S. and Marsh, H. *op. cit.*

Indeed the local variations in mangrove distribution ensure that each system is unique and is worthy in itself.

So the loss of these mangroves will have a significant impact on the values and attributes of the World Heritage Area.

iii) *Intertidal habitat for seabirds*

The Great Barrier Reef World Heritage Area contains areas that are internationally important for the conservation of shorebirds.

The failure of the proponent to make a detailed analysis of the relevant impacts of the development on the shorebirds is inexcusable. Because the Delegate in her Statement of Reasons abandoned the site as not containing “populations of ecological significance”, was no reason for the proponent to ignore assessing the matter.⁷³

DEH found that the proposed development is not likely to have a significant impact on listed migratory waterbird species, therefore there is no requirement to further address this issue.

Clearly the loss of this intertidal area will have a significant impact on the shorebirds that visit and frequent the area and so affect the values and attributes of the WHA. The majority of the shorebirds that visit the marina area are migratory and as such are of universal interest and significance.

We have attached a list of migratory birds that are known to frequent the area or who may visit the area [see Table 1] a list which is reasonably comprehensive.

Once again the Delegate and the proponent are ignorant of the significance of this area that plays a vital role in contributing to the values and attributes of the WHA.

Further studies are needed to ascertain the impacts on these listed migratory birds. As we will continue to point out there is a total lack of sufficient information provided in the Preliminary Documentation for the Minister to make an informed decision. A full Environmental Impact assessment is required.

iv) *Removal of marine plants*

The primary value of marine plants to fisheries productivity is their contribution, through the process of photosynthesis, to a detritus based food web and through the provision of a diverse range of habitats (for shelter, feeding and nursery areas) for fish stocks:⁷⁴

All tidal lands, including those that do not appear to support vegetation, are important in providing diverse fish habitats and maintaining the high biodiversity of aquatic life found in Queensland’s marine and estuarine ecosystems.

The direct and indirect value of healthy fish habitats and marine plant ecosystems to the recreational, commercial and indigenous fishing industries is

⁷³ Cardno (Qld) Pty Ltd. *Report on Matters of National Environmental Significance – The New Bowen Marina.* (2 November 2006, p.24)

⁷⁴ Couchman, D. and Beumer, J. *Fish Habitat Management Operational Policy for the Management and Protection of Marine Plants: Departmental Assessment Procedures and Policy Position.* (Queensland Department of Primary Industries, FHMP 001, 2002)

increasingly being understood as research efforts demonstrate the connectivity between fisheries production and healthy coastal ecosystems. Community values have changed since the protection of mangroves for oyster furniture early last century. Current Fisheries legislation reflects contemporary community values and now protects all types of marine plants (including mangrove, salt marsh, seagrass and algal communities), all parts of marine plants (leaves, roots, branches etc.), whether they are trees, shrubs or groundcovers and wherever they grow. Dead or fallen marine plants are also protected in recognition of the important role this material plays in the food web and in providing habitat.

Yet the Delegate appears to have dismissed all of this information provided by myself and not by the proponent and takes what the proponent has stated on face value and has failed to obviously consider the full impacts on the values and attributes of the World Heritage Area:⁷⁵

22. I found that the site of the proposed action is adjacent to the shoreline of Edgumbe Bay which is within the Great Barrier Reef World Heritage Area (GBRWHA) and is also a Dugong Protection Area Zone B.

23. I found that the impacts from construction and operation of the marina may potentially affect the GBRWHA,

26. I found that a number of indirect impacts, such as water quality degradation and acid sulfate soils may adversely affect the GBRWHA

28. I found, based on my findings in paragraph 21-27 above, that the taking of action will not jeopardise or infringe upon Australia's legal obligations under the World Heritage Convention,

Where is the evidence that the development won't have a significant impact on the values and attributes of the World Heritage Area? There isn't any because the developer never provided any information or carried out appropriate assessments to fully ascertain the short term and long term impacts, or any impacts which may be uncertain or irreversible. Yet this development has been approved – HOW?

3. Acid sulphate soils: Boy! this is a can of worms.

In my Submission I pointed out the following:

There are an estimated 2.3 million ha of ASS along 6500 km of the Queensland coastline.

When exposed to air as a result of drainage or disturbance, ASS produce sulphuric acid, and often release toxic quantities of iron, aluminium and heavy metals. This can have major environmental, health, engineering, and economic effects. In ASS areas, developments such as large-scale drainage and flood mitigation schemes can lead to widespread acidification of land, lakes and streams and subsequent economic losses to other industries.

⁷⁵ Campbell, Dr. Jane. *op. cit.*

In some cases, multi-million dollar coastal developments have been stalled or abandoned; millions of dollars worth of oysters, prawns and fish have been destroyed; fish-breeding areas have been decimated, and millions of dollars worth of infrastructure has had to be replaced due to acid attack.

The developer has already indicated the presence of ASS:⁷⁶

Field test results indicated the presence of potential acid sulfate soils (PASS) in BH3, BH5, BH6, BH8, BH11, BH13 and BH17. Laboratory analyses on samples from BH3, BH6 and BH13 yielded Chromium Reducible Sulfur ("SCR") concentrations above QASSIT Action levels confirming these materials are PASS.

Samples from the remaining boreholes indicated that no PASS present. However, laboratory tests indicated an available neutralising capacity within some samples that may have masked generated acidity during the field tests during testing. The presence of fine shell fragments across this site was noted during borehole drilling.

The investigation concludes that a more detailed PASS investigation will be required to more accurately determine the extent of PASS materials with and without sufficient neutralising capacity over the site. This will be undertaken prior to the commencement of any earthworks.

Groundwater inflows were typically encountered in boreholes at approximate depths of between a.2m and 3.6m below the current ground surface. Any dewatering activities required for future development will need to be strictly controlled and managed to prevent the oxidisation of PASS.

8.2.1 Issues

The proponent states:⁷⁷

... that a more detailed PASS investigation will be required to more accurately determine the extent of PASS materials with and without sufficient neutralising capacity over the site. This will be undertaken prior to the commencement of any earthworks.

However, it is not the intention of the proponent to carry out any further ASS investigations:⁷⁸

A preliminary acid sulfate soil investigation was conducted by Golder Associates within the site in 2005 (the Golder Report). The Golder Report states that low PASS materials are present within the proposed development site and that specific management will be required during excavation and dredging to prevent acidification due to oxidation of these materials.

⁷⁶ Cardno (Qld) Pty. Ltd. *Review of Environmental Factors*. (Report, the New Bowen Marina for JAG Marine Group, 28 September 2005, p. 31)

⁷⁷ Cardno (Qld) Pty. Ltd. *ibid.* (p. 31)

⁷⁸ Cardno (Qld) Pty Ltd. *Appendix G: Further Particulars and Response to Information Request*. (6 September 2006, s10.6.1, p. 45)

It is not proposed that further sampling and analysis will be conducted within the site. Should PASS be encountered, the management measures outlined within the ASSMP included as Appendix D will be implemented to minimise potential impacts.

As we have already mentioned, when exposed to air as a result of drainage or disturbance, ASS produce sulphuric acid, and often release toxic quantities of iron, aluminium and heavy metals. This can have major environmental, health, engineering, and economic effects.

What is this developer playing at? He is well aware of the implications of disturbing acid sulphate soils, and yet is prepared to carry out excavation and dredging works without any prior knowledge of the extent of PASS materials.

Further, it should be noted that the QASSIT Guidelines state:⁷⁹

The presence of carbonates, in excess of the potential acidity held by sulfides, does not necessarily prevent soil acidification if the carbonates' acid buffering is not readily or rapidly available (eg. if it is locked up in shells, or as unreactive coarse fragments). Formation of insoluble or sparingly soluble surface coatings (eg. of iron oxides, gypsum, etc.) can also limit the neutralising ability and reactivity of calcium carbonate. It is extremely important to know the in situ form and distribution of the carbonates in the sediment to enable a correct interpretation of analytical results and the choice of appropriate management techniques. It should be noted that normal laboratory soil preparation (especially the grinding process) affects the fineness and reactivity of shell, yielding an analytical acid neutralising capacity in excess of that which would normally be available from the soil in situ.

How will we know the in situ form if this uncaring developer has no intentions of performing any further ASS investigations?

We also must question as to what the proponent's approach will be to dewatering activities within PASS materials given that groundwater has been encountered on the site?

However, to my great alarm the Delegate obviously has overlooked the impacts of ASS on the surrounding environment and is mimicking the proponent.⁸⁰

26. I found that a number of indirect impacts, such as water quality degradation and acid sulfate soils may adversely affect the GBRWHA and potential habitat for listed threatened and migratory marine species as a result of the construction of the marina. I found that management plans to impact these impacts have been prepared or are being prepared by the proponent. I found that the draft Acid Sulfate Management Plan will adequately manage any potential acid sulfate soils during the construction of the marina. I found that in order to ensure that water quality is appropriately addressed, the Environmental Management Plan, being prepared as a condition for the Bowen Shire Council, must include corrective actions for the possible impacts of

⁷⁹ Queensland Acid Sulphate Soils Investigation Team. *Acid Sulphate Soils – Laboratory Method Guidelines*. (Version 2.1, June 2004, p. A1 – 7)

⁸⁰ Campbell, Dr. Jane. *op. cit.*

stormwater, erosion, sediment and residence times should specific triggers be exceeded.

Where is the full ASS test? Where is the adoption of the Precautionary Principle? The Port of Airlie Marina faced a similar situation regarding ASS, however, the Delegate saw fit to place a condition on the approval:⁸¹

4. Prior to the commencement of any works, the person taking the action must undertake an Acid Sulfate Soil investigation in accordance with the Guidelines for Sampling and Analysis of Lowland Acid Sulfate Soils in Queensland (Ahern et al 1998) and the Queensland Government Instructions for the Treatment and Management of Acid Sulfate Soils 2001. In the event that sampling from the investigation reveals Acid Sulfate Soils to be present on-site, the person taking the action must prepare a plan to manage the impacts on the Great Barrier Reef World Heritage Values, listed threatened species and communities and listed migratory species.

The plan must be submitted for the Minister's approval before the commencement of works. The approved plan must be implemented.

4. Loggerhead turtles

The township of Bowen in north Queensland sits on Edgumbe Bay, a dugong protected area. The bay is also home to marine turtles, both green and loggerhead. Bowen has a marina with 142 moorings and 33 private berths. It was expected that future expansion would accommodate 100 extra berths.⁸²

The loggerhead turtle is listed as an endangered species and as a migratory species under the EPBC Act. The species is severely threatened:⁸³

Based on information collected from the east coast, the loggerhead turtle has lost 50-80% of its annual nesting population in the last decade. Further loss of only hundreds of large loggerhead turtles annually may threaten the survival of the species in eastern Australia.

Under the Recovery Plan for Marine Turtles in Australia, the loggerhead was singled out as an issue of importance.⁸⁴

The Recovery Team identified this decline as an issue of importance prompting the following guiding statement.

In view of the apparent drastic decline of loggerhead turtles in Australia, the lead conservation and fisheries management agencies in

⁸¹ Early, Gerard Patrick. *op. cit.*

⁸² Department of State Development and Department of Tourism, Racing and Fair Trading. *Marina Demand Study*. (Commissioned by Whitsunday Region Interdepartmental Committee, Queensland Government, 2001)

⁸³ Department of the Environment, Water, Heritage and the Arts. *Marine Species Conservation: Loggerhead turtle*. (Commonwealth of Australia, 19 July 2007, downloaded from the website 25th December 2007)

⁸⁴ Environment Australia. *Recovery Plan for Marine Turtles in Australia*. (Prepared by the Marine Species Section, Approvals and Wildlife Division, Environment Australia, in consultation with the Marine Turtle Recovery Team, Canberra, July 2003)

each jurisdiction will make every effort, care and precaution to reduce loggerhead mortality to almost zero.

The *Recovery Team* also noted the continued decline of the eastern Australian population of the loggerhead turtle and identified the need for *“its conservation to be implicit in all actions.”*

However, with total disregard for marine turtles of Edgumbe Bay and the adjacent creeks and mangroves, vital habitat for the survival of these endangered species, a delegate of the Department, note I stated a delegate of the Department and not the Minister, saw fit to approve the expansion of the Bowen Marina to include 600 + berths, and major residential and commercial developments.

This approval will see major alteration to the flows in and out of the extensive mangrove area of the Magazine creek which is directly behind the marina. Further, it will see a major loss of mature and regrowth mangroves and a major benthic community which provides a vital food source for the turtles. I have on many occasions witnessed turtles transiting the marina and have witnessed the turtles in the magazine creek area. Also, I have noted the turtles in a nearby channel, a channel which is to be heavily excavated to allow some form of flow to the Magazine creek while excavation operations are carried out in an area locally known as ‘the duckhole’. I advised the Department of my concerns regarding the marine turtles in my Submission on the Preliminary Information Assessment for the Marina Development.

These turtles that utilise the area could be either green or loggerhead, but as no appropriate surveys were undertaken during the assessment process it remains uncertain as to the species.

The approval for this marina development contains no conditions about the protection of the turtles.

Again I stipulate that the approval decision was made at a time that the government was in caretaker mode and as such may be deemed as having implications for or repercussions on the in-coming government. Believe me Ministers you haven’t heard the last of this development.

The EPBC Act has been in force for 7 years that is 7 years out of the last decade that has seen a drastic decline in the loggerhead turtle population. Says a lot for the effectiveness of the Act? Or is it simply the case that the Department’s Policy is to approve development at all cost and the word NO will not be part of that Policy?

But still this Department approves the loss of vital habitat for this endangered species and it will continue unless the Objects of the Act become the Policy of the Department.

The only obvious consideration given to impacts on the marine turtles is in regard to boat strikes:⁸⁵

24. *I found that direct impacts on marine species from boat strikes may occur as a result of the increased traffic in the area. I found a number of mitigation measures are proposed by the proponent for boat strike, including enforcing 6 knot speed limits within the entrance channel; directing boat traffic away from shallow areas using markers and signs; and educating the public about the importance of driving slowly over shallow areas.*

25. *I found that further mitigation measures would be required to reduce the risk of boat strikes on marine turtles and dugong. These mitigation measures include:*

- *ensuring tourism operators are made aware and advise clients of measures to reduce the risks associated with boat traffic to marine turtles and dugong;*
- *monitoring the incidences of boat strike involving dugong or marine turtles. Requiring boat strike incidents to be reported to the Department within 2 weeks and that the report must include a full investigation of the circumstances of the strike and actions recommended to reduce the risk of subsequent strikes. The report must also include the measures carried out for managing injured marine turtles and dugongs; and*
- *providing the public and commercial operators with contingency measures for managing injured marine turtles and dugongs, including responsive procedures for injured animals and reporting mechanisms.*

I find that there are apparently no measures to protect the marine turtles that transit the marina to go to the Magazine Creek mangrove complex for feeding. I also note no mention of protection of the marine turtles that utilise the small channel that is approximately 100 metres to the east of the main marina entrance channel. This channel is to be excavated and widened to purported allow a tidal flow to the Magazine Creek area whilst operational works are being carried out on the 'duck hole'.

Also I note there is no true or positive identification of what species of marine turtles may utilise Edgumbe Bay or the marine turtles that utilise Magazine Creek. The only statement is non-specific.⁸⁶

I found that marine turtles (Green, Flatback, Leathery, Hawksbill, Loggerhead and Olive Ridley) and dugong are species that may occur in the vicinity of the action area.

No studies were undertaken by the proponent to ascertain what impacts the development would have on the marine turtles or for that matter other listed threatened species that utilise the marina, the channel to the east of the marina, and the Magazine Creek area.

⁸⁵ Campbell, Dr. Jane. *Statement of Reasons for Decision under Section 133 of the Environment Protection and Biodiversity Conservation Act 1999*. (Department of the Environment, Water, Heritage and the Arts, Jag Marine Group Pty Ltd, EPBC 2006/2602, 21 December 2007, p. 11)

⁸⁶ Campbell, Dr. Jane. *ibid.* (p. 11)

5. Seagrass and dugong

Seagrass meadows provide an essential food resource for the dugong and the green sea turtle (*Chelonia mydas*) which are listed respectively as vulnerable and endangered by the IUCN (IUCN, 1994).

Primary and secondary productivity in seagrass meadows provide support for extended food chains and links to other ecosystems.

Intertidal seagrass meadows are important habitats for the food of shorebirds and support fish and prawn populations which migrate to other habitats.

Seagrass meadows are particularly important as nursery grounds for a range of penaeid prawns and fish.^{87 & 88}

Seagrasses play an important role in sediment trapping and stabilisation. It is likely that the success in trapping sediments will explain the function of seagrass meadows as nutrient sinks in this region. Furthermore, seagrass meadows make important regional contributions to net primary production.⁸⁹

None of these factors have been considered as significant by the proponent or the Department. However, it is the belief of the experts of the Department of Primary Industries and Fisheries, the Environmental Protection Agency and Dr. Helene Marsh that these factors are significant.

Also, loss of seagrass in this area is expected to have a significant impact on the dugong population of the Whitsundays:⁹⁰

As pointed out by Campbell et al. (2002), seagrass meadows which support the species which are the preferred food of dugongs are patchy in the Whitsundays, and thus the loss of any of these meadows is likely to have some impacts on the Whitsundays as habitat for dugongs and as a staging post for dugongs moving between the major dugong habitats such as Shoalwater Bay and Hinchinbrook. The cumulative impact of such seagrass beds is also of concern, given the evidence of a substantial reduction in dugong numbers on the urban coast of Queensland since the 1960s (Marsh et al. 2001).

Scenario – Dugong populations have decreased dramatically on the urban coast of Queensland since the 1960s to the point that there is only approx 3% of the 60s population left. If for argument's sake there were some 30,000 dugongs in the 60s then currently there would be only 900 left. That is a severe loss and if that

⁸⁷ Coles, R., Mellors, J., Bibby, J. and Squire, B. *Seagrass beds and juvenile prawn nursery grounds between Bowen and Water Park Point.* (Qld Department of Primary Industries and Fisheries, Information Series No. Q187021, 1987)

⁸⁸ Coles, R.G., Lee Long, W.J., Helmke, S.A., Bennett, R.E., Miller, K.J. and Derbyshire, K.J. *Seagrass beds and juvenile prawn and fish nursery grounds.* (Qld Department of Primary Industries and Fisheries, Information Series No. Q192012, 1992)

⁸⁹ Lee Long, W.J., Mellors, J.E. and Coles, R.G. *Seagrasses between Cape York and Hervey Bay, Queensland, Australia.* (Australian Journal of marine and Freshwater Research, Vol. 44, 1993)

⁹⁰ Marsh, Helene. *Consultancy Report for the Queensland Environment Protection Agency.* (As published in the Supplementary EIS for the Port of Airlie Marina, EPBC 2001/298, 2003)

current trend continues then we could expect to see no dugongs on the urban coast of Queensland within the next 5 to 10 years. So if this is not a significant loss and if impacts from the development on seagrass beds are not considered significant, then all the experts must be talking nonsense?

The proponent points out that the majority of seagrass to be lost are short term losses and that it is expected that the seagrass beds will recover following the dredging operations. This is an uncertainty and there is no true evidence that these beds will recover. They certainly have no understanding of the values and attributes of the World Heritage Area for if they did they would know that the seagrass beds of Edgumbe Bay contribute greatly to the values and attributes of the WHA, for so many marine creatures who are part of the World Heritage values are dependent on these seagrass beds.

With respect to the statement made by the Delegate:⁹¹

... .. I found a number of mitigation measures are proposed by the proponent for boat strike, including enforcing 6 knot speed limits within the entrance channel;

I am amazed for it clearly shows that the information that I provided in my Submission has not been taken into consideration for I stated in that Submission:

With reference to the request at s.8.28 Impacts on Turtles and Dugongs, the developer responds by stating:⁹²

A detailed analysis on the impacts on the development of the New Bowen Marina on turtles and dugongs is provided in Appendix E which states that:

“an increase in human activity associated with the marina development has the potential to impact populations of dugong and turtle, both directly and indirectly (via habitat loss or degradation). However, slow-moving boat traffic confined to the entrance channel is unlikely to further deter turtles and dugong from foraging on the intertidal and shallow subtidal areas adjacent to the marina (although it is possible that dugong already avoid these areas due to the high amount of human activity).”

... Overall, the current risk of boat strike of turtle or dugong at the existing Bowen Boat Harbour is low compared to other regions of the Queensland coast. The increased risk of boat strike associated with an increase in boat traffic from the New Bowen Marina can be managed by directing boat traffic away from shallow areas, ensuring that boats travel slowly (<6 knots) in the entrance channel and marina, and educating the public about the importance of driving slowly over shallow areas.

It is fascinating that the proponent is stating that the marina development has the potential to impact populations of dugong and turtle via habitat loss or degradation. Previously in a response at s.8.10.1 the proponent has stated that associated dredging operations will cause loss of the seagrass species adjacent to the marina entrance channel. What the hell has the statement that slow-moving boat traffic confined to

⁹¹ Campbell, Dr. Jane. *op.cit.* (p. 11)

⁹² Cardno (Qld) Pty Ltd. *op. cit.* (p. 26)

the entrance channel is unlikely to further deter turtles and dugong from foraging, to do with the already lost seagrass community?

*The reason that the current risks of boat strikes on turtle or dugong at the existing harbour is low compared to other regions, is that there is limited boat traffic. The current marina is designed to accommodate 142 vessels, and **the marina and entrance channel already have a 6 knot restriction on vessel speed.** Increasing the capacity to some 596 vessels will dramatically increase the risk of strikes on turtle and dugong*

Why is the Delegate insisting on reiterating exactly what the proponent said when the Queensland Department of Transport already polices the marina and the entrance channel and has restricted boat speeds to 6 knots?

6. Community considerations

I doubt very much if the Department has considered the impacts of this marina on the community. The boats currently at moorings in the 'duck-hole', some seventeen vessels, will be displaced when the northern basin is excavated. These vessels will have to lie at anchorage in the far too often windy and choppy conditions that are experienced in Edgumbe Bay at the anchorage off Dalrymple Point.

Also, the owners of these vessels are not wealthy people and as such could never afford the high leases associated with marina berths. Where are they to moor their vessels? Are they to be left in Edgumbe Bay?

The Department also ignores the inconvenience that will be placed on the vessels that use the southern basin. Beside private vessels several commercial fishing vessels are at pylon moorings in the marina. These pylons will have to be removed to accommodate the proposed new marina facilities. Where will these vessels go? The fishing co-ops have no intentions of relocating so what will happen to the commercial vessels moored for convenience adjacent to the fishing co-ops that they are part of?

It is so annoying that the Department in its assessment approach appears to have been more interested in the economic gains than truly looking at the impacts on the historic town of Bowen:⁹³

29. I found that the proposal is expected to have a short term negative economic impact due to the relocation of commercial offices from the Bowen Town Centre to the Bowen Marina. I found that this will increase vacancy levels in the short term and may delay the leasing of current vacancies. However, I found that the proposal cost is a major investment for the Bowen Shire. It is projected to be \$260 million.

30. I found that the construction of the development may lead to flow-on benefits of some \$600 million for Queensland. I found that the construction is likely to directly generate approximately 2100 person years of employment, with a total of

⁹³ Campbell, Dr. Jane. *op.cit.* (p. 11)

approximately 4200 person years of employment generated from flow-on effects in the State.

31. I found that upon completion the proposal would provide employment for approximately 400 persons in the trades, retailing, hospitality and professional services. I found that trades, retailing and hospitality are sectors that employ a high proportion of young persons, encouraging a greater proportion to remain with the Shire. I found that an increase in the level of professional services would broaden the economy of Bowen.

Does this Department truly know the nature of Bowen? Has it ever visited Bowen and looked around to see where everything is located? Does it know what the population of Bowen is and what its work force comprises of? Or have these people who just sit in their offices in Canberra been just listening to the high flying spiel being dished out by the developer? I think I would opt for the latter.

Questions:

- What commercial offices have to be relocated from the Bowen Town Centre?
- Where are the skilled persons in Bowen to construct the marina and also, when completed, work in the marina?

I live here and I know of no offices that would need to be relocated from the town centre.

Regarding the work force and skilled labour it might be very wise to consider the report prepared for Chalco (Australia) Pty Ltd who is proposing to build an alumina smelter/refinery at either Townsville or Gladstone or Bowen. The report highlights the following:

EXISTING ENVIRONMENT AND POTENTIAL IMPACTS ASSOCIATED WITH THE CHALCO PROJECT ⁹⁴

SOCIAL ASSESSMENT

Community

Bowen is North Queensland's oldest town. It was founded before Townsville, Mackay or Charters Towers in the northern region of the Whitsundays. Bowen has an industrial focus as well as tourism, environmental and agricultural.

As at the end of June 2005 the Bowen Shire had an estimated resident population of 12,546. Projections by the Queensland Government (PIFU 2006) indicate that the expected population of the Bowen Shire will be between 12,220 and 13,570 people. The median age of Bowen Shire's population is project to increase by 9 years from a median age of 38 years in 2001 to 47 years in 2026.

There are likely to be higher social impacts to the Bowen Shire in comparison to Townsville or Gladstone. With a small population there will be expected less variety and type of services available to support the estimated construction workforce of 1,600

⁹⁴ GHD Pty Ltd. *Report for Aurukun Bauxite Project: East Coast Refinery and Port Facilities – Initial Advice Statement.* (Prepared for the Aluminium Corporation of China Ltd., Brisbane, 23rd July 2007)

and operational workforce of 560 people (and potential families). A dedicated construction camp is proposed to be located on the edge of town with dedicated infrastructure and facilities for 'self-contained' operation.

Social impacts of the proposed works have been only broadly assessed. Potential social issues include:

- *Geographic proximity of the proposed refinery site;*
- *Impacts of the proposed works on directly affected landowners;*
- *Impacts on the construction and operational workforce to community structure (e.g. single men, women or families);*
- *Impacts on the social values of the Bowen community – how will the proposed works impact on how people define where they live, work and recreate (traditionally an agricultural and tourism town but increasingly involved in support infrastructure for mining in the Bowen Basin);*
- *Potential impacts on tourism;*
- *Impacts of the construction and operating workforces and the flow-on impacts (but not limited to):*
 - *Services provided in Bowen with the extra people potentially receiving services (e.g. health, housing, education and emergency services etc);*
 - *Impacts on the social values and structures of the existing Bowen community and the impact new individuals and families will have;*
 - *Impacts associated with further expansion with construction of the Abbot Point coal loading facility;*
- *Environmental impacts including (but not limited to):*
 - *Noise and air impacts;*
 - *Visual amenity impacts;*
 - *Impacts on transport;*
 - *Impacts on the Great Barrier Reef Marine Park;*
 - *Impacts on the economic viability of families and the region;*
- *Local employment opportunities and the capacity of Bowen to supply a skilled and unskilled labour force; and*
- *Potential employment with fly-in/fly-out or labour driving from other regional centres.*

Bowen is a Queensland style fishing village it is not Hamilton Island, Airlie Beach, the Gold Coast or Miami Beach. Where is the need for the reported 600+ vessels? Will the rich and famous be interested in coming to Bowen which has limited infrastructure in place to cope with their needs?

7. Endangered ecological community

I note that nowhere in the Statement of Reasons provided by the Delegate can I find any evidence of an assessment on the endangered ecological community present on the site. In my Submission I pointed out that areas adjacent to the proposed marina development contain areas of the endangered ecological community semi-evergreen vine thickets.

Semi-evergreen vine thickets have been disappearing from the coastal areas of Queensland at an alarming rate and for the Department to obviously ignore the fact that there is SEVT present in the area clearly shows that the Department is really not interested in protecting the Australian environment and in particular matters of national environmental significance and is more prone to assessing the economics than it truly is of the environment.

8. Migratory species – Birds

There is no mention by the Delegate in her Statement of Reasons of the impact of this development on the migratory birds that frequent the area.

With the loss of and continued loss of coastal wetlands and associated mangroves and benthic communities, more and more pressure is being placed on protected wetlands –RAMSAR sites and Listed Nationally Significant Wetlands – for the habitation, feeding and survival of migratory birds.

Through protection of habitat for migratory shorebirds, not only important and significant wetlands, major benefits will flow to other migratory and marine species that share habitat. Species that may share habitat with migratory shorebirds include crocodiles, marine turtles, and other listed marine species. This includes many resident shorebirds such as the Painted snipe, Red-capped plover and Beach stone-curlew and migratory seabirds such as the Little tern.

In my Submission I listed migratory birds that use or may utilise the development area, a rather comprehensive list.

Why has the Department summarily dismissed the need to assess the impacts on listed migratory species?

The current ineffectiveness of the EPBC Act is clearly obvious. There must be change and that change must be an alteration of the current obviously flawed assessment policy of the Department.

The environment is the life blood of Australia and without it we will cease to exist. NO must become the key word on the lips of the Referrals and Assessment Branch when assessing development and mining referrals. The policy of the Department must be the objects of the Act and future assessments must reflect that.

Ministers, please for the environment's sake, for the present generation's sake, and for future generation's sake don't keep continuing down the path chosen by the previous Howard government and through the EPBC Act look toward protection

rather than ways of getting around the Act to approve unwarranted developments for the sake of economic gain.

Major consideration must be given to protecting our environment for future generations. I want to ensure that my grandchildren and their grandchildren are given the opportunity to see what little remains of this unique country's environment.

Australia – There is no other place like it on earth. Let's endeavour to keep our uniqueness: Our coasts and oceans; our wonderful World Heritage Areas; our unique landscape; our unrivalled flora and fauna; and our wetlands, home to our beautiful migratory birds.

2.6.1 EVERYONE IS RESPONSIBLE

All creatures are connected in an intricate living web. We have already impacted heavily on the fauna of this country and destroyed entire species. By continuing to force creatures out of their homes, reducing their habitats and pushing them to remote corners, eventually more and more animals will simply have nowhere to go, for after their habitat disappears they soon follow.

The more creatures we lose the closer we come to the eventual collapse of the entire structure from which there will be no survivors.

Earth's wild creatures are definitely very vulnerable, but only slightly more so than we are. What goes around comes around. There is absolutely no doubt we will ultimately reap the whirlwind, in fact we are already paying the price – global warming, climate change, drought, higher temperatures, rising seas, salinity, the list goes on.

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CLIMATE CHANGE



In particular, Australia, because of its ancient geography, soil profile and distinctive weather patterns, is more adversely affected by climate variability than some other continents.

-- Peter Garrett

The future is unfolding before our eyes. Canada's Inuits see it in disappearing Arctic ice and permafrost. Australians see it in fatal heatwaves and extended droughts. Scientists see it in tree rings, ancient coral and bubbles trapped in icicles. All of these things reveal that the world has not been as warm as it is now for a millennium or more, and that the last years have been the hottest on record.

-- Peter Garrett

Climate change is so big that people who study it.. and many do.. need to speak to it. They must present scientific papers, they must appear in public, they must speak to the media and we must hear their voices. In order to get policy right, policymakers.. governments.. need to make decisions based on sound science.

-- Peter Garrett

The challenge for governments is to adopt policies that address the increasing energy demand but within the long-term context of climate change. Many elements can be considered: ways of making coal cleaner; rapidly developing and supporting a suite of renewable energy technologies with an emphasis on increased energy efficiency; carbon caps and trading; and, of course, looking hard at ways of reducing and localising energy demand.

-- Peter Garrett

Climate change is such a huge issue that it requires strong, concerted, consistent and enduring action by governments.

-- Peter Garrett

There are many who still do not believe that global warming is a problem at all. And it's no wonder: because they are the targets of a massive and well-organized campaign of disinformation lavishly funded by polluters who are determined to prevent any action to reduce the greenhouse gas emissions that cause global warming out of a fear that their profits might be affected if they had to stop dumping so much pollution into the atmosphere.

-- Al Gore

We are upsetting the atmosphere upon which all life depends. In the late 80s when I began to take climate change seriously, we referred to global warming as a "slow motion catastrophe" one we expected to kick in perhaps generations later. Instead, the signs of change have accelerated alarmingly.

-- David Suzuki



3. CLIMATE CHANGE

The jury is in. The judges' decision has been handed down. A crime against humanity and mother earth has been committed and is still perpetuating. Those responsible must pay and must take action immediately to rectify and prevent the cause.

3.1 OVERVIEW

For more than twenty years some of the world's top scientists have been warning governments about the effects that Greenhouse Gas Emissions are having on our planet. But the governments snubbed this notion of climate change being induced by human activities and preferred to listen to the anti climate change scientists who were on the payroll of the giant oil and coal companies. To this day very little has changed and many of our governments particularly in the USA and here in Australia are still listening to those scientists and the large oil companies and the coal industry.

Our planet is heading down the path of an environmental catastrophe and our politicians just keep arguing about the best policies or let's carry-out some further investigations. The evidence is here and action is required **NOW**.

The Australian Government must now face the *Green Truths*. Long-term targets are ludicrous.

Governments, industries, and communities cannot continue to keep ignoring the impacts that climate change is having on this planet. Climate change is the most threatening process facing mankind and the two major contributors to the greenhouse effect are land-clearing and the burning of fossil fuels – the coal industry and other major mining industries are a major contributor to both of these.

The time has come for us as a community, and as a country, to consider the implications of continuing to utilise coal in industry and in power generation both in Australia and overseas. Supposedly 'clean-coal technology' is not the answer.

A lot of water has passed under the bridge since the Third Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) in 2001 and very little has been done by the Australian Government or State Governments to reduce greenhouse gas emissions. There has been a lot of rhetoric and chest-thumping - but **NO ACTION**.

The Fourth Assessment Report of the IPCC was released early last year and now the evidence is clear and irrefutable that climate change is human induced, but still our governments squabble and still look to 'dirty' coal as the solution. It is far from the solution - it is purely the cause.

Australia's record on greenhouse gas emissions is disgusting. We have the highest greenhouse gas emissions per head of population than any other country, and we have the highest rate of mammal extinctions in the world and are beginning to drive

more threatened species to the 'Tipping Point'.⁹⁵ When climate change scientists talk about a 'tipping point', it means a point of no return, a level of global warming that irreversibly changes the living conditions on earth. Seemingly tiny increases in temperature are already tipping the balance of survival for Australian wildlife. Frogs in the rainforest (the Mountain Nursery Frog vulnerable to rising temperatures), seabirds on the reef (Heron Island is one of the main breeding sites for shearwaters on the reef, but in 2002, the population crashed), and possums in the snow (the Mountain Pygmy Possum is one of only 2,000 left in the wild - the only marsupial in the world that hibernates during winter), are the new 'canaries in the coalmine'.

3.1.1 LATEST ENVIRONMENTAL EVIDENCE

- **10 years to climate 'tipping point'** - Even "moderate additional" greenhouse emissions are likely to push Earth past "critical tipping points". Recent climate reports underestimated how soon. NASA is endorsing science that places considerably more urgency on the need to reduce emissions to avoid "disastrous effects" of global warming than was evident in the recent reports from the world's scientists coordinated by the Intergovernmental Panel on Climate Change. Scientists have been warning for several years that such tipping points are the greatest threat from manmade global warming – and what makes it potentially catastrophic for civilization.
- **Australian icons under threat** -
 - Great Barrier Reef - The spectacular coral formations off the Queensland coast are showing alarming signs of decline, according to scientists.
 - The rainforest - Rising temperatures could spell doom for many of the delicate creatures in Queensland's wet tropical rainforest.
 - Kakadu - The bountiful life in the Northern Territory's famed national park is at risk, scientists warn, because of rising sea levels.
- **Wetlands, rivers and lakes** - Wetlands need water to exist and to support animal and plant life. Coastal and inland wetlands are at risk from climate change.
- **Penguins** - Penguin decline in Antarctica linked with Climate Change. Scientists have determined that the penguins' susceptibility to climate change accounts for a dramatic decline in their number over the past half century.
- **Social impacts** –
 - Tourism - Unless action is taken urgently, Australia's most famous natural wonders are likely to be amongst the earliest victims of climate change. Kakadu's coastal wetlands may be inundated, the Great Barrier Reef permanently bleached, and Alpine snows reduced to a fraction of their former range. Thousands of unique flora and fauna species may disappear. This is not only a natural tragedy. More than half a million Australians, especially those in regional areas, rely on tourism for their livelihoods.

Climate change is a major threat to Australia's most economically significant natural wonder, the Great Barrier Reef which generates over \$4.228 billion per annum

⁹⁵ Catalyst. *Tipping Point*. (ABC TV, 25 May 2006)

- Farming and Rural Communities - The agricultural sector, which accounts for almost one fifth of Australian greenhouse gas emissions, is particularly vulnerable to the effects of global warming. Changes to rainfall, temperature, storm intensity and drought frequency will increase evaporative water loss, increase soil erosion, stress livestock, damage crops, exacerbate fire risks and imperil fish stocks. This threatens the identity and livelihoods of more than half a million Australians directly reliant on fishing, farming and grazing.
 - Insurance - Weather and climate are critical variables for the insurance industry. When weather patterns are reasonably stable, the magnitude of possible losses from storms, droughts and floods can be predicted. The industry can then price and spread weather-related risk across multiple policy-holders. But a warmer and more volatile climate will bring unpredictable losses, undermining the insurers' capacity to calculate, price and spread weather-related risk.
 - Housing - The apartments and houses in which Australians live will be at risk as climate change intensifies. And as Australians settle in increasing numbers near the coast and in the hotter outer suburbs of our major cities, their vulnerability will increase.
 - Cost of living - The natural environment affects every aspect of our economy and of our daily lives. From the production of food to the sale of insurance, the climate is an important determinant of the costs of goods and services. As climate change increases, so to will the cost of living. Those who are already financially vulnerable stand to be the worst affected.
 - Health - Climate change will have serious implications for public health in Australia resulting in increasing social and economic costs.
 - Population - Climate change will influence where it is practical, safe, affordable, comfortable and healthy for Australians to live. Where people live is influenced by many factors, but if people choose or are forced to move to avoid negative impacts, this will affect the job and housing markets and the demand for public services such as transport, health and education. Thinking about who is likely to be most affected, and where, is therefore an important part of determining how Australia should best adapt to climate change.
- **Planet's Tougher Problems Persist, UN Report Warns - ⁹⁶**
 - *Nairobi/New York, 25 October:* The United Nations Environment Programme says that major threats to the planet such as climate change, the rate of extinction of species, and the challenge of feeding a growing population are among the many that remain unresolved, and all of them put humanity at risk.
 - Failure to address these persistent problems, UNEP says, may undo all the achievements so far on the simpler issues, and may threaten humanity's survival.
 - Worldwide, greenhouse gas emissions, for example, some experts say, will need to fall by up to 50 per cent by 2050, compared with their 1990 levels – this is based on a threshold of a 2°C increase in the global mean temperature above pre-industrial levels, beyond which, some experts say, climate impacts become significantly more severe, and the threat of major, irreversible damage more plausible. This implies emissions cuts of 60-80 per cent by 2050 in developed countries, and significant cuts for developing nations, should they accept emissions reduction commitments.

3.2 ISSUES

The Howard Government's climate change strategy said a lot but in reality did nothing to stem the flow of Greenhouse Gas Emissions. This *Strategy* could be likened to the Bush administration's actions on global climate change:

⁹⁶ United Nations Environment Programme. *op. cit.*

Bush's do-nothing policy on global warming began almost as soon as he took office. By pursuing a carefully orchestrated policy of delay, the White House has blocked even the most modest reforms and replaced them with token investments in futuristic solutions like hydrogen cars. "It's a charade," says Jeremy Symons, who represented the EPA on Cheney's energy task force, the industry-studded group that met in secret to craft the administration's energy policy. "They have a single-minded determination to do nothing - while making it look like they are doing something." ⁹⁷

The White House has implemented an industry-formulated disinformation campaign designed to actively mislead the American public on global warming and to forestall limits on climate polluters. The previous Government followed in Bush's footsteps and looked to protect the major polluters, the coal industry, and failed to seriously consider alternate renewable energy, wind farms and solar power stations.

Will the Rudd government continue down the same path? They have at least taken one giant step by signing the Kyoto Protocol, but at the recent conference in Bali once again no agreement was reached and the planet has to wait a further 2 years before positive action and an appropriate policy will be put in place. Further delays caused by the American government's undermining of the conference and once again playing into the hands of the major polluters.

I will address my concerns and issues in relation to greenhouse gas emissions in the following sections:

- CLIMATE CHANGE AND THE EPBC ACT;
- TOO MUCH – TOO LITTLE – TOO LATE;
- ENERGY;
- RENEWABLE ENERGY – CURRENT TECHNOLOGY;
- EQUITABLE CONSIDERATIONS;
- ADAPTATION; and
- INDUSTRY, PLANNING AND BUILDING.

3.3 CLIMATE CHANGE AND THE EPBC ACT

There is no recognition in the EPBC Act for climate change and yet climate change is the major issue that is affecting our environment, matters of national environmental significance, and our very way of life.

Why is there no 'controlling provision' for climate change? Isn't climate change having the largest significant impact on the Australian environment? Why was the previous government so adamant for so long that climate change wasn't really happening?

⁹⁷ Tim Dickinson. *The secret campaign of President Bush's administration to deny global warming.* (Rolling Stone Magazine, 20 June 2007)

The EPBC Act recognises the fact that “*anthropogenic emissions of greenhouse gases*” is causing loss of habitat, but this very fact meant nothing to the previous government.

3.3.1 KEY THREATENING PROCESSES

The Key Threatening Process ‘*Loss of climatic habitat caused by anthropogenic emissions of greenhouse gases*’ came into effective on 4th April 2001. The Threatened Species Scientific Committee (TSSC) believed that the threatening process:⁹⁸

- *could cause a native species or an ecological community to become eligible for listing in any category, other than conservation dependant;*
- *could cause a listed threatened species or a listed threatened ecological community to become eligible to be listed in another category representing a higher degree of endangerment; and*
- *adversely affects 2 or more listed threatened species (other than conservation dependant) or 2 or more listed threatened ecological communities.*

The threatening process meets s188(4)(a), s188(4)(b) and s188(4)(c) of the EPBC Act.

Also one must look at another key threatening process that if not halted will contribute to greenhouse gas emissions and hence climate change. That Key Threatening Process is ‘*Land Clearance*’ which was listed on the 4th April 2001.

Neither of these Key Threatening Processes addresses impacts on the “*environment*” or impacts on World Heritage Areas. Don’t forget Section 528 of the EPBC Act defines the ‘environment’ as including:⁹⁹

- (a) *ecosystems and their constituent parts, including people and communities; and*
- (b) *natural and physical resources; and*
- (c) *the qualities and characteristics of locations, places and areas; and*
- (d) *the social, economic and cultural aspects of a thing mentioned in paragraph (a), (b) or (c)*

3.3.2 REFERRAL AND ASSESSMENT PROCESS

I have already pointed out the inadequacies and the non-compliance of the Department’s new Referral Form (see s2.1.1) and the importance of looking at impacts not only on matters of national environmental significance but also on the environment this would include land clearing and greenhouse gas emissions. This rectification and adherence to the EPBC Regulations must occur immediately if we are to start down the path of solving and responding to climate change.

The assessment process is totally inadequate when it comes to addressing climate change: There is no policy; there are no guidelines; and there are no controlling provisions.

⁹⁸ Department of the Environment and Heritage. *Key Threatening Processes*. (Commonwealth of Australia, 2005)

⁹⁹ Department of the Environment and Water Resources. *Environment Protection and Biodiversity Conservation Act 1999*. (Act No. 91 of 99 as amended, prepared by the Office of Legislative Drafting and Publishing, Attorney-General’s Department, Canberra, 19th February 2007, Vol. 2, p. 461)

CASE STUDIES

COAL MINING

Current assessments of coal mining operations are failing dismally in addressing the impacts associated with greenhouse gas emissions. The Department is failing to:

- Consider the amount of land being cleared and is only looking at impacts on endangered ecological communities and that only on an individual referral basis;
- fails to fully assess the overall actions of the mining company in association with other mining operations in the area; and
- fails to truly conceive the fact that ever little bit of greenhouse gas that is released into the atmosphere is relevant and not as stated by a Departmental Officer:¹⁰⁰

I found that contributions from the proposed coal mine operations and the burning of coal by third parties are likely to be negligible compared to total Australian greenhouse gas emissions. I further found that the Australian contribution to current annual greenhouse gas emissions, though relatively large on a per capita basis, is only one amongst many contributions that are made from a number of sources by all other industrialised countries.

I found that, while there is a relationship between the amount of carbon dioxide in the atmosphere and warming of the atmosphere, the climate system is complex. I found that a possible link between the additional greenhouse gases arising from the proposed action and a measurable or identifiable increase in global atmospheric temperature is speculative only and unlikely to be identifiable. I further found that climatic processes linking specific additional greenhouse gas emissions to potential adverse impacts on matters protected by Part 3 of the EPBC Act are uncertain and conjectural only.

This above statement sounds as though it could have been written by John Howard or President Bush. On what planet are these Departmental Officers living? Certainly not on planet earth.

The TSSC established that greenhouse gas emissions are a key threatening process and the key threatening process was listed on the 4th April 2001 then, how can this Officer state that “*I further found that climatic processes linking specific additional greenhouse gas emissions to potential adverse impacts on matters protected by Part 3 of the EPBC Act are uncertain and conjectural only.*”? Is this not a conflict of interest? Also, if there is uncertainty shouldn't the 'precautionary principle' be applied? Oh! I must be missing something:

*I took into account (among other matters) the principles of ecologically sustainable development as required under section 136(2)(a) of the EPBC Act, and the precautionary principle as required under section 391 of the EPBC Act.*¹⁰¹

¹⁰⁰ Middleton, Vicki. *Statement of Reasons – Approval under the Environment Protection and Biodiversity Conservation Act 1999*. (Department of the Environment and Water Resources, Moolarben Coal Mine Pty Ltd, EPBC 2007/3297, 26th November 2007, p. 11)

¹⁰¹ Middleton, Vicki. *ibid*

The greenhouse gas emissions from a single coal mining operation are measurable and also irrespective of that are additional to the greenhouse gases already present in the atmosphere. Emeritus Professor Ian Lowe, AO FTSE FQA, points out the how the mining, transport and use of coal from a mine contributes to global warming and climate change in a report prepared an objections hearing in the Queensland Land and Resources Tribunal:¹⁰²

22. *Dr Saddler calculates in his report that the total average annual emissions from mining, transporting and using the coal produced by the mine would be 5.6 Mt CO₂-e for the 15 year life of the mine or 84.0 Mt CO₂-e in total.*

23. *An initial point to understand in assessing the contribution that these emissions will make to climate change and global warming is that greenhouse gas emissions are additive, i.e. any emissions add to the amount of greenhouse gases already in the atmosphere. While different greenhouse gases persist in the atmosphere for different lengths of time, CO₂ remains in the atmosphere for around 50-200 years. As a consequence of this, CO₂ emitted into the atmosphere from the mine could influence the atmospheric concentrations of CO₂ for up to two centuries. It is not possible to link these emissions to any particular impact on a specific part of the environment in Queensland, Australia or globally, other than to contribute to greenhouse gases in the atmosphere and thereby contribute to global warming and climate change. The impacts of greenhouse gas emissions from this mine should, therefore, be understood as contributing to the cumulative impacts of global warming and climate change.*

24. *In assessing the contribution of the emissions from the proposed mine, it is important to understand that geological structures now trap the carbon contained in the coal, so that the carbon is completely isolated from the atmosphere and will not contribute to global warming or climate change in its current form. It would, therefore, be wrong to say that “the mining of this coal will not make any difference to global warming because if this mine does not proceed the coal will just come from another mine somewhere in the World”. It is true that there is a large amount of coal in the World and that the coal could be supplied from another mine. However, that reasoning ignores the fact that coal is a finite resource, so the mining and use of the coal from this mine will release to the atmosphere fossil carbon that would otherwise be trapped in the ground. Such reasoning also ignores the growing recognition that reasonable and practicable measures should be required to avoid, reduce or offset the greenhouse gas emissions from all human activities, including the proposed mine. Global warming and climate change are massive problems for society that, ultimately, need to be addressed through action at the level of individual projects such as this proposed mine.*

25. *As the emissions of greenhouse gases from the mine will add to the amount of greenhouse gases already in the atmosphere, they need to be considered in the context of national and global emissions. Dr Saddler notes that the most recent available data on Australia’s national direct greenhouse gas emissions were set out by the Australian*

¹⁰² Lowe, Ian. *A brief summary of the science of global warming and climate change.* (Report prepared for an objections hearing in the Queensland Land and Resources Tribunal, Tribunal Ref Nos: AML 207/2006 and ENO 208/2006, Tenure identifier: 4761-ASA 2, 15 January 2007, pp. 9 – 11)

Greenhouse Office in the National Greenhouse Gas Inventory 2004. The AGO found Australia's direct greenhouse gas emissions in 2003-04 were as follows:

<i>Sector Emissions</i>	<i>(Mt CO₂-e)</i>
<i>Energy</i>	<i>387.5</i>
<i>Stationary Energy</i>	<i>279.9</i>
<i>Transport</i>	<i>76.2</i>
<i>Fugitive Emissions</i>	<i>31.0</i>
<i>Industrial Processes</i>	<i>29.8</i>
<i>Agriculture</i>	<i>93.1</i>
<i>Land Use, Land Use Change and Forestry</i>	<i>35.5</i>
<i>Waste</i>	<i>19.1</i>
<i>Australia's Net Emissions</i>	<i>564.7</i>

26. *Dr Saddler also notes that global greenhouse gas emissions in 2000 (excluding emissions from land use, land use change and forestry) are estimated to have been nearly 34 Gigatonnes of CO₂ equivalents (Gt CO₂-e).*

27. *To put the potential release of CO₂ from the proposed mine extension into context, the lifetime emissions from the proposed mine extension would be about one quarter of the national figure for a year, more than the total annual emissions of the entire transport sector, or about 0.24 per cent of the current annual global release of greenhouse gases.*

28. *The IPCC data show that about 40 per cent of the carbon from fossil fuels released each year comes from coal, about 40 per cent from oil and about 20 per cent from gas. Since some of the oil is used to transport coal, the IPCC figure of about 10,000 Mt, or 10 Gt, of CO₂ released each year from the burning of coal should be seen as a conservative estimate that does not include the associated transport emissions. Because coal contains more carbon and less hydrogen than oil or gas, it produces proportionately more CO₂ per unit energy. In round figures, gas produces about 60 per cent of the CO₂ per unit energy of coal, while petroleum fuels produce about 80 per cent. Burning coal to generate electricity is extremely inefficient, so that coal-fired electricity releases about five times as much CO₂ per unit energy as burning gas.*

For the Departmental Officer to state that "I further found that climatic processes linking specific additional greenhouse gas emissions to potential adverse impacts on matters protected by Part 3 of the EPBC Act are uncertain and conjectural only", smacks in the face of expert opinion. Professor Ove Hoegh-Guldberg, Director, Centre for Marine Studies, University of Queensland (since 2000); Director, Heron Is, Low Isles and Morton Bay Research Stations; Deputy Director, ARC Centre for Excellence for Reef

Studies; and Visiting Professor, Stanford University, in a report on a mining operation in the Bowen Basin states: ¹⁰³

EXECUTIVE SUMMARY

1. *This report considers the likely ecological impacts of global warming and climate change on the Great Barrier Reef, Australia, by 2050 and beyond. It has been prepared at the request of the Queensland Conservation Council (QCC) for use in an objections hearing before the Queensland Land and Resources Tribunal concerning a proposed large open-cut coal mine.*

2. *The earth is undergoing accelerating climate change that is being driven by rapidly increasing greenhouse gas concentrations. This is changing the conditions under which the earth's fauna and flora have flourished over the past several million years. There is now extensive evidence of changes to the distribution, abundance and health of earth's terrestrial and aquatic ecosystems. Species are migrating towards the poles, ecosystems like coral reefs are experiencing increasing stressful conditions and populations of organisms are in decline as a result of a combination of climate change and other anthropogenic impacts.*

3. *There is no longer any serious doubt that the earth has warmed by 0.6-0.8 degrees Celsius since 1880 and will warm a further 2-6 degrees Celsius by 2100, almost exclusively due to human activity. Atmospheric concentrations of carbon dioxide are now 100 parts per million above those seen over the past 650,000 years, and rates of increase are 2-3 orders of magnitude above most of those periods in which the temperature of the planet changed. It is probable that these conditions also exceed those seen for many millions of years. Past changes to greenhouse gas concentrations have always been directly accompanied by increases in global temperature. It is no longer credible to claim that there is "major debate around the fact of human driven climate change". It is here right now and is already changing our lives. It will continue to do so for many hundreds of years.*

4. *The earth's biological systems are already responding to the minimal warming seen so far. Terrestrial bird, butterfly and plant populations have shifted 50-200 km towards the poles. The tree lines of many alpine forests have expanded to higher altitudes and exotic species have invaded as the number of frost days has decreased. Rainforests are severely threatened and palm forests now grow in alpine Switzerland.*

5. *Reproductive seasons have lengthened for animals and plants over the entire planet. Similar changes are occurring in the sea. Many regions of the world are experiencing the invasion of warm water benthic fish and invertebrate species into reefs at higher latitudes. Shifts in the structure of planktonic and intertidal communities show similar patterns with major changes being documented over the past 100 years. The melting of the earth's polar ice caps is rapidly changing the habits and distributions of both Arctic and Antarctic biota.*

¹⁰³ Hoegh-Guldberg, Ove. *Likely ecological impacts of global warming and climate change on the Great Barrier Reef by 2050 and beyond.* (Report prepared for an objection hearing in the Queensland Land and Resources Tribunal, tribunal Ref Nos. AML 207/2006 and ENO 208/2006, Tenure identifier: 4761-ASA 2, 19 January 2007, pp. 3 – 6)

6. Coral reefs have shown some of the most dramatic impacts of climate change, with the advent of worldwide coral bleaching events from 1979 as the thermal threshold of corals have been exceeded. Reports of global cycles of coral bleaching and mortality have increased dramatically. The global episode of mass coral bleaching in 1998 was the largest in recorded history, and coincided with the warmest year and decade on record. It removed an estimated 16% of the world's living coral, with estimates for the Indian Ocean rising as high as 46% of living coral dying over a few months.

7. Coral reefs across the world are also deteriorating due to a combination of coastal land practices, overfishing and marine based pollution. These influences alone have been estimated to potentially remove over 50% of coral reefs over the next 30-50 years. Reduced carbonate alkalinity of seawater (the source of ions for calcification) is inflicting additional pressure on coral reefs.

8. This will have dramatic impacts on the world's coral reefs over the next 50 years. It will reduce coral abundance to less than 5%, will cause major changes to fish populations and will change the natural values of coral reefs to millions of reef users and associated industries. These changes will add to the problems of global fishing industries which are already in crisis as fish stocks plummet.

9. Australia's Great Barrier Reef is arguably the best-managed reef ecosystem in the world; yet this does not prevent it from being under great threat from continued warming of sea temperatures. It also faces growing threats from coastal land practices and exploitation of fisheries resources. The facts supporting these conclusions are indisputable.

10. Change to the health of our ecosystems as a result of climate change is inevitable. Even under the best case scenario, losses of at least 50% of the Reef's living coral cover are likely to occur by 2050. It is estimated that corals on the Great Barrier Reef will experience between 2 degrees Celsius and 6 degrees Celsius increases in sea temperature by 2100. Torres Strait temperatures will be found at the southern Great Barrier Reef as early as 2030. As with coral reefs elsewhere, thermal stress is likely to increase to levels that are several times higher than in 1998. By the middle of this century, these levels will be exceeded every year at all sites along the Great Barrier Reef. Corals will either have to adapt or move. If they don't do either, then corals will become rare over most of the Great Barrier Reef.

11. There is little to no evidence that corals can adapt fast enough to match even the lower projected temperature rise. Most evidence points to rates of adaptation that involve centuries and millennia. There is no evidence that coral can take on completely new varieties of symbiotic dinoflagellates with the result that they are hardened to the projected increases in sea temperature. Reefs do not exchange masses of larvae over hundreds of kilometres even though they are connected genetically. These factors plus the observation that mass mortalities of corals are increasing in response to sea temperature increases suggest that the rate of adaptation cannot match the high rate of climate change currently occurring.

12. The flora and fauna of the Great Barrier Reef is going to change dramatically if current estimates of climate change are correct. The past behaviour of coral reefs to warming has revealed that thermal stresses of 5 degree heating months remove the majority of reef-building corals and other related organisms. There is no evidence to

the contrary. The Great Barrier Reef will see thermal stresses of 5 or more degree heating months on an annual basis by 2050. They are projected to rise to as high as 15-20 degree heating months by 2100. Coral cover will decrease to less than 5% on most reefs by the middle of the century under even the most favourable assumptions. This is the only plausible conclusion if sea temperatures continue to rise. Reefs will not disappear but they will be devoid of coral and dominated by other less appealing species such as macroalgae and cyanobacteria.

13. The rapid reduction in coral cover will have major consequences for other organisms and reef functions. Many organisms that are coral dependent will become rare and may become locally or globally extinct. Other organisms, such as herbivores, may actually increase as reefs change from coral domination to algal/cyanobacterial domination. Fish and other organisms that form the basis of fisheries will change, although the direction of this change has yet to be determined and will depend on how reefs are treated with respect to other anthropogenic stresses. Increases in the abundance of cyanobacteria may have implications for the incidence of ciguatera poisoning, a major problem in some areas of the world already.

14. Coral reefs have deteriorated due to a combination of anthropogenic misuse and climate change induced bleaching events such as those in 1998 and 2002. This will have implications for the tourist industry through changing environmental qualities, commercial fisheries through changing fish community structure and abundance, and other activities such as recreational fishing, subsistence gathering and coastal protection. Understanding and planning for this change should be an imperative of governments everywhere. The Great Barrier Reef is no exception.

17. I am instructed that the mine involves 28.5 million tons of black coal being produced over 15 years. The coal from the mine will be transported to domestic and/or export markets for electricity production (thermal or steaming coal) and/or steel production (metallurgical or coking coal). The mining, transport and use of the coal will produce greenhouse gas emissions contributing to global warming and climate change; however, the contribution of these emissions to global warming and climate change is a matter for other witnesses. My evidence concerns the likely impacts of global warming and climate change on the Great Barrier Reef of which the emissions from the mine the subject of this objection are a contributing factor.

It is clear that climate change is having a significant impact on matters of national environmental significance and the Department must recognise that fact. The Department must also recognise the fact that any emissions of greenhouse gases to the atmosphere is a contributing factor and must be deemed as contributing to climate change and hence must be deemed to be having an impact on matters of national environmental significance. There is a choice: either the experts are totally wrong; or the Department is wrong in its assessment of the situation? Which is it to be?

The other assessment issue with mining operations is that cumulative impacts are not taken into consideration. As an example, in my recent Comments on a Referral regarding a proposed coal mine at Moranbah I noted the following:¹⁰⁴

There are already several large coal mining operations active in the Bowen Basin where approx. 85% of Queensland's coal comes from. These mining operations have seen the clearing of land and the loss of endangered ecological communities (bluegrass and brigalow) and the increased loss of habitat for endangered species (eg. Squatter pigeon).

The coal mining operations in the region which have been approved by the Minister for the Environment and Water Resources are:

<i>MIM – Rolleston operation</i>	<i>Hard Creek – Nebo</i>
<i>Ensham – Emerald</i>	<i>Wollombi – Suttor Creek</i>
<i>XStrata – Glenden</i>	<i>Olive Downs – Bowen Basin</i>
<i>Poitrel – Moranbah</i>	<i>Pacific Coal – Clermont</i>
<i>Kestrel – Moranbah</i>	<i>Minerva Coal – Springsure</i>
<i>Ellensfield – Nth Bowen basin</i>	<i>Goonyella Riverside – near Moranbah</i>
<i>Carborough Downs – Moranbah</i>	<i>Broadlea Coal project – near Moranbah</i>
<i>IP Coal – Moranbah</i>	<i>Bowen Central – Moranbah</i>
<i>Sonoma – Collinsville</i>	
<i>Isaac Plain – Moranbah</i>	

It can be clearly seen how all the clearing of endangered ecological communities and habitat for endangered species can all of a sudden become significant.

Also, these coal mining companies each produce on average 6 million tonnes of coal per annum the majority of which is exported. That is an approximate total of 108 million tonnes of coal per annum.

If you consider that the above coal mining companies of the Bowen Basin each produce on average 6 million tonnes of coal per annum the majority of which is exported then that is an approximate total of 108 million tonnes of coal per annum.

When this amount of coal is burnt the full fuel cycle of greenhouse gas emissions as per the formula from the *AGO Factors and Method Workbook*¹⁰⁵ would be:

- If used in the production of electricity
 - $108 \times 27 \times 93.8 / 1000 = 273.5$ million tonnes of CO² per annum
- If used in the production of steel

¹⁰⁴ Lee, Ian. *Comments on Anglo Coal (Grosvenor) Pty Ltd, Mining, Moranbah, Qld: The Grosvenor Coal Mine Project, Reference No. EPBC 2007/3785.* (1st November 2007, s2.2.1, p. 5)

¹⁰⁵ Department of the Environment and Heritage. *AGO Factors and Method Workbook.* (Australian Greenhouse Office, Canberra, 2006)

- $108 \times 30 \times 111 / 1000 = 359.6$ million tonnes of CO² per annum

This means that these current mining operations in the Bowen Basin, all approved by the Minister, produce on average 316.57 million tonnes of CO² per annum or, 56.6% of Australia's greenhouse gas emissions in 2005.

Also of interest is the Departmental Officer's statement¹⁰⁶ made on the 26th November, 2007 compared to a Statement made by another Departmental Officer on the 5th October, 2005:¹⁰⁷

18. ... I also considered that the Australian contribution to current annual greenhouse gas emissions, though relatively large on a per capita basis, is only one amongst many contributions that are made by all other industrialised countries. ...

22. I formed the view that, while it is clear that, at a general global level, there is a relationship between the amount of carbon dioxide in the atmosphere and warming of the atmosphere, the climate system is complex and the processes linking specific additional greenhouse gas emissions to potential impacts on matters protected by Part 3 of the EPBC Act are uncertain and conjectural.

These two statements are identical and yet they have been made 2 years apart, says a lot for the Department's assessment approach to greenhouse gas emissions from mining operations. Also, in 2 years science on climate change has changed dramatically and yet this Department is still sticking to the old beliefs, beliefs indoctrinated under the Howard government.

ALUMINIUM SMELTERS/REFINERIES

Gladstone in central Queensland is recognised by international scientists¹⁰⁸ as "one of the greenhouse-gas emissions hubs of the world." It is home to the largest aluminium refinery, Queensland's largest power station, Australia's largest cement operation, and a huge coal export terminal and storage depot. It also unfortunately boasts the highest rates of leukaemia in Queensland at double the state average.

Yet, the Queensland government is pushing for another major industrial estate in Bowen in north Queensland which will be home to heavy industries such as an Alumina Smelter and Refinery, iron ore smelter, and a chemical industry. This all to occur on the east coast of Queensland directly adjacent to the Great Barrier Reef World Heritage Area. If it ever gets off the ground it will make the Gunns Pulp Mill Project pale into insignificance.

There is no question that the burning of coal is a major contributor to greenhouse gas emissions and that the resultant climate change is having a dramatic affect on Australia's and the world's environment.

¹⁰⁶ Middleton, Vicki. *op. cit.*

¹⁰⁷ Flanigan, Mark. *Affidavit of Mark Flanigan.* (Filed in the Federal Court of Australia, 5th October 2005)

¹⁰⁸ New Scientist. *Fred's footprint: A can load of energy.* (New Scientist Environment Blog, Tuesday, May 8, 2007)

The following is an example of how much greenhouse gases are emitted from a major alumina smelter:¹⁰⁹

I wanted to find out where the aluminium in my beer can came from. And I ended up in Gladstone in Queensland, Australia, one of the greenhouse-gas emissions hubs of the world.

Smelting aluminium is one of the most energy-hungry industrial activities on the planet. It uses 2% of the world's electricity. In Gladstone, one of the world's biggest mining companies extracts the metal from the ore bauxite. This is mined across the state at Weipa, where 10% of the world's bauxite is stripped from land that used to be native bush.

Most aluminium smelters use hydroelectricity. But Rio Tinto gets its power from a 30-year old power station in the town that burns cheap Queensland coal.

In Gladstone, the bauxite arrives by barges which thread their way around the Great Barrier Reef. First it is refined into aluminium oxide – alumina. Then the alumina goes to one of three giant smelting halls, each 900 metres long.

Stepping into an aluminium smelter is like going back to an earlier industrial era. "The Hall-Herout smelting process is virtually unchanged since it was invented in the 1880s," production manager Alan Milne told me.

The process heats the alumina to almost 1000° C and then subjects it to an immense electric current delivered through thousands of carbon anodes, each weighing more than one tonne. The current strips the oxygen from the alumina and combines it with the carbon from the anodes. Result: pure aluminium ingots and a great deal of carbon dioxide gas.

Combining the CO₂ emissions from the smelting and the 900 megawatts of coal-fired power needed to sustain the process, you get 17 tonnes of CO₂ for every tonne of aluminium. That's 270 grammes of CO₂ per aluminium drinks can.

Gladstone makes enough aluminium for almost 40 billion cans a year – six for every person on the planet. In doing that, it emits 10 million tonnes of CO₂ a year – as much as a typical European city of one million people.

Besides using one-fifth of the Queensland state's electricity, around the world, Rio Tinto smelters use one-sixth of New Zealand's power, a quarter of Tasmania's and a tenth of Wales's.

Not surprisingly, Rio Tinto is growing worried about its CO₂ emissions. They don't fit well with its new environmentally- and socially-aware image. And even though Australia is currently a Kyoto refusenik, the company reckons the government will soon sign up to future emissions reduction targets.

So what is it doing? Last year it announced plans to build a new smelter in Abu Dhabi, powered by natural gas. Rio Tinto is not alone. As its managing director pointed out: "The Middle East is fast becoming a key region in the global aluminium smelting business."

¹⁰⁹ New Scientist. *ibid.*

Why so? It's a no-brainer. As the company's head of climate change told me when I asked about the new geography of aluminium smelting: "Abu Dhabi is outside the Kyoto protocol." It has no emissions targets. Silly me.

It is expected that the Chalco refinery will produce approx. 2.1 million tonnes of aluminium per year. The production of 2.1 Mtpa of aluminium by the east coast smelter/refinery will produce somewhere in the vicinity of 44.7 million tonnes of CO₂ per annum. To put this into a broader concept that is equivalent to 8.13% of Australia's greenhouse gas emissions in 2003.

It is expected the bauxite mine will operate for approx. 30 years therefore it is to be assumed that the refinery would be in operation for approximately the same length of time or, if new bauxite mining sites are discovered, even longer. Given this fact then it would be expected that the smelter/refinery would produce upwards of approx. 1,341 million tonnes of CO₂ in its life time or 243.8% of Australia's greenhouse gas emission in 2003. Scary to say the least.

So why is this government hell bent on allowing another massive greenhouse gas emitting plant to be built? Have they no concept of what they are doing or is it that they merely don't care?

The fact may be that the government doesn't know what they are doing because they don't know what they are undoing.

3.3.3 CONCLUSION

There is a need for climate change to become part of the EPBC Act and for it play a pivotal role in the Referral and Assessment Process. The EPBC Act was put in place to protect the Australian environment but by failing to truly consider greenhouse gas emissions as part of the assessment process is denying the Australian public natural justice and ignoring the objects of the EPBC Act.

I am aware that mining operations will always be part of the Australian economy and for one to think otherwise is probably foolish. Coal mining will continue into the future but something must be done to mitigate the coal mining companies' actions and also actions of other mining operations and associated industries that contribute to greenhouse gas emissions. By making climate change part of the EPBC process it gives the Minister the opportunity to place conditions on approvals. Those conditions may come in form of off-sets, eg. tree plantations, revegetation of degraded areas, monetary assistance to communities to assist in establishing renewable energy sources or environmentally sound waste management, etc. I will leave it up to the Ministers to provide the appropriate conditions but it must be polluter pays.

3.4 TOO MUCH – TOO LITTLE - TOO LATE

3.4.1 CASE STUDY – QUEENSLAND GOVERNMENT'S CLIMATE CHANGE STRATEGY

The Queensland government appears to throw much money about in its *Climate Smart 2050* initiatives, but the largest amounts are heading in the wrong direction.

\$300 million of tax payers' money is to be invested in clean coal technology (geosequestration).

Too little, if any, of the moneys promised are being utilised to stop Queensland's reliance on coal. Where is the money for wind farms? Where is the money for solar power stations? This government would rather spend the tax payers' money on unproven futuristic technology than invest in current renewable energy technology.

*\$50 million Queensland Renewable Energy Fund. This fund will complement investments in clean coal technologies and provide support for the development of emerging renewable technologies such as geothermal and solar thermal technologies.*¹¹⁰

Once again the government is wasting incredible funds to complement investments in clean coal technology. If it is supposedly a Renewable Energy Fund then why isn't the \$50 million being used to build more wind farms and start on some solar power stations similar to the one being developed in Central Australia?¹¹¹

Again, **too much** to protect the coal industry and **too little** for current renewable energy technology.

*\$10 million Identifying future geosequestration sites. Storing the carbon dioxide that results from burning fossil fuels is an essential part of clean coal technology. The government will spend an initial \$10 million on geological research to identify and locate suitable sites in Queensland for the long-term safe and secure storage of carbon dioxide emissions.*¹¹²

Why this waste of money to identify future geosequestration sites when the research has already been carried out and further research is still continuing? The Cooperative Research Centre for Greenhouse Gas Technologies (CO2CRC) stated:¹¹³

An Australia-wide study of sedimentary basins conducted by CO2CRC (previously GEODISC) over the past five years has assessed 100 sites for the suitability for the safe, long-term storage of CO₂.

The majority of these sites were found to be potentially suitable. Ideally, these areas have rocks such as permeable sandstone that are overlain by a seal of non-permeable rocks.

CO2CRC is undertaking a more detailed look at these and other sites to determine the most suitable areas for geosequestration.

Areas being evaluated in detail are:

- *the Otway,*

¹¹⁰ Queensland Government. *Climate Smart 2050: Queensland's Climate Change Strategy 2007 – a low carbon future.* (Premier's Department, Brisbane, June 2007)

¹¹¹ Australian Greenhouse Office. *Renewable Energy Commercialisation in Australia: A 220kw solar power station for the Anangu Pitjantjatjara Lands.* (Department of the Environment and Water Resources, Canberra, 2003)

¹¹² Queensland Government. *Climate Smart 2050. op. cit.*

¹¹³ The Cooperative Research Centre for Greenhouse Gas Technology. *Geosequestration Sites in Australia.* (CO₂ Geosequestration Fact Sheet No.3, CO2CRC, Canberra, 2005)

- Perth; and,
- Bowen-Surat Basins.

Geosequestration sites must have simple geology. This means they should have no active faults, to avoid movement and leakage; the right sort of permeable rocks to absorb the CO₂ and the necessary rocks to trap the CO₂.

This research will lead to the establishment over the next four years of one or more geosequestration research projects.

It can be seen here that 5 years of research has been done! This research is continuing! And three areas are now being evaluated in detail.

So it would be more advantageous for this \$10 million to be better invested immediately in clean renewable energy sites such as wind and solar. As we have pointed out on other Reports to the Queensland government, there are a number of such sites successfully in operation throughout Australia.

Why is the Queensland government unaware of, or ignoring, this research and investigation?

Governments, including the Queensland Government, spend millions of taxpayers' money on studies to study studies of studies, but inevitably sit back and let many species of our planet become extinct or head on the path of extinction – the Great Barrier Reef; the polar bears; the great apes; the nursery frog; and the list goes on and on and on.

We cannot afford to wait one more minute let alone 10, 15, 20 or 50 years to come up with ways of reducing our greenhouse gas emissions. The technology and the answers are right in front of us, but not for a government hell bent on protecting the dirty coal industry.

It will be too late to wait to take action in 5 years or 10 years as proposed by the Queensland government, because, only by taking **immediate action** can the world avert a climate catastrophe. Unless we humans **act now** to curb our climate-warming pollution, warned the Intergovernmental Panel on Climate Change, "We are in deep trouble."

If we continue on with business as usual – exporting coal to China, Korea, and India; waiting until clean coal technology is in place (10yrs down the track); and looking to futuristic technology such as geothermal energy – it may be too late and we will be heading to the point that global warming will have superheated the planet.

3.5 ENERGY

3.5.1 CLEAN COAL INVESTMENTS - GEOSEQUESTRATION

The previous Australian Government, the current Australian Government, and the Queensland Government, along with the coal industry, are advocating the application of geosequestration as a climate policy, both for the long term and as a

'transitional' technology. However, geosequestration of greenhouse gases carries with it a range of environmental, technological, social and economic risks.

Geosequestration is an end of pipe response which raises the fundamental issue of intergenerational equity and shifts the responsibility to manage our waste to future generations. In terms of certainty and efficiency it is far better to respond to climate change by not creating greenhouse emissions in the first place. Renewable energy, energy efficiency and reducing demand allow us to do this.

Widespread application of geosequestration would require considerable new investment in fossil fuel based infrastructure. Continued investment in fossil fuel will have a range of environmental and social impacts besides increasing Australia's greenhouse emissions, such as air pollution and reduced employment opportunities, compared to investment in renewable energy, energy efficiency and demand management.

In addition, geosequestration of coal fired power stations emissions is not expected to be widely available for use before at least 2015.¹¹⁴ More generally, it seems likely that some decades will be required to commercialise geosequestration technologies, and answer present uncertainties regarding its safety, technical feasibility, costs and potential scale of application. Critically, it has not yet been shown that CO₂ injected into geological reservoirs will remain there for the thousands of years required if it is to help protect the climate. If we are to prevent dangerous level of climate change, significant emission reductions are required to happen before this date. The implementation of policies to rapidly accelerate the uptake of renewable energy and energy efficiency whilst reducing energy demand must therefore be the absolute priority for governments.

Given the range of risks and uncertainties associated with geosequestration, it remains to be proven that geosequestration can permanently reduce greenhouse.

KEY ISSUES

LIMITED COVERAGE

Large areas of Australia, including some major centres for energy generation, do not have geological formations suited to geosequestration. Existing major electricity generators NSW and South Australia are in regions currently considered economically and technically unsuitable for geosequestration.

TIMEFRAME

Even if all the uncertainties and problems of geosequestration can be successfully overcome, geosequestration in coal fired power stations will not be widely available until 2015 at the earliest. If we are going to achieve the deep reductions in emissions necessary to prevent dangerous climate change then greenhouse emissions have to be significantly reduced before then.

¹¹⁴ MacGill, I, Outhred, H and Passey, R. *Climate Change and the Australian Electricity Industry: What Role for Geosequestration?* (ERGO Draft Discussion Paper, Sydney, 2003)

PERMANENCE

Of paramount importance for geosequestration is the issue of permanence. Clearly, if the sequestered greenhouse emissions leak back into the atmosphere, then geosequestration will have failed as a climate policy because the leaked emissions will cause more global warming. In addition, if the leakage is rapid it can asphyxiate humans and animal life in the vicinity.

This means that sequestered greenhouse emissions must be stored permanently in locations that do not allow any leakage for at least 100,000 years. The more geosequestration is relied on as a response to climate change, the greater the impact if leakage does occur.

Recognising the precautionary principle in determining proper risk management, governments and proponents of geosequestration must unambiguously prove permanence of storage.

The government and proponents of geosequestration must ensure independent scientific review and monitoring of geosequestration projects on a site- by-site basis and provide full public disclosure of data.

The government and proponents of geosequestration must undertake to develop and implement Emergency Management Plans for site-specific projects.

LIABILITY

Fossil fuel projects normally have lifetimes of 30-40 years. Yet to effectively reduce greenhouse emissions, the sequestered emissions from these projects would have to remain underground for at least 100,000 years. This raises the significant issue of who is liable for the sequestered greenhouse emissions, particularly once the project which originally emitted the greenhouse pollution is no longer operational.

Governments must establish a stringent legal framework for regulating geosequestration that ensures that the proponents of geosequestration assume complete legal liability for the full economic, environmental and social costs of leakage over the lifetime of the storage. This framework must ensure that future corporate insolvency or restructuring should not diminish the effectiveness of the liability regime.

ECOLOGICAL IMPACTS

There are risks of negative ecological impacts on subterranean biodiversity and water supplies from geosequestration.

The proponents of geosequestration must guarantee no significant impact on subterranean biodiversity and water supplies. This must be confirmed through independent and publicly available scientific review and monitoring.

DIVERSION OF RESOURCES

Geosequestration takes investment away from renewable energy, energy efficiency and demand management, which are sustainable, create more jobs than fossil fuels,

are lower risk alternatives, more proven and mature technology, less costly and deliver equal or better greenhouse emission reductions at source.

Geosequestration will instead mean investment in new fossil fuel infrastructure.

COST

Authoritative published studies estimate the cost of geosequestration at \$46-\$140/tCO₂.¹¹⁵

Research shows it is “clearly possible” that electricity generated from coal with geosequestration may be more expensive than other less polluting sources, such as gas and wind power.¹¹⁶

3.5.2 CASE STUDY - QUEENSLAND GOVERNMENT’S PROTECTION OF THE COAL INDUSTRY

Besides the \$300 million to be invested in clean coal technology and the \$10 million to identify future geosequestration sites, the Queensland Government is investing an enormous amount of taxpayers’ money in the coal industry:

- Abbot Point coal terminal Stage 2 - \$116 million (Stage 3 expansion expected to be a lot more expensive – EIS has just been completed)
- Missing rail link - \$765 million
- Kogan Creek power station and coal mine - \$360 million
- \$4.2 billion 20 year program to underpin the coal industry. This is in addition to the \$2.3 billion already committed.

A bloody lot of money in any man’s language. For what? To ensure that *coal-based energy sources will continue to be a significant part of Queensland’s energy mix?* Or is the Queensland Government so naïve as to not realise that this action of investment is merely hastening global warming?

3.5.3 ANSWER

All countries that have ratified the *United Nations Framework Convention on Climate Change* (UNFCCC), including Australia, have an obligation to take action to prevent dangerous climate change.

To prevent dangerous climate change the global average warming needs to be limited to a peak of less than 2 degrees Celsius above pre-industrial times and should be reduced as fast as possible from this peak. To prevent an increase in temperature of 2 degrees Celsius, industrialised countries need to reduce greenhouse emissions by 60-80% by 2050, with further reductions in global emissions by 2100.

¹¹⁵ MacGill, I and Outhred, H. *Beyond Kyoto – Innovation and Adaptation: A critique of the PMSEIC assessment of emission reduction options in the Australian stationary energy sector.* (ERGO Discussion Paper, Sydney, 2003)

¹¹⁶ Tarlo, K. *Comparing the roles of coal and sustainable energy in reducing greenhouse gas emissions.* (University of NSW, 2003)

I consider that these cuts are challenging but achievable, given political will, through much greater utilisation of renewable energy, energy efficiency, demand management and a huge reduction in the use of fossil fuels. They are necessary if we are going to prevent dangerous climate change and avoid its significant economic, social and environmental costs.

Renewable energy, energy efficiency and demand management are the safest, fastest and most environmentally and socially acceptable ways to achieve greenhouse emission reductions in the energy sector.

So, Australian Government, invest in the renewable energy sector and not continue to invest in the very sector that is the major contributor to global warming – the coal mining industry.

Renewable energy won't '**cost the earth**' but the coal industry **will**, and we will have good growth in Australia instead of economic growth.

3.6 RENEWABLE ENERGY – CURRENT TECHNOLOGY

A recent report states that Australia now has the most cost-efficient solar power stations in the world operating in off-grid communities in central Australia.

Both solar power stations and wind farms are the only answer.

The Australian renewable energy industry leads the world in:

- The sustainable management of water for hydro-electricity production;
- The use of wind forecasting techniques and project design to increase output and reliability from wind power;
- Large-scale solar technological development; and
- Heat exploration and cost-efficient geothermal energy techniques.

Renewable sources are used to displace power from diesel generators, reducing the use of generators and the need to transport diesel over long distances. For many remote communities, it means having 24-hour power for the first time. A major project of interest is one involving a grant of \$3.425M which supported the installation of a system of solar energy concentrating dishes to generate power for the communities of Hermannsburg, Yuendumu, and Lajamanu, in the Northern Territory. These projects will generate 1560MW hours of renewable electricity each year, reducing diesel consumption by more than 400,000 litres/year and greenhouse gas emissions by more than 1100 tonnes per year.

What is the Australian Government doing for our other remote communities?

According to the Australian Wind Energy Association (AUSWIND) there are 817MW of installed wind capacity in this country, and another 6785MW proposed. Unlike hydro and coal power, the wind farms are not affected by drought and shortage of water.

There is an urgent need to act now and put in place more ready-to-go wind and solar systems which are successfully in operation in a number of areas in Australia.

- 154MW solar system plant will soon be deployed in northern Victoria;
- 52.5MW Challicum Hills, Victoria;
- 66 MW Cathedral Rocks, Port Lincoln;
- 89.1MW Alinta Wind Station, near Geraldton, WA;
- 80.5MW at Lake Bonney, SA, with a staged development to bring the capacity to 159MW by next year;
- A current wind farm at Albany, WA, supplies 70% of the power consumed by that port city; and
- 80MW Emu Downs Wind Farm, WA.

It is alarming to note that Queensland has still to commit to large wind and solar projects but still insists on protecting the coal industry and even looking at ways of expanding it.

3.6.1 SOLID WASTE TO ENERGY RECYCLING

Currently, much of our biodegradable waste such as food, garden waste, card and paper is sent to landfill, where it breaks down to release methane, a powerful greenhouse gas.

There are systems in place in Australia and overseas that capture the methane and the biogas can be utilised to produce electricity and heating.

ANAEROBIC DIGESTION

Anaerobic Digestion (AD) is a biological process that happens naturally when bacteria breaks down organic matter in environments with little or no oxygen. It is effectively a controlled and enclosed version of the anaerobic breakdown of organic waste in landfill which releases methane.

Almost any organic material can be processed with AD, including waste paper and cardboard (which is of too low a grade to recycle, e.g. because of food contamination), grass clippings, leftover food, industrial effluents, sewage and animal waste.

*Producing 100 per cent renewable energy from our biodegradable waste helps tackle climate change, instead of contributing to climate change through landfilling and incineration.*¹¹⁷

AD produces a biogas made up of around 60 per cent methane and 40 per cent carbon dioxide (CO₂). This can be burnt to generate heat or electricity or can be used as a vehicle fuel. If used to generate electricity the biogas needs to be scrubbed. It can then power the AD process or be added to the national grid.

As well as biogas, AD produces a solid and liquid residue called digestate which can be used as a soil conditioner to fertilise land. The amount of biogas and the quality of digestates obtained will vary according to the feedstock used. More gas will be

¹¹⁷ Friends of the Earth. *Briefing: Anaerobic Digestion*. (Friends of the Earth, London, September 2007)

produced if the feedstock is putrescible, which means it is more liable to decompose. Sewage and manure yield less biogas as the animal which produced it has already taken out some of the energy content.

APPLICATIONS

Australia, as in the UK, AD has until recently been limited to small on-farm digesters. However AD is widely used across Europe. Denmark has a number of farm co-operative AD plants which produce electricity and district heating for local villages; biogas plants have been built in Sweden to produce vehicle fuel for fleets of town buses; and Germany and Austria have several thousand on-farm digesters treating mixtures of manure, energy crops and restaurant waste, with the biogas used to produce electricity.

AD is also widespread in other parts of the world. India and Thailand have several thousand mostly small scale plants. In developing countries, simple home and farm-based AD systems offer the potential for cheap, low cost energy from biogas.

*When treating municipal waste, AD can be used to process specific source separated waste streams such as separately collected food waste. The digestate will be uncontaminated so can be used as a soil improver. To minimise the impact our waste has on the climate, Friends of the Earth believes that compostable and recyclable material should be separated at source for treatment or reprocessing, using AD where suitable.*¹¹⁸

CASE STUDIES

SOUTH SHROPSHIRE BIOWASTE DIGESTER¹¹⁹

Greenfinch Ltd designed and installed an AD plant in South Shropshire in partnership with the South Shropshire District Council. It was constructed under Defra's New Technologies Demonstrator Programme and can be visited by anyone interested in finding out.

The process starts in an enclosed waste reception hall in which a biofilter controls emissions. After shredding, the waste is heated in tanks to 37 degrees centigrade. After it has broken down, the material is pasteurised for an hour at 70 degrees so that it complies with the animal by-products regulations.

The plant has a capacity of 5000 tonnes each year at a cost of between £40 and £50 per tonne. The biogas is converted into electricity and 800,000 kilowatts per hour is used to heat the plant. The pasteurised bio-fertiliser is offered to local farmers. The plant could produce around 4,320 tonnes of biofertiliser and 880 tonnes of biogas each year. In the future, biogas may be used in a local district heating system.

The plant began full operation in the first quarter of 2006 and initially processed source-separated kitchen waste and garden waste collected from households in South Shropshire. It was found there was too much garden waste in the mix to produce the most biogas possible, so the plant is now focussing on processing food waste.

¹¹⁸ Friends of the Earth. *ibid.*

¹¹⁹ Friends of the Earth. *ibid.*

AD AND COMPOSTING IN YPRES, BELGIUM ¹²⁰

Built in 2004, the Ypres anaerobic waste treatment plant has an annual capacity of 55000 tons. The plant produces enough energy to meet its own thermal and electrical energy demand and also sells more than half of its total generated electricity into the electric utility grid system, providing electricity for 2000 homes. The plant also incorporates an enclosed tunnel composting system producing high-grade compost.

SOLID WASTE TO ENERGY RECYCLING FACILITY (SWERF)

MUNICIPAL WASTE

Despite recycling efforts, up to 82 per cent of waste is put to landfill in Australia. The Whytes Gully Solid Waste and Energy Recycling Facility (SWERF), Woollongong, helps to address this issue by recycling and converting residual organic waste into "green" electricity.

Substantial recovery and reuse of resources occurs with 90 per cent of household waste being diverted from landfill, minimising the health and environmental hazards of landfill.

SWERF will fully replace the existing landfill at Whytes Gully.

SWERF OPERATION

The SWERF process involves three integrated components: pre-processing waste; gasification of the organic waste; and electricity generation from the gas produced. Pre-processing involves receiving, sterilising and mechanical separation. Recyclable materials such as steel, aluminium and some rigid plastics are recovered at this stage. A pulp is produced from the organic material, then washed to remove other non-organic solids, and dried in preparation for gasification. Gasification involves feeding the organic pulp into a high temperature gasifier to produce principally: carbon, hydrogen and oxygen. These gases are then reformed into a synthesis gas that is processed into a clean dry fuel gas. Electricity is generated by firing the "syngas" into high efficiency internal combustion engines.

ENERGY PURCHASE AND SUPPLY

Power is generated at 415 volts and stepped up to 11,000 volts for connection to Integral Energy's local distribution network. The power is sold to Ergon Energy to assist in meeting renewable energy obligations.

SITE

The SWERF is housed in a building the size of an Olympic swimming pool. The entire waste-to-energy site is 120 x 100 metres wide.

ENVIRONMENTAL IMPACT

The SWERF will significantly reduce the greenhouse gas emissions associated with landfill waste. At full capacity, Whytes Gully will provide green electricity for

¹²⁰ Friends of the Earth. *ibid.*

around 24,000 homes, which will reduce greenhouse gas emissions by some 405,000 tonnes per annum. Effective recovery and reuse of recyclable materials from the waste stream will lead to a significant reduction in use of material resources and the energy required to process these items.

SWERF or similar facilities across Australia could provide 'green' electricity and eliminate landfills. Follow the example of the Wollongong City Council and put in place SWERF which creates:

Environmental Benefits

- *The SWERF technology avoids the emission of over 2.7 tonnes of carbon dioxide (CO₂) equivalent for every tonne of waste processed.*
- *The Wollongong system averts the production of approximately 400,000 tonnes of CO₂ equivalent greenhouse gases each year or 8 million tonnes of CO₂ over a 20 year project life.*
- *The energy recovery process utilises gasification technology to convert the energy containing components into a clean synthetic gas, which is then used as fuel to generate electricity.*
- *The combustion of a clean gas avoids the air emission usually associated with combustion of solid waste such as incineration. By direct contrast, the SWERF has a low volume of emissions and recycles garbage to produce 'green' electricity.*
- *The synthetic gas produced is suitable for use in efficient engines similar to a car engine.*
- *When compared to other waste processing options, the combination of these technologies within the SWERF maximises the recovery of energy as electricity from household waste.*

Economic Development

The system facilitates the creation of a number of value-adding operations. The associated cluster industries would further reduce the residual quantity of inert material sent to landfill.

So a SWERF would not only help the environment, but also provide jobs for **locals**.

3.7 'EQUITABLE CONSIDERATIONS' - SHOULD CERTAIN INDUSTRIES PROFIT AT THE EXPENSE OF OTHERS?

Land clearing and the burning of fossil fuels are the main contributing factors to global warming. The coal industry and its allies contribute to land clearing and through their indirect actions to the burning of fossil fuels. The result from these actions is causing climate change, which is having a significant impact on Australia's environment and its communities.

3.7.1 IMPACTS ON AUSTRALIA'S TOURISM INDUSTRY COULD BE SUBSTANTIAL

The Australian Greenhouse Office¹²¹ made the following observation:

The potential impact on Australia's tourism industry due to climate change could also have substantial economic implications. Statistics for 1999–2000 show that tourism exports totalled \$13.1 billion, equivalent to 2.1% of Australia's gross domestic product. Major attractions include the country's unique flora and fauna, vast stretches of coastal beaches, the Great Barrier Reef and the snowfields. Potential direct causes of losses to the industry include coral bleaching, damage to beaches and coastal resorts due to rising sea levels and possible increased storm surge activity, reductions in the extent and duration of snow cover in the Australian Alps and an increased risk of contracting serious insect-borne diseases. Any substantial damage to Australia's biodiversity could also reduce the country's attractiveness to tourists.

Herman Cesar¹²² gives a comprehensive account of the economic valuation of coral reefs in the opening chapter of a book of essays on the economics of coral reefs. After surveying many possible valuation methods, he asks:

Why do economists want to value something as invaluable as coral reefs?

The answer could well be: "Because coral reefs are so beautiful that we want to make sure that our grandchildren can enjoy them as well." Yet, we see many coastal populations who are unaware of the goods and services that coral reef ecosystems provide and who are unable to see through the complex linkages of the natural world.

We see people using coral reefs unsustainably and even destructively. And we see politicians unwilling to look beyond their short-sighted lenses, and consequently we see a lack of funds for coral reef management, even though the long-term costs of inaction are typically much higher than the funds needed.

Cesar puts the case squarely into the realm of sustainability and intergenerational equity.

In a new publication, Herman Cesar¹²³ actually values not the Great Barrier Reef as such but the cost of severe coral bleaching in Australian reefs generally. The figure is \$US 28.4 billion or about \$A 31.6 billion at current exchange rates (\$A1 approximately equivalent to 90 US cents). The cost is distributed among fisheries, tourism and biodiversity and calculated in Net Present Value (NPV) with a 50-year time horizon at a 3% discount rate.

A table in the paper values the worldwide cost of severe bleaching at \$US 104.8 billion, with Southeast Asia showing the highest damage of \$38.3 billion.

¹²¹ Australian Greenhouse Office. *Living with Climate Change Climate Change: An Overview of Potential Change Impacts on Australia*. (Commonwealth of Australia, 2002)

¹²² Cesar, H.S.J. ed. *Collected Essays on the Economics of Coral Reefs*. (CORDIO, Sweden, 2000)

¹²³ Cesar, H., Burke, L. & Pet-Soede, L. *The Economics of Worldwide Coral Reef Degradation*. (Cesar Environmental Economic Consulting, Arnhem, Netherlands, 2003)

The paper also has a ‘moderate’ bleaching scenario costed at about one-quarter of the ‘severe’ scenario, and expresses the hope that concerted efforts of all stakeholders might help us achieve the level of the ‘moderate’ bleaching predictions.

The tourism industry will be severely impacted on by climate change. It could be expected that as many as 250,000 jobs may be lost as a result of reductions in tourists due to the impacts of climate change.

ABARE (PC 2003)¹²⁴ has produced a base employment estimate for each regional economy for 2000-01 (Figure 1). The text below the chart contains a brief description of dominant industries in each of the regions.

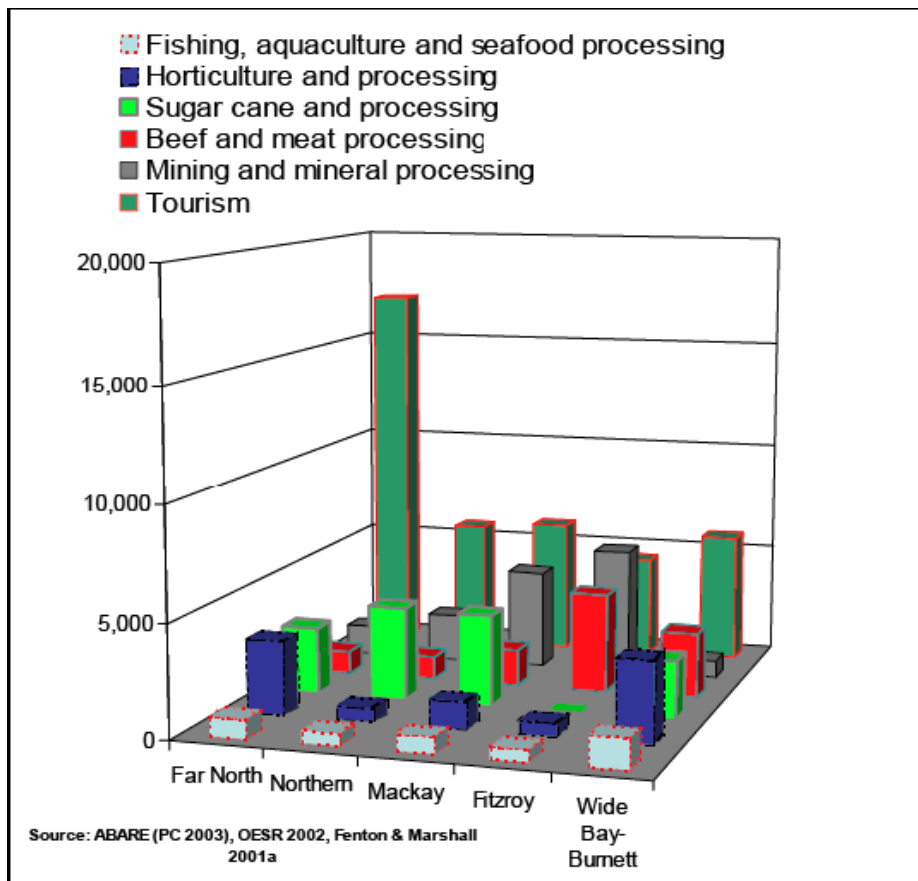


Figure 1: Estimated number of employed persons in key industries in each Statistical Division in 1999-2000. Tourism is the largest industry in terms of employment in each region (row of bars at back of chart). The figures are based on OESR 2002. The maximum estimated number of persons employed in fishing, aquaculture and seafood processing was in Fitzroy (1,325) followed by the Far North (831), where about 17,000 full-time-equivalent persons were employed in tourism. Mining and mineral processing are most important in employment terms in Fitzroy and Mackay, beef and meat processing in Fitzroy, sugar in Northern and Mackay, and horticulture in Wide Bay-Burnett and Far North Queensland.

In employment terms, tourism comes out on top in each of the five regions, though especially in Far North Queensland (its dominance is less in other regions but still

¹²⁴ Fenton, D.M. *A Guide to the Fishers of Queensland. Part A: TRC Analysis and Social profiles of Queensland’s Commercial Fishing Industry.* (CRC reef Research Centre, Technical Report No. 37, Townsville, 2001)

striking in terms of gross value of production and value added). The three agricultural industries represented in Figure 1 together managed to exceed tourism employment in only one region: Wide Bay-Burnett.

Australia's tourism GDP in 1998-99 was \$28 billion. Queensland's tourism GDP in the same year was \$6.3 billion or about 22.5% of the Australian total. The combined tourism GRP for the Great Barrier Reef regions was \$2 billion or about 7% of Australia's total tourism GDP – a substantial proportion for what is sometimes considered a remote area.

3.7.2 FISHING INDUSTRY TO BE HIT HARD

The gross value of fisheries production is valued at around \$2.3 billion, most of which is exported.¹²⁵ In recent years, exports from fisheries have averaged around \$2 billion or around 1.5 per cent of Australia's total exports.¹²⁶ Around 68 per cent or \$1.6 billion of fishing output is attributable to wild catch fishing; the remainder of output comes from aquaculture production, which has been expanding rapidly in recent years.¹²⁷

OCEAN PRODUCTIVITY AND FISHERIES

Climate induced changes to ocean circulation and wave generation, and shifts in regional climate patterns such as ENSO, would affect ocean productivity within the Australasian region. A slowdown in circulation of the Southern Ocean, which provides nutrients to support the oceanic and Antarctic ecosystems, could have profound but largely unknown impacts on the productivity of the ocean and on Australia's fisheries. If warm events associated with El Niño increase in frequency, plankton biomass and fish larvae abundance would decline and adversely impact ocean biodiversity including fish, marine mammals, and seabirds. For example, a weakening of the Leeuwin Current off Western Australia could jeopardise the \$260 million western rock lobster fishery.

Recent research indicates that climate variability has had significant influences on stock availability in the past. Catches of Tasmanian rock lobster, abalone and a variety of fin fishes correlate with variations in local wind fields, sea surface temperatures and surface productivity.

Information on the effects of climate variability on major fish stocks and possible longer term changes to regional climate patterns, however, is still insufficient to allow projections and to determine likely impacts of climate change on Australian fisheries.

¹²⁵ ABARE and Fisheries Research and Development Corporation. *Australian Fisheries Statistics 2003*. (Canberra, 2004)

¹²⁶ Love, G., Langenkamp, D. and Galeano, D. *Seafood outlook to 2008-09*. (Australian Commodities, Vol 11, No. 1, 2004)

¹²⁷ ABARE and Fisheries Research and Development Corporation. *op. cit.*

The coastal region is also important for Australia's fisheries, including aquaculture. Changes in coastal processes such as up-welling and sea-bed sedimentation and increased sea surface temperatures as a result of climate change could have adverse but as yet unknown impacts. Commercially important species such as prawns and barramundi may be impacted by sedimentation of estuarine and coastal waters. Mangroves, which are nursery areas for many commercially important fish, prawns and mudcrabs, are vulnerable to climate change, and in many locations have little capacity for adaptation due to infrastructure development.

Fisheries and related activities are important for several economic and social reasons:¹²⁸

- Commercial fishing activities and fishers are an important part of the socio-economic web of the coastal communities;
- Aquaculture has been identified by the Federal Government as a top growth industry for the Australian rural sector and is a potentially significant but currently small-scale industry in North Queensland; and
- Recreational fishing is practised by an estimated 25% of the Queensland population at least once a year and is considered by many as an important part of the regional lifestyle.

SCENARIOS FOR FISHERIES AND RELATED INDUSTRIES

The majority of the following scenarios come from research carried out by Hoegh-Guldberg and Hoegh-Guldberg:¹²⁹

- Mangrove-associated fisheries contract as mangrove habitats are reduced by half by 2020 and by a further 30% by 2050. Mud and sand crab industries suffer, especially given that some estuaries are also being heavily affected by anthropogenic factors such as pesticide and herbicide runoff;¹³⁰
- Declining health of coastal ecosystems leads to many commercially valuable species experiencing problems in having enough nursery habitat to maintain viable commercial populations;
- There is a pronounced movement of remaining benthic fisheries in a southward direction as southern waters warm. This is quite dramatic and starts to occur as early as 2020, with northern tropical species (non-coral dependent) appearing at southern sites where stock does not have to be associated;
- By 2030, the waters of the southern end of the Great Barrier Reef reach temperatures applying to far northern tropical waters at the turn of the century. Invasion of different species leads to an uncertain future for reef fisheries. This problem becomes chronic by 2050 due to the rapid movement of warm-water Southeast Asian species into Australian waters;
- The incidence of ciguatera rises between 2010 and 2020. Ciguatera is a compound that is poisonous to humans and accumulates in the tissues of some reef fish. It comes from eating blue-green algae (cyanobacteria), and appears to build up as coral cover is lost. Elevated water

¹²⁸ Hoegh-Guldberg, O. and Hoegh-Guldberg, H. *Implications of Climate Change for Australia's Great Barrier Reef*. (WWF Australia and the Queensland Tourism Industry, Brisbane, 2004)

¹²⁹ Hoegh-Guldberg, O. and Hoegh-Guldberg, H. *ibid.*

¹³⁰ Duke, N.C., Roelfsema, C., Tracey, D. and Godson, L. *Preliminary Investigation into Dieback of Mangroves in the Mackay Region: Initial Assessment and Possible Causes*. (Report to the Queensland Fisheries Service, Northern Region and the Community of Mackay Region, University of Queensland, 2000)

temperatures and substrates that are now dominated by cyanobacteria lead to a change in the diets of many food fishes. This puts added pressure on the market which then requires an educational push to ensure people don't completely reject reef fish. By 2030 aquaculture varieties dominate due to loss of benthic fisheries and more cost-effective aquaculture practices.

- By 2030, the fishing industry is constrained by environmental pressures. Aquaculture expands rapidly under this scenario in the early years. Most prawns, crabs and fish that are eaten in 2030 are derived from aquaculture in coastal Queensland. Parts of the fishing industry rely on government assistance from 2020 onwards. There is an ongoing debate over whether no-catch fishing zones designated under the 2003 Representative Areas Program should be reduced in size and number. Eventually, the dire circumstances of the industry cause political pressure that either leads to a 'redesigned' Marine Park (very few no-take areas) or to the loss of a viable benthic commercial fishing industry on the Great Barrier Reef by 2030.
- Pelagic fisheries show a gradual decline in catch as major reductions occur in ocean productivity, and circulation patterns change. International pressure on fisheries located within Australian waters intensifies via legal and illegal channels. In 2025, a major standoff develops between Australia and its neighbours over dwindling and changing fishery resources in its coastal waters. Later in the century, wild stocks are so low that international incidents are almost non-existent and aquaculture takes over as the major supplier of seafood. Australia's major competitor for seafood derived from aquaculture is Southeast Asia. Its position within world markets is determined by its previous long-term investments in technologies such as high intensity aquaculture, genetic modification and selective breeding.
- Major changes to ocean circulation cause pelagic fish populations to shift their distributions around the globe. Warm-water species penetrate further south. This changes food webs as well as catch species. Warming of surface waters leads to shifting abundance of fish populations. Some southern ocean species experience reductions as waters warm more rapidly at pole-ward locations.
- The warmer conditions by 2050 promote a major increase in the risk of mass fish kills by anoxic conditions resulting from overheated stagnant waters inshore – killing large numbers at critical juvenile stages. These are localised in regions in which tidal flow and local land forms create low rates of mixing. These coincide with doldrums conditions usually occurring in strong El Niño years and are due to high metabolic activity versus low mixing rates.
- The advent of warm up-welling events shocks the system as the deep ocean continues to warm more rapidly than the surface. This leads to the activation of bacteria and a lowering of deep ocean oxygen concentrations. These events affect coral areas and although their effect on the Great Barrier Reef is minimal, there is a further general downturn of ocean productivity.
- Trawling continues in the Marine Park. The industry adopts measures to minimise impacts but faces negative publicity as reef and associated fisheries continue to decline in quality (rise of macroalgae and unsightly blue-green algae blamed rightly or wrongly on fishing pressure). Much of the change in benthic structure is driven by climate change and fish populations change as a result of this (leading for instance to a reduced abundance of grazing fishes due to line fishery pressure which reinforces the conversion of coral dominated to algal dominated ecosystems).
- Towards 2050 the restrictions on trawling are relaxed due to demonstrable evidence that benthic habitats have been largely destroyed by the rapid shift in climate. This is also occurring as the reduced availability of some fish species mean that prices increase – creating political pressure for an increase in fishing. This is analogous to how tuna prices in Japan have increased dramatically over the past 50 years due to the increasing difficulty of obtaining tuna of the required quality for sushi.

SUMMARY OF COMMERCIAL FISHERIES PROSPECTS

In summary, life for fishers is a struggle. Conditions grow steadily worse towards 2010 and 2020, with a greater number of industries requiring assistance as fish stocks either dwindle or undergo major changes. The seafood market changes both in terms of variety and quality. There is more intensive competition for fewer and fewer fish. Beyond 2020, benthic fisheries can be expected to remain in decline and have issues like ciguatera to be concerned about. This will require considerable investment in medical responses, public education and marketing. Aquaculture will represent a temporary solution to the major upheaval within the commercial fishing industry. Active policies to move warm-water species into more southern areas will provide a buffer against the fact that waters will be warming by as much as 0.5°C per decade. Beyond 2030, large areas of the coastline may well be unusable for aquaculture unless ponds can be stocked with varieties that have been genetically altered to live in water temperatures beyond 34°C.

LATEST NEWS ON FISHERIES

IF North Queensland's beloved barramundi start disappearing you can blame it, along with dead coral, melting ice caps, dying rainforest and extinct bird species, on climate change:¹³¹

IF North Queensland's beloved barramundi start disappearing you can blame it, along with dead coral, melting ice caps, dying rainforest and extinct bird species, on climate change.

Scientists from the State Government's Queensland Climate Change Centre of Excellence have unearthed evidence that the shifting plates in the earth's climatic rotations looks like being bad news for the fish that can reduce grown men to tears.

They cry with joy when they catch one and they blubber like babies when the silver fish jumps and spits the lure back into the tinny.

Natural Resources and Water Minister Craig Wallace, whose Ministerial turf includes the climate change centre of excellence, said scientists had found that projected rises in sea water temperatures could affect the distribution of wild barra.

Mr Wallace said the fish was traditionally found in rivers and along coastlines in tropical and subtropical areas. "The barra is a Queensland and Australian icon," he said.

"From personal experience I can say it is one of the best eating and sport fishing fish in the world."

He said scientists at the climate centre had found that factors including rainfall, freshwater flows, evaporation and sea surface temperatures may all impact on the distribution and commercial catch of wild barra in North Queensland.

"While the six year study is still in its early stages, changes in fish habitat brought on by climate change may reduce wild barramundi numbers," he said.

¹³¹ John Andersen. *Barra barren*. (Townsville Bulletin, 28th June 2007)

Mr Wallace said one of the biggest threats to the barra's future were the freshwater wetlands in which young fish grow before making their way to the river mouths.

"Reduced rainfall and freshwater flows combined with higher evaporation will reduce the area of shallow wetlands where the fish breed," he said.

Mr Wallace said the research also suggested that warmer sea waters would see barramundi – which now can be found as far south as the Noosa River – moving even further south. Despite all of this doom and gloom, all is not lost.

Mr Wallace said scientists at the climate centre were looking at ways to turn the tide and ensure that the north's barra stocks remained at sustainable levels.

"Our research could also help with plans to ensure the continued health of the species, such as the release of fingerlings," he said.

FISHERIES AND TOURISM

A survey of restaurateurs in the Cairns region (Port Douglas to Mission Beach) showed that 65% of meals consumed were by visitors to the region and that seafood-based meals represented 45% of the total number of meals in a normal week. The seafood was overwhelmingly from local suppliers (though it was unclear whether it was always locally harvested). Some 95% of the restaurants surveyed served seafood-based meals, two-thirds actively promoted local seafood dishes on their menus and 78% felt that customers expected local seafood to be available on the menu. At the time of the survey, the market was expected to double by 2006 from an estimated \$35 million, of which \$23 million was from visitors to the region.¹³² Most of the growth in demand would come from increases in tourism.

Doesn't look to good for the Fishing Industry, wonder who they will point the finger at?

3.7.3 AGRICULTURAL INDUSTRY IN DIRE STRAIGHTS

Agriculture is important to Australia for many reasons. Economically it accounts for about three per cent of GDP. Socially, it is the lifeblood of many rural communities. Environmentally, agriculturalists are stewards of a large proportion of the Australian landmass.

The 2002-03 drought gave a painful demonstration of the well-known dependence of agriculture on climate. Farm output fell by close to \$3 billion and Treasury estimated that GDP was one per cent lower than it would have been had the drought not occurred. Many families and communities experienced hardship.

The prosperity of the Australian agricultural industry is also linked to global climatic conditions that influence worldwide production and supply, and hence commodity prices. Commodity prices in turn dictate the incomes that farmers receive from sale of their goods in world markets.

¹³² Turton, S., Griggs, P., Bankaranaike, S. and Adams, H. *An Examination of Links between Tourism, Tourism Expectations and the Importance of Seafood in Restaurants in the Cairns Region.* (Consultancy report prepared for the Queensland Commercial Fishermen's Organisation, James Cook University, 1993)

EXTENSIVE LIVESTOCK INDUSTRY¹³³

EXPOSURE - The Australian extensive livestock industry is located across a wide range of agro ecological zones that differ significantly in their access to rain-fed and irrigated water. Climate change will leave many regions highly exposed due to increased temperature, reduced annual rainfall or reduced water when needed for plant growth. An increase in the intensity and frequency of extreme events such as drought will limit the capacity to grow productive pastures in some regions. It is also likely that the temperate areas will be more exposed to the impacts of climate change than the tropical grazing lands.

SENSITIVITY - This industry is relatively sensitive to the impacts of climate change and can be attributed to a number of factors including: heat stress, availability of good quality water, susceptibility to pests and diseases, supply of high quality feed, frequency and number of drought years, and the ability to recover after drought. The impact of elevated CO₂ on plant growth may influence the composition of pastures and reduce their overall quality.

ADVERSE IMPLICATIONS - Extensive livestock industries represent about \$8 billion worth of export earnings annually. The industry consists of about 30 million cattle and about 100 million sheep on unimproved rangelands in the northern half of the country and improved rain fed and irrigated pastures in the southern States. Removal of animals from extensive grazing systems could result in the proliferation of invasive weed species. Options for the reuse of grazing land if animals are no longer able to graze it are limited and may result in serious NRM issues. There is some opportunity for native revegetation.

INTENSIVE LIVESTOCK INDUSTRY¹³⁴

EXPOSURE - The intensive livestock industry in Australia is located close to water and high quality feed stocks. As such, the industry is moderately exposed to the availability of a consistent supply of high quality water for a range of different industries, especially dairy, pigs, poultry, and cattle. The industry is also moderately exposed to the supply of high quality feed stocks, especially in an atmosphere of elevated CO₂ that is likely to result in lower protein content per weight of feed. An increase in the intensity and frequency of extreme events such as drought could increase the cost of production due to higher feed costs and may limit productivity due to feed availability.

SENSITIVITY - The intensive livestock industry is particularly sensitive to the impacts of climate change due to a number of factors. These include: heat stress, availability of good quality water, susceptibility to pests and diseases, the supply of high quality feed, and the frequency of very hot and humid days. For some

¹³³ Australia Greenhouse Office. *Climate Change Risk and Vulnerability: Promoting an efficient adaptation response in Australia*. (Report to the Australian Greenhouse Office, Department of the Environment and Heritage by the Allen Consulting Group, AGO, 2005)

¹³⁴ Australia Greenhouse Office. *ibid.*

industries (dairy) the recovery period will be prolonged after periods of drought and for some individuals the loss of genetic stock and resources may be too great to continue.

ADVERSE IMPLICATIONS - The intensive livestock industry produces a range of products that represent about \$9 billion of export earnings annually. The intensive livestock industry is located in some of the more favourable climatic regions of Australia located close to the supply of high quality feed and water and is therefore less exposed than other industries to the impacts of climate change. A major concern for the industry is the high cost of feed over a prolonged period such as that produced by more frequent droughts.

ANNUAL CROPS (FRUIT AND VEGETABLES)¹³⁵

EXPOSURE - Annual fruit and vegetable crops are located across a wide range of environments, but are primarily restricted by access to irrigation water or high annual rainfall, quality soils and topography. The industry is exposed to lower rainfall, increased temperature, increased frequency of droughts, a reduction in frost days and increased frequency of extreme events especially hail and very hot days and summer rainfall. The industry is more exposed in the temperate regions of Australia than in the tropical regions.

SENSITIVITY - Annual fruit and vegetable crops are particularly sensitive to an increase in diseases and pests following summer rainfall, and are thus highly susceptible to the impacts of climate change where summer rainfall is likely to increase. These crops are also sensitive to extreme events such as hailstorms and drought, although where there is access to irrigated water the impacts of climate change are substantially reduced. The impact of elevated CO₂ on plant growth together with reduced rainfall and increased temperature may provide opportunities in some regions, but is more likely to increase the reliance on nitrogen fertiliser to maintain current production rates.

ADVERSE IMPLICATIONS - Annual fruit and vegetable crops are worth about \$2 billion of export and domestic earnings annually. Climate change impacts may have wide-reaching effects on the viability of secondary food production that relies on fresh annual fruits and vegetables for domestic and export markets.

ANNUAL BROADACRE CROPS¹³⁶

EXPOSURE - The Australian broadacre cropping industry is located across a wide range of agro ecological zones that differ significantly in their access to rain-fed and irrigated water. Climate change will leave many regions highly exposed due to increased temperature, reduced annual rainfall or reduced water when needed for plant growth. An increase in the intensity and frequency of extreme events such as drought and hail will limit the capacity to grow productive crops in some regions. It

¹³⁵ Australia Greenhouse Office. *ibid.*

¹³⁶ Australia Greenhouse Office. *ibid.*

is highly likely that the areas currently considered to be marginal in their capacity to produce viable crops will be the most vulnerable to climate change.

SENSITIVITY - Some regional locations will be more sensitive to the impacts of climate change than others. This sensitivity can be attributed to a number of factors including: heat stress, susceptibility to pests and diseases, seasonal rainfall patterns delivering rain when it is not needed, frequency of frost days and very hot days, number of drought years, and the ability to recover after drought. Some regional communities are highly dependant upon the economic viability of the broadacre cropping sector and are therefore likely to suffer significant decline subject to the impacts of climate change. The impact of elevated CO₂ on plant growth together with reduced rainfall and increased temperature may provide opportunities in some regions, but is more likely to increase the reliance on nitrogen fertiliser to achieve current production rates.

ADVERSE IMPLICATIONS - Broadacre cropping industries remain the lifeblood of regional Australia, with crop production worth about \$8 billion of export and domestic earnings annually (principally export). Any adverse impacts of climate change will have a significant detrimental impact on regional communities.

3.7.4 CONCLUSION

The countries to which Australia exports coal are third world countries with developing economies – China, Korea, and India. These countries have no intention of turning to clean technology within the foreseeable future.

China is a major buyer of our coal. Last year it added power capacity equal to the entire electricity systems of Britain and Australia combined, using 90% coal, and expects to continue to do so into the 2020's, with consumption climbing from 2.1 billion tonnes/year to 2.4 b/t by the end of the decade. Not quite a recipe for the survival of our planet, is it? China has 16 of the most polluted cities on the planet, with dirty air being the cause of 400,000 deaths every 12 months.

Can this Australian government persist in exporting coal to these countries knowing full well that the burning of such coal is adding to greenhouse gas emissions and thus coming back to bite not only Australians and their environment, but the rest of the world as well.

Where does the duty of care of the Australian government lie? Is it with the environment? Is it with the tourism industry? Is it with the agricultural industry? Is it with the coastal communities? Or is it merely with the coal companies?

INTERNATIONAL RESPONSIBILITIES

The encouragement of people to think internationally, to regard the culture of their own country as part of world culture, to conceive a physical, spiritual and intellectual world heritage, is important in the endeavour to avoid the destruction of humanity.¹³⁷

¹³⁷ The late Justice Lionel Murphy in his judgement on the Franklin Dam Case (1983)

Australia is a signatory to the 'Convention on Biological Diversity' and as such is bound by the articles of the Convention:¹³⁸

States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction. [my highlight]

Is it right for us to export coal knowing that it will be burnt; knowing that it will contribute to greenhouse gas emissions; and knowing that it will have impacts on other countries?

We have a responsibility to ensure we do not knowingly cause damage to the environment (biological diversity and ecological integrity) of "other States or of areas beyond the limits of national jurisdiction."

Ministers, you cannot in all conscience still insist on propping up the dirty coal industry, for to do so is heading all living things, including *Homo sapiens*, down the path of extinction.

3.8 ADAPTATION

Current Policies and Management Plans lack sadly behind the latest scientific information and trends that are available regarding Adaptation to Climate Change. There is a need to implement a more specific and co-ordinated approach to Policies and Management Plans regarding Adaptation to Climate Change.

The Climate Change Risk and Vulnerability Report released in March 2005 states:¹³⁹

Climate vulnerability has important regional dimensions. Climate variability is inherently a phenomenon that will play out at a geographic level and put greater pressure on some regions than others. Similarly, some regions will be more vulnerable to these pressures. They may already be under significant stress, embody several climate sensitive industries or systems and have recognised national significance. Vulnerable areas (and associated communities) include:

- *low lying coastal population and resort centres;*
- *tropical and sub-tropical population centres;*
- *alpine regions;*
- *centres with a high dependence on agricultural and/or eco-tourism activities;*
- *remote Indigenous communities (particularly in the far north of Australia);*
and
- *areas of southern Australia facing acute water shortages and supply constraints.*

¹³⁸ Secretariat of the Convention on Biological Diversity. *Convention on Biological Diversity, Article 3, Principle.* (United Nations Environment Program, 2004)

¹³⁹ Allen Consulting Group. *Climate Change Risk and Vulnerability: Promoting an efficient adaptation response in Australia.* (Report to the Australian Greenhouse Office, Australian Greenhouse Office, Canberra, March 2005)

However, within this grouping a handful of highly vulnerable regions can be identified that should be given priority for further adaptation planning and response.

Regional adaptation planning requires coordination across all levels of government and the involvement of industry, scientists and community leaders. It must be informed by a thorough and ongoing analysis of the climate threat and viable adaptation options, recognising the inter-linkages and dependencies of the many human and natural systems that operate at a regional level. Planners need to anticipate future climate pressures and build the capacity of systems to cope with these pressures (and/or relieve other stresses) if the adverse implications of climate change are to be minimised.

Adaptation is a necessary strategy at all scales to complement climate change mitigation efforts. Together they can contribute to sustainable development objectives.

The climate change issue is part of the larger challenge of ecologically sustainable development. As a result, climate policies can be more effective when consistently embedded within broader strategies designed to make national and regional development paths more sustainable.

3.8.1 WATER RESOURCES

We tend to think of water in the most personal terms – a mother bathing her child or a cool drink on a hot day – but only 10% of the water consumed worldwide is for household use.

Agriculture takes 70% and half or more of that water is lost to evaporation or runoff. Industry consumes the remaining 20% of water, often inefficiently. One example is a liquor company in China which washes bottles with water that is used once and then discarded. **Water used once to wash coal is a similar example.** This tends to be a worldwide practice.

ISSUES

WATER IN GENERAL

- Among the environmental spectres confronting humanity in the 21st Century – global warming, the destruction of rainforests, overfishing of the oceans – a shortage of fresh water is at the top of the list.
- Recently the UN said that 2.7 billion people would face severe water shortages by 2025 if consumption continues at the present rate.
- All over the globe farmers and municipalities are pumping water out of the ground faster than it can be replenished.
- That the planet's fresh water is consumed extravagantly is beyond doubt, particularly in agriculture, which accounts for 70% of all water usage.
- Industry uses 20% of all water often extravagantly.
- As the world's population increases and the demand for food soars, unchecked irrigation poses a serious threat to rivers, wetlands and lakes.
- Increased water stress is likely due to higher temperature and evaporation.

CLIMATE CHANGE

- Water is a scarce and essential natural resource.
- Conserving and maintaining water quality is especially important in Australia, the world's driest inhabited continent.
- Preventing or reducing water pollution protects our water quality and is essential to maintaining the health of our environment and our own quality of life.
- Water resources already are stressed in some areas and are therefore highly vulnerable, especially with respect to salinisation and competition for water supply between agriculture, power generation, urban areas and environmental flows.
- Increased evaporation and possible decreases in rainfall in many areas would adversely affect water supply, agriculture, and the survival and reproduction of key species.

INLAND WATERS

- Excessive surface and groundwater abstraction.
- Loss of riparian vegetation.
- Loss of wetlands.
- Altered flow regimes resulting from dam and barrage construction.
- Increased sediment, nutrient, and pesticide input from agricultural and urban development.
- Hazardous industrial and mining waste discharges.
- River modification.

PRESSURES

- Australia is the driest of the world's inhabited continents containing the least river water. Increasing pressures to extract more water from our rivers for consumptive uses are leading to the continuing decline in the health of our waterways.
- The era of dam development is dead in all Australian states and in the rest of the developed world. NSW has recently hosted Australia's first dam removal, and in the US, 63 dams across 16 states have been either removed or earmarked for removal. However, the Queensland government has continued to lack the political will to make decisions to ensure our rivers remain healthy and functioning into the future and is still proposing to build further dams.
- The Water Resource Planning process for the Burnett Basin regarding the proposed Paradise Dam clearly showed the additional water will not allow sustainable environmental flows and that this level of development is likely to have major to very major impacts on the geomorphic and/or ecological conditions within the river.
- The State of the Environment Report 2001 confirmed that Australia's rivers are under increasing pressure from over-extraction, pollution, algal blooms, catchment modification, habitat destruction, and flow modification. In Queensland, the area of irrigated land has doubled in the last 20 years, and is continuing to increase.

RESPONDING TO CLIMATE CHANGE IMPACTS ON WATER RESOURCES

CASE STUDY – QUEENSLAND GOVERNMENT’S RESPONSE

*The Queensland Government is responding to the climate change impacts on water supplies. A Queensland Water Grid project will look at securing future water supplies by linking major catchments and centres between the Burdekin catchment and South East Queensland. A pre-feasibility study to confirm the suitability of a site for a Connors River Dam—for supply to the Bowen Basin coalfields—is proceeding. In South East Queensland, a grid of interconnected water sources will increase flexibility in response to local rainfall variability.*¹⁴⁰

Also the Queensland Government is pushing ahead with its plan to build a dam at Traveston Crossing on the Mary River in South-East Queensland. I have already spoken about the environmental concerns regarding this dam in s2.5.2.

If we don't get enough rainfall as it is to fill our current dams then where does this government think the rain will come from to fill all these extra proposed dams? It is called 'CLIMATE CHANGE' you fools and obviously this Queensland government has no concept about adaptation to climate change.

This government's way of adapting to climate change is to build more dams and destroy more of the environment and stop environmental flows in vital rivers.

It is also looking at ways to support the coal industry - the very industry that is behind global warming and the very industry that uses water like there is no tomorrow.

Already the Queensland government has provided a pipeline from the Burdekin to Moranbah for the coal mining industry and now it wants to build another dam on the Connors River to provide more water to prop up the coal industry.

The coal industry has little concern for the environment or for the conservation of water. This is clear by a statement made by Bowen Central Coal Management Pty. Ltd. in a referral document to the Commonwealth Minister for the Environment:¹⁴¹

.....The mine water management system consists of clean stormwater diversion, treatment of runoff from land disturbance areas in sediment dams and containment of mine water in release dams with controlled releases when stream flows are sufficient to achieve the design dilution ratio.

There is no mention of recycle/reuse only the mention of “.... containment of mine water in release dams with controlled releases when stream flows are sufficient to achieve the design dilution ratio”.

¹⁴⁰ Queensland Government. *Climate Smart 2050: Queensland's Climate Change Strategy 2007 – a low carbon future*. (Premier's Department, Brisbane, June 2007)

¹⁴¹ Matrix+ Consulting. *Referral Form*. (Prepared for Bowen Central Coal Management Pty Ltd for their Isaac Plains Coal Mining Project near Moranbah, EPBC Ref. 2005/2070, March 2005)

And yet this so called 'Climate Smart' government wants to throw millions of dollars towards building more water infrastructure including dams to help its coal industry buddies. This is not 'climate smart' it is 'climate foolish'.

CONCLUSION

The role of Federal, State and Local governments in water management is to facilitate society's efforts to achieve the most beneficial uses of this scarce resource, while ensuring that these uses occur in an ecologically sustainable way. There is a need to:

- Formulate education tools to assist stakeholders in acquiring the knowledge necessary to ensure a growing appreciation of ecological processes;
- recognition of the need to adopt sustainable water management practices, and a stewardship role for local communities and private landholders; and
- use water wisely. **Recycle/Reuse.**

3.9 INDUSTRY, PLANNING AND BUILDING

It is time for us to rethink the way we live, work, travel, design, build and consume. To think that we are doing our part simply by driving a hybrid car and recycling our paper, bottles, and cans is a dangerous illusion. For years, we environmentalists have been telling you to do more with less in order to make change happen. This is now simply not enough. We are going to have to fundamentally change the way we design our products, industries and cities.

Our current recycling methods are inefficient and only serve to perpetuate the "cradle-to-grave" manufacturing model that we've been using for hundreds of years.

3.9.1 CRADLE-TO-CRADLE

Architect William McDonough and Chemist Michael Braungart have published a revolutionary new book in which we adopt a cradle-to-cradle way of manufacturing that is as effective as nature itself in maintaining sustainability. The focus of their vision is for us to use nature itself as a model for manufacturing.¹⁴²

Consider the cherry tree: thousands of blossoms create fruit for birds, humans, and other animals, in order that one pit might eventually fall onto the ground, take root, and grow. Who would look at the ground littered with cherry blossoms and complain, how inefficient and wasteful! The tree makes copious blossoms and fruit without depleting its environment. Once they fall on the ground, their materials decompose and break down into nutrients that nourish microorganisms, insects, plants, animals, and soil.

Although the tree actually makes more of its product than it needs for its own success in an ecosystem, this abundance has evolved (through millions of years of success and failure or, in business terms, R&D), to serve rich and varied purposes. In fact, the tree's fecundity nourishes just about everything around it. What might the human built world look like if the cherry tree had produced?

¹⁴² Anon. *Cradle to Cradle: Rethinking Sustainability*. (Energy News, Alternative Energy, April 10th 2007)

CASE STUDY

The Ford Motor Company – Restoring the Industrial Landscape:¹⁴³

What does it take to support and celebrate life on an industrial site? In 1999, that's the question Ford Motor Company, William McDonough + Partners, and MBDC asked as we began working together on the \$2 billion restoration of Ford's 1,100-acre Rouge River manufacturing complex in Dearborn, Michigan.

It was not an unprecedented question in the history of Ford. Founder Henry Ford thought using agricultural products to build cars could support farming and preserve the rural landscape. He pursued his vision vigorously, developing natural textiles and other soy-based materials for use on the assembly line. Over the years, however, the industrial might of his own factories overwhelmed even that remote connection to the landscape.

But what if an industrial site itself could be a fecund place? What if a 600,000 square foot automotive assembly plant could create habitat, filter stormwater with a living roof and natural swales, and restore life to its surroundings—all cost-effectively?

Company history aside, that was a challenging question for Ford Motor Company. Ford's engineers were sceptical, its executives quizzical. There were raised eyebrows all around.

The Design Process

Ford persevered. Chairman and CEO Bill Ford had declared that the restoration would "transform a 20th century industrial icon into a model of 21st century sustainable manufacturing." He was committed and optimistic. Ford's Rouge team was committed too, though perhaps not as flushed with optimism. But with wild ideas ricocheting off the walls of the Rouge Room, they rolled up their sleeves and brought their can-do spirit and "healthy scepticism" to the table. "We made sure we didn't dismiss ideas simply because they were unconventional," O'Brien said. "On the other hand, we had to evaluate them against recognized business criteria and principles. That was an interesting challenge."

Rather than trying to balance concerns to reduce the negative impacts of the site, the project team aimed to maximize economic, social and environmental value with every design decision. The team's inquiries extended to the manufacturing processes used to make new cars, exploring everything from the chemistry of automotive materials to the disassembly and recovery of auto parts. Ultimately, the intention was to make the Rouge a place that celebrates human activity and creates a wide variety of delightful, positive effects. More habitat, more clean water, more natural light on the factory floor, more productivity. In short, we were all coming together to create a new way of understanding and generating value.

The Site

The Rouge site was begging for new ideas. Built between 1917 and 1925, the Rouge is one of the largest manufacturing facilities in the world. In its heyday, it was an enormously productive complex of blast furnaces, stamping mills, warehouses and

¹⁴³ McDonough, William and Braungart, Michael. *Restoring the Industrial Landscape*. (Issue of *Green@Work*, September-October, 2002)

assembly plants capable of chewing up raw materials and spitting out automobiles. The Rouge River and the 90 miles of railroad tracks crisscrossing the grounds were the plant's supply lines. Deliveries of ore, sand and every other material that went into a car or truck, arrived every day via barge, while finished components were ferried from factory to factory on the rails. During the 1930s, more than 100,000 Rouge employees worked in 15 million square feet of factory space. They produced airplanes, cars, tractors and trucks by the millions. There was nothing quite like it in the world.

By the 1980s, however, the plant had fallen into disrepair. The aging facilities were rusting and out of date and decades of manufacturing had taken a heavy toll on the soil, the landscape and the waters of the Rouge River. That's usually the point where a manufacturer closes up shop and moves its flagship factory off shore. But Ford Motor decided to re-invest in the Rouge. From our perspective, the company was declaring itself native to Dearborn, Michigan, taking responsibility for making the Rouge a healthy, productive, life-supporting place. With the project well underway, it might be hard to appreciate the importance of that decision. But it was the bold first step that preceded all others. No investment in industrial restoration happens without it.

Water, Water Everywhere

After a year of rigorous design meetings, a strategy for restoring the site began to emerge. Right from the start, storm water run-off was one of the key areas of concern at the Rouge complex.

The plant's proximity to its namesake, along with the site's shallow water table and the high clay-content of its soil, made the natural drainage system more of a wide-open sluice than a slow, percolating flow of water. When heavy rains fell, storm water washed toxins and cinders off all the impervious surfaces – vast parking lots, buildings, chimneys, gas towers - and carried them swiftly away. There was little between the rooftops and the river to slow the water down.

A green roof was the most compelling solution to the storm water problem at the Rouge. At first, the idea fell into the "unconventional" category and turned the Rouge Room into a tableau of wrinkled brows. But not for long. The idea made intuitive sense: The soils and grasses that comprise functional living roofs absorb water just like the soil and plants in a healthy landscape. Why not a living roof on a factory?

The ten-acre roof on the Rouge assembly plant could be blanketed with a thin layer of soil and growing plants. On the grounds, new green spaces could naturally absorb storm water and impervious paved surfaces could be replaced by porous paving, which allows water to seep into underground retention beds and percolate slowly into the soil or into swales. Swales are channels cultivated with wetland plants that absorb and filter water. In many places on the site, particularly along roadways, the project team believed the swales could be lined with hedgerows to create green breaks in the landscape and even greater capacity for storm water retention. The natural storm water system would also create new and revived habitats on the site for native birds, butterflies, insects and microorganisms, generating a larger biological order.

The U.S. Environmental Protection Agency was developing new storm water regulations and Ford had estimated that the conventional technical controls required

to comply with the new rules could cost almost \$50 million. The natural storm water management system was estimated to cost only \$15 million.

The math was simple and compelling: The living roof offered millions of dollars in savings, with the landscape thrown in for free. Kind of gets your attention.

In addition to absorbing storm water, soil and vegetation on the roof would also:

- *provide extra insulation*
- *protect the roof membrane from wear and thermal shock*
- *create habitat for native birds*
- *contribute to mediating the urban heat island effect*
- *capture harmful particulates*

"At the end of the day," said Richardson, "we engineered some solutions and now we have facts that say, if we're as successful as we think we're going to be, these systems can be replicated at other Ford facilities."

An array of storm water management elements are now nearly in place. The porous paving system, which was designed for the site in collaboration with the water resource planning firm, Cahill Associates, has already gone from a wild idea to a standard practice - one that Ford may replicate at other sites.

The living roof will be completed this autumn and the installation itself will be a wonder. Near the Rouge site, 15 acres of thin, soil mats have been planted with sedum, a drought-resistant flowering succulent. The sedum, which absorbs water like a sponge, has been taking root and growing for about 6 months. In late September, the mats will be rolled up, trucked to the Rouge factory, and unrolled on the roof.

When it's completed, the ten-acre living roof will be the largest in the world. Next summer, the roof will bloom with scarlet and yellow flowers.

Plants with an Appetite

As we've seen, eighty-five years of 20th century manufacturing has a heavy impact on the land. Nowhere is that more evident than in the soils of the Rouge, which are contaminated with hazardous chemicals. Typically, industrial sites with toxic earth are "cleaned-up" by excavating the topsoil and hauling it away.

The project team had a different idea-it decided to do on-site remediation instead. Along with landscape architect Julie Bargmann, the team has been working with Dr. Clayton Rugh, a professor in the Department of Crop and Soil Sciences at Michigan State University, who is doing pioneering research in phytoremediation.

Phytoremediation is a process that uses plants to neutralize toxins in the soil. Dr. Rugh has been testing phytoremediation at the Rouge for the past year. He has cultivated 20 native plants in contaminated soil and is monitoring them to test how well each breaks down and purifies polycyclic aromatic hydrocarbons (PAH), a prevalent on-site toxin. So far, big bluestem and green ash seem to have the biggest appetites for PAHs. With other native plants, which will be monitored by Rugh and a group of scientists, big bluestem and green ash are being planted in phytoremediation gardens along the Rouge's main thoroughfare. The researchers will continue to systematically test which plants are the best long-term toxic avengers. Other

scientists are doing research on plants they believe may neutralize heavy metals and other compounds.

These industrial strength plants, adding lustre to the landscape as they purify the soil, may be the most productive living things at the Rouge.

On the Factory Floor

And indoors? We've tried to bring as much of the outdoors into the Rouge factory as possible. Our work with other manufacturing companies has shown that job satisfaction increases measurably when workers are able to experience a relationship to nature from the factory floor. At Herman Miller, in Zeeland, Michigan, where the company's furniture assembly plant provides fresh air, sunlight and ample opportunities to observe the outdoors, researchers have credited our building design with elevating both worker productivity and employee retention.

The design team aimed for the same sensitivity to worker satisfaction at the Rouge. Our first goal was to bring sunlight deep into the building so workers could sense the changing light and weather and have visual contact with the outdoors. To achieve this, the factory design includes ten 25 x 100 foot rooftop monitors - essentially, pop-up roofs-each glazed on all four sides. Skylights of this scale are unprecedented in an automotive assembly plant, which as Richardson pointed out, are typically boxes filled with tools. In addition, the roof is sloped to the north to allow more northern light to enter the building and to block some of the strong, direct sunlight from the south. The glass is frosted to cut glare and thermally insulated to mediate heat fluctuations. Thirty-five smaller skylights establish an even, well-tempered level of light.

Worker safety was an important consideration too. How would people safely and conveniently traverse the building in the midst of heavy forklift traffic? The design includes a mezzanine to get people up and away from the busy factory floor. The mezzanine level also houses services for workers, office space and employee team rooms, all open to the skylights and bathed in natural light.

The factory's state-of-the-art manufacturing processes are designed for flexibility. The assembly lines will be capable of handling three different vehicle platforms and nine different models. That's impressive, but we're especially interested in manufacturing flexibility for the opportunities it provides for disassembling cars and trucks.

Building a truly sustainable automobile industry means developing closed-loop systems for the manufacturing and reutilization of auto parts. In Europe, the End-of-Life Vehicle Directive, which makes manufacturers responsible for automotive materials, is pushing companies to consider design for disassembly and effective resource recovery more seriously.

Cradle-to-cradle systems, in which materials either go back to industry or safely back to the soil, are built for effective resource recovery. American automakers, with a glance over the pond, have an opportunity to see the future and prepare.

It is our hope that Ford will lead the way to effective cradle-to-cradle manufacturing by developing profitable closed-loop systems in which cars are assembled from safe, healthy materials and disassembled at the end of their useful lives. In such a system, each part of every car is either returned to the soil or recovered and reused in the assembly of new cars, generating extraordinary productivity and consistent

employment in the transportation industry. In other words, just as Henry Ford was the father of the assembly line, we hope Bill Ford will become the father of the re-assembly line.

As Ford nears its centennial celebration, that sounds like a very apt way to honour the heritage of the Rouge River complex and close a century-long historical loop. Why not encourage and celebrate both restorative facilities and restorative manufacturing? Though the engineers in the Rouge Room might be little sceptical, we think they might come around. After all, they're putting a flowering living roof on a factory that builds F10 trucks. Could cradle-to-cradle manufacturing be far behind?

3.9.2 SUMMARY

Cradle-to-cradle is about encouraging diversity and utilizing efficient energy sources. The five guiding principles encourage:

- commitment to new paradigms;
- good growth instead of economic growth;
- continuous innovation and perfection;
- understanding in preparation for learning; and
- implementation of intergenerational responsibility.

The Australian Government needs to look seriously at investing in this brilliant new concept and not waste its time investing in the dirty coal industry.

We must ask ourselves:

How can we support and perpetuate the rights of all living things to share in a world of abundance?

How can we love the children of all species — not just our own — for all time?

3.10 CONCLUSION

Our planet's magnificent beauty is the true wonder of the world, and through our actions this beauty is dying.

For the sake of protecting some 26,000 jobs in the coal industry, several of these people could obtain work in the new renewable energy sectors, we are putting at risk the livelihoods of many thousands of people in the tourism, fishing and agricultural industries. Is it appropriate to protect the coal industry forsaking all others?

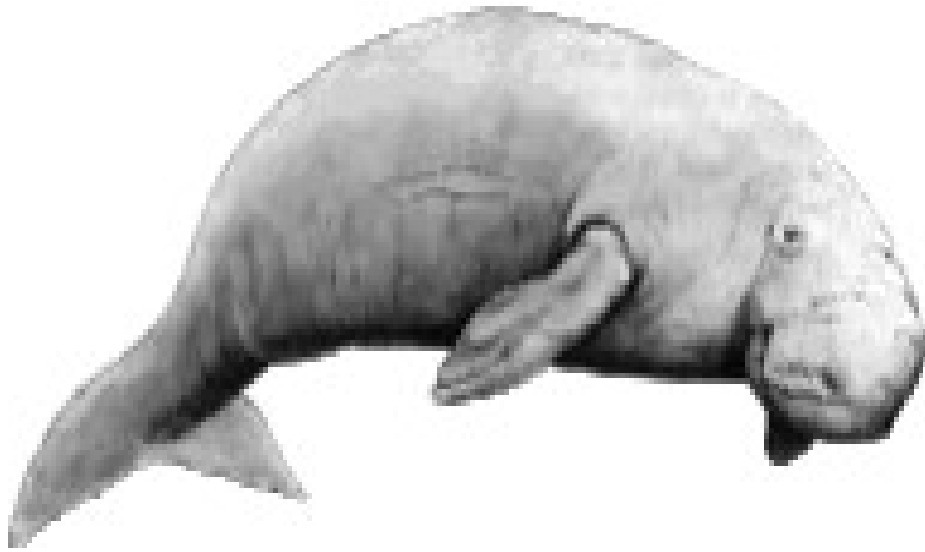
Climate change is here, it is really happening, and yet the EPBC Act fails to acknowledge its very existence. The Act is in place to protect our environment so any process that is having an affect on our environment must form part of the Act. Climate change is the major influence on our environment at present time so let's incorporate it into the referral and assessment process of the EPBC Act. Each and every matter of national environmental significance is being affected by climate change and yet it is not a significant part of the Act – WHY?

The new Rudd government must not delay actions to rein in our greenhouse gas emissions. There can be no more waiting for new reports. The answers are right in front of us.

ACTION IS REQUIRED NOW ! One year, two years, or more years is too long to wait.

Come on Minister, stick to your word: *“Climate change is such a huge issue that it requires strong, concerted, consistent and enduring action by governments”*.

OUR WORLD – YOUR CHOICE.



FINALE



*We have poisoned our own seas and darkened our own
skies.*

*Only now are we learning that just as we made life
unbearable for many of the delicate species we have lost, so
too we are slowly but surely making this planet unsuitable
to sustain even our own existence.*

*The only proven cure for fear is knowledge, yet we know so
little about the fragile world around us.*

*We know so little about the wonderful creatures whose
lives we touch every time we turn on a light, start our car
or walk out the door of our home.*

We know so little about everything.

*There is absolutely no doubt we will ultimately reap the
whirlwind.*

In fact, we are already paying the price.



4. FINALE

The EPBC Act is a powerful environmental protection tool. However, it is unfortunate that under the Howard government it has been misused.

There must be change into the way referrals and assessments are appraised under the EPBC Act if we are to truly protect our environment and conserve our biodiversity. The time has come for the new Rudd government to alter the thinking regime of the Department and the word NO to become more prevalent in the approval process than the current yes.

*GEO-4*¹⁴⁴, the latest report from the United Nations, acknowledges that technology can help to reduce people's vulnerability to environmental stresses, but says there is sometimes a need "to correct the technology-centred development paradigm". It explores how current trends may unfold by 2050 in four scenarios.

The real future will be largely determined by the decisions individuals and society make now, *GEO-4* says: "Our common future depends on our actions today, not tomorrow or some time in the future."

For some of the persistent problems the damage may already be irreversible. *GEO-4* warns that tackling the underlying causes of environmental pressures often affects the vested interests of powerful groups able to influence policy decisions. The only way to address these harder problems requires moving the environment from the periphery to the core of decision-making: Environment for development, not development to the detriment of environment.

"There have been enough wake-up calls. I sincerely hope *GEO-4* is the final one. The systematic destruction of the Earth's natural and nature-based resources has reached a point where the economic viability of economies is being challenged—and where the bill we hand on to our children may prove impossible to pay," said Mr Steiner.

The *GEO-4* report concludes that "while governments are expected to take the lead, other stakeholders are just as important to ensure success in achieving sustainable development. The need couldn't be more urgent and the time couldn't be more opportune, with our enhanced understanding of the challenges we face, to act now to safeguard our own survival and that of future generations."

Climate change must become core business for the Department and also must form part of the EPBC Act if we are to start to turn around our current greenhouse gas emissions.

¹⁴⁴ United Nations Environment Programme. *Global Environment Outlook GEO4: Environment for Development*. (UNEP, Nairobi, Kenya, 2007)



Wolf Robe, June 1909

eat money

Only when the last tree has died
and the last river been poisoned
and the last fish been caught
will we realise we cannot eat money.

Cree Indian saying