

AMENDING THE INTEGRATED PLANNING ACT 1997 TO MITIGATE THE IMPACTS OF CLIMATE CHANGE

A submission to the 2006 review of the Integrated Planning Act 1997
from the Wildlife Preservation Society of Queensland.

AUTHOR:
Malcolm Wade BA, Dip Inf Proc
Vice President (Policies & Campaigns)
Wildlife Preservation Society of Queensland
email: malcolmwade@wildlife.org.au

ABSTRACT

The onset of climate change has made it imperative that all native vegetation in Queensland be protected, and the Integrated Planning Act 1997 and the South East Queensland Regional Plan 2005-2026 are now the primary causes of the ongoing loss of native vegetation in this State. This paper reports the current state of protection for native vegetation in Queensland, and identifies the specific sections of the Integrated Planning Act 1997 and the South East Queensland Regional Plan 2005-2026 which severely limit the protection for native vegetation which would otherwise be provided by the Vegetation Management Act 1999.

Because the fundamental reason offered for protecting all of our native vegetation is to mitigate the impacts of climate change, a summary of what the climate change literature is predicting for the planet, for Australia, for Queensland, and for flora and fauna generally is presented before the case for improving the protection of our native vegetation is presented. Specific recommendations for amendments which will remedy the identified problems are provided. The benefits and costs of implementing those recommendations in full are identified. The consequences of implementing and not implementing those recommendations are explored, and, finally, a timeframe is put on the issue, to underline the urgency of action.

TABLE OF CONTENTS

1. INTRODUCTION.....	4
2. RECOMMENDATIONS IN BRIEF	4
3.0 CLIMATE CHANGE	5
3.1 SCOPE OF CLIMATE CHANGE DISCUSSION IN THIS PAPER	5
3.2 GLOBAL CLIMATE CHANGE	6
3.3 CLIMATE CHANGE IN AUSTRALIA.....	8
3.4 CLIMATE CHANGE IN QUEENSLAND	10
3.5 HOW WILL CLIMATE CHANGE IMPACT OUR WILDLIFE?.....	13
4.0 A MITIGATION PROPOSAL: THE PROTECTION OF ALL OUR REMAINING NATIVE VEGETATION	14
5.0 THE CURRENT STATE OF NATIVE VEGETATION PROTECTION IN QUEENSLAND	14
6.0 WHY IS THE CLEARING OF NATIVE VEGETATION STILL LEGAL IN THOSE AREAS WHERE IT IS?	16
7.0 WHY ALL OUR REMAINING NATIVE VEGETATION SHOULD BE PROTECTED FROM CLEARING	17
7.1 To minimise the consequences of Wildfires.....	18
7.2 To Minimise the Consequences of Habitat Fragmentation	19
7.3 Because it's Wildlife Habitat	20
7.4 Because all Native Vegetation is Environmentally Valuable	22
7.5 To Minimise the Urban Heat Island Effect.....	22
7.6 To Minimise Greenhouse Gas Emissions & Maximise Sequestration	23
7.7 To Minimise Eutrophication	24
7.8 To Maximise the Potential for Weed Management and Revegetation as Mitigation Strategies	25
7.9 To Maximise Accessibility to Suitable Research Sites for Researchers	26
7.10 To Maximise Cloud Cover	26
7.11 To Maximise Transpiration	27
7.12 To Maximise the Chances of Survival of our Native Vegetation	28
7.13 To Maximise Intergenerational Equity	29
7.14 To Comply with the Precautionary Principle.....	30
7.15 Because Clearing Native Vegetation is not Sustainable Development.....	31
7.16 Because there is Insufficient Water in South East Queensland to Cater for Any Population Growth.....	31
7.17 Because Development should be Restricted to Land that is Already Environmentally Destroyed.....	33
7.18 Because it's Consistent with the National Biodiversity and Climate Change Action Plan.....	34
8.0 IMPLICATIONS OF THE PROPOSED MITIGATION PROPOSAL	35
8.1 CONSEQUENCES OF PROTECTING OUR NATIVE VEGETATION IN THE MANNER PROPOSED.....	36
8.2 CONSEQUENCES OF RETAINING THE <i>STATUS QUO</i>	36
9.0 HOW URGENT IS IT THAT OUR NATIVE VEGETATION BE PROTECTED IN THE MANNER PROPOSED?	37
10.0 WHAT MECHANISMS CAN BE USED TO MAXIMISE THE PROTECTION OF OUR NATIVE VEGETATION? ..	38
10.1 THE INTEGRATED PLANNING ACT 1997 (IPA)	38
RECOMMENDATION 1:	39
RECOMMENDATION 2:	39
RECOMMENDATION 3:	40
RECOMMENDATION 4:	40
RECOMMENDATION 5:	41
RECOMMENDATION 6:	42
RECOMMENDATION 7:	42
RECOMMENDATION 8:	43
RECOMMENDATION 9:	43
RECOMMENDATION 10:	44
RECOMMENDATION 11:	44
RECOMMENDATION 12:	48
RECOMMENDATION 13:	48
RECOMMENDATION 14:	49
RECOMMENDATION 15:	49
RECOMMENDATION 16:	49
RECOMMENDATION 17:	51
10.2 THE INTEGRATED PLANNING ACT 1997 REGULATIONS	51
RECOMMENDATION 18:	51
RECOMMENDATION 19:	52
10.3 SOUTH EAST QUEENSLAND REGIONAL PLAN 2005-2026	52
RECOMMENDATION 20:	52
RECOMMENDATION 21:	55
11.0 CONCLUSION	55
GLOSSARY.....	56
BIBLIOGRAPHY	60
INDEX	62

1. INTRODUCTION

The onset of climate change has made it imperative that all native vegetation in Queensland be protected, irregardless of whether it is urban or non-urban; irregardless of whether it is classified as endangered, of concern, or not of concern; and irregardless of whether it has been assessed as environmentally valuable. Halting the loss of our native vegetation is an essential mitigation strategy to minimise the consequences of the impacts of climate change.

This paper reports the current state of protection for native vegetation in Queensland, and identifies the specific sections of the Integrated Planning Act 1997 and the South East Queensland Regional Plan 2005-2026 which severely limit the protection for native vegetation which would otherwise be provided by the Vegetation Management Act 1999. It is the Integrated Planning Act 1997 and the South East Queensland Regional Plan 2005-2026 that today are the primary causes of ongoing loss of native vegetation in this State.

This paper identifies the specific defects in the Integrated Planning Act 1997 and its subordinate legislation that need to be corrected in order to halt the loss of our native vegetation. Specific recommendations for change to those pieces of legislation are presented, and supporting arguments for each of those recommendations are offered.

This paper makes extensive reference to the very abundant literature on climate change. Most of the citations in this paper are from official government publications from the United Nations, Australia, and Queensland. Everything said about climate change in this paper has all been said before, and mostly by government officials. And to reinforce that point, most citations are in the form of quotations.

The forthcoming impacts of climate change mean that protecting all our native vegetation is not only imperative, it is now urgent. It is time to act on the issues raised in this paper.

Because it is almost too late to act.

2. RECOMMENDATIONS IN BRIEF

The Wildlife Preservation Society of Queensland makes the following recommendations for changes to the Integrated Planning Act and its subordinate legislation:

RECOMMENDATION 1: That "natural environment" be defined in the dictionary (Schedule 10) of the Integrated Planning Act 1997.

RECOMMENDATION 2: That s1.2.1 of the Integrated Planning Act 1997 be amended to declare the protection of the natural environment as a Purpose of the Act.

RECOMMENDATION 3: That s1.2.3 of the Integrated Planning Act 1997 be amended to better protect the natural environment.

RECOMMENDATION 4: That the definition of ecological sustainability in s1.3.3 of the Integrated Planning Act 1997 be redefined to prioritise consideration of the natural environment over the manmade environment.

RECOMMENDATION 5: That s2.1.23 of the Integrated Planning Act 1997 be amended to increase local government powers to protect land from development.

RECOMMENDATION 6: That s 3.1.6 of the Integrated Planning Act 1997 and all sections of the Act and the Regulations that relate specifically to s 3.1.6 be deleted to remove an existing means of bypassing the restrictions of planning instruments.

RECOMMENDATION 7: That s 3.5.21 item (6) (a) of the Integrated Planning Act 1997 be amended to reduce the currency period from 4 years to 2 years in order to limit the currency period of development applications that involved the clearing of native vegetation, thus limiting the loss of native vegetation through prior-existing development approvals.

RECOMMENDATION 8: That s3.5.23 of the Integrated Planning Act 1997 be amended to prohibit the extension of the currency period for any development application to the extent that that development application involves operational works in order to reduce the loss of native vegetation from pre-existing development approvals.

RECOMMENDATION 9: That s 3.5.30 of the Integrated Planning Act 1997 be amended to redefine conditions that may be applied to a development approval in order to increase the scope of protection for the natural environment available to assessment agencies.

RECOMMENDATION 10: That s3.5.31 of the Integrated Planning Act 1997 be amended to allow any condition at all

to be imposed on a development approval.

RECOMMENDATION 11: That additional limitations on compensation under ss 5.4.2 and 5.4.3 be added to s 5.4.4 in order to allow Councils to act to protect the environment without fear of unreasonable compensation claims.

RECOMMENDATION 12: That the time limit for claiming compensation under s5.4.6(b) be reduced to match that in s5.4.6(a) in order to achieve uniformity of time limits.

RECOMMENDATION 13: That s 5.6.3 of the Integrated Planning Act 1997 be amended to remove the exemption for public housing that makes operational works (which includes vegetation clearing) for public housing exempt development.

RECOMMENDATION 14: That s 5.8.6 of the Integrated Planning Act 1997 be amended to require the Environmental Protection Agency to prepare all EISs at the expense of the proponent of the development application in order to ensure that EISs are comprehensive and balanced, and prepared without bias that favours the interests of the proponent.

RECOMMENDATION 15: That s 5.8.8 of the Integrated Planning Act 1997 be amended to ensure that the authors of all submissions on any draft EIS are protected by law from legal action by any person on the grounds of libel, defamation, or damages.

RECOMMENDATION 16: That item (g) be deleted from Schedule 8 Table 4 (1A) of the Integrated Planning Act 1997 to make development applications that include clearing of native vegetation in urban areas assessable.

RECOMMENDATION 17: That Schedule 8 Section 7 item (c) be amended to require referral coordination if the development shares a common boundary with or is within 1km of the boundary of the nominated areas, instead of just 100m, to better protect environmentally valuable areas.

RECOMMENDATION 18: That the Regulations of the Integrated Planning Act 1997 be amended to require Environmental Impact Statements for all development applications that have the potential to damage the natural environment.

RECOMMENDATION 19: That Schedule 2 Table 3 Item 4 (Acid sulfate soils) of the IPA Regulations be amended to make the chief executive under the Land Act 1994 a concurrence agency instead of an advice agency in order to better protect the natural environment when acid sulfate soil is present.

RECOMMENDATION 20: That native vegetation be protected in South East Queensland by amending the South East Queensland Regional Plan 2005-2026 in the manner described in recommendations 20(a), 20(b), 20(c), and 20(d).

RECOMMENDATION 21: That the maps associated with the South East Queensland Regional Plan be made available on paper at cost, and digitally free of charge, to allow for appropriate democratic scrutiny of the impact of the Plan.

These recommendations are addressed in depth towards the end of this paper. The reasons that implementing those recommendations is so important and so urgent are addressed first.

3.0 CLIMATE CHANGE

The case presented in this paper for amending the Integrated Planning Act 1997 and its subordinate legislation (including the South East Queensland Regional Plan 2005-2026) in order to better protect our native vegetation in Queensland requires a knowledge of climate change and the predicted consequences of climate change for the planet, for Australia, and for Queensland in particular. For this reason, a synopsis of the climate change literature with specific focus on its predicted impacts for native vegetation and wildlife is presented first, before the case for increasing the protection of our native vegetation is presented.

3.1 SCOPE OF CLIMATE CHANGE DISCUSSION IN THIS PAPER

Because the focus of this paper is on the merits of amending the Integrated Planning Act 1997 and its subordinate legislation in order to better protect our natural environment (and our native vegetation in particular), this coverage of climate change discusses only those aspects of climate change which are relevant to securing the future of native vegetation in Queensland in the face of climate change. Which means that many of the most important aspects of climate change are barely mentioned in the following discussion, if at all. For example, there is little or no discussion of such very important topics as:

- The Kyoto Protocol; or

- The importance of dramatically reducing greenhouse gas emissions as quickly as possible; or
- Viable means of reducing greenhouse gas emissions; or
- The maximum level of global greenhouse gas emissions that will make stabilisation of greenhouse gases in the atmosphere ever achievable; or
- The length of the lag period between total cessation of greenhouse gas emissions (ie, the optimal case, albeit an unachievable one) and the stabilisation of greenhouse gas concentrations in the atmosphere; or
The length of the lag period (in centuries) between achievement of atmospheric greenhouse gas emissions stability and the stabilisation of the climate in Australia.¹
- Estimates of the date when it is too late to be worth trying to do anything about greenhouse gas emissions because the achievement of a stable concentration of greenhouse gases in the atmosphere at a level which will leave the planet habitable becomes unachievable. (Some argue that we have already reached and passed that point.); or
- Estimates of the date when so much of the world's forests have died that that portion that has died is generating (ie, sourcing) more greenhouse gases than that portion still remaining alive can absorb (ie, sink). (Some models put this as soon as the 2050s)

As important as all those aspects of climate change unquestionably are, discussion of them is beyond the scope of this paper. The only aspects of climate change discussed in this paper are those features of climate change which will adversely affect native vegetation. Some excellent papers on climate change which discuss the issues mentioned above can be found on the websites of the Australian Greenhouse Office, CSIRO, IPCC, Bureau of Meteorology, and Queensland's Department of Natural Resources & Mines. Citations for many of these appear in the bibliography of this paper.

3.2 GLOBAL CLIMATE CHANGE

The most widely accepted authority on global climate change is the Intergovernmental Panel on Climate Change (IPCC). Their resources are world-wide. What they say on climate change is accepted without question the world over.

"The Intergovernmental Panel on Climate Change (IPCC) was jointly established by the World Meteorological Organization (WMO) and the United Nations Environment Programme (UNEP) in 1988. Its terms of reference includes: (i) to assess available scientific and socioeconomic information on climate change and its impacts and on the options for mitigating climate change and adapting to it, and (ii) to provide, on request, scientific/ technical/ socioeconomic advice to the Conference of the Parties (COP) to the United Nations Framework Convention on Climate Change (UNFCCC). From 1990, the IPCC has produced a series of Assessment Reports, Special Reports, Technical Papers, methodologies, and other products that have become standard works of reference, widely used by policymakers, scientists, and other experts."²

Their reports make it quite clear that climate change is not a prediction. It is here, now. And it is here to stay for the foreseeable future.

"3.2. Observed Changes in Earth's Surface Temperature and Precipitation

Over the 20th century there has been a consistent, large-scale warming of both the land and ocean surface (see Figure 2), and it is likely that most of the observed warming over the last 50 years has been due to the increase in greenhouse gas concentrations. The global mean surface temperature has increased by 0.6°C (0.4–0.8°C) over the last 100 years, with 1998 being the warmest year and the 1990s very likely being the warmest decade. The largest increases in temperature have occurred over the mid- and high latitudes of northern continents, land areas have warmed more than the oceans, and nighttime temperatures have warmed more than daytime temperatures. Since the year 1950, the increase in sea surface temperature is about half that of the increase in mean land surface air temperature, and the nighttime daily minimum temperatures over land have increased on average by about 0.2°C per decade, about twice the corresponding rate of increase in daytime maximum air temperatures."³

Almost any conceivable indicator of climate change supports the conclusion that climate change has occurred over the last 100 years. The literature on the topic abounds with such evidence - but there is nothing gained by reporting any of that here. Climate change is now accepted as a fact of life without question by all the world's acknowledged experts on climate change. The statistical probability of the changes observed being due to natural variation is now considered to be so miniscule that the possibility of that being the explanation is beyond consideration.

And the cause of it all is greenhouse gas emissions.

¹ B.Pittock (ed.), *Climate Change: An Australian Guide to the Science and Potential Impacts*, Australian Greenhouse Office, Canberra, Canberra, 2003, p3)

² J.J.McCarthy et. al. (eds.), *Climate Change 2001: Impacts, Adaptation, and Vulnerability*, Contribution of the Working Group II to the Third Assessment Report of the Intergovernmental Panel on Climate Change, Cambridge University Press, Cambridge, 2001, foreword.

³ H. Gitay et. al. (eds), *Climate Change and Biodiversity*, IPCC Technical Paper V, Intergovernmental Panel on Climate Change, April 2002, p5.

"Much of the observed warming of the last century was due to greenhouse gases" and "greenhouse gases will continue to rise through the 21st century".⁴

(For some rather dramatic graphs of change since 1860, see page 28 of *Climate Change Risk and Vulnerability: Promoting an efficient adaptation response in Australia*.⁵ For a graph of temperature changes over the last 1800 years, see page 43 of that same report. For a graph of CO₂ changes over the last 10,000 years, see page 29 of that same report. For a graph of carbon dioxide concentrations in the atmosphere 440,000 years ago to 2100, see page 42 of that same report.)

So what is the predicted global climate change? In the executive summary of the IPCC report *Climate Change and Biodiversity* (p1), (Third Assessment Report, or TAR) the IPCC predict that:

"For the wide range of Intergovernmental Panel on Climate Change (IPCC) emissions scenarios, the Earth's mean surface temperature is projected to warm 1.4 to 5.8°C by the end of the 21st century, with land areas warming more than the oceans, and the high latitudes warming more than the tropics. The associated sea-level rise is projected to be 0.09 to 0.88 m. In general, precipitation is projected to increase in high-latitude and equatorial areas and decrease in the subtropics, with an increase in heavy precipitation events. Climate change is projected to affect individual organisms, populations, species distributions, and ecosystem composition and function both directly (e.g., through increases in temperature and changes in precipitation and in the case of marine and coastal ecosystems also changes in sea level and storm surges) and indirectly (e.g., through climate changing the intensity and frequency of disturbances such as wildfires). Processes such as habitat loss, modification and fragmentation, and the introduction and spread of non-native species will affect the impacts of climate change. A realistic projection of the future state of the Earth's ecosystems would need to take into account human land- and water-use patterns, which will greatly affect the ability of organisms to respond to climate change via migration."⁶

Note especially the statement "For the wide range of Intergovernmental Panel on Climate Change (IPCC) emissions scenarios, the Earth's mean surface temperature is projected to warm 1.4 to 5.8°C by the end of the 21st century." The real meaning of this statement is rarely understood. The predicted temperature rise is offered as a range, not so much because of difficulty estimating it, but more because each scenario inserted into the climate change models as input produces a different temperature rise output. And the range predicted is the spread from that predicted using the scenario that predicts the lowest temperature rise to that predicted using the scenario that predicts the highest temperature rise.

And what are these scenarios that are inserted into the climate change model as input data? Broadly speaking, they are estimates of the pattern of greenhouse gas emissions over the period addressed by the model (which is typically 1990 to 2100). These scenarios can be thought of as ranging from the excessively optimistic one of halting virtually all greenhouse gas emissions as soon as the IPCC Third Assessment Report was released, to the excessively pessimistic one of "business as usual" without change until 2100. So the 1.4°C prediction roughly equates to the excessively optimistic do-everything-at-once scenario, and the 5.8°C roughly equates to the excessively pessimistic do-nothing-business-as-usual scenario.

But, regrettably, reality since the Third Assessment Report was written has been such that the do-nothing-business-as-usual scenario is now the most likely scenario. The industrial world has done very little to reduce their greenhouse gas emissions, and some of the developing countries (particularly in Asia) which were low emitters back when the Third Assessment Report was written have experienced a booming economy since then and have now become major emitters of greenhouse gases. (The TAR was published in 2001, so it was probably written and last updated in 2000.)

So when the Fourth Assessment Report (4AR) from the IPCC comes out next year, it will doubtless revise these temperature rise predictions to a much narrower range, and possibly with a higher upper end on the range as well.

Note too the seemingly innocuous statement that land areas will warm more than the oceans. By inference, this means that the land areas will warm more than the global mean (because the mean will be somewhere between the lower ocean temperature and the higher land temperature). And since we live on land, not on water, then reality is that we will experience higher temperature rises than the global mean prediction suggests. And, by extension, the closer the land is to the ocean, the lower the temperature rise, and the further it is from the ocean, the higher the temperature rise. Climate models, such as CSIRO's Ozclim, demonstrate this quite vividly, but most papers on climate change barely even give it a mention.

So if the Earth's mean surface temperature is going to warm 1.4 to 5.8°C by the end of the 21st century, then country

⁴ Allen Consulting Group, *Climate Change Risk and Vulnerability: Promoting an efficient adaptation response in Australia*, Final Report, Australian Greenhouse Office, Department of the Environment and Heritage, Canberra, March 2005, pp30,31.

⁵ Allen Consulting Group, *Climate Change Risk and Vulnerability: Promoting an efficient adaptation response in Australia*, Final Report, Australian Greenhouse Office, Department of the Environment and Heritage, Canberra, March 2005, p28.

⁶ H. Gitay et al. (eds), *Climate Change and Biodiversity*, IPCC Technical Paper V, Intergovernmental Panel on Climate Change, April 2002, p 1.

Queensland has to be expected to warm considerably more than that! Considerably more!

And a warming of that magnitude is considerably more serious than most people think.

"A serious issue with respect to response to climate change is the impression held by the population at large that changes to planetary mean temperature of a few degrees are of little consequence. This might be expected since daily and seasonal variations of temperature are of the order of 10°C, making the warming of the past century (0.6°C) or even anticipated for this coming century (between roughly 1°C to 6°C) seem small, and even in some cases desirable. What is poorly understood is that the year-to-year variation of the planetary mean temperature is around *a few tenths of a degree*, and is of a similar magnitude even on a decadal timescale. Many climate scientists recognise that the planet has only warmed around 5°C between the last glacial maximum (around 20,000 years ago) to the current interglacial temperatures. This 5°C increase has brought about a major redistribution of ecosystems, as well as extinctions and the emergence of new species."⁷

Note the statement that the difference in global average temperature between the last ice age (20,000 years ago) and now is only around 5°C, and that 5°C is well within the predicted temperature rise range for the remainder of this century. **The predicted global average temperature rise over the next 100 years could exceed that since the last ice age!**

3.3 CLIMATE CHANGE IN AUSTRALIA

The first thing that needs to be pointed out regarding climate change in Australia generally is that most reports focus on the next fifty years, though apparently with good reason.

"The period through to 2030, and to a lesser extent 2050, is the one that is most relevant today for decisions about adaptation strategies. This is because most decisions that could be affected by climate risks involve assets and business systems whose economic life falls within or near this time horizon."⁸

and

"For the purposes of this study, we have adopted an outlook of 30 to 50 years. This looks ahead to the types of changes and challenges that current Australian policymakers and communities might face within their current lifetimes, and reflects a planning horizon that, although long term, still lies within the productive life of key capital and infrastructure investments within our economy, and the scope of intergenerational planning."⁹

But there's a serious problem with that approach that its proponents overlook. From the perspective of the economy, it may well be the case that looking only at climate changes expected over the next 30 to 50 years is quite sufficient, but from the perspective of the natural environment, it is grossly inadequate - because **the sooner mitigation strategies to counter the impacts of climate change upon the natural environment are implemented, the less will be the impact of climate change and the greater will be the benefits**. And the longer the implementation of mitigation strategies is delayed, the less value there is in implementing them - until the point is reached where there is no point trying to do anything about it at all any more because it's too late!

And anticipating the impacts upon the biosphere that one must develop mitigation measures for requires looking well beyond the next 30 to 50 years!

This Australian focus on the short term is not universal. Although the Australian reports tend to focus on the next 30 to 50 (or, in some instances, 70) years, the IPCC reports focus on the next 100 years. This longer-term perspective of the IPCC means that their material on the impact of climate change for the natural environment is very important and must not be overlooked. (eg, IPCC Technical Paper on "Climate Change and Biodiversity")

That said, it is important to acknowledge the valuable contribution that the Australian literature contributes to our understanding of climate change and its impacts as well. And though the IPCC material is important and must not be ignored, so too is an understanding of how the global phenomenon of climate change will specifically affect Australia. (For example, section 4.2 of the Australian Greenhouse Office's *Science Guide* addresses specifically that issue by Australianising the IPCC Technical Paper on "*Climate Change and Biodiversity*".) And the Australian material is very important for another reason as well: the most accurate, most recent predictions for Australia are to be found in Australian reports, not IPCC reports.

"In general, impacts assessments take time and are therefore often based on climate change scenarios that

⁷ Allen Consulting Group, *Climate Change Risk and Vulnerability: Promoting an efficient adaptation response in Australia*, Final Report, Australian Greenhouse Office, Department of the Environment and Heritage, Canberra, March 2005, pp32,33.

⁸ Allen Consulting Group, *Climate Change Risk and Vulnerability: Promoting an efficient adaptation response in Australia*, Final Report, Australian Greenhouse Office, Department of the Environment and Heritage, Canberra, March 2005, p VII.

⁹ Allen Consulting Group, *Climate Change Risk and Vulnerability: Promoting an efficient adaptation response in Australia*, Final Report, Australian Greenhouse Office, Department of the Environment and Heritage, Canberra, March 2005, p19

are not the latest by the time the impact assessment is completed. This has affected the [IPCC Third Assessment Report, or TAR], and in particular the results reported in the TAR for Australia, many of which were based on the CSIRO (1996a) scenarios, which were superseded by CSIRO (2001)."¹⁰

So what are the climate change predictions for Australia?

"Based on the SRES scenarios used by the IPCC, and regional changes in climate simulated by nine climate models, annual average temperatures in Australia are projected to increase by 0.4 to 2.0 °C by 2030, and 1.0 to 6.0 °C by 2070, relative to 1990. There would be associated increases in potential evaporation and heatwaves, and fewer frosts. Warming is expected to be greater inland than near the coast".¹¹

"When rainfall changes are combined with increases in potential evaporation, a general decrease in available soil moisture is projected across Australia, with droughts likely to become more severe."¹²

Note that the Australian material is predicting a temperature rise range for Australia in 2070 that is similar to that predicted by the IPCC for the entire planet in 2100. The Australian estimate is the more valuable of the two, since it takes into account local climatic conditions and expresses the temperature rise that may be expected for the Australian land mass, whereas the IPCC estimate expresses the average temperature rise expected by 2100 across the entire planet, including the water masses. The two estimates are therefore measuring different things, and the apparent disagreement is therefore probably not actually a disagreement at all.

And remember too that the predicted temperatures are a range not so much because of vagueness in the prediction process as much as because each scenario produces a different temperature prediction, and the range of temperature predictions reflects the range of outcomes from the various scenarios. And, as was pointed out in the discussion on global climate change, global inaction on greenhouse gas emissions to date means that the do-nothing-business-as-usual scenario comes closest to reality, therefore the upper end of the temperature range predictions is the most likely eventuality.

But the common message of all climate change predictions is that Australia is getting hotter. And getting hotter fast. Remember how hot and dry 2005 was? According to the Bureau of Meteorology in their Annual Australian Climate Summary 2005 (issued 4th January 2006), it was Australia's hottest year on record.

"Australia has officially recorded its warmest year on record. Data collected by the Bureau of Meteorology indicate that the nation's annual mean temperature for 2005 was 1.09 °C above the standard 1961-90 average, making it the warmest year since reliable, widespread temperature observations became available in 1910. The previous record of +0.84 °C was set in 1998. While these temperature departures may seem relatively small, a 1 °C increase in mean temperatures is equivalent to many southern Australian towns shifting northward by about 100km.[]

"Despite some regional variations, the warm conditions in 2005 were remarkably widespread. All States and Territories, apart from Victoria and Tasmania, recorded 2005 mean temperatures amongst their top two warmest years on record. The only region recording a cooler than normal year was a coastal strip of Western Australia extending from Cape Leeuwin to Carnarvon.[]

"Australian temperatures have increased by approximately 0.9 °C since 1910, consistent with global warming trends. Scientific studies have linked global and Australian temperature increases to the enhanced greenhouse effect. Whilst this warming trend is expected to continue into the decades ahead, annual temperatures are influenced by numerous factors, including natural variability, so 2006 will not necessarily be warmer than 2005.[]

"Warmer-than-normal temperatures were not confined to Australia in 2005, with many other regions reporting an exceptionally warm year. According to a preliminary estimate released by the World Meteorological Organization (WMO) on 15 December 2005, the global mean temperature for 2005 was about 0.48 °C above normal, putting 2005 amongst the four warmest years globally since records commenced in 1861."¹³

Clearly Australia is not going to escape the impacts of climate change. But inevitably some areas will be hit harder than others - and the climate changes most relevant to this paper are those for Queensland, not Australia. So what are the climate change predictions for Queensland? How is Queensland going to fare under climate change?

¹⁰ B. Pittock (ed.), *Climate Change: An Australian Guide to the Science and Potential Impacts*, Australian Greenhouse Office, Canberra, 2003, pp57,58.

¹¹ B. Pittock (ed.), *Climate Change: An Australian Guide to the Science and Potential Impacts*, Australian Greenhouse Office, Canberra, 2003, p4.

¹² B. Pittock (ed.), *Climate Change: An Australian Guide to the Science and Potential Impacts*, Australian Greenhouse Office, Canberra, 2003, p4.

¹³ Bureau of Meteorology, *Australia's hottest year on record*, Annual Australian Climate Summary 2005, 4th January 2006, Bureau of Meteorology, http://www.bom.gov.au/announcements/media_releases/climate/change/20060104.shtml 5/01/2006

3.4 CLIMATE CHANGE IN QUEENSLAND

The first thing that needs to be pointed out regarding climate change in Queensland is that the most recent information is generally the most reliable information. Improvements in climate models have reduced uncertainty, which in turn has meant that later predictions have a narrower range, which makes the later predictions far more useful, meaningful, and reliable than earlier predictions. (Unfortunately, many of the Australian reports on climate change (on the internet, at least) are undated, or ambiguously dated, and the only way to ascertain the approximate date they were written is by comparison of the predictions with predictions in other reports for which date of authorship is known.)

But there are few Australian reports more recent than 2003. Since then, temperatures have risen dramatically, far more than was predicted by the models, and aridity has also increased. The "drought" in South East Queensland is already the worst in over 100 years and shows no sign of coming to an end.

But is it really a drought? Droughts come to an end. The longer this "drought" continues, the more likely it is that it is in fact not a drought, but a taste of the future for South East Queensland. A taste of what will be the norm from now on. In fact, in future years we may even look back on 2005 and consider it cool and wet, relative to the climate at that time.

So what is the predicted climate for Queensland?

"Since 1995, NR&M has coordinated a study by CSIRO's Atmospheric Research Division – jointly funded with other agencies – into how Queensland's climate will change in the years ahead. While such information is vital for natural resource managers, it is also of assistance to policy makers and planners across government as well as local governments and the wider community. According to the latest CSIRO work, Queensland's temperatures are projected to rise significantly in the years ahead, with inland areas warming more rapidly than coastal areas, and the frequency and severity of heatwaves increasing. Average rainfall is also expected to decrease by up to 15 per cent over most of the state. While overall rainfall is expected to decline, the incidence of extreme rainfall events is expected to increase. This has implications for soil erosion and could diminish water quality through increased sediment and nutrient loads in waterways. The combination of reduced rainfall and increasing temperatures is also expected to cause a marked decline in soil moisture, particularly in inland areas, and reduce the availability of water for primary producers, industry and regional and urban communities."¹⁴

"According to the work being conducted by CSIRO on behalf of the Queensland Government, the trend towards higher temperatures will accelerate, with projections showing increases in average temperatures of between 0.3 °C and 2 °C by 2030 and between 0.4 °C and 6 °C by 2070, with inland areas tending to warm more rapidly than coastal areas."¹⁵

"Queensland temperatures are in fact rising more rapidly than the global average."¹⁶

"Rainfall, water availability and water quality will decline in most areas and droughts will become more severe."¹⁷

[The foregoing evidence demonstrates] "an unfavourable condition for soil to hold moisture, with potentially serious implication for farming and other agricultural activities. This point is illustrated in Figures 3.2, which shows that when it does rain, the warmer temperature increases the evaporation rate (Figure 3.2b)".¹⁸

"Soil moisture is one of the most relevant hydrological parameters. Its response indicates the extent to which climate change affects farming practice and agriculture land usage. Figure 3.12 shows that in all catchment areas, soil moisture decreases, and that the magnitude of the decrease is similar in all catchment areas."¹⁹

"Projected annual average [rainfall] ranges tend toward decrease over much of the state by up to 13% by 2030 and up to 40% by 2070."²⁰

¹⁴ M.Gabriel *et. al.*, *Climate Change: the Challenge for Natural Resource Management*, Department of Natural Resources and Mines, Brisbane, 2004, pIV.

¹⁵ M.Gabriel *et. al.*, *Climate Change: the Challenge for Natural Resource Management*, Department of Natural Resources and Mines, Brisbane, 2004, p8.

¹⁶ M.Gabriel *et. al.*, *Climate Change: the Challenge for Natural Resource Management*, Department of Natural Resources and Mines, Brisbane, 2004, p8.

¹⁷ M.Gabriel *et. al.*, *Climate Change: the Challenge for Natural Resource Management*, Department of Natural Resources and Mines, Brisbane, 2004, p16.

¹⁸ W. Cai *et. al.*, *Climate Change in Queensland under Enhanced Greenhouse Conditions*, Final Report 2002-2003, Annual Report 2003, CSIRO Atmospheric Research, Aspendale Victoria, May 2003, p17.

¹⁹ W. Cai *et. al.*, *Climate Change in Queensland under Enhanced Greenhouse Conditions*, Final Report 2002-2003, Annual Report 2003, CSIRO Atmospheric Research, Aspendale Victoria, May 2003, p23.

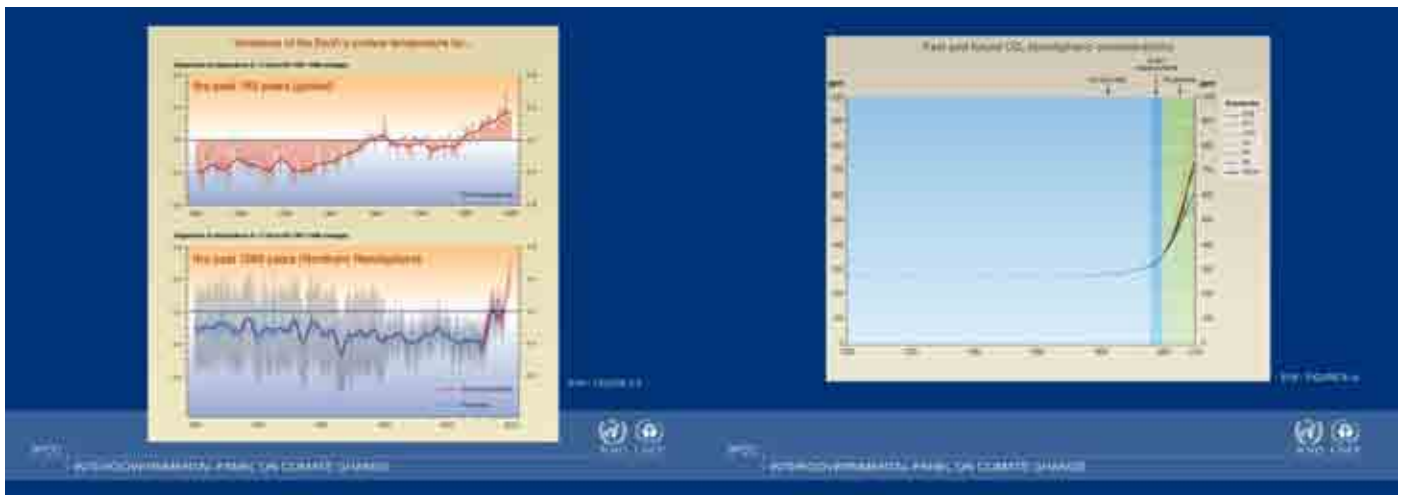
²⁰ W. Cai *et. al.*, *Climate Change in Queensland under Enhanced Greenhouse Conditions*, Final Report 2002-2003, Annual Report 2003, CSIRO Atmospheric Research, Aspendale Victoria, May 2003, p47.

"... all models for which potential evaporation is available show a significant increase in this parameter over Queensland. The increase is in the range of 2-8% per degree C global warming. Thus even if rainfall does not change, soil moisture will be lower as a result of the increase in potential evaporation."²¹

So, in a nutshell, Queensland is going to get hotter and drier very fast. And it's happening already.

"While national attention has focused on the drying trend in south-west Western Australia, the drying trend along Queensland's coast south from Cairns is arguably even more pronounced, particularly in central Queensland (Crimp and Day 2003). Queensland's dry extends across much of the state, including many inland areas and the south-east where the bulk of the population lives."²²

The cause of climate change is unquestionably the increase in greenhouse gas concentrations in the atmosphere since the Industrial Revolution - as the graphs below dramatically demonstrate.²³



Note the exponential rise in atmospheric concentrations of carbon dioxide, the primary greenhouse gas. Until the Industrial Revolution, atmospheric concentrations were reasonably stable (and the curve for that period is flat), but since the Industrial Revolution, the curve rises more and more steeply with every passing year.

The fact that the rise is exponential, not linear, means that long term trend analysis of historical data is far less meaningful than short term trend analysis. In other words, trends evident from analysis of data covering the last thirty years are far more meaningful and useful than trends found in data from the last fifty years, or the last seventy years, for example. Natural variability means that it is unwise to take too short a time frame for trend analysis, but the fact that the basic data pattern is exponential, not linear, means that too long a time frame for the trend analysis means that data is being included that is diluting the trend that the analysis is looking for.

So what is the optimal period over which to conduct trend analysis of historical climate data in Australia? Numerous sources, including Queensland's Department of Natural Resources and Mines, acknowledge that "most of the increase has occurred since the 1970s".²⁴ Climate trend maps are available from the Bureau of Meteorology web site for various periods of time, but the shortest time frame for which they are available is 1970 to present. Source data for any period is available from the Bureau of Meteorology to permit more detailed analysis, but for our purposes, the trends since 1970 that are published on their web site are sufficient.

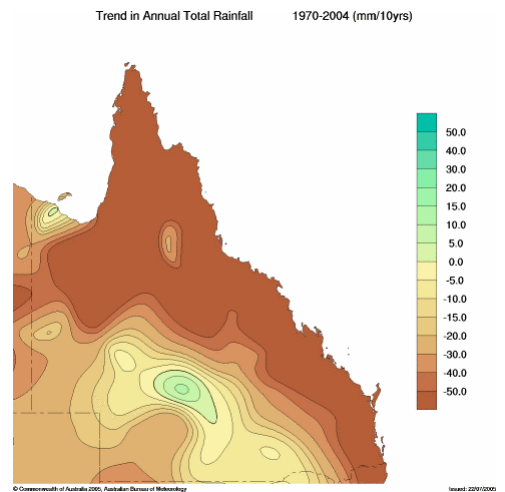
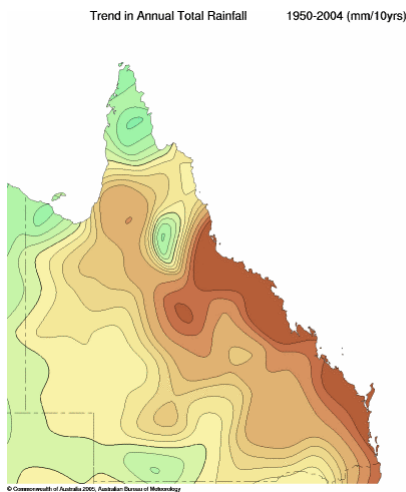
To bring home the point on time frames for trend analysis, below are rainfall trend graphs from the Bureau of Meteorology for both the period since 1950, and the period since 1970. Note how much more marked the drying trend is when only data since 1970 is used for the analysis.

²¹ W. Cai et al., *Climate Change in Queensland under Enhanced Greenhouse Conditions*, Final Report 2002-2003, Annual Report 2003, CSIRO Atmospheric Research, Aspendale Victoria, May 2003, p50.

²² M.Gabriel et al., *Climate Change: the Challenge for Natural Resource Management*, Department of Natural Resources and Mines, Brisbane, 2004, p13.

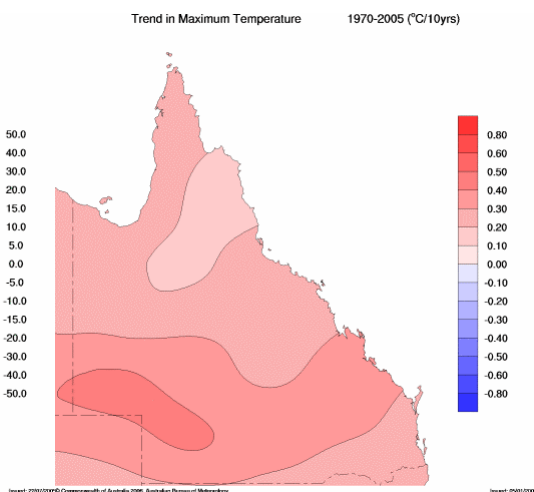
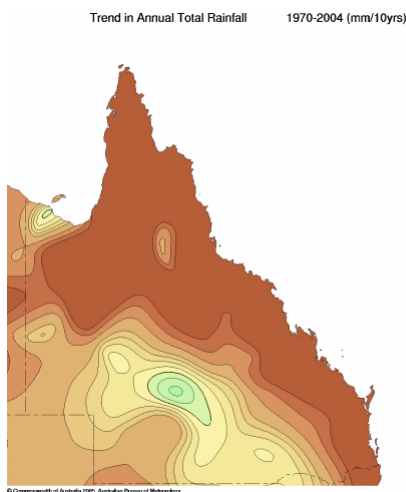
²³ 02.21.jpg & 05.16.jpg, figures from IPCC Third Assessment Reports, from http://www.grida.no/climate/ipcc_tar/slides/index.htm

²⁴ M.Gabriel et al., *Climate Change: the Challenge for Natural Resource Management*, Department of Natural Resources and Mines, Brisbane, 2004, p1.



Yet, in spite of the strength of the argument for using short time frames for trend analysis, Queensland's Department of Natural Resources and Mines generally chooses the 1950 trend map for their publications rather than the 1970 one.²⁵ Which is very misleading.

So having now established that 1970 trend data is far more meaningful than trend data over a longer time frame, let's look again at 1970 trend data for Queensland.



The conclusion is obvious: extrapolation of trends in recent historical climate data fully supports the predictions of the climate change models. Two separate tools, using two separate types of data as input, broadly predict the same future for Queensland: very much hotter, and very much drier. And both tools predict that this trend will only get worse as the years go by.

And what was that trend again? What were CSIRO's predictions again?

"According to the work being conducted by CSIRO on behalf of the Queensland Government, the trend towards higher temperatures will accelerate, with projections showing increases in average temperatures of between 0.3 °C and 2 °C by 2030 and between 0.4 °C and 6 °C by 2070, with inland areas tending to warm more rapidly than coastal areas."²⁶

Let's put a perspective on this. Let's put this into some sort of time frame and magnitude of change perspective. What does history have to tell us about global average temperature change?

[] the year-to-year variation of the planetary mean temperature is around *a few tenths of a degree*, and is of a similar magnitude even on a decadal timescale. Many climate scientists recognise that the planet has only warmed around 5°C between the last glacial maximum (around 20,000 years ago) to the current interglacial temperatures. This 5°C increase has brought about a major redistribution of ecosystems, as well as

²⁵ (eg, M.Gabriel *et al.*, *Climate Change: the Challenge for Natural Resource Management*, Department of Natural Resources and Mines, Brisbane, 2004, p13; and *Climate Smart Adaptation: What does climate change mean for you?*, Department of Natural Resources and Mines, Indooroopilly, 2005, fig. 2.

²⁶ M.Gabriel *et al.*, *Climate Change: the Challenge for Natural Resource Management*, Department of Natural Resources and Mines, Brisbane, 2004, p8.

extinctions and the emergence of new species."²⁷

So, when we use historical global temperature change patterns to put the predictions for the future from Australia's foremost authority on climate change research into some sort of perspective, and discard the temperature predictions from climate change models that used scenarios that assumed greater reduction in greenhouse gas emissions this century than now seems likely, we get...

Within the lifetime of our grandchildren, and, for some of us, our own children, the temperature rise in Queensland is very likely to exceed the global temperature rise since the last ice age 20,000 years ago!

3.5 HOW WILL CLIMATE CHANGE IMPACT OUR WILDLIFE?

It's the consequences of rising temperature and increasing aridity that are important, when you get right down to it. Not the raw numbers that allowed us to predict those consequences. So what are the predicted consequences of rising temperature and increasing aridity?

Well, the first things many people think of are an increased need for air conditioning, and problems with water availability for drinking. But what about the biosphere upon which we are totally dependent for our very survival (even though most of us in the city don't realise how dependent upon it we are)? What about our vegetation, and the wildlife that depend upon that native vegetation for habitat? How will they fare under climate change?

The short answer is: very poorly.

"For the wide range of Intergovernmental Panel on Climate Change (IPCC) emissions scenarios, the Earth's mean surface temperature is projected to warm 1.4 to 5.8°C by the end of the 21st century, with land areas warming more than the oceans, and the high latitudes warming more than the tropics. The associated sea-level rise is projected to be 0.09 to 0.88 m. In general, precipitation is projected to increase in high-latitude and equatorial areas and decrease in the subtropics, with an increase in heavy precipitation events.

"Climate change is projected to affect individual organisms, populations, species distributions, and ecosystem composition and function both directly (e.g., through increases in temperature and changes in precipitation and in the case of marine and coastal ecosystems also changes in sea level and storm surges) and indirectly (e.g., through climate changing the intensity and frequency of disturbances such as wildfires). Processes such as habitat loss, modification and fragmentation, and the introduction and spread of non-native species will affect the impacts of climate change. A realistic projection of the future state of the Earth's ecosystems would need to take into account human land- and water-use patterns, which will greatly affect the ability of organisms to respond to climate change via migration."²⁸

Fauna can't air-condition their homes, so when the climate becomes intolerable where they are, they have to move house to somewhere where the climate is more like what they are accustomed to. I.e, further up the mountain, or further south. And if they can't find anywhere suitable, or can't find a wildlife corridor that might take them to somewhere suitable, what then? They die. Simple as that. And without producing another generation to replace themselves.

Flora can't migrate on an individual level, and on a species level it will take decades, or even centuries, for most species of flora to migrate any meaningful distance, so if temperature and aridity rises faster than individual flora can cope with, then they die. Simple as that.

Is there anything that can be done to help preserve our State's wildlife and biodiversity?

Yes there is. There is a lot that can be done. But most of the strategies for assisting them are beyond the scope of this paper. This paper focuses on one specific strategy for assisting our wildlife to survive climate change: the preservation of all existing bushland in Queensland. Because that objective can be achieved simply and easily, with just a few trivial changes to the Integrated Planning Act 1997 and its subordinate legislation, the South East Queensland Regional Plan 2005-2026.

But although the scope of this paper is thus constrained, implementing the recommended changes to that Act and that Plan is, nevertheless, the simplest, the cheapest, and the most beneficial change that the State Government could make that would make the biggest difference to the survival chances of our State's wildlife.

²⁷ Allen Consulting Group, *Climate Change Risk and Vulnerability: Promoting an efficient adaptation response in Australia*, Final Report, Australian Greenhouse Office, Department of the Environment and Heritage, Canberra, March 2005, pp32,33.

²⁸ H. Gitay *et. al.* (eds), *Climate Change and Biodiversity*, IPCC Technical Paper V, Intergovernmental Panel on Climate Change, April 2002, p1 (Executive Summary).

4.0 A MITIGATION PROPOSAL: THE PROTECTION OF ALL OUR REMAINING NATIVE VEGETATION

This paper presents the merits of a proposal for the protection of all native vegetation in Queensland, irregardless of whether it is urban or non-urban; irregardless of whether it is classified as endangered, of concern, or not of concern; and irregardless of whether it has been assessed as environmentally valuable, as a mitigation strategy against the impacts of climate change. And the means of implementation of the proposal is a few trivial amendments to the Integrated Planning Act 1997 and the South East Queensland Regional Plan 2005-2026 as per the recommendations of this paper.

The case supporting the proposed mitigation strategy requires a knowledge of the current state of protection for native vegetation in Queensland and what legislation is limiting that protection. Accordingly, that necessary prerequisite knowledge is presented first, before the case for extending the protection of native vegetation in Queensland to cover all of Queensland is presented.

5.0 THE CURRENT STATE OF NATIVE VEGETATION PROTECTION IN QUEENSLAND

Queensland has come a long way since the days when many people summed up the Australian philosophy as "If it moves, shoot it. If it doesn't, chop it down" - but there's a long way to go yet before the natural environment is accorded the status it must have if it is to survive the explosion of human population across the planet and their impact upon the planet.

Perhaps the greatest advance in that regard in Queensland came with the Vegetation Management Act 1999 (VMA). If there was a continuum of consideration for the natural environment in Queensland legislation, at one extreme would be the Vegetation Management Act, and at the other would be the Integrated Planning Act 1997. Somewhere between the mid point of the continuum and the VMA would come first the Environment Protection Act 1994, then the Nature Conservation Act 1992 - both of which are showing their age and badly need a major overhaul to bring them into line with current thinking about the natural environment.

The Vegetation Management Act 1999 protects a very substantial portion of the States native vegetation. So much, in fact, that that legislation alone contributes very substantially towards Australia's commitment to limit greenhouse emissions to 108% of that of 1990. (Under the Kyoto Protocol, most developed countries are obliged to limit their emissions to 95%. Australia has argued that it requires a 108% limit - and hasn't signed the Kyoto Protocol.)

So what is this Kyoto Protocol?

Australia was among the first countries to ratify the 1992 *United Nations Framework Convention on Climate Change* (UNFCCC), the primary policy instrument for facilitating a global response. The Convention's 1997 Kyoto Protocol seeks to set legally binding, measurable limits and greenhouse gas emission reduction objectives for developed countries within a specified commitment period. The Kyoto Protocol seeks to reduce the greenhouse gas emissions of developed countries collectively by at least five percent below 1990 levels by the first commitment period, 2008–12. Developing nations are not required to set emission limits during the first commitment period, even though they may still be party to the original UNFCCC agreement. The Kyoto Protocol does not come into force until ratified by 55 countries, representing 55 percent of Annex 1 (i.e. developed countries) emissions for 1990. Currently, parties corresponding to 44.2 percent of Annex 1 emissions have ratified the Kyoto Protocol. This does not include the United States, Russia and Australia, which represent 36.1 percent, 17.4 percent and 2.1 percent, respectively, of total Annex 1 emissions.²⁹

Russia has now signed the Kyoto Protocol. The United States and Australia are still refusing to sign (even though, in Australia's case, the Kyoto target is 8% greater than its 1990 level of emissions, when the global Kyoto Protocol target is 5% less than 1990 emissions!)

In 2002, the Commonwealth Government announced that it would not ratify the Kyoto Protocol under present circumstances, because it considered it was not in Australia's interests to do so. It argued that a wider-ranging global framework with a greater emphasis on developing nations is necessary. The Commonwealth Government has also stated that ratifying the Protocol would have the potential to impose very significant costs on Australia. Nevertheless, the Commonwealth Government is committed to achieving Australia's Kyoto Protocol emissions target of 8 percent above 1990 levels in the first commitment period (2008–12).³⁰

And Queensland's Vegetation Management Act 1999 has contributed very substantially to reducing Australia's greenhouse gas emissions.

"Land clearing in Queensland contributes a significant proportion to Australia's total greenhouse gas emissions. The latest NCAS results identify that, for 2001, Queensland contributed around 61 percent to total

²⁹ *Queensland Greenhouse Strategy*, Environmental Protection Agency, Queensland, 2004, pA:6

³⁰ *Queensland Greenhouse Strategy*, Environmental Protection Agency, Queensland, 2004, pA:7.

national emissions for land clearing. The NCAS results also show that Queensland emissions from land clearing have declined by around 50 percent from 1990 to 1999 from 75.0 Mt CO₂ -e to 37.8 Mt CO₂ -e (AGO 2003b). The Department of Natural Resources, Mines and Energy regulates the management of native vegetation through the *Vegetation Management Act 1999* and the *Integrated Planning Act 1997*. Following the commencement of the *Vegetation Management Act 1999* in September 2000, clearing rates were reduced by 11 percent compared to the rate of clearing in 1997-1999, which would have contributed to a measurable reduction in greenhouse gas emissions over the same period. Amendments to the vegetation management framework were passed by State Parliament in April 2004. The legislation will result in significant savings in greenhouse gas emissions for Queensland. [] It is estimated that the phase-out of broadscale land clearing in Queensland would achieve an annual reduction in CO₂ emissions of 20–25 megatonnes a year by 2008–12"³¹

Or, in the Premier's words,

"Our new tree clearing laws, passed by Parliament in April 2004, will virtually deliver on Australia's international obligations for greenhouse gas mitigation".³²

Unfortunately, a sad fact of life is that meeting "Australia's international obligations for greenhouse gas mitigation" is not enough. The planet needs Australia to make a far bigger commitment to reducing greenhouse gas emissions than mere and bare compliance with its Kyoto Protocol target. But the *Vegetation Management Act 1999* was a step in the right direction. And the much-needed protection it gave for native vegetation did more to conserve our wildlife and our biodiversity than any expansion of the reserve system ever could have done.

That legislation has categorised remnant native vegetation in Queensland into "Not of Concern", "of Concern", and "Endangered". Which category a particular type of remnant vegetation falls in is determined by how much remains of the original coverage of the State by that type at the time of colonisation by Europeans. For much of the State, the extent of protection afforded any particular patch of remnant vegetation is determined by which of these three categories it falls in and the reason for which it is being cleared. These criteria have effectively protected a considerable proportion of the State's native vegetation from clearing.

But as good as that legislation is, native vegetation is still being cleared in Queensland. That legislation hasn't banned all clearing of native vegetation. There are circumstances under which clearing of native vegetation is still legal under that Act - but most of the vegetation that is lost now is lost not because of the *Vegetation Management Act 1999*, but because of the *Integrated Planning Act 1997* and its subordinate legislation, the *South East Queensland Regional Plan 2005-2010*.

In the case of the *Integrated Planning Act 1997*, it is because development applications for operational works (which includes clearing) in urban areas for urban purposes are exempt from assessment, which means that nobody, anywhere, has even the opportunity to reject the application.

And in the case of the *South East Queensland Regional plan 2005-2026*, it is because the Regulatory Provisions of the Plan exempt the Urban Footprint from assessment and require impact assessment for the other areas, not code assessment. And it is the seven pages of Regulatory Provisions that have upholdable meaning under law, not the 130 pages of very appealing sales pitch that comprise the rest of the document.

"The population growth of SEQ and associated urban and rural development is placing increased pressure on the natural environment. Continued loss of natural areas and degradation of natural environmental processes will adversely affect the region's biodiversity, economic potential and public health, and ultimately will impact on liveability in the region. Protecting and managing the natural environment is fundamental to achieving a sustainable future for the region."³³

The *South East Queensland Regional Plan 2005-2026* makes all the right noises about the natural environment and ecological sustainability, but when you prise away the decoration and get right down to the legislative core of it - the Regulations of Part H - one discovers that the reality of what the Plan actually does is quite different to what the convincing soft-sell of the other 130 pages says that it does. Those 130 pages present a perception of what the Plan does for the environment that simply does not match up with the truth.

The *South East Queensland Regional Nature Conservation Strategy* presents a far more truthful assessment of the *South East Queensland Regional Plan 2005-2026*!

A large proportion of the areas of nature conservation significance is available for development. Only some 15 percent of these areas are within the State's protected area network, dedicated as national parks,

³¹ *Queensland Greenhouse Strategy*, Environmental Protection Agency, Queensland, 2004, pB:33.

³² *Queensland Greenhouse Strategy*, Environmental Protection Agency, Queensland, 2004, Foreword by Premier Peter Beattie.

³³ *South East Queensland Regional Plan 2005-2026*, Office of Urban Management, Department of Local Government, Planning, Sport and Recreation, Queensland, June 2005, p26.

conservation parks, nature refuges and co-ordinated conservation areas.³⁴

In other words, **only 15% of the land identified as of nature conservation significance by the South East Queensland Regional Nature Conservation Strategy is protected from loss to development!**

And because the South East Queensland Regional Plan 2005-2026 overrides all else, nothing else and nobody else can protect what the South East Queensland Regional Plan does not!

2.5A.23 Effect of SEQ regional plan on other plans, policies or codes

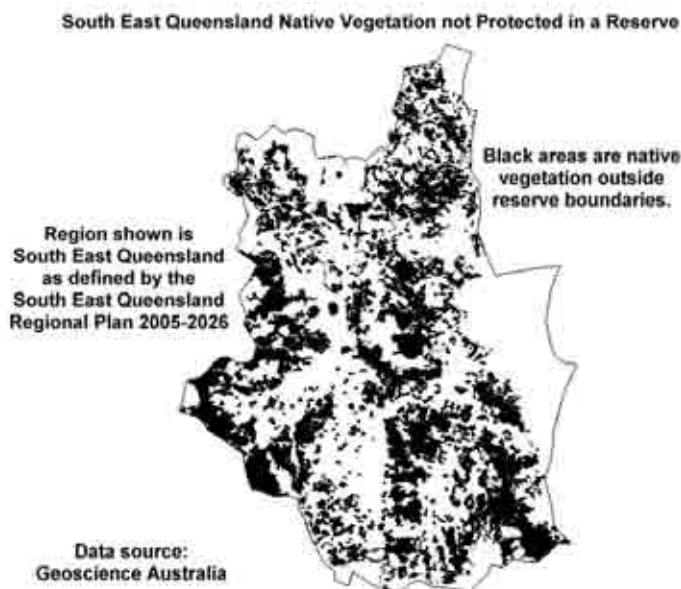
(1) An entity responsible for preparing or amending a plan, policy or code under this or another Act that may affect a matter under section 2.5A.11 must—

(a) in preparing the plan, policy or code, or the amendment of the plan, policy or code, take account of the SEQ regional plan; and

(b) state in the plan, policy or code how the plan, policy or code, or the amendment of the plan, policy or code, will reflect the SEQ regional plan for the matters under section 2.5A.11.

(2) For this Act, to the extent there is an inconsistency between the SEQ regional plan and any other plan, policy or code under this or another Act, including any other planning instrument, the SEQ regional plan prevails.³⁵

The attached map shows the native vegetation in South East Queensland that is not protected by the South East Queensland Regional Plan 2005-2026.³⁶ (The map shows the result of subtracting land protected in reserves from land covered in native vegetation.)



Significant improvement in the protection for native vegetation in Queensland can not be achieved without amending both the Integrated Planning Act 1997 and the South East Queensland Regional Plan 2005-2026. And the places that the amendments to those two pieces of legislation will most assist are urban areas throughout the state, and South East Queensland.

6.0 WHY IS THE CLEARING OF NATIVE VEGETATION STILL LEGAL IN THOSE AREAS WHERE IT IS?

Large scale clearing of native vegetation is still legally able to continue in many areas of Queensland because:

- The Integrated Planning Act 1997 Schedule 8 Table 4 (1A) has an exception that excludes development applications for operational works (which is the category that covers vegetation clearing) in urban areas for urban purposes from assessment.
- The South East Queensland Regional Plan 2005-2026 excludes the Urban Footprint regional land use category from the Regulatory Provisions that relate to assessment of development applications.
- The Vegetation Management Act 1995 permits the clearing of native vegetation if the proportion or quantity of that vegetation type remaining in Queensland is more than a specified amount.

But it is the first two which allow most vegetation clearing to happen. The amount of clearing that is still permitted by

³⁴ *Regional Nature Conservation Strategy for South East Queensland 2003-2008*, Environmental Protection Agency, Brisbane, 2003, p30.

³⁵ *Integrated Planning Act 1997* (Qld) s2.5A.23

³⁶ Data for the map was sourced from Geoscience Australia and is copyright Commonwealth of Australia 2006.

the Vegetation Management Act 1999 is trivial in comparison.

7.0 WHY ALL OUR REMAINING NATIVE VEGETATION SHOULD BE PROTECTED FROM CLEARING

Queensland is changing rapidly as a consequence of two factors: climate change, and population growth. The speed of those changes is far greater than the present system of environmental protection can handle. To cater for population growth, extensive areas of native vegetation are cleared every day (and quite unnecessarily, really!), and what isn't cleared to cater for population growth is at risk of loss from climate change.

Until now, the loss of native vegetation has correlated closely with the clearing of land that contained native vegetation, so legislation that controlled vegetation clearing provided predictable control over vegetation loss. But climate change will change that. Under climate change, there will be substantial losses of vegetation as the temperature and aridity tolerance limit of each species is exceeded and as the increased prevalence of wildfire takes its toll. So the net result of climate change will be the same as if the clearing of native vegetation had been allowed to continue. (Unless mitigation measures are successfully applied, of course.)

Loss of native vegetation means loss of habitat for our wildlife. And as suitable habitat diminishes, so too do wildlife populations. Once wildlife populations shrink below minimum viable thresholds, then entire species go locally extinct and local biodiversity diminishes. When this happens everywhere, then species don't just go locally extinct, they go nationally extinct. And since so much of Australia's wildlife is endemic to Australia, this usually means their becoming globally extinct!

The unique nature of climate change means that very few options exist for preserving our State's native vegetation and the wildlife that depend upon that vegetation for habitat: protecting as much of our native vegetation from loss through human action as we can; doing whatever can be done (within available financial and human resources) to keep alive all the native vegetation that we can; and revegetating with species that are more heat and aridity tolerant as the existing vegetation dies (be it from wildfire, rising temperatures, or "drought".) This paper focuses on the first option - protecting as much of our native vegetation from loss through human action as we can - because unless we do that, then we don't have the other two options.

The case for the protection of native vegetation in Queensland is already well established, and so well established that it convinced the government to introduce the Vegetation Management Act 1999 and to strengthen it in 2004. This paper presents a case for protecting what native vegetation isn't already protected - as a mitigation measure against the impacts of climate change.

Climate change makes it extremely important that all native vegetation in Queensland is protected. And the only way to do that is to amend the Integrated Planning Act 1997 and the South East Queensland Regional Plan 2005-2026 to allow the Vegetation Management Act 1987 to afford its protection to ALL of Queensland without exception!

So what are some of the reasons why all native vegetation be protected?

- To minimise the consequences of wildfires
- To minimise the consequences of habitat fragmentation
- Because it's wildlife habitat
- Because all native vegetation is environmentally valuable
- To minimise the urban heat island effect
- To minimise greenhouse gas emissions & maximise sequestration
- To minimise eutrophication
- To maximise the potential for weed management and revegetation as mitigation strategies
- To maximise accessibility to suitable research sites for researchers
- To maximise cloud cover
- To maximise transpiration
- To maximise the chances of survival of our native vegetation
- To maximise intergenerational equity
- To comply with the precautionary principle
- Because clearing native vegetation is not sustainable development
- Because there is insufficient water in south east Queensland to cater for any population growth
- Because development should be restricted to land that is already environmentally destroyed
- Because it's consistent with the *National Biodiversity and Climate Change Action Plan*

Each of these reasons will now be addressed in detail.

7.1 To minimise the consequences of Wildfires

Native vegetation is not only wildlife habitat, it is also, at a more basic level, flammable material which is very subject to wildfire (or bushfire, as it is also known). Causes are various, including natural events like lightning as well as man-made events such as cigarette butts, vehicle exhaust pipes, vehicle fires, and arson.

"In Australia widespread bushfires are usually associated with drought. In many regions ignition of small fires is common in most dry seasons due primarily to lightning strikes, although human agencies are responsible for an increasing number of ignitions in more settled areas. Many small fires fail to spread and are extinguished naturally or by fire-fighting. The critical factor in a small fire becoming a large one is the abundance and dryness of the fuel, and the occurrence of suitably hot and windy conditions that cause fire to spread, especially by "spot fires" well in advance of fire fronts due to wind-borne burning embers. Kershaw *et al.* (2002) document a history of fire in Australia, noting a strong correlation with climatic changes, but also a large influence due to human occupation around 40,000 years ago, and again in the early phase of European settlement."³⁷

And wildfires are going to become increasingly common in Queensland as aridity and temperatures increase with climate change.

"Fire frequency is expected to increase with human-induced climate change, especially where precipitation remains the same or is reduced (Stocks *et al.*, 1998)".³⁸

"Heat stress and lack of water stress make [vegetation] more vulnerable to insect attack and disease, and less likely to survive bushfire, of which there will be more. The increased proliferation of dead wood in bushland (as a result of non-survival of stressed vegetation) will result in hotter fires, with consequential greater damage to the woodland and more deaths and hotter fires the next time too as the trees killed in the last fire burn. Bushfires tend to occur in cycles following prolonged dry spells, as was the case in 2002–03 when fires burned across the nation following the severe drought."³⁹

Some computer models can even put a dimension on the increased risk.

"The incidence of bushfire is likely to be impacted by the temperature, humidity and precipitation changes brought about by climate change. According to a recent US climate change study, a 1 °C mean summer temperature increase could result in an increase in the frequency of fires within a range of 17–28 per cent. The intensity of fires will also be affected by climate conditions (that can affect the availability of fuel in the form of scrubby undergrowth) and the frequency of fire events (which affect the build up of undergrowth and leaf litter)".⁴⁰

To put a time perspective on the above statement, CSIRO are predicting a mean annual average temperature rise for Queensland that puts this event well within the lifetime of our grandchildren, and very likely within the lifetime of our own children. In fact, if we disregard temperature predictions generated using scenarios which assumed a level of reduction in greenhouse gas emissions which has now been shown by the passage of time to be unachievable on the time scale of the scenario, then **this increase in bushfire frequency is very likely to happen within our own lifetimes!**

"According to the work being conducted by CSIRO on behalf of the Queensland Government, the trend towards higher temperatures will accelerate, with projections showing increases in average temperatures of between 0.3 °C and 2 °C by 2030 and between 0.4 °C and 6 °C by 2070, with inland areas tending to warm more rapidly than coastal areas."⁴¹

Australian research draws similar conclusions.

"Beer and Williams (1995), Williams *et al.* (2001), and Cary (2002) have studied the potential impact of climate change on bushfire danger in Australia. These studies each found a general increase in fire danger, as measured by the McArthur Forest Fire Danger Index (FDI), with the enhanced greenhouse effect.

"Cary found small to moderate increases in the [Forest Danger Index, or] FDI, but more significant decreases

³⁷ B.Pittock (ed.), *Climate Change: An Australian Guide to the Science and Potential Impacts*, Australian Greenhouse Office, Canberra, 2003, p65

³⁸ J.J.McCarthy *et al.* (eds.), *Climate Change 2001: Impacts, Adaptation, and Vulnerability*, Contribution of the Working Group II to the Third Assessment Report of the Intergovernmental Panel on Climate Change, Cambridge University Press, Cambridge, 2001, p290.

³⁹ Allen Consulting Group, *Climate Change Risk and Vulnerability: Promoting an efficient adaptation response in Australia*, Final Report, Australian Greenhouse Office, Department of the Environment and Heritage, Canberra, March 2005, p72.

⁴⁰ Allen Consulting Group, *Climate Change Risk and Vulnerability: Promoting an efficient adaptation response in Australia*, Final Report, Australian Greenhouse Office, Department of the Environment and Heritage, Canberra, March 2005, p73.

⁴¹ M.Gabriel *et al.*, *Climate Change: the Challenge for Natural Resource Management*, Department of Natural Resources and Mines, Brisbane, 2004, p8.

in the inter-fire interval (IFI) for the moderate and high change scenarios. IFI varied from an average of about 43 years (present conditions) to 20 years (moderate change scenario) and 12 years (large change)."⁴²

In other words, wildfires can be expected in any given location somewhere between twice and three-and-a-half times more often than in the past!

And once there has been a bushfire, then climate change will inhibit recovery from the wildfire. And with increased frequency of wildfire, there is reduced time in which the vegetation can recover from wildfire before being devastated by another.

"Changes in precipitation may not have immediate effects on mature and old-growth forests, which have well-established root systems, but are likely to have pronounced effects on regeneration success for some species following disturbance, such as harvest or fire (Hogg and Schwarz, 1997; Price *et al.*, 1999a,b)."⁴³

So wildfire devastation will increase with climate change - and with increasing aridity and heat stress, some of the areas devastated by wildfire will probably never fully recover. Which makes it extremely important to save all the native vegetation we can. Because the more native vegetation we have, the more we will have unaffected by wildfire.

And the more we have unaffected by wildfire, the more places there are where wildlife can retreat to to escape the wildfire. Some species can't flee, of course, so their only option is to seek safe shelter in creeks, in hollows, under ground, or high in trees. And fleeing the fire is only a viable strategy if there exists an alternative habitat to which they can flee. Which makes it very important that we save all the native vegetation that we can. Because the more native vegetation there is, the more alternative habitat there is to which they can flee in the event of wildfire.

In Queensland, most non-urban native vegetation is protected from clearing by the Vegetation Management Act 1999, but native vegetation in urban areas is not protected. Yet it is the native vegetation in urban areas that can be most easily and most economically protected from wildfire - simply because of its proximity to the human and equipment resources necessary to do so!

This makes native vegetation close to urban areas extremely important as places to which the wildlife (birds especially) can retreat when their usual habitat is engulfed in wildfire. But at present native vegetation in urban areas is very vulnerable to clearing.

Amending the Integrated Planning Act 1997 and the South East Queensland Regional Plan 2005-2026 in accordance with the recommendations of this paper is the only way to protect our urban native vegetation from clearing. And protecting our urban native vegetation from clearing is an essential mitigation strategy to lessen the impact of the more frequent and more devastating wildfires that are expected with climate change

Protecting our urban native vegetation means that, no matter how badly wildfire devastates our native vegetation elsewhere in the State, there will always be at least some native vegetation that can provide wildlife habitat and seed source for regeneration - because our urban native vegetation is the cheapest and easiest native vegetation to protect from wildfire and nurse through the impacts of climate change.

7.2 To Minimise the Consequences of Habitat Fragmentation

"The ability of wildlife to adapt naturally to climate change is largely a function of available genetic diversity and the rate of change."⁴⁴

But in today's world, wildlife habitat is severely fragmented, largely existing only as pockets amidst a huge expanse of land that mankind has modified to suit himself. This fragmentation of habitat limits local population sizes, which in turn limits the available genetic diversity within the local population. And this limited genetic diversity severely limits their ability to adapt naturally to climate change.

But climate change is occurring far too rapidly for wildlife to adapt to it genetically anyway. They can't adapt their immediate environment either, so migration is the only response to climate change that is available to them. And many species have already done just that.⁴⁵

⁴² B.Pittock (ed.), *Climate Change: An Australian Guide to the Science and Potential Impacts*, Australian Greenhouse Office, Canberra, 2003, pp 65, 66

⁴³ J.J.McCarthy *et al.* (eds.), *Climate Change 2001: Impacts, Adaptation, and Vulnerability*, Contribution of the Working Group II to the Third Assessment Report of the Intergovernmental Panel on Climate Change, Cambridge University Press, Cambridge, 2001, p 289.

⁴⁴ J.J.McCarthy *et al.* (eds.), *Climate Change 2001: Impacts, Adaptation, and Vulnerability*, Contribution of the Working Group II to the Third Assessment Report of the Intergovernmental Panel on Climate Change, Cambridge University Press, Cambridge, 2001, p 278.

⁴⁵ Migrations of a number of species in response to climate change are documented in J.J.McCarthy *et al.* (eds.), *Climate Change 2001: Impacts, Adaptation, and Vulnerability*, Contribution of the Working Group II to the Third Assessment Report of the Intergovernmental Panel on Climate Change, Cambridge University Press, Cambridge, 2001, p273.

But migration is not an option for most species, and for some species, it is only an option for some members of the species. Wildlife who have made their home in an isolated pocket of habitat too inextensive to permit migration without leaving the habitat are in trouble and can not migrate. The only ones who can migrate are those with a migration path to alternative habitat. (And that applies to birds as well - all birds have certain requirements for a migration path, and if those requirements are not met, then they will stay where they are, even though to our eyes it may appear that "all they have to do is fly over to there and then they'll be fine!")

Fragmentation of habitat is a huge problem for wildlife migration.

"The general effect of projected human-induced climate change is that the habitats of many species will move poleward or upward from their current locations. Species will be affected differently by climate change: They will migrate at different rates through fragmented landscapes []"⁴⁶

"As habitat becomes more fragmented, barriers to dispersal or expansions of species' ranges could occur. This could force individuals to remain in inhospitable areas, decreasing the range and population size of species and ultimately leading to extinction (Rabinowitz, 1981). Fragmentation also may facilitate movement of invasive species into an area, leading to potential population declines through predation, competition, or transmission of disease (e.g., May and Norton, 1996). Increasing urbanization also could lead to increasing exposure to contaminants, which may make species less fit to survive changes in environmental conditions or weaken their immune systems (Pounds and Crump, 1987; Berger *et al.*, 1998). Human responses to climate change also may contribute to synergistic effects; for example, if new pest outbreaks are countered with increased pesticide use, nontarget species might have to endure climate- and contaminant-linked stressors."⁴⁷

The greater the fragmentation, the greater the difficulty they will have migrating to find more suitable habitat, and therefore the greater the fragmentation, the greater the number of wildlife deaths and the greater the number of species extinctions that will result from climate change.

Vegetation clearing is the major cause of fragmentation of wildlife habitat, especially in urban areas. And vegetation clearing reduces the quality and quantity of wildlife corridors between existing fragments of habitat as well.

The only way to minimise further fragmentation of existing wildlife habitat is to protect all existing native vegetation from clearing - be it urban or non-urban; be it endangered, of concern, or not of concern; and irregardless of whether or not it has been assessed as environmentally valuable. Because the more native vegetation we have, the more native vegetation we have that is minimally affected by fragmentation.

And the more native vegetation we have minimally affected by fragmentation, the less the consequences of climate change for our wildlife and our biodiversity.

7.3 Because it's Wildlife Habitat

Native vegetation is wildlife habitat. Many people think that if you destroy the habitat, the wildlife just go somewhere else. But that is the exceptional case, not the usual case. For most species and for most members of most species, there is nowhere for them to go because all existing habitat within search range is already fully populated. So what really happens when their habitat is destroyed is that the residents of that habitat search for replacement habitat, find none, and die; or they find some suitable replacement habitat and displace someone else - who dies instead of them; or they find some lesser quality habitat where they can survive, but the quality isn't good enough for them to breed in, so they spend the rest of their natural lives without producing offspring to maintain the species population. Whichever the outcome for the individual, the outcome for the species is reduced population and eventual local extinction. And when that process happens everywhere, then the outcome is global extinction.

Climate change is going to be a major contributing factor in that process.

"Recent estimates indicate that 25% (~1,125 species) of the world's mammals and 12% (~1,150 species) of birds are at a significant risk of global extinction. One measure of the magnitude of this problem is the speed at which species at risk are being identified. For example, the number of bird species considered at risk has increased by almost 400 since the year 1994, and current population sizes and trends suggest an additional 600–900 soon could be added to these lists."⁴⁸

How fast will extinctions and deaths from climate change occur? Unfortunately, that is very difficult to estimate because...

⁴⁶ H. Gitay *et al.* (eds), *Climate Change and Biodiversity*, IPCC Technical Paper V, Intergovernmental Panel on Climate Change, April 2002, Executive Summary p1. (Topic also covered on p17.)

⁴⁷ J.J.McCarthy *et al.* (eds.), *Climate Change 2001: Impacts, Adaptation, and Vulnerability*, Contribution of the Working Group II to the Third Assessment Report of the Intergovernmental Panel on Climate Change, Cambridge University Press, Cambridge, 2001, p273.

⁴⁸ H. Gitay *et al.* (eds), *Climate Change and Biodiversity*, IPCC Technical Paper V, Intergovernmental Panel on Climate Change, April 2002, p24.

"Most models of ecosystem changes are not well suited to projecting changes in regional biodiversity."⁴⁹

The key to maintaining biodiversity through climate change is a large gene pool. The more members of the species available as potential mates for each individual of the species, the greater the chance that evolution will produce a strain of the species that is capable of surviving climate change.

"Maintenance of biodiversity leads to the protection of a larger gene pool from which new genotypes of both domesticated and wild species adapted to changed climatic and environmental conditions can arise. Conservation reserves can contribute to the maintenance of a diverse gene pool, but there are also significant contributions from native species growing among agricultural land or in pastures."⁵⁰

Conservation reserves play an important role in maintaining our biodiversity, but in times of climate change, with many species forced to migrate upwards or polewards in search of climate and habitat more like that to which they are genetically adapted, reserves are not enough to ensure the survival of the species. In fact, they probably never were enough, but in times of climate change, with ever-rising average temperatures and ever declining average rainfall, the protection against extinction that is offered a species by a conservation reserve steadily diminishes with every passing year. Climate change is a threat that the national parks, state forests, and conservation reserves can not protect their resident flora and fauna from. Sooner or later, the species has to attempt to migrate out of the reserve if it is to survive the impacts of climate change.

This fact doesn't lessen the benefit of the conservation reserves. Quite the contrary, in fact. As managed areas, the resident flora and fauna have a better chance of survival there than in an unmanaged area, and, although many of the present residents will be forced to migrate out of the reserve sooner or later, the conservation reserves do offer a destination to which other flora and fauna can migrate from areas that have become inhospitable as a result of climate change. Over time, the result will be a different species mix in the protected area, and the species which the protected area was supposed to provide protection for may no longer be resident there. But the reserves will retain their value.

But they won't be enough on their own. Adaptation to climate change requires a large gene pool, and in times of climate change, conservation reserves on their own can not provide a sufficiently large gene pool to ensure the survival of a species.

"Many important reserve systems may need to be extended in area or linked to other reserves, but for some such extensions are not possible as there is simply no place to extend them. As many species are expected to move poleward or up in altitude with increasing temperatures, the locations of reserves may need to allow for such movement. This may necessitate larger areas being conserved or appropriately designed networks of reserves linked by dispersal corridors."⁵¹

"Networks of reserves with connecting corridors provide dispersal and migration routes for plants and animals. The placement and management of reserves (including marine and coastal reserves) and protected areas will need to take into account potential climate change if the reserve system is to continue to achieve its full potential. Options include corridors, or habitat matrices, that link currently fragmented reserves and landscapes by providing potential for migration."⁵²

"There are several other design opportunities to increase the resilience of nature reserves. These measures include maintaining intact natural vegetation along environmental gradients (e.g., latitude and altitude gradients, soil moisture gradients), providing buffer zones around reserves, minimizing habitat fragmentation and road-building, and conserving genetic diversity within and among populations of native species."⁵³

So the existing reserve system is not enough. The only way to minimise reductions in wildlife numbers and wildlife species is to protect all existing native vegetation - be it urban or non-urban. Because the more native vegetation we have, the more we have for wildlife habitat. And the more native vegetation we have, the more we have that is minimally affected by climate change. And the more wildlife we have, the greater the chance of some surviving climate change.

And the cheapest, most effective way of protecting the habitat they need is to amend the Integrated Planning Act 1997 and South East Queensland Regional Plan 2005-2026 to protect all our existing native vegetation from clearing.

⁴⁹ H. Gitay *et. al.* (eds), *Climate Change and Biodiversity*, IPCC Technical Paper V, Intergovernmental Panel on Climate Change, April 2002, p15.

⁵⁰ H. Gitay *et. al.* (eds), *Climate Change and Biodiversity*, IPCC Technical Paper V, Intergovernmental Panel on Climate Change, April 2002, p43.

⁵¹ H. Gitay *et. al.* (eds), *Climate Change and Biodiversity*, IPCC Technical Paper V, Intergovernmental Panel on Climate Change, April 2002, p22.

⁵² H. Gitay *et. al.* (eds), *Climate Change and Biodiversity*, IPCC Technical Paper V, Intergovernmental Panel on Climate Change, April 2002, p41.

⁵³ H. Gitay *et. al.* (eds), *Climate Change and Biodiversity*, IPCC Technical Paper V, Intergovernmental Panel on Climate Change, April 2002, p41.

7.4 Because all Native Vegetation is Environmentally Valuable

All native vegetation is environmentally valuable. Some is more environmentally valuable than others, admittedly, but all is environmentally valuable, because all is wildlife habitat. Some is more precious to us than others because there is now so little of that particular type of vegetation left in comparison to the amount here when white man first arrived on the continent, but it's all precious to the wildlife that use it for habitat, irregardless of how much of it remains - because their very life depends upon it!

The Vegetation Management Act 1999 defines three categories of vegetation: endangered, of concern, and not of concern. These three categories are categories of concern for the continued survival of the vegetation type. They are not categories of environmental value. They are categories that indicate how precious that vegetation is to mankind. They are not categories of how precious that vegetation is to the wildlife that use it for habitat. They are indicators of ecological significance, but the measure of significance is strictly one of rarity, not value. Increased rarity makes them increasingly precious (and worth saving for that reason alone); it does not mean that vegetation classified as "endangered" is any more or less environmentally valuable than vegetation classified as "not of concern". The categories of vegetation type used in the Vegetation Management Act 1999 are not measures of environmental value.

South East Queensland offers an eminent example of an area where native vegetation of considerable environmental value is unprotected and severely threatened by vegetation clearing.

"South East Queensland's biodiversity is under threat from land clearing, development, pollution and increased climate variability. Clear evidence (Figures 11 and 12) shows that the region's biodiversity and the associated values that the community places on these resources are under threat of degradation and perhaps loss of major components. At present, about 110 plant taxa and about 44 animal taxa (2.75 percent and 5 percent of South East Queensland's total) are formally listed as threatened (endangered or vulnerable) and 102 REs (69 percent of South East Queensland's total) are listed as endangered or of concern. Queensland's South East corner has a comparatively high population density (Figure 13), is one of the fastest growing areas in Australia, and is the fastest growing in Queensland. Its population has almost doubled from 1.2 million in 1976 to 2.3 million in 2000. The region's population is projected to grow to 3.4 million people by 2021. Around 22 percent of Australia's total population growth in 2000 occurred in this region (DLGP pers. comm. 2001). Figure 12 Number of rare (R), vulnerable (V), endangered (E) and presumed extinct (PE) plant taxa in each bioregion of Queensland (EPA 1999b: 7.51) Figure 13 The Southeast Queensland bioregion has a high population density (EPA 1999b: 7.10)"⁵⁴

There is no need to destroy native vegetation to meet mankind's needs in urban areas. There is now plenty of land that has already been environmentally destroyed that mankind can use to satisfy his needs for land instead. Land previously used for farming is invariably of considerably lower environmental value than is native vegetation. And all that is required to shift development away from environmental land to land that is already environmentally destroyed is a few minor changes to the Integrated Planning Act 1997 and the South East Queensland Regional plan 2005-2026 - as per the recommendations of this paper.

All native vegetation is environmentally valuable for the wildlife that use it for habitat, and the only way to minimise further loss of existing wildlife habitat is to protect all existing native vegetation.

And protecting all our native vegetation is an essential mitigation measure to help protect our wildlife and biodiversity from the impacts of climate change.

7.5 To Minimise the Urban Heat Island Effect

The relative absence of vegetation in urban areas (in comparison with non-urban areas) results in the urban areas being hotter than surrounding non-urban areas. The more vegetation present in the urban area, the less the difference in temperature between the urban area and the surrounding non-urban area.

"Another important factor that can influence climate data is the 'urban heat island effect'. Towns and cities tend to be warmer than surrounding rural areas due to factors such as concrete and asphalt absorbing more solar energy, fewer trees for shade and evaporation, reduced wind speeds due to the effects of buildings, and the warming effects of pollution and industrial and domestic activities. As urban areas grow, the urban heat island effect increases."⁵⁵

Climate change will bring higher temperatures. In the urban areas, this temperature rise can be minimised by the inclusion of as much vegetation as possible, or maximised by clearing all vegetation from the urban area and replacing it with houses and concrete and bitumen. The higher the temperature in urban areas, the more the residents

⁵⁴ *Regional Nature Conservation Strategy for South East Queensland 2003-2008*, Environmental Protection Agency, Brisbane, 2003, p16.

⁵⁵ M.Gabriel *et. al.*, *Climate Change: the Challenge for Natural Resource Management*, Department of Natural Resources and Mines, Brisbane, 2004, p8.

of the urban area will suffer, and the more electricity and water they will consume in an attempt to lessen their suffering.

And temperatures are going to rise significantly throughout Queensland as a result of climate change.

"In Brisbane the current long-term annual average number of days above 35°C is three. By 2030 Brisbane could experience an average of up to six days above 35°C and by 2070, up to 35 days."⁵⁶

Prohibiting the clearing of native vegetation from urban areas will minimise the urban heat island effect. The flow-on benefits of minimising the urban heat island effect are:

- the suffering of urban residents as climate change produces higher temperatures will be reduced;
- future demand for electricity and water will be reduced; and
- future greenhouse gas emissions from the generation of electricity will be reduced.

And prohibiting the clearing of native vegetation from urban areas is as simple as a couple of trivial amendments to the Integrated Planning Act 1997 and the South East Queensland Regional Plan 2005-2026 as per the recommendations of this paper.

7.6 To Minimise Greenhouse Gas Emissions & Maximise Sequestration

More than anything else, climate change is a consequence of the addition of carbon dioxide to the atmosphere by mankind over the last two hundred years, especially in the latter part of the twentieth century. And Queensland is a major contributor.

"Queensland has high emissions per capita, on a world standard. This is due to:

- the State's industrial structure, including the relative contribution of primary, secondary and tertiary industries
- the abundance of high-quality, low-cost coal reserves
- long distances for transport
- growing energy demands associated with rising standards of living
- the clearing of significant areas of vegetation for primary production (prior to the phase-out of broadscale clearing of remnant vegetation by December 2006)."⁵⁷

"The four largest sources of greenhouse gas emissions in Queensland in 1999, within key sectors, were:

- clearing of vegetation (37.8 Mt CO₂ -e or about 28 percent of net emissions)
- electricity generation (35.3 Mt CO₂ -e or about 26 percent)
- agriculture (25.1 Mt CO₂ -e or about 19 percent)
- transport (15.4 Mt CO₂ -e or about 11 percent)."⁵⁸

Whilst greenhouse gas emissions from vegetation clearing were significantly reduced by the Vegetation Management Act 1999, that legislation did not reduce vegetation clearing in urban areas or in South East Queensland, and there still remains considerable potential for further reductions in greenhouse gas emissions in Queensland by amending the Integrated Planning Act 1997 and the South East Queensland Regional Plan 2005-2026 to protect native vegetation in the areas that the Vegetation Management Act 1987 can not protect.

And vegetation clearing imposes a double penalty for greenhouse gas emissions, because it causes the vegetation cleared to flip from being a carbon sink to becoming a carbon source.

"Vegetation clearing contributes to greenhouse gas emissions as cleared vegetation decays and soil carbon gradually runs down following clearing. These processes slowly release carbon dioxide into the atmosphere, adding to global emissions. When cleared vegetation is burnt, carbon dioxide is emitted far more quickly."⁵⁹

But if the vegetation is not cleared, if it is allowed to remain intact and perform the role that it's been performing ever since it evolved, then it extracts carbon dioxide from the atmosphere instead. When vegetation is left alive and allowed to perform this function, it is described as acting as a "carbon sink", because it is sinking carbon out of the atmosphere into itself. When vegetation is killed and breaks down into its fundamental components, it acts as a source of carbon dioxide to the atmosphere and is described as acting as a "carbon source".

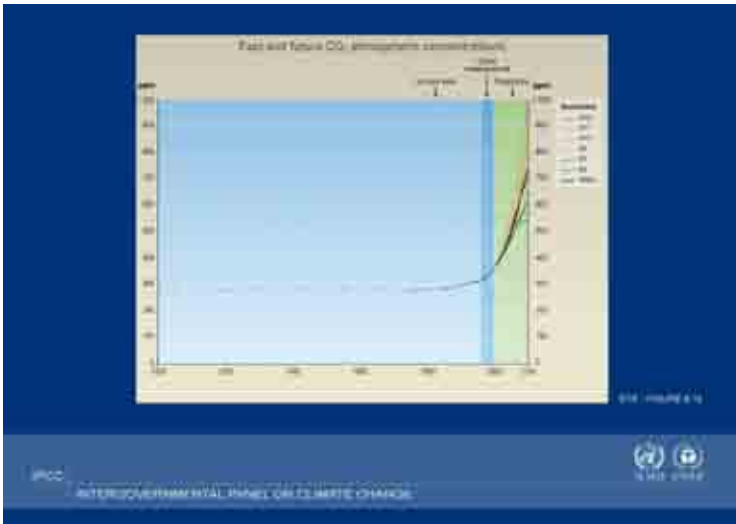
⁵⁶ M.Gabriel *et. al.*, *Climate Change: the Challenge for Natural Resource Management*, Department of Natural Resources and Mines, Brisbane, 2004, p12. (Temperature prediction graphs for different parts of the State, including the three high-population-growth areas, are to be found on pages 9, 10, and 11.)

⁵⁷ *Queensland Greenhouse Strategy*, Environmental Protection Agency, Queensland, 2004, pA:21.

⁵⁸ *Queensland Greenhouse Strategy*, Environmental Protection Agency, Queensland, 2004, pA:9.

⁵⁹ M.Gabriel *et. al.*, *Climate Change: the Challenge for Natural Resource Management*, Department of Natural Resources and Mines, Brisbane, 2004, p23.

The following graphs show the atmospheric carbon dioxide levels over the last 1000 years.



With so much excessive carbon dioxide in the atmosphere and so much more being added to it every day, this planet needs all the carbon sinks it can get.

7.7 To Minimise Eutrophication

Eutrophication is...

"excessive enrichment of rivers, lakes, and shallow sea areas, primarily by nitrate fertilizers washed from the soil by rain, by phosphates from fertilizers and detergents in municipal sewage, and by sewage itself. These encourage the growth of algae and bacteria which use up the oxygen in the water, thereby making it uninhabitable for fishes and other animal life."⁶⁰

And, even without climate change,

"Eutrophication is a major water quality problem in Australia."⁶¹

but with climate change, and with the reduced precipitation rates and higher evaporation rates that are part and parcel of climate change in Queensland, eutrophication will be an even greater problem in the future than it is now.

"[Eutrophication] is a natural process, but it has been greatly accelerated in Australia by human activities, including sewage effluent and runoff from animal farms, irrigation, and stormwater. Low flow, abundant light, clear water, and warmth all encourage algal growth, which affects the taste and odour of water and can be toxic to animals, fish, and humans. Thus, local climate warming and the potential for reduced streamflow may lead to increased risk of eutrophication."⁶²

because the impacts of climate change will include...

"Less water run-off, more sediment and higher nutrient loads in rivers and creeks."⁶³

These impacts will favour exotics and further stress natives that are already stressed by rising temperatures, declining rainfall, and declining soil moisture levels. Increased incidence of eutrophication is a side-effect of climate change that in itself will result in increased flora and fauna mortality. But there are mitigation strategies that will reduce the mortality rate from eutrophication.

In areas where human visitation is infrequent, eutrophication caused by upstream contamination could go unnoticed for months, if not longer. Under such circumstances, it could well lead to serious damage to the local environment long before it was detected. But in urban areas, where human visitation is more frequent, a eutrophication problem stands a far better chance of being detected quickly, which will at least create an opportunity for remedial action before

⁶⁰ P. Lafferty & J. Rowe (eds.), *The Hutchinson Dictionary of Science*, Helicon, Oxford, 1995.

⁶¹ *State of the Environment, 2001*, p62, quoted in B.Pittock (ed.), *Climate Change: An Australian Guide to the Science and Potential Impacts*, Australian Greenhouse Office, Canberra, 2003, p94.

⁶² B.Pittock (ed.), *Climate Change: An Australian Guide to the Science and Potential Impacts*, Australian Greenhouse Office, Canberra, 2003, p94.

⁶³ M.Gabriel et. al., *Climate Change: the Challenge for Natural Resource Management*, Department of Natural Resources and Mines, Brisbane, 2004, p17.

serious damage is done, if not actually lead to remedial action.

In urban areas, the streams can be easily, cheaply, and regularly monitored (perhaps even by the community at negligible cost to government) if warranted. And in urban areas eutrophication can more easily be treated, whereas in the country the condition will go unnoticed and untreated - and the wildlife that depends upon the water quality of those streams will die.

But our native vegetation is very poorly protected in urban areas. Which means that the opportunity to capitalise upon the increased ease of detection and management of eutrophication in urban areas is limited. And with every hectare of urban native vegetation cleared, the opportunity to capitalise upon that ability diminishes further.

The more urban native vegetation we have, the more native vegetation we can help protect from eutrophication. And the more native vegetation that we can help protect from eutrophication, the more we can limit the impacts of climate change upon our native vegetation and the wildlife that depend upon that vegetation for their survival. We need all the urban native vegetation that we can get.

And all it takes to protect it is a few minor changes to the Integrated Planning Act 1997 and the South East Queensland Regional Plan 2005-2026.

7.8 To Maximise the Potential for Weed Management and Revegetation as Mitigation Strategies

Climate change will affect some species of native vegetation sooner than others, because some species tolerate a broader spectrum of temperature and aridity than do others. This means that some species will die out before others as temperatures and aridity rise beyond their tolerance threshold.

"[] many Australian species have evolved to cope with large year-to-year variability, but not to long-term change in the average climate. Australian ecosystems are therefore vulnerable to climatic change, as well as to other threats including invasion by exotic animals and plants."⁶⁴

"Increasing temperatures and drier conditions can adversely affect Eucalypts, Dryandra and Acacia shrubs."⁶⁵

"The present temperature range for 25% of Australian *Eucalyptus* trees is less than 1 °C in mean annual temperature (Hughes *et al.*, 1996). Similarly, 23% have ranges of mean annual rainfall of less than 20% variation. The actual climate tolerances of many species are wider than the climate envelope they currently occupy (due to effects of soil, competition and other factors) and may be affected by increasing carbon dioxide concentrations. Nevertheless, if present-day boundaries even approximately reflect actual thermal or rainfall tolerances, substantial changes in Australian native forests may be expected with climate change. Climate change-induced modifications to vegetation composition, structure and productivity will likely have flow on effects to other components of biodiversity through alterations in the quality and quantity of habitat available to vertebrate and invertebrate fauna."⁶⁶

Left unmanaged, the space created by their deaths will be filled by fast-spreading weedy exotics of little value to most native fauna.

"Climatic changes also affect native vegetation ranges. Species with efficient dispersal mechanisms—so that seed arrives into the new zone, whether bird, wind or water dispersed — will cope better than species with poor seed dispersal. Invasive plants generally have excellent seed transport mechanisms, often by human activity or by birds, and can therefore be expected to spread rapidly into new areas. Climate change can therefore be expected to favour invasive plants over established native vegetation, especially if accompanied by an increase in extreme conditions such as droughts alternating with very wet years."⁶⁷

"The spread of some weeds in Australia has been found to be heavily dependent upon climatic conditions — the Prickly Acacia and the Rubber or Woody Vine, both recognised as posing a threat at a national level, have been found to favour higher temperatures."⁶⁸

"With Queensland expected to get warmer, invasive plants can be expected to demonstrate a southward range shift, with tropical and sub-tropical species moving into the border regions, and temperate species being displaced out of these areas. Species currently restricted to the lowlands can be expected to move into higher altitude areas such as the Atherton Tableland and the Border Ranges. For temperature sensitive plants

⁶⁴ B.Pittock (ed.), *Climate Change: An Australian Guide to the Science and Potential Impacts*, Australian Greenhouse Office, Canberra, 2003, p95.

⁶⁵ Allen Consulting Group, *Climate Change Risk and Vulnerability: Promoting an efficient adaptation response in Australia*, Final Report, Australian Greenhouse Office, Department of the Environment and Heritage, Canberra, March 2005, p69.

⁶⁶ B.Pittock (ed.), *Climate Change: An Australian Guide to the Science and Potential Impacts*, Australian Greenhouse Office, Canberra, 2003, p97.

⁶⁷ M.Gabriel *et al.*, *Climate Change: the Challenge for Natural Resource Management*, Department of Natural Resources and Mines, Brisbane, 2004, p27.

⁶⁸ Allen Consulting Group, *Climate Change Risk and Vulnerability: Promoting an efficient adaptation response in Australia*, Final Report, Australian Greenhouse Office, Department of the Environment and Heritage, Canberra, March 2005, p70.

such as lantana this shift may be significant and there is some evidence that lantana is already invading higher altitude areas of the Border Ranges. Frost-intolerant species such as rubbervine and chromolaena can also be expected to shift their ranges significantly further south."⁶⁹

"The impact of changed rainfall on invasive weeds is difficult to predict. Reduced rainfall will limit the distribution of many weeds such as lantana and the vine species growing in riparian areas. However, reduced rainfall will restrict pasture and crop growth, increasing bare ground and diminishing canopy cover, which favours weed invasion. Increased extremes, with long dry or drought periods interspersed with occasional very wet years, can be expected to exacerbate weed invasion. Established vegetation, whether native or crop, will cope poorly with extremes, leaving areas for invasion. [] More severe cyclones will assist in dispersing weeds and open areas of pristine native vegetation for weed invasion, especially in the Wet Tropics."⁷⁰

In non-urban areas, the process of replacing those weedy exotics (eg, lantana) with Australian natives that can tolerate the new, changed, climatic conditions will be expensive and difficult. But in urban areas, it is both practically and economically viable to do so, and there are countless bushcare groups already in existence who would be keen to do just that. All they require is a little guidance, a little money, and a little help. And support systems for these bushcare groups are already in place throughout urban Australia, from all three levels of government.

But those bushcare groups can't intensively manage our urban bushland unless they have some urban bushland to manage - and unless the Integrated Planning Act 1997 and the South East Queensland Regional Plan 2005-2026 are amended in accordance with the recommendations of this paper, then by the time climate change starts to seriously impact our native vegetation, then there won't remain very much urban bushland left for them to intensively manage.

The more urban native vegetation we have, the more native vegetation the bushcare groups will be able to save and the more revegetation they will be able to do. And the more bushland they can keep intact as native bushland, the more wildlife that will survive the impacts of climate change. And the more wildlife that survive climate change, the fewer the species extinctions that will result from climate change.

But unless existing legislation is amended to protect urban bushland, then by the time their efforts are most required, there will be hardly any bushland left for the bushcare groups to manage!

7.9 To Maximise Accessibility to Suitable Research Sites for Researchers

Climate change is a new phenomenon about which there is much to be learnt. Very little is known for certain yet about it's affects upon our native vegetation. In fact, as of yet, there are still very few computer models of it and still much disagreement between computer models. There still remains vast amounts of research to be done before Science understands sufficiently well how climate change will affect our native vegetation and bushland to make meaningful predictions of impacts and identify useful, viable ways of minimising those impacts.

"It is important to note that some existing species may be advantaged by climate change. However *a priori* one would expect a reduction in biodiversity due to the large number of species adapted to 'narrow' climate or topography niches. Current studies appear to have only 'scratched the surface' in building our knowledge of the climate dependency of important Australian species and how these are likely to respond to variations in climate conditions."⁷¹

And most of that research will be done in urban areas, simply because of its proximity to the researchers. The more urban bushland there is, the broader the spectrum of species and circumstances that can be easily and economically researched. And the more urban bushland there is, the faster will Science produce meaningful research results.

But urban bushland is substantially unprotected in Queensland. Unless the Integrated Planning Act 1997 and the South East Queensland Regional Plan 2005-2026 are amended to protect urban bushland, then that essential research task is going to be made very difficult, and the broad spectrum of bushland types necessary to produce meaningful research results will not be readily available.

7.10 To Maximise Cloud Cover

Climate change will bring increased temperatures and increased evaporation rates from the dams that provide our water supplies - but the extent to which that is so is not totally beyond the control of the present government.

⁶⁹ M.Gabriel *et. al.*, *Climate Change: the Challenge for Natural Resource Management*, Department of Natural Resources and Mines, Brisbane, 2004, p27.

⁷⁰ M.Gabriel *et. al.*, *Climate Change: the Challenge for Natural Resource Management*, Department of Natural Resources and Mines, Brisbane, 2004, p27.

⁷¹ Allen Consulting Group, *Climate Change Risk and Vulnerability: Promoting an efficient adaptation response in Australia*, Final Report, Australian Greenhouse Office, Department of the Environment and Heritage, Canberra, March 2005, p70.

Cloud cover brings a reduction in temperature at the earth's surface and lowers the evaporation rate. And research in Western Australia has established a link between cloud cover and vegetation cover. Dramatic demonstration of the relationship is frequently provided along the rabbit fence in Western Australia: the side of the fence that is still densely vegetated is frequently beneath cloud whilst the side that has been intensively cleared for farmland is quite devoid of clouds.

"Clouds form preferentially over native vegetation

Prof T.J.Lyons, School of Environmental Science, Murdoch University, Murdoch, WA6150, Australia

Abstract: The replacement of native vegetation for agriculture leads to significant changes in land surface characteristics, such as albedo, surface roughness and canopy resistance. These land surface changes induce changes in the atmospheric boundary layer. It is shown that in Western Australia, this change in surface characteristics and in particular, the albedo, has reduced the occurrence of convective cloud formation through limiting the vertical development of the boundary layer."⁷²

Clearing native vegetation reduces cloud cover. Reduced cloud cover results in increased average temperature, and increased evaporation rates from our dams. Increased average temperature means greater suffering for both people and wildlife, and increased evaporation rates from our dams means reduced water availability for both people and wildlife. Reduced cloud cover means increased discomfort for humans, increased stress (and death rates) for wildlife and vegetation, and increased loss of biodiversity. And it means increased electricity and water consumption as people struggle to cope with the increased temperatures.

Temperature increases and evaporation rate increases from climate change can be kept to a minimum by minimising vegetation loss, because vegetation loss results in cloud cover loss. The more vegetation we have, the more cloud cover we have. The more cloud cover we have, the less the impact of climate change. And since most people live in urban areas, then protecting the cloud cover over urban areas will benefit the most people.

Urban vegetation is not protected under either the Integrated Planning Act 1997 or the South East Queensland Regional plan 2005-2026 - but the changes required to those two pieces of legislation in order to protect urban native vegetation are trivial. Simple and trivial.

And making those simple and trivial changes will bring enormous benefit to the people and wildlife of urban areas - by minimising the loss of cloud cover resultant from vegetation loss.

7.11 To Maximise Transpiration

If clearing of native vegetation results in reduced cloud cover, then doesn't that mean that clearing of native vegetation also results in reduced precipitation?

At least in some parts of the world, yes, that is not only true, but has been scientifically proven to be true. In late 2004, two Australian scientists proved the link between increasing deforestation and declining precipitation beyond all challenge for the very first time. The paper they published on their research isn't exactly easy to read, so rather than quote from that, allow me to quote from a Reuters Newsagency story about their research that appeared around the world in countless different newspapers at the time.

"Scientists Prove Less Trees, Less Rain. March 11, 2005 — By Reuters

SYDNEY — Australian scientists have found that deforestation along the Amazon River in South America was reducing rainfall and causing climate change in the region. A study in the Amazon found that a loss of forests meant less water evaporated back into the atmosphere, resulting in less rainfall, said Ann Henderson-Sellers, director of environment at the Australian Nuclear Science and Technology Organisation. Key to the study was plotting the cycle of a heavy molecular version of water common in the Amazon that evaporates more readily through plants than from lakes and rivers. [], scientists discovered there had been a reduction in heavy-molecule water since the 1970s. Henderson-Sellers said the only possible explanation for the decline was that heavy-molecule water was no longer being returned to the atmosphere to fall as rain due to less vegetation, signalling a relationship between deforestation and rainfall. [] "This is the first demonstration that deforestation has an observable affect on rainfall. Source: Reuters"⁷³

The Intergovernmental Panel on Climate Change has also been closely following the Amazon basin research.

"Changes in land surface characteristics — such as those created by land-cover change — can modify energy, water, and gas fluxes and affect atmospheric composition, creating changes in local, regional, and global climate. Evapotranspiration and albedo affect the local hydrological cycle, thus a reduction in vegetative

⁷² T.J.Lyons (Prof.), *Clouds form preferentially over native vegetation*, School of Environmental Science, Murdoch University, Australia, p355.

⁷³ *Scientists Prove Less Trees, Less Rain.* March 11, 2005 - By Reuters. Environmental News Network, <http://www.enn.com/today.html?id=7307>.

cover may lead to reduced precipitation at local and regional scales and change the frequency and persistence of droughts. For example, in the Amazon basin, at least 50% of precipitation originates from evapotranspiration from within the basin. Deforestation reduces evapotranspiration, which could reduce precipitation by about 20%, producing a seasonal dry period and increasing local surface temperatures by 2°C. This could, in turn, result in a decline in the area of wet tropical rainforests and their permanent replacement by floristically poorer drought-deciduous or dry tropical forests or woodlands."⁷⁴

The case is proven for the Amazon, but what about Australia? Expert opinion is divided on that. There are some who believe that the increasing aridity of the south west corner of Western Australia is at least partially a consequence of the broadscale land clearing of the area prior to the dramatic lessening of rainfall to the area, but there are others who point to weather patterns which changed at the same time and attribute blame to that instead. Was the massive deforestation the cause of the changed weather patterns to which the reduced rainfall was officially attributed? Who can say?

7.12 To Maximise the Chances of Survival of our Native Vegetation

The native vegetation most likely to survive the longest under climate change is that in or near coastal urban areas (which is where most of the population live in Queensland). This is because temperature rises in coastal areas will be less than inland, and there are bushcare groups in urban areas motivated enough and skilled enough to help look after the bushland - by keeping it reasonably free of invasive weeds and by revegetating it with trees better suited to the new climate as the original trees die off from the effects of climate change.

"The [CSIRO climate change] model produces distinctively different surface temperature responses in different catchment areas, with a small warming rate in coastal areas increasing toward inland regions."⁷⁵

But urban bushland is not protected under either the Integrated Planning Act 1997 or the South East Queensland Regional Plan 2005-2026 - so by the time the impacts of climate change start to really hit hard on the native vegetation of Queensland, there won't be much urban bushland left for the bushcare groups to maintain! It will have all been turned into real estate! And with inland vegetation much more difficult and expensive to maintain, then there may not be much vegetation left anywhere!

And this scenario is not as extreme as it might sound. The literature on climate change abounds with forecasts of this very situation occurring. For example...

"Amazon forest

The size of Western Europe, the Amazon forest is one of the most biodiverse regions on Earth. Models suggest that, with global warming, will come a drop in Amazonian rainfall, leading to the gradual death of the forest and subsequent collapse of the myriad ecosystems it supports. As the trees die off, they will fall and rot, releasing carbon dioxide. In the worst-case scenario, the quantities of carbon dioxide emitted could be similar in magnitude to the 20th century's total fossil fuel output."⁷⁶

Monday, November 2, 1998 Published at 07: 09 GMT. Sci/ Tech.

Grim climate warning: Climate change threatens to leave us sick, hungry and thirsty

by Environment Correspondent Alex Kirby

"With another major international conference on climate change starting in Argentina on Monday, delegates will be pondering a sombre message from a panel of respected British climatologists. Scientists from the Hadley Centre on Climate Change, part of the UK's Meteorological Office, have published a new scenario of climate change.[] Fifty years from now, the world's forests will not be helping to soak up the main greenhouse gas, carbon dioxide(CO₂). They will themselves be a significant source of carbon emissions.[] Perhaps the most serious part of the report is that dealing with the role of the world's forests. It predicts that tropical forests in northern Brazil will die back in the 2050s, and globally tropical grassland will be transformed into desert, or at least temperate grassland. For the first half of the 21st century, vegetation will absorb CO₂ at a rate of about 2- 3 billion tonnes (1 bn tonnes = 1GtC) per year. Human emissions of CO₂ are about 7GtC a year. But from 2050 onwards, vegetation dying under the impact of climate change will itself add about 2GtC a year to greenhouse emissions, further intensifying global warming.[] This evidence from the Hadley Centre is compelling and suggests that the threat is far more real and urgent than some scientists - and many politicians - have yet acknowledged."⁷⁷

⁷⁴ H. Gitay *et. al.* (eds), *Climate Change and Biodiversity*, IPCC Technical Paper V, Intergovernmental Panel on Climate Change, April 2002, p23.

⁷⁵ W. Cai *et. al.*, *Climate Change in Queensland under Enhanced Greenhouse Conditions*, Final Report 2002-2003, Annual Report 2003, CSIRO Atmospheric Research, Aspendale Victoria, May 2003, p2.

⁷⁶ Allen Consulting Group, *Climate Change Risk and Vulnerability: Promoting an efficient adaptation response in Australia*, Final Report, Australian Greenhouse Office, Department of the Environment and Heritage, Canberra, March 2005, p37.

⁷⁷ A.Kirby, *Grim climate warning: Climate change threatens to leave us sick, hungry and thirsty*, Sci/ Tech., British Broadcasting Commission, 07: 09 GMT Monday, November 2, 1998. <http://news.bbc.co.uk/1/hi/sci/tech/205867.stm>. (The Hadley Centre does the same work for the UK on climate change as CSIRO does for Australia)

Were the consequences of global warming in Queensland to be this dramatic for our native non-urban bushland, then our surviving urban bushland (which is easier to protect from bushfire, easier to care for and preserve, and generally subject to lower temperature rises than non-urban) could well be the only bushland we have left - but since present legislation provides negligible protection to urban bushland, there may not be much of that left by then either!

7.13 To Maximise Intergenerational Equity

Intergenerational equity is a foundation principle of ecologically sustainable development. The National Strategy for Ecologically Sustainable Development (which has been endorsed by the Council of Australian Governments) has this to say about ecologically sustainable development:

"Ecologically Sustainable Development (ESD) represents one of the greatest challenges facing Australia's governments, industry, business and community in the coming years. While there is no universally accepted definition of ESD, in 1990 the Commonwealth Government suggested the following definition for ESD in Australia:

'using, conserving and enhancing the community's resources so that ecological processes, on which life depends, are maintained, and the total quality of life, now and in the future, can be increased'.

Put more simply, ESD is development which aims to meet the needs of Australians today, while conserving our ecosystems for the benefit of future generations.⁷⁸

Note especially the sentence underlined: "ESD is development which aims to meet the needs of Australians today, while conserving our ecosystems for the benefit of future generations". The principle espoused here has become commonly referred to as the intergenerational equity principle, and has been incorporated into various pieces of legislation Australia-wide.

For example, Queensland's Integrated Planning Act 1997 has a declared purpose (S 1.2.1) as follows:

The purpose of this Act is to seek to achieve ecological sustainability 1 by—
(a) coordinating and integrating planning at the local, regional and State levels; and
(b) managing the process by which development occurs; and
(c) managing the effects of development on the environment (including managing the use of premises).⁷⁹

and the purpose of the Act is generally required to be furthered in administration of the Act.

1.2.2 Advancing Act's purpose

(1) If, under this Act, a function or power is conferred on an entity, the entity must—
(a) unless paragraph (b) or (c) applies—perform the function or exercise the power in a way that advances this Act's purpose;⁸⁰

Statements of what advancing the Act's purpose includes are included in the Act (S 1.2.3), and the intergenerational equity principle is included in the list.

(1) Advancing this Act's purpose includes—
(a) ensuring decision-making processes—
(i) are accountable, coordinated and efficient; and
(ii) take account of short and long-term environmental effects of development at local, regional, State and wider levels; and
(iii) apply the precautionary principle; and
(iv) seek to provide for equity between present and future generations;⁸¹

The South East Queensland Regional Plan 2005-2026 also defines intergenerational equity:

"ensuring the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations."⁸²

The failure of the Integrated Planning Act 1997 (Schedule 8 Table 4) and the failure of its subordinate legislation, the South East Queensland Regional Plan 2005-2026 (Part H Regulatory Provisions Division 2 - Provisions Affecting

⁷⁸ *National Strategy for Ecologically Sustainable Development*, prepared by the Ecologically Sustainable Development Steering Committee and endorsed by the Council of Australian Governments, December, 1992. Introduction.

⁷⁹ *Integrated Planning Act 1997* (Qld) s1.2.1.

⁸⁰ *Integrated Planning Act 1997* (Qld) s1.2.2

⁸¹ *Integrated Planning Act 1997* (Qld) s1.2.3

⁸² *South East Queensland Regional Plan 2005-2026*, Office of Urban Management, Department of Local Government, Planning, Sport and Recreation, Queensland, June 2005, p23.

Planning Schemes) to protect urban bushland to the same criteria that bushland elsewhere in the state is protected is in direct contravention of the principle of intergenerational equity as defined in the National Strategy for Ecologically Sustainable Development, the South East Queensland Regional Plan 2005-2026, and the Integrated Planning Act 1997.

The present generation has the privilege of having native vegetation in urban areas. Succeeding generations will have a reduced quantity and quality of vegetation in urban areas as a consequence of climate change. If that reduced quantity and quality is further reduced as a result of vegetation clearing for development, then that disadvantages future generations relative to the present generation even further than does the consequences of climate change. And since most of the population of Queensland lives in urban areas, then the loss of urban bushland between this generation and the next is a loss that affects the overwhelming majority of members of the next generation.

A failure to protect native vegetation in urban areas is a failure to uphold one of the most fundamental principles of ecologically sustainable development: the intergenerational equity principle. And the only way to minimise intergenerational inequity on urban bushland is to give urban bushland the same protection under the Integrated Planning Act 1997 and the South East Queensland Regional Plan 2005-2026 as non-urban bushland has.

And all our vegetation is far more valuable to future generations than it is to the present generation, because there is a huge lag time between loss of carbon sink and consequences for the climate. So it is the next generation that most has to wear the climate-change consequences that result from the loss of carbon sink as a result of vegetation clearing.

And that is most definitely a breach of the principle of intergenerational equity.

7.14 To Comply with the Precautionary Principle

The National Strategy for Ecologically Sustainable Development 1992 defines the precautionary principle as

"where 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."⁸³

Section 1.2.3 (2) of the Integrated Planning Act 1997 defines it as:

"the precautionary principle is the principle that lack of full scientific certainty should not be used as a reason for postponing a measure to prevent degradation of the environment if there are threats of serious or irreversible environmental damage."⁸⁴

The South East Queensland Regional Nature Conservation Strategy defines the precautionary principle as:

"To ensure, where there is a threat of significant reduction or loss of biological diversity, that lack of full scientific certainty should not be used as a reason for postponing measures to minimise or avoid such a threat."⁸⁵

And the Queensland Government's *Adaptation to Climate Change in Regional NRM Plans* defines the precautionary principle as:

"Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing cost-effective measures to prevent environmental degradation. [Under the precautionary principle,] action to forestall large scale, irreversible damage from climate change is warranted even though the risks of climate change are not yet fully understood. The precautionary principle thus puts a premium on the long-term safeguarding of the world's climate system, even in the face of uncertainty about the impacts and the need to bear near-term costs of mitigation."⁸⁶

The common thread in these definitions is unmistakable. Applied to the issue of conservation of urban bushland in the face of climate change, there is only one decision possible which complies with the precautionary principle: conserve it. Because once it's gone, it's gone forever. And that makes it irreversible environmental damage.

With 1000 people moving to South East Queensland every week; with climate change threatening what little native vegetation we still have close to the major cities; and with a general move everywhere from the country to the cities, then abidance by the precautionary principle becomes extremely important, and more important with every passing

⁸³ *National Strategy for Ecologically Sustainable Development*, prepared by the Ecologically Sustainable Development Steering Committee and endorsed by the Council of Australian Governments, December, 1992. Introduction.

⁸⁴ *Integrated Planning Act 1997* (Qld) s1.2.3 (2)

⁸⁵ *Regional Nature Conservation Strategy for South East Queensland 2003-2008*, Environmental Protection Agency, Brisbane, 2003, p23

⁸⁶ *Adaptation to Climate Change in Regional NRM Plans*, Queensland Government, September 2004. Glossary: Precautionary principle

week.

If the "conserve only what we find extremely good reason to conserve" strategy isn't abandoned in favour of "conserve it all unless there is no good reason to" soon, then soon there won't be any native vegetation left in urban areas to worry about trying to save from the impacts of climate change.

And whilst making such a fundamental change in conservation strategy may seem quite radical, it isn't really - because the strategy proposed is the only one that complies with the widely accepted precautionary principle.

And implementation of that strategy requires just a couple of trivial changes to the Integrated Planning Act 1997 and the South East Queensland Regional Plan 2005-2026, in accordance with the recommendations of this paper.

7.15 Because Clearing Native Vegetation is not Sustainable Development

"The overriding intent of the [South East Queensland] Regional Plan is to ensure the region grows and changes in a sustainable way. The 1987 report of the United Nations World Commission on Environment and Development, *Our Common Future*, defined sustainable development as '...development that meets the needs of the present without compromising the ability of future generations to meet their own needs'. To achieve sustainability means thinking about and protecting the things that matter most: a healthy natural environment, clean air and water..."⁸⁷

How can clearing of native vegetation possibly be sustainable development? How can it possibly be construed as not "compromising the ability of future generations to meet their own needs"? Climate change is primarily a consequence of the addition of too much carbon dioxide to the atmosphere. That makes anything that extracts carbon dioxide from the atmosphere an extremely valuable resource. Vegetation is the most effective means we have to extract carbon dioxide from the atmosphere - and that makes all vegetation a very valuable resource.

And it's a particularly valuable resource for future generations, because of the enormous lag period between variation in atmospheric greenhouse gas concentrations and the consequences of that variation for the climate. (Centuries, in the case of Australia.) So it is future generations which will benefit most from the immediate conservation of all remaining native vegetation, not the present generation.

Vegetation is something which the present generation grossly undervalues, and future generations will criticise us for that, because it is the most effective carbon sink we have on this planet. And we're destroying it. And there is no real need to destroy it at all, because there is plenty of other land available that could be used for whatever purpose anyone might wish to clear native vegetation.

Clearing native vegetation is not sustainable development, and it is not considerate of the needs of future generations.

7.16 Because there is Insufficient Water in South East Queensland to Cater for Any Population Growth

According to the South East Queensland Regional Plan 2005-2026, and countless government documents written thereafter, we have 1000 people a week moving to South East Queensland and we have to cater for that by making land available for that increasing population. But can we provide water for them when we can't even provide enough water for ourselves? The South East Queensland Regional Plan argues that we can.

"Being water wise

To ensure we 'll have enough water to meet our future needs, we must better manage the way we use it. The Regional Plan introduces measures to reduce water consumption, improve the way we manage stormwater, and improve our wastewater treatment and recycling. It also supports better allocation of water for its various uses and the early identification of future sources of water. By 2026, we will have reduced our water usage by around 25 per cent per person per day."⁸⁸

"Reduce-Reuse-Recycle

We cannot simply find more water; we also need to better manage how we use it. The current average residential water use across the region is 300 litres per person per day. Over time, we are looking for a gradual reduction in this usage, down to 230 litres per person per day by 2020. We will also look to improve the efficiency of water use and potentially increase the use of recycled water for rural agriculture. The Queensland Government itself will lead by example in this area by introducing water conservation initiatives into our own buildings and facilities. Overall, the Infrastructure Plan invests \$79 million in water efficiency

⁸⁷ *South East Queensland Regional Plan 2005-2026*, Office of Urban Management, Department of Local Government, Planning, Sport and Recreation, Queensland, June 2005, p22.

⁸⁸ *Building a better future for South East Queensland: Your guide to the South East Queensland Regional Plan and South East Queensland Infrastructure Plan 2005-2026*, Office of Urban Management, Queensland Government.

measures. There also is a strong emphasis on water recycling, with more than \$107 million in subsidies allocated to local government for water recycling projects."⁸⁹

So the South East Queensland Regional Plan 2005-2026 proposes measures for the provision of water for residents of South East Queensland - but can the solutions proposed in the Plan be provided fast enough to match requirements? The low rainfall over our dam catchments during 2005/ 2006 to date cast that in very serious doubt. Very serious doubt.

The South East Queensland Regional Plan 2005-2026 claims that water consumption per person in South East Queensland will have been reduced by 25% by 2026. But CSIRO predicts a 15% reduction in rainfall by 2030, and an increase in the evaporation rate as well.

"The projections by CSIRO indicate that the drying trend observed over much of Queensland is expected to continue, with a further decline in rainfall of up to 15 per cent expected in most areas by 2030. The central and southern coastal regions appear to be most affected."⁹⁰

Once you take the CSIRO predictions into account, that 25% reduction in consumption suddenly doesn't look so good after all. A reduction of 25% in consumption is getting very close to the degree of reduction that CSIRO are predicting that we can expect in our dam catchments! Add population growth by 2030 to that, and a 25% reduction in water consumption per person isn't even maintaining the *status quo*! (And the *status quo* is declining dam levels and tight water restrictions.)

And over a longer term, it looks even grimmer. That 25% reduction in water consumption per person is probably the maximum ever achievable, but the 15% reduction in precipitation by 2030 is just the beginning. CSIRO are predicting that the drying trend in Queensland will continue for at least the present century, meaning that there will be an even higher reduction in precipitation by 2070, and even higher again by 2100. So even if climate change doesn't balance reduced water consumption per head by 2030, it is only a matter of time before it does, and not a great deal of time at that.

And the Queensland Government thinks they can afford to take until December 2006 to finish writing the SEQ Regional Water Supply Strategy?

"Water – \$861 million investment

Our investment in water will primarily focus on increasing supply and ensuring more efficient use. Key to this investment is the *SEQ Regional Water Supply Strategy* which will be finalised by December 2006. This strategy will, amongst other things, identify how much water will be required through to 2026 and how best to provide it. Once complete, this strategy will outline further potential investment."⁹¹

Some of the solutions they have in mind have already been mooted in the South East Queensland Regional Plan Guide.

"Where's the water?

New weirs will be built on the Logan and Mary Rivers, a new dam built at Wyaralong and local government will receive state subsidies to upgrade several council-run dams. The estimated Queensland Government investment in dams and weirs will amount to around \$266 million. We will invest around \$4 million in investigating alternative water supplies, including rainwater tanks, stormwater, recycled water and groundwater resources. The Infrastructure Plan also invests around \$400 million as subsidies to local government for treatment and distribution of water, and additional pipelines to convey water from water sources to areas of high growth. SEQ councils intend to invest around \$2 billion in water and sewerage and water recycling over the next five years."⁹²

Since climate change will negate the water savings achieved by reductions in consumption per head within the life of the South East Queensland Regional Plan 2005-2026 (or shortly thereafter), then this increased water storage capacity proposed in the Plan must cater for some of the needs of our current population, all of the needs of regional population growth, and all of the needs of regional industry growth. And if CSIRO have underestimated the drying trend over the rest of this century, or if the targetted reduction in water consumption per head proves unachievable, then these dams and weirs will also have to at least partially compensate for reductions in rainfall and increases in evaporation rates from climate change. A tall order, particularly when the rainfall pattern of Summer 2005 in South

⁸⁹ *Building a better future for South East Queensland: Your guide to the South East Queensland Regional Plan and South East Queensland Infrastructure Plan 2005-2026*, Office of Urban Management, Queensland Government.

⁹⁰ M.Gabriel et. al., *Climate Change: the Challenge for Natural Resource Management*, Department of Natural Resources and Mines, Brisbane, 2004, p14.

⁹¹ *Building a better future for South East Queensland: Your guide to the South East Queensland Regional Plan and South East Queensland Infrastructure Plan 2005-2026*, Office of Urban Management, Queensland Government.

⁹² *Building a better future for South East Queensland: Your guide to the South East Queensland Regional Plan and South East Queensland Infrastructure Plan 2005-2026*, Office of Urban Management, Queensland Government.

East Queensland was such that plenty of rain fell everywhere in South East Queensland except over the catchments of the dams that supply Brisbane residents with water.

Meeting present and future demand for water is not going to be easy. It will take a lot of time (which we don't have), and a lot of money. And if action to resolve the problem isn't going to commence until the SEQ Regional Water Supply Strategy is finalised in December 2006, then the Summer of 2006/2007 is going to be a time of serious crisis in South East Queensland which the government is unlikely to survive politically in the state election that is due at the end of that Summer. The government of Western Australia has already learnt the painful lessons that come from being unable to provide sufficient water for their residents.

In summary, then, providing water for the residents of South East Queensland is already at crisis point and the situation can only get worse. And in the absence of sufficient water to meet the most basic needs of the residents of South East Queensland, there is NO OPTION but to compel new residents to settle outside of South East Queensland, at least until the water supply for South East Queensland matches present need, anticipated future need, anticipated future rainfall decline, and anticipated future evaporation rate increase. As difficult as that may be in a democratic system, there is no alternative.

And compelling new residents to settle outside of South East Queensland means that we don't have to make land available for them in South East Queensland - at least until we can provide water for them, if we ever can.

The South East Queensland Regional Plan 2005-2026 reveals that limiting population growth in South East Queensland was considered (briefly, at least) when preparing the Plan - and put in the too-hard basket.

"Some submissions on the Draft Regional Plan suggested growth should not be planned for, but rather should be redirected to alternative locations in the State. While this could be encouraged, there is no available or generally acceptable policy arrangement to direct this outcome."⁹³

But that isn't good enough. A defeatist attitude like that expressed in the Plan is simply not good enough. A way has to be found - because the price of not finding a way is too high. The price of not finding a way is the inability to provide sufficient potable water to maintain the sewerage system, to provide water for drinking and cooking, and to provide water for the maintenance of hygiene. A way has to be found to do it. (One way of doing it is to push land prices up in areas where the provision of water is a problem by limiting land availability or by taxation. Market forces will then shift growth to cheaper areas, where the population growth can be provided for. But that strategy on its own will not be enough.)

And if we're compelled to shift population growth away from the areas where we can't provide water for them, then we don't need to provide land for them in those areas either.

7.17 Because Development should be Restricted to Land that is Already Environmentally Destroyed

There is no need to develop land carrying native vegetation in order to meet demand for land. There is no shortage of land that has already been destroyed environmentally, and that land can and should be used instead.

Land cleared in the past for pasture or grazing is generally now land of low environmental value that is eminently suitable for development, and generally the owners of such land would be thrilled to get the high prices that developers are prepared to pay for such land. The decline of the sugar industry has freed up a lot of land which can be used for alternative crops, for housing, or for industry, for example. Degradation and salination of pasture land also renders land unsuitable for primary production but eminently suitable for housing or industry. The decline in the availability of water for irrigation in some areas also frees up land for industry, and perhaps for housing as well.

The primary obstacle to developing ex-farming land is the widespread attitude that farming land is more valuable than bushland. This viewpoint is reflected in the way the South East Queensland Regional Plan 2005-2026 deliberately makes every effort to protect farming land from development, but makes no effort to protect land covered in native vegetation from development. That viewpoint also results in Councils everywhere preferring to zone bushland for residential development than farmland. So whilst certain legislation has to be changed in order to implement this proposal, the legislation only reflects a widespread attitude in society. And it is an attitude that we can no longer afford the luxury of indulging, now that climate change is upon us.

The legislation must change. The attitude must change. Climate change threatens our bushland in a way that no other threat ever has. The only way to maximise how much of it survives climate change is to maximise how much of it we protect and look after - because in spite of our very best efforts, most of it will not survive climate change. If any of it is to survive, we must protect every last piece of it that we can!

⁹³ *South East Queensland Regional Plan 2005-2026*, Office of Urban Management, Department of Local Government, Planning, Sport and Recreation, Queensland, June 2005, p8.

And not just for the sake of having it. Not just for the sake of the wildlife that inhabit it. Not just for the people who like going there. But because the survival of our own species requires the survival of native vegetation and the countless species that depend upon that native vegetation for survival. (And that includes the pollinators of our crops.)

7.18 Because it's Consistent with the National Biodiversity and Climate Change Action Plan

The fundamental proposal of this paper is the conservation of all native vegetation in Queensland, irregardless of whether it be urban or non-urban; irregardless of whether it is classified as endangered, of concern, or not of concern; and irregardless of whether it has been assessed as environmentally valuable. That proposal is entirely consistent with the *National Biodiversity and Climate Change Action Plan (2004-2007)* from the Natural Resource Management Ministerial Council.

An appreciation of the importance of the proposal being consistent with the *National Biodiversity and Climate Change Action Plan (2004-2007)* requires an understanding of what the plan is and how it came into existence. So...

"In 2001 *The Review of the National Strategy for the Conservation of Australia's Biological Diversity* (ANZECC 2001) identified the need to 'Plan to minimise the potential impacts of human-induced climate change on biological diversity.'⁹⁴

"In 2003, Australian governments agreed to develop the National Biodiversity and Climate Change Action Plan through the Natural Resource Management Ministerial Council. The action plan outlines a 'nationwide strategic approach to protect Australia's biodiversity from the impacts of climate change.'⁹⁵

"The goal of the action plan is to minimise the impacts of climate change on biodiversity. The plan sets out a series of adaptation strategies and accompanying actions to minimise the negative impacts of climate change on biodiversity by maximising the capacity of species and ecosystems to adapt to future climate change.'⁹⁶

The strategy proposed in this paper - the conservation of all native vegetation - will "minimise the negative impacts of climate change on biodiversity by maximising the capacity of species and ecosystems to adapt to future climate change". So the vegetation conservation proposal of this paper is entirely consistent with the Plan's goal.

According to the Plan, one of the main intents of this three-year Plan is to:

"use existing knowledge about the impacts of climate change and draw from ecological principles to review and amend current biodiversity conservation policies and strategies.'⁹⁷

This paper draws heavily on the climate change literature to present a case based on ecological principles to amend current Queensland biodiversity conservation legislation and strategies. This paper complies with the above-stated intent of the Plan.

"The actions proposed in this document [ie, the Plan] are aimed at reducing the impacts of climate change on each of these ecosystems, and promote *in situ* conservation of species and ecological communities to facilitate their natural adaptation, rather than the use of high-cost interventions such as translocation and captive breeding. Key strategies include promoting ecological connectivity to aid migration and dispersal of species, protecting refuges and creating specific management zones around important habitats.'⁹⁸

The primary proposal of this paper (the conservation of all native vegetation) is aimed at reducing the impacts of climate change on the ecosystems of all native vegetation areas in Queensland by *in situ* conservation of species and ecological communities. The proposals outlined in this paper have the same aims as the actions proposed in the Plan.

This same aim is itemised in the Plan as Objective 5:

"Objective 5: To minimise the impacts of climate change on native terrestrial species, communities and ecosystems.'⁹⁹

⁹⁴ Natural Resource Management Ministerial Council (2004), *National Biodiversity and Climate Change Action Plan 2004–2007*, Australian Government, Department of the Environment and Heritage, Canberra, ACT, p7 (Executive Summary)

⁹⁵ Natural Resource Management Ministerial Council (2004), *National Biodiversity and Climate Change Action Plan 2004–2007*, Australian Government, Department of the Environment and Heritage, Canberra, ACT, p8 (Introduction)

⁹⁶ Natural Resource Management Ministerial Council (2004), *National Biodiversity and Climate Change Action Plan 2004–2007*, Australian Government, Department of the Environment and Heritage, Canberra, ACT, p8 (Introduction)

⁹⁷ Natural Resource Management Ministerial Council (2004), *National Biodiversity and Climate Change Action Plan 2004–2007*, Australian Government, Department of the Environment and Heritage, Canberra, ACT, p7 (Executive Summary)

⁹⁸ Natural Resource Management Ministerial Council (2004), *National Biodiversity and Climate Change Action Plan 2004–2007*, Australian Government, Department of the Environment and Heritage, Canberra, ACT, p7 (Executive Summary)

⁹⁹ Natural Resource Management Ministerial Council (2004), *National Biodiversity and Climate Change Action Plan 2004–2007*, Australian Government, Department of the Environment and Heritage, Canberra, ACT, p26.

"Responses to individual species threatened by climate change may include translocation to new areas that are likely to be more climatically suitable. However, this is a risky and highly expensive alternative and may result in funds not being available for other actions. Therefore, for most species, the preferred and most practical option is to retain, restore and protect their existing habitat, so that their whole ecosystem becomes more resilient."¹⁰⁰

The vegetation conservation proposal of this paper is entirely consistent with the "preferred and most practical option" for meeting Objective 5: "to retain, restore and protect their existing habitat, so that their whole ecosystem becomes more resilient."

"Strategy 5.2 Reviewing reserve acquisitions to strengthen the capacity of the reserve system to act as refuges for vulnerable terrestrial species and integrate reserve planning and management with broader landscape protected area networks to allow the movement of species across bioclimatic gradients.
Actions 5.2.1 Review current reserve system plans and guidelines to include consideration of identified priority areas that could be used to assist migration or provide natural refuges for vulnerable terrestrial species under future climate regimes.
5.2.2 Incorporate consideration of climate change into programs to voluntarily acquire new land for reserves for conservation purposes.
5.2.3 Build on the national programs to retain and restore native vegetation and protect habitat by promoting voluntary partnerships between government and land-holders to develop strategic protected area networks at landscape and larger scales to provide linkages and stepping-stones to assist biodiversity adaptations."¹⁰¹

The strategy proposed in this paper for protecting all the native vegetation of Queensland (by amending existing legislation) is considerably faster, cheaper, and easier than expanding the reserve system. The proposed strategy produces the desired results the moment that the legislation is gazetted. The reserve system expansion strategy requires considerable funding, and results are not obtained until the land has been purchased. The strategy proposed in this paper for the conservation of habitat is superior to the strategy proposed in Strategy 5.2 of the Plan.

"Objective 7: To factor the impacts of climate change on biodiversity into natural resource management and land-use planning.
Strategy 7.2 Incorporating consideration of climate change impacts on biodiversity into land-use planning and land-use change programs.
Action 7.2.1 Review new land-use and reserve planning policies, strategies, programs and planning instruments to take into account current and future impacts of climate change on biodiversity and make provision for adaptation to occur."¹⁰²

Objective 7 of the Plan is an objective of the proposal outlined in this paper. The strategy proposed in this paper for the realisation of the vegetation conservation objective is compliant with the strategy described as Strategy 7.2 The actions proposed in this paper are entirely consistent with the actions described as Action 7.2.1.

"Climate change significantly increases the threat to Australia's biodiversity, both directly and indirectly by exacerbating many existing pressures. The area, or number of areas, that would be regarded as adequate for protecting a given species under climate change is therefore greater than under the conditions that might have been considered adequate before. Protection could be afforded by off-reserve conservation or additional reserves. Therefore, in addition to changes in the way protected areas are managed, there may be an increased need for protected areas under climate change."¹⁰³

This is the concluding paragraph of the National Biodiversity and Climate Change Action Plan. In essence, it is the summary of the entire Plan. And whilst one of the solutions nominated in that final paragraph is different to that proposed in this paper, the other is the same, and the objective of each and the reasons for pursuing that objective are the same.

The proposals outlined in this paper are entirely consistent with the National Biodiversity and Climate Change Action Plan.

8.0 IMPLICATIONS OF THE PROPOSED MITIGATION PROPOSAL

With the case supporting the mitigation proposal now presented, it's time to look at the implications of the proposed

¹⁰⁰ Natural Resource Management Ministerial Council (2004), *National Biodiversity and Climate Change Action Plan 2004 –2007*, Australian Government, Department of the Environment and Heritage, Canberra, ACT, p26.

¹⁰¹ Natural Resource Management Ministerial Council (2004), *National Biodiversity and Climate Change Action Plan 2004 –2007*, Australian Government, Department of the Environment and Heritage, Canberra, ACT, p27.

¹⁰² Natural Resource Management Ministerial Council (2004), *National Biodiversity and Climate Change Action Plan 2004 –2007*, Australian Government, Department of the Environment and Heritage, Canberra, ACT, p31.

¹⁰³ Natural Resource Management Ministerial Council (2004), *National Biodiversity and Climate Change Action Plan 2004 –2007*, Australian Government, Department of the Environment and Heritage, Canberra, ACT, p34.

mitigation proposal.

8.1 CONSEQUENCES OF PROTECTING OUR NATIVE VEGETATION IN THE MANNER PROPOSED

The recommendations of this paper are not expensive to implement. In fact, in most cases, the only expense is the cost of drafting the legislative changes required. Everything required to implement every recommendation in this paper can be funded out of existing budgets. But although the recommendations of this paper are very cheap to implement, the magnitude of the benefits is enormous.

Implementing the recommendations of this paper in full will:

- Generate employment to process additional development applications
- Generate revenue from development application fees to fund the additional employment requirement
- Hasten development of the Western Corridor, as specified in the South East Queensland Regional Plan 2005-2026 as an objective of the Plan.
- Provide an opportunity to redirect population growth to where water can be provided for that population growth.
- Minimise temperature rises in urban areas by minimising the urban heat island effect.
- Significantly reduce future greenhouse gas emissions by minimising the loss of the native vegetation carbon sink.
- Minimise wildlife deaths and extinctions (both flora and fauna).
- Contribute significantly towards meeting Australia's Kyoto Protocol emissions target
- Maximise the amount of native vegetation that will avoid devastation by wildfire
- Maximise sequestration of carbon from the atmosphere into a harmless carbon sink.
- Maximise opportunities for weed management and revegetation to assist the survival of areas of native vegetation through the long period of climate change
- Maximise availability of research sites for researchers studying how to assist our native vegetation to survive climate change
- Maximise cloud cover, with resultant benefits for ground level temperature and evaporation rates over our urban areas and dam catchments
- Maximise transpiration, with potential resultant benefits for precipitation.

Protecting native vegetation from development will have negligible economic impact. The development will still happen somewhere; it just won't happen where the land contains native vegetation. Developers aren't going to stop looking for land they can develop just because land presently covered in bushland suddenly becomes unattractive to them. And the jobs lost clearing vegetation there will be more than compensated for by the jobs created in order to prepare and process the additional development applications.

Amending the Integrated Planning Act 1997 and the South East Queensland Regional Plan 2005-2026 in the manners proposed in the recommendations in this paper will NOT result in any liability for compensation under any of those pieces of legislation. (The Integrated Planning Act 1997 Part 4 S 5.4.2 makes provision for compensation, but it only applies when there is a disadvantage created as a result of changes to a planning scheme by a local government. It does not apply when there is a disadvantage created as a result of changes to the Act itself, or to the South East Queensland Regional Plan 2005-2-26.)

8.2 CONSEQUENCES OF RETAINING THE *STATUS QUO*

What are the consequences of retaining the *status quo* and not implementing the recommendations of this paper? All the dire predictions of the climate change literature for our biodiversity come true, and all the dire predictions of the climate change literature for our crops and forests come true. And what are those dire predictions?

In a nutshell? It all dies. Sooner or later, it all dies - and is replaced with species more tolerant of the new climate at that location. But in the meantime, we have massive species extinctions (both flora and fauna), and the space vacated by their deaths is taken up by species that can migrate or spread quickly and easily. In the case of flora, the species that can and do spread most easily are commonly known as "weeds". In the case of fauna, they're commonly known as pests.

But this scenario isn't inevitable. Fast but sensible mitigation action will limit the losses and maximise the chances of our native vegetation surviving, and surviving in a state not too radically different to what we know now. But it will take resources, and it will take planning, and it will take a lot of determination by a lot of very dedicated people prepared to stand up for what they believe in against those who oppose them.

And it will take full implementation of all the recommendations of this paper.

9.0 HOW URGENT IS IT THAT OUR NATIVE VEGETATION BE PROTECTED IN THE MANNER PROPOSED?

More urgent than most people think. Extremely urgent, in fact. Because the longer the action is delayed, the less benefit is to be had from the action - until eventually the day comes when there is so little benefit to be had from doing it that there is no point doing it at all.

And when is that day? Nobody can say for sure, but it's not as far off as most people believe. Climate change is here, now.

"Thursday 5th January, 2006

Media Release – Queensland Regional Office [of the Bureau of Meteorology]

Hot December ends warmest year on record for Queensland

2005 was the warmest year on record for Queensland the Bureau of Meteorology Queensland Regional Office announced today. "This matches the warmest year on record for Australia as a whole, and Queensland's temperatures certainly contributed to it", said the Queensland Regional Director, Mr Jim Davidson. "The record takes into account the combination of daily maximum and minimum temperatures averaged across the state as a whole", he said. "After a hot start to the year, we experienced a mild autumn and winter, and finished with record hot temperatures in December". For Queensland as a whole, December recorded the highest mean monthly maximum temperature with many places breaking longstanding records."¹⁰⁴

"Wednesday 1st March, 2006

Media Release – Queensland Regional Office [of the Bureau of Meteorology]

Hopes pinned on March rainfall following record hot summer in Queensland

Queensland has just experienced its warmest summer on record according to Bureau of Meteorology figures. "Taking the state as a whole, and based on figures since 1950, it's been the hottest summer on record for both daytime maximum temperatures and overnight minima" said the Bureau's Queensland Regional Director, Mr Jim Davidson. It was particularly hot in the west of the state, where maximum temperatures averaged over 40 degrees for a number of centres. [] "While hot summers are not unusual in the west, these temperatures were 2 to 4 degrees higher than normal, with many places breaking longstanding records for summer temperatures", said Mr Davidson. [] New high average minimum records for summer were also set in many places []. Temperatures were consistently hot throughout the summer, with February contributing a number of new records."¹⁰⁵

Temperature rises from climate change are already a reality. How much temperature rise does it take before it starts to exceed the temperature tolerance of our native vegetation ?

"The present temperature range for 25% of Australian *Eucalyptus* trees is less than 1 °C in mean annual temperature."¹⁰⁶

For some, not a lot. Not very much at all, in fact. Even if these eucalypts have a wider temperature tolerance than their latitude span suggests, it clearly isn't wide enough to guarantee the long term survival of the species in their present location. The executive summary of the IPCC report *Climate Change and Biodiversity* (p1) makes that very clear.

"For the wide range of Intergovernmental Panel on Climate Change (IPCC) emissions scenarios, the Earth's mean surface temperature is projected to warm 1.4 to 5.8°C by the end of the 21st century, with land areas warming more than the oceans."¹⁰⁷

The sooner the changes recommended in this paper are implemented, the more vegetation we have a chance of saving. The longer we delay, the less. When is it too late to act? Well, fifty years is definitely much too late.

"Grim climate warning: Climate change threatens to leave us sick, hungry and thirsty

by Environment Correspondent Alex Kirby

With another major international conference on climate change starting in Argentina on Monday, delegates will be pondering a sombre message from a panel of respected British climatologists. Scientists from the Hadley Centre on Climate Change, part of the UK's Meteorological Office, have published a new scenario of climate change. [] It predicts that tropical forests in Northern Brazil will die back in the 2050s, and globally tropical grassland will be transformed into desert, or at least temperate grassland. For the first half of the 21st

¹⁰⁴ Bureau of Meteorology, *Hot December ends warmest year on record for Queensland*, Media Release - Queensland Regional Office, Tuesday 5th January 2006, Bureau of Meteorology, http://www.bom.gov.au/announcements/media_releases/qld/20060105.shtml 6/01/2006

¹⁰⁵ Bureau of Meteorology, *Hopes pinned on March rainfall following record hot summer in Queensland*, Media Release - Queensland Regional Office, Wednesday 1st March 2006, Bureau of Meteorology, http://www.bom.gov.au/announcements/media_releases/qld/20060301.shtml 5/03/2006

¹⁰⁶ B.Pittock (ed.), *Climate Change: An Australian Guide to the Science and Potential Impacts*, Australian Greenhouse Office, Canberra, 2003, p97.

¹⁰⁷ H. Gitay *et. al.* (eds), *Climate Change and Biodiversity*, IPCC Technical Paper V, Intergovernmental Panel on Climate Change, April 2002, p1 (Executive Summary)

century, vegetation will absorb CO₂ at a rate of about 2- 3 billion tonnes (1bn tonnes = 1GtC) per year. Human emissions of CO₂ are about 7GtC a year. But from 2050 onwards, vegetation dying under the impact of climate change will itself add about 2GtC a year to greenhouse emissions, further intensifying global warming.¹⁰⁸

Of course, this outcome is not totally inevitable. Mitigation strategies can affect this. Ongoing revegetation with species that are more heat and aridity tolerant can enable areas of native vegetation to survive as temperatures rise and aridity worsens. But that strategy is more viable in some areas than others. It is most viable in urban areas, where human resources are most available to do it. But native vegetation in urban areas is denied protection by the Integrated Planning Act 1997 and the South East Queensland Regional Plan 2005-2026.

The sooner the mitigation strategies proposed in this paper are implemented, the greater the results and the less serious will be the consequences of climate change for our bushland, our biodiversity, and our wildlife.

We need to act, and we need to act now.

Before it's too late.

10.0 WHAT MECHANISMS CAN BE USED TO MAXIMISE THE PROTECTION OF OUR NATIVE VEGETATION?

A handful of minor changes to the Integrated Planning Act 1997, its Regulations, and its subordinate legislation, the South East Queensland Regional Plan 2005-2026, will make an enormous difference to the protection afforded our native vegetation in this State. Those amendments are a very important mitigation strategy against the impacts of climate change.

10.1 THE INTEGRATED PLANNING ACT 1997 (IPA)

The recommendations of this paper fall into two broad categories: amendments which will directly protect our native vegetation from clearing, and amendments which will make it easier for Councils and other agencies to protect our native vegetation from clearing. Both sets of amendments are important mitigation strategies to lessen the impacts of climate change upon our natural environment, and upon ourselves.

Although the IPA defines intergenerational equity and sustainable development and purports to defend them, the actual operation of the Act does not implement those principles. For example, clearing of native vegetation is unquestionably irreversible environmental damage that is contrary to the principles of intergenerational equity, yet it isn't even assessable development under the Act in most circumstances.

The present wording of the Integrated Planning Act 1997 makes it difficult for Councils (and other agencies) to protect what should be protected, particularly if a development application is the trigger which first brings the environmental value of a particular parcel of land to the attention of Council. Because the environmental value wasn't known at the time of the last planning scheme revision and the land is not protected by the planning scheme, it is very difficult under the Act as it stands now for Council to protect that land after a development application is received for it. A rejection of the application is not only very likely to be overturned by the Planning Court, but it is also very likely to result in a huge compensation claim against Council. Under such circumstances, the only means that Council has to protect land which environmental value was not previously recognised is to purchase the land, but limited financial resources impose a limit upon how often that solution can be taken, which means that the usual outcome is that approval is granted for the development.

The default state of affairs with the Integrated Planning Act 1997, as it stands at the moment, is to permit development unless there is an extremely good reason not to. Which means that it is those opposed to a particular development who must fight hardest to win. But they are the very people least equipped to fight. Those who will benefit from the development will benefit financially, and can afford to fight for what they want, but they don't have to because the legislation is written in their favour. Those opposed to the development will lose financially by fighting, and generally do not have the financial resources to fight anyway. So the default state of affairs very strongly favours those who favour developing and very severely penalises those fighting to protect the environment.

The Integrated Planning Act 1997 and all its subordinate legislation is so complex that few can come to terms with it. Environmentalists everywhere waste their time and resources fighting environmental battles that they can not possibly win, because of the wording of the Integrated Planning Act 1997 and/ or its subordinate legislation. And these people don't have the financial resources to recruit expertise to assist them to fight for what they believe in in accordance with the rules laid down in the Act, or to assist them to take their fight to the Planning Court, or to advise them that they're

¹⁰⁸ A.Kirby, *Grim climate warning: Climate change threatens to leave us sick, hungry and thirsty*, Sci/ Tech., British Broadcasting Commission, 07: 09 GMT Monday, November 2, 1998. <http://news.bbc.co.uk/1/hi/sci/tech/205867.stm>. (The Hadley Centre does the same work for the UK on climate change as CSIRO does for Australia)

wasting their time and money and can't possibly win. The present system very strongly favours those who stand to benefit financially from development, and it very strongly penalises those who stand in defence of the natural environment.

Shifting the balance to favour the natural environment requires more than a few technical fixes to the legislation. It requires changing the default state of the legislation, so that the environmentally-conscious public doesn't need to know and understand the legislation (or be rich enough to hire someone who does) in order to fight effectively to protect the natural environment against development.

The recommendations of this paper are not sufficient on their own to bring about this shift in default state from "develop unless there's extremely good reason not to" to "develop only if there's no good reason not to". The recommendations of this paper are sufficient only to make it easier for those trained in the inner intricacies of the Integrated Planning Act 1997 to protect our native vegetation. Achieving a balance between development and the environment that is fair to the people who put their houses and their families on the line to fight for the environment requires far more wide-reaching changes to the Integrated Planning Act 1997 and its subordinate legislation than are proposed in this paper.

Many of the problems with the Integrated Planning Act 1997 stem from sections 1.2.1, 1.2.2, 1.2.3, 1.3.3, and 1.3.6 - which comprise the guidelines for execution of the Act when other sections of the Act leave something in doubt. The Act can not be made more protective of the natural environment without extensively reworking all these sections.

RECOMMENDATION 1:

That "natural environment" be defined in the dictionary (Schedule 10) of the Integrated Planning Act 1997.

The recommended definition of "natural environment" is:

***natural environment** is ecosystems and their constituent parts (excluding people and communities), ecological processes, natural resources and natural systems.*

At the moment there is no definition for natural environment, and many people reading the IPA would assume that the word "environment" in the IPA means the natural environment. Defining natural environment permits the resolution of the problems caused by the IPA's all-encompassing definition of the word "environment".

The definition of "environment" in the Act is as follows:

environment includes—

- (a) ecosystems and their constituent parts including people and communities; and
- (b) all natural and physical resources; and
- (c) those qualities and characteristics of locations, places and areas, however large or small, that contribute to their biological diversity and integrity, intrinsic or attributed scientific value or interest, amenity, harmony, and sense of community; and
- (d) the social, economic, aesthetic and cultural conditions affecting the matters in paragraphs (a), (b) and (c) or affected by those matters¹⁰⁹

RECOMMENDATION 2:

That s1.2.1 of the Integrated Planning Act 1997 be amended to declare the protection of the natural environment as a Purpose of the Act.

S1.2.1 as it stands at the moment is as follows:

1.2.1 Purpose of Act

The purpose of this Act is to seek to achieve ecological sustainability by—

- (a) coordinating and integrating planning at the local, regional and State levels; and
- (b) managing the process by which development occurs; and
- (c) managing the effects of development on the environment (including managing the use of premises).

The recommended change to s1.2.1 is the addition of an item (d), as follows:

(d) minimising or avoiding the consequences of development upon the natural environment.

The inclusion of item (d) in the purpose of the Act is essential in order to solve some of the problems caused by later sections of the Act. In particular, s 1.2.2, which requires advancing the Act's purpose.

As presently written, s1.2.1 (purpose of the Act), in conjunction with s1.2.2, suggests that the Act requires sustainable

¹⁰⁹ *Integrated Planning Act 1997* (Qld), Schedule 10 (Dictionary)

development that is sensitive to the needs of the natural environment, but because the word "environment" has a much broader meaning in the Act than natural environment, and because the IPA definition of "ecological sustainability" is much broader in scope than the phrase suggests, and because managing the effects of development on the environment doesn't necessarily do anything to protect the natural environment anyway, and because s1.2.2 requires advancing the Act's purpose, then improving protection for the natural environment necessitates amending the Purpose of the Act.

Hence the need for the inclusion of the recommended item (d).

The relevant portion of s1.2.2 as it stands at the moment is as follows:

1.2.2 Advancing Act's purpose

(1) If, under this Act, a function or power is conferred on an entity, the entity must—

(a) unless paragraph (b) or (c) applies—perform the function or exercise the power in a way that advances this Act's purpose; or...

RECOMMENDATION 3:

That s1.2.3 of the Integrated Planning Act 1997 be amended to better protect the natural environment.

S1.2.3 as it stands at the moment is as follows:

1.2.3 What advancing this Act's purpose includes

(1) Advancing this Act's purpose includes—

(a) ensuring decision-making processes—

(i) are accountable, coordinated and efficient; and

(ii) take account of short and long-term environmental effects of development at local, regional, State and wider levels; and

(iii) apply the precautionary principle; and

(iv) seek to provide for equity between present and future generations; and

(b) ensuring the sustainable use of renewable natural resources and the prudent use of non-renewable natural resources; and

(c) avoiding, if practicable, or otherwise lessening, adverse environmental effects of development; and

(d) supplying infrastructure in a coordinated, efficient and orderly way, including encouraging urban development in areas where adequate infrastructure exists or can be provided efficiently; and

(e) applying standards of amenity, conservation, energy, health and safety in the built environment that are cost effective and for the public benefit; and

(f) providing opportunities for community involvement in decision making.

(2) For subsection (1)(a)(iii), the precautionary principle is the principle that lack of full scientific certainty should not be used as a reason for postponing a measure to prevent degradation of the environment if there are threats of serious or irreversible environmental damage.

(3) In subsection (1)(b)—

natural resources includes biological, energy, extractive, land and water resources that are important to economic development because of their contribution to employment generation and wealth creation.

On the face of it, this section doesn't seem too bad - but reality is quite different. Because the Act's definition of "environment" is considerably broader than just the natural environment, this section of the Act doesn't do as much to protect the natural environment as one might think. The protection of the natural environment can be improved considerably by specifying two additional items, 1(g) and 1(h).

The recommended change is to insert additional items (1)(g) and (1)(h) as follows:

(g) permitting development only under conditions which will protect the natural environment from degradation.

(h) rejecting development in order to protect the natural environment from degradation.

RECOMMENDATION 4:

That the definition of ecological sustainability in s1.3.3 of the Integrated Planning Act 1997 be redefined.

S 1.3.3 as it stands at the moment is as follows:

1.3.3 Meaning of ecological sustainability

Ecological sustainability is a balance that integrates—

(a) protection of ecological processes and natural systems at local, regional, State and wider levels; and

(b) economic development; and

(c) maintenance of the cultural, economic, physical and social wellbeing of people and communities.

There are a number of problems with s1.3.3, not the least of which arises from the fact that the label does not reflect the meaning. The label implies that only the ecological environment is sustained, but in reality, the ecological environment is, at best, one third of what is protected. The meaning has to be changed so that the label is correct.

And what on earth is "a balance that integrates?" The literature on the IPA contains a spread of views on what the phrase might mean, and states that the Court has never been asked to define it. It's a vague, ambiguous phrase that has no place in legislation. At best one might assume that it grants "protection of ecological processes and natural systems" a one-third weighting in decision making, but a one-third weighting is not enough. Not in the face of rapid population growth and rapidly onsetting climate change. The natural environment needs a much stronger weighting in the decision making process than that if it is to survive the impacts of population growth and climate change!

The recommended amendments to s1.3.3 are as follows:

1.3.3 Meaning of ecological sustainability

Ecological sustainability encourages economic development and the maintenance of the cultural, economic, physical, and social wellbeing of people and communities subject to the condition that ecological processes and natural systems at local, regional, State and wider levels are protected to the greatest extent possible.

The recommended replacement definition will still encourage economic development and consideration of the needs of people and communities, but whenever the proposed development may adversely affect the natural environment, then the needs of the natural environment will receive appropriate consideration in the decision making process.

And this replacement definition is entirely consistent with s1.3.6, which, as it stands at the moment, is as follows:

1.3.6 Explanation of terms used in ecological sustainability

For section 1.3.3—

(a) ecological processes and natural systems are protected if—

(i) the life supporting capacities of air, ecosystems, soil and water are conserved, enhanced or restored for present and future generations; and

(ii) biological diversity is protected; and

(b) economic development occurs if there are diverse, efficient, resilient and strong economies (including local, regional and State economies) enabling communities to meet their present needs while not compromising the ability of future generations to meet their needs; and

(c) the cultural, economic, physical and social wellbeing of people and communities is maintained if—

(i) well-serviced communities with affordable, efficient, safe and sustainable development are created and maintained; and

(ii) areas and places of special aesthetic, architectural, cultural, historic, scientific, social or spiritual significance are conserved or enhanced; and

(iii) integrated networks of pleasant and safe public areas for aesthetic enjoyment and cultural, recreational or social interaction are provided.

RECOMMENDATION 5:

That s2.1.23 of the Integrated Planning Act 1997 be amended to increase local government powers to protect land from development.

S 2.1.23 as it stands at the moment is as follows:

Division 6 Local planning instruments generally

2.1.23 Local planning instruments have force of law

(1) A local planning instrument is a statutory instrument under the *Statutory Instruments Act 1992* and has the force of law.

(2) A local planning instrument may not prohibit development on, or the use of, premises.

(3) A planning scheme or a temporary local planning instrument can regulate a use of premises, but only—

(a) by applying to the use a code identified in the planning scheme or temporary local planning instrument; and

(b) if—

(i) the use is a natural and ordinary consequence of making a material change of use of the premises happening after the code took effect; and

(ii) the making of the material change of use is assessable or self-assessable development.

(4) A planning scheme policy may only do 1 or more of the following—

(a) state information a local government may request for a development application;

(b) state the consultation the local government may carry out under section 3.2.5;

(c) state actions a local government may take to support the process for making or amending its planning scheme;

- (d) contain standards identified in a code;
- (e) include guidelines or advice about satisfying assessment criteria in the planning scheme.
- (5) Subsections (2) to (4) apply despite subsection (1).

The problem areas in s 2.1.23 are as follows:

- Item (2) prevents Councils from prohibiting development on environmentally valuable land, which makes protection of that land extremely difficult for them, if not impossible.
- Item (3)(b)(ii) effectively prevents Council regulating the use of premises covered in native vegetation because operational works in urban areas, which is the category of works which covers vegetation clearing, is not currently assessable development unless the vegetation is classified as "endangered".
- Item (4) prevents Councils using policy to protect environmentally valuable land from development - and they need all the tools for protecting environmentally valuable land that that they can get!

The recommended changes to s2.1.23 are as follows:

- *delete item (2)*
- *change item (3)(b)(ii) to:*
 - (ii) (a) the making of the material change of use is assessable or self-assessable development; or*
 - (b) the making of the material change of use requires operational works.*
- *adding a (4)(f) as follows:*
 - (f) specify requirements which will help protect the natural environment*

RECOMMENDATION 6:

That s 3.1.6 of the Integrated Planning Act 1997 and all sections of the Act and the Regulations that relate specifically to s 3.1.6 be deleted.

Section 3.1.6 as it stands at the moment is as follows:

3.1.6 Preliminary approval may override a local planning instrument

(1) This section applies if—

(a) an applicant applies for a preliminary approval; and

(b) part of the application states the way in which the applicant seeks the approval to vary the effect of any local planning instrument for the land.

It is recommended that s 3.1.6 be deleted, because it provides a way to get development approval contrary to the provisions of a local planning instrument - which can only mean increased leniency for the development. And in all likelihood, the obstacle planning instrument has the objective of protecting the natural environment, which means that increased leniency means increased damage to the natural environment.

And for the very same reasons, it is recommended that the sections that become irrelevant once s 3.1.6 is deleted should also be deleted from the Act and the Regulations. For example, s3.5.5a, s3.5.11(5), and s3.5.14a of the Act..

RECOMMENDATION 7:

That s 3.5.21 item (6) (a) of the Integrated Planning Act 1997 be amended to reduce the currency period from 4 years to 2 years.

At the moment, the currency period for a development application that involves the clearing of native vegetation is four years. Reducing it to two years will have the effect of limiting the loss of native vegetation through development for which a development approval pre-existed at the time of enactment of the amending legislation.

It is recommended that s3.5.21 item (6) (a) of the Integrated Planning Act 1997 be amended by substituting "2 years" for "4 years".

Section 3.5.21 as it stands at the moment is as follows:

3.5.21 When approval lapses

(1) The development approval for the application lapses at the end of the currency period for the approval unless—

(a) for development that is a material change of use—the change of use happens before the end of the currency period; or

(b) for a development permit that is reconfiguring a lot—the plan mentioned in section 3.7.2 for the reconfiguration of the lot is given to the local government for its approval before the end of the currency period; or

(c) for development not mentioned in paragraphs (a) and

(b)—development under the approval substantially starts before the end of the currency period.

- (3) To the extent the approval is for development other than a material change of use, the currency period is, if the application was not a development application (superseded planning scheme)—
- (a) the 2 years starting the day the approval takes effect; or
 - (b) if the approval states or implies a time for the approval to lapse—the period from the day the approval takes effect until the stated or implied time.
- (6) Despite subsections (2) to (5), to the extent the approval is for development that is reconfiguring a lot and the reconfiguration requires operational works, the currency period is—
- (a) the 4 years starting the day the approval takes effect; or
 - (b) if the approval states or implies a time for the approval to lapse—the period from the day the approval takes effect until the stated or implied time.

RECOMMENDATION 8:

That s3.5.23 of the Integrated Planning Act 1997 be amended to prohibit the extension of the currency period for any development application to the extent that that development application involves operational works.

Preventing the extension of the currency period will limit the loss of native vegetation from existing development approvals. There are very few options available for limiting the loss of native vegetation from existing development approvals, because the IPA is founded on the principle that once approval is granted, approval can not be withdrawn - but there is no moral obligation upon the government to permit vegetation clearing to occur in the event that the developer has not proceeded with the development prior to lapse of the development approval. Denying an application to extend currency is thus one of very few means available to limit vegetation loss from pre-existing development approvals.

Section 3.5.23 as it stands now is as follows:

3.5.23 Deciding request to extend currency period

- (1) If there was no concurrence agency, the assessment manager must approve or refuse the extension within 30 business days after receiving the request.
- (2) If there was a concurrence agency, the assessment manager—
 - (a) must not approve or refuse the extension until at least 20 business days after receiving the request; but
 - (b) must approve or refuse the extension within 30 business days after receiving the request.
- (3) The assessment manager and the person making the request may agree to extend the period within which the assessment manager must decide the request.
- (4) A concurrence agency given a notice under section 3.5.22(1)(a) may give the assessment manager a written notice advising—
 - (a) it has no objection to the extension being approved; or
 - (b) it objects to the extension being approved and give reasons for the objection.
- (5) If the assessment manager does not receive a written notice within 20 business days after the day the request was received by the assessment manager, the assessment manager must decide the request as if the concurrence agency had no objection to the request.
- (6) Despite subsection (5), if the development approval was subject to a concurrence agency condition about the currency period, the assessment manager must not approve the request unless the concurrence agency advises it has no objection to the extension being approved.
- (7) If the assessment manager receives a written notice from a concurrence agency within 20 business days after the day the request was received by the assessment manager, the assessment manager must have regard to the notice when deciding the request.
- (8) The assessment manager may make a decision under this section even if the development approval was granted by the court.
- (9) Despite section 3.5.21, the development approval does not lapse until the assessment manager decides the request.
- (10) After deciding the request, the assessment manager must give written notice of the decision to the person asking for the extension and any concurrence agency that gave the assessment manager a notice under subsection (4).

The recommended amendment is the addition of the following as a new and additional item (11):

(11) In spite of subsections 1 through 10, if the development approval was for operational works involving vegetation clearing, the request to extend the currency period must be refused.

RECOMMENDATION 9:

That s 3.5.30 of the Integrated Planning Act 1997 be amended to redefine conditions that may be applied to a development approval.

S 3.5.30 as it stands now is as follows:

3.5.30 Conditions must be relevant or reasonable

(1) A condition must—

- (a) be relevant to, but not an unreasonable imposition on, the development or use of premises as a consequence of the development; or
- (b) be reasonably required in respect of the development or use of premises as a consequence of the development.

(2) Subsection (1) applies despite the laws that are administered by, and the policies that are reasonably identifiable as policies applied by, an assessment manager or concurrence agency.

This section seriously limits the protection that an assessment manager or concurrence agency can provide for environmentally-valuable land, and environmentally valuable land needs all the protection that it can get.

The recommended amendments to s3.5.30 are as follows:

- *delete the words ", but not an unreasonable imposition on," from item (1)(a) because what is "unreasonable" is entirely subjective, and what is reasonable to one person (or even the Court) is very likely totally unreasonable to another.*
- *delete Item (2), because there should be no exception to the laws and policies.*

RECOMMENDATION 10:

That s3.5.31 of the Integrated Planning Act 1997 be amended to allow any condition at all to be imposed on a development approval.

S3.5.31 as it stands now is as follows:

3.5.31 Conditions generally

(1) A condition may—

- (a) place a limit on how long a lawful use may continue or works may remain in place; or
- (b) state a development may not start until other development permits, for development on the same premises, have been given or other development on the same premises (including development not covered by the development application) has been substantially started or completed; or
- (c) require development, or an aspect of development, to be completed within a particular time and require the payment of security under an agreement under section 3.5.34 73 to support the condition.

There should be no limit upon the conditions that may be imposed on a development approval, because conditions may make the difference between a development damaging the natural environment and not damaging the natural environment.

Accordingly, it is recommended that an item (d) be added to s3.5.31 as follows:

(d) specify requirements that are directed towards the protection of the natural environment.

RECOMMENDATION 11:

That additional limitations on compensation under ss 5.4.2 and 5.4.3 be added to s 5.4.4.

It is recommended that s 5.4.4 be amended from:

5.4.4 Limitations on compensation under ss 5.4.2 and 5.4.3

(1) Despite sections 5.4.2 and 5.4.3, compensation is not payable if the change—

- (a) has the same effect as another statutory instrument, in respect of which compensation is not payable; or
- (b) is about a type of development that, before the coming into effect of this Act, would normally have been dealt with under a local law, including, for example, the filling or drainage of land or the clearing of vegetation; or
- (c) is about the relationships between, the location of, or the physical characteristics of buildings, works or lots, but the yield achievable is substantially the same as it would have been before the change; or
- (d) is about a designation made under chapter 2, part 6; or
- (e) is about the matters comprising a priority infrastructure plan; or
- (g) removes or changes an item of infrastructure shown in the scheme; or
- (h) affects development that, had it happened under the superseded planning scheme—
 - (i) would have led to significant risk to persons or property from natural processes (including flooding, land slippage or erosion) and the risk could not have been significantly reduced by conditions attached to a development approval; or
 - (ii) would have caused serious environmental harm, as defined in the Environmental Protection Act 1994, section 17, 128 and the harm could not have been significantly reduced by conditions attached to a development approval.

- (2) For subsection (1)(c), yield for residential building work is substantially the same if—
- (a) the proposed residential building has a gross floor area of not more than 2000m²; and
 - (b) the gross floor area of the proposed residential building is reduced by not more than 15%.
- (3) Also, compensation is not payable—
- (a) for a matter under this part if compensation has already been paid for the matter to a previous owner of the interest in land; or
 - (b) for anything done in contravention of this Act; or
 - (c) if infrastructure shown in a planning scheme is not supplied, or supplied to a different standard, or supplied at a different time than the time stated in the planning scheme.
- (4) If a matter for which compensation is payable under this part is also a matter for which compensation is payable under another Act, the claim for the compensation must be made under the other Act.
- (5) In this section—
- gross floor area means the sum of the floor areas (inclusive of all walls, columns and balconies, whether roofed or not) of all stories of every building located on a site, excluding the areas (if any) used for building services, a ground floor public lobby, a public mall in a shopping centre, and areas associated with the parking, loading and manoeuvring of motor vehicles.
- yield means—
- (a) for buildings and works—the gross floor area, or density of buildings or persons, or plot ratio, achievable for premises; and
 - (b) for reconfiguration—the number of lots in a given area of land.

to:

5.4.4 Limitations on compensation under ss 5.4.2 and 5.4.3

- (1) Despite sections 5.4.2 and 5.4.3, compensation is not payable if the change—
- (a) has the same effect as another statutory instrument, in respect of which compensation is not payable; or
 - (b) is about a type of development that, before the coming into effect of this Act, would normally have been dealt with under a local law, including, for example, the filling or drainage of land or the clearing of vegetation; or
 - (c) is about the relationships between, the location of, or the physical characteristics of buildings, works or lots, but the yield achievable is substantially the same as it would have been before the change; or
 - (d) is about a designation made under chapter 2, part 6; or
 - (e) is about the matters comprising a priority infrastructure plan; or
 - (g) removes or changes an item of infrastructure shown in the scheme; or
 - (h) affects development that—
 - (i) would have led to significant risk to persons or property from natural processes (including flooding, land slippage or erosion) and the risk could not have been significantly reduced by conditions attached to a development approval; or
 - (ii) would have caused serious environmental harm, as defined in the Environmental Protection Act 1994, section 17, 128 and the harm could not have been significantly reduced by conditions attached to a development approval.
 - (i) is declared by the Council to have been done in order to protect ecological processes and natural systems in accordance with s1.3.6 of this Act.
 - (j) is declared by the Council to have been done in order to protect flora and/ or fauna which are protected wildlife under s71 of the Nature Conservation Act 1992.
 - (k) is declared by the Council to have been done for the purpose of vegetation management as defined in s9 of the Vegetation Management Act 199.
- (2) For subsection (1)(c), yield for residential building work is substantially the same if—
- (a) the proposed residential building has a gross floor area of not more than 2000m²; and
 - (b) the gross floor area of the proposed residential building is reduced by not more than 15%.
- (3) Also, compensation is not payable—
- (a) for a matter under this part if compensation has already been paid for the matter to a previous owner of the interest in land; or
 - (b) for anything done in contravention of this Act; or
 - (c) if infrastructure shown in a planning scheme is not supplied, or supplied to a different standard, or supplied at a different time than the time stated in the planning scheme.
- (4) If a matter for which compensation is payable under this part is also a matter for which compensation is payable under another Act, the claim for the compensation must be made under the other Act.
- (5) In this section—
- gross floor area means the sum of the floor areas (inclusive of all walls, columns and balconies, whether roofed or not) of all stories of every building located on a site, excluding the areas (if any) used for building services, a ground floor public lobby, a public mall in a shopping centre, and areas associated with the parking, loading and manoeuvring of motor vehicles.
- yield means—
- (a) for buildings and works—the gross floor area, or density of buildings or persons, or plot ratio, achievable for premises; and

(b) for reconfiguration—the number of lots in a given area of land.

by amending item 1(h) and adding items 1(i), 1(j), and 1(k).

The recommended amendments are designed to disallow from compensation Council actions which may, in some instances, be disallowed under item 1(b) anyway. So the basic principle behind the proposed amendments is already evident in this section. The difference between 1(b) and the recommended amendments is that the recommended amendments will cover every Council, not just those which had a relevant local law; and they will provide much broader protection for the natural environment than many Councils ever had local laws providing.

The case for making these amendments is as follows:

Item 1(h):

The reasons for disallowing compensation under section 1(h) are valid under any planning scheme, and it should make no difference which planning scheme is considered. *Accordingly, it is recommended that the condition "had it happened under the superseded planning scheme" be deleted from item 1(h).*

Deleting this condition from item 1(h) will have the effect of disallowing compensation if the development would have caused serious environmental harm, which is defined in s17 of the Environmental Protection Act 1994 as follows:

17 Serious environmental harm

(1) Serious environmental harm is environmental harm (other than environmental nuisance)—

(a) that causes actual or potential harm to environmental values that is irreversible, of a high impact or widespread; or

(b) that causes actual or potential harm to environmental values of an area of high conservation value or special significance; or

(c) that causes actual or potential loss or damage to property of an amount of, or amounts totalling, more than the threshold amount; or

(d) that results in costs of more than the threshold amount being incurred in taking appropriate action to—

(i) prevent or minimise the harm; and

(ii) rehabilitate or restore the environment to its condition before the harm.

(2) In this section—

threshold amount means \$50000 or, if a greater amount is prescribed by regulation, the greater amount.

Item 1(i):

It is recommended that a new item, item 1(i), be added as follows:

(i) is declared by the Council to have been done in order to protect ecological processes and natural systems in accordance with s1.3.6 of this Act.

Under s1.2.1 of the Act, the purpose of the Act is to seek to achieve ecological sustainability. Under s1.3.3, a key component of ecological sustainability is the "protection of ecological processes and natural systems at local, regional, State and wider levels."

The insertion of item 1(i), as recommended, is consistent with s1.2.1 and s1.3.3 of the Act, and has the effect of protecting Councils from compensation claims if they reject or impose conditions on an application in order to protect ecological processes and natural systems.

Ecological sustainability is defined in s1.3.6. The relevant portion of s1.3.6 is as follows:

1.3.6 Explanation of terms used in ecological sustainability

For section 1.3.3—

(a) ecological processes and natural systems are protected if—

(i) the life supporting capacities of air, ecosystems, soil and water are conserved, enhanced or restored for present and future generations; and

(ii) biological diversity is protected

Item 1(j):

It is recommended that a new item, item 1(j), be added as follows:

(j) is declared by the Council to have been done in order to protect flora and/ or fauna which are protected wildlife under s71 of the Nature Conservation Act 1992.

The Nature Conservation Act 1992 protects most flora and fauna, yet the Integrated Planning Act 1997 presently offers no protection from compensation claims to Councils if they make a planning decision that will protect the habitat of flora and fauna that are granted protection under the Nature Conservation Act 1992. This amendment will remedy that situation.

Section 71 of the Nature Conservation Act 1992 is as follows:

- Part 5 Wildlife and habitat conservation
- Division 1 Basic concepts
- 71 Classes of wildlife to which Act applies
- The classes of wildlife to which this Act applies are—
- (a) protected wildlife, that is—
- (i) extinct in the wild wildlife; and
- (ii) endangered wildlife; and
- (iii) vulnerable wildlife; and
- (iv) rare wildlife; and
- (v) near threatened wildlife; and
- (vi) least concern wildlife; and
- (b) international wildlife; and
- (c) prohibited wildlife.

Item 1(k):

It is recommended that a new item, item 1(k), be added as follows:

(k) is declared by the Council to have been done for the purpose of vegetation management as defined in s9 of the Vegetation Management Act 1999.

The purpose of the Vegetation Management Act 1999 is to regulate the clearing of vegetation. Vegetation management is defined in s9 of that Act as the management of vegetation in a way that achieves the purpose of the Act. Yet Councils are presently not protected from compensation claims if they make planning decisions for the purpose of vegetation management. This amendment will remedy that situation.

Section 9 of the Vegetation Management Act 1999 is as follows:

- 9 What is vegetation management
- (1) Vegetation management is the management of vegetation in a way that achieves the purpose of this Act.
- (2) For subsection (1), the management of vegetation may include, for example, the following—
- (a) the retention or maintenance of vegetation to—
- (i) avoid land degradation; or
- (ii) maintain or increase biodiversity; or
- (iii) maintain ecological processes;
- (b) the retention of riparian vegetation;
- (c) the retention of vegetation clumps or corridors.

The purpose of the Vegetation Management Act 1999, as defined in s3 of that Act, is as follows:

- 3 Purpose of Act
- (1) The purpose of this Act is to regulate the clearing of vegetation in a way that—
- (a) conserves the following—
- (i) remnant endangered regional ecosystems;
- (ii) remnant of concern regional ecosystems;
- (iii) remnant not of concern regional ecosystems; and
- (b) conserves vegetation in declared areas;¹ and
- (c) ensures the clearing does not cause land degradation; and
- (d) prevents the loss of biodiversity; and
- (e) maintains ecological processes; and
- (f) manages the environmental effects of the clearing to achieve the matters mentioned in paragraphs (a) to (e);
- and
- (g) reduces greenhouse gas emissions.
- (2) The purpose is achieved mainly by providing for—
- (a) codes for the Planning Act relating to the clearing of vegetation that are applicable codes for the assessment of vegetation clearing applications under IDAS; and

- (b) the enforcement of vegetation clearing provisions; and
 - (c) declared areas; and
 - (d) a framework for decision making that, in achieving this Act's purpose in relation to subsection (1)(a) to (e), applies the precautionary principle that lack of full scientific certainty should not be used as a reason for postponing a measure to prevent degradation of the environment if there are threats of serious or irreversible environmental damage; and
 - (e) the phasing out of broadscale clearing of remnant vegetation by 31 December 2006.
- (3) In this section—
- environment includes—
- (a) ecosystems and their constituent parts including people and communities; and
 - (b) all natural and physical resources; and
 - (c) those qualities and characteristics of locations, places and areas, however large or small, that contribute to their biological diversity and integrity, intrinsic or attributed scientific value or interest, amenity, harmony and sense of community; and
 - (d) the social, economic, aesthetic and cultural conditions affecting the matters in paragraphs (a) to (c) or affected by those matters.

RECOMMENDATION 12:

That the time limit for claiming compensation under s5.4.6(b) be reduced to match that in s5.4.6(a).

Six months is sufficient time to claim compensation irregardless of whether the grounds are 5.4.2 or 5.4.3.

It is therefore recommended that the compensation period specified in s5.4.6(b) be reduced from 2 years to 6 months, to match the compensation period that applies under s5.4.6(a).

Section 5.4.6 as it stands at the moment is as follows:

5.4.6 Time limits for claiming compensation

A claim for compensation under this part must be given to the local government—

- (a) if the entitlement to claim the compensation is under section 5.4.2—within 6 months after the day the application mentioned in section 5.4.2(b) is refused or approved in part, or subject to conditions or approved both in part and subject to conditions; or
- (b) if the entitlement to claim the compensation is under section 5.4.3—within 2 years after the day the change came into effect; or
- (c) if the entitlement to claim the compensation is under section 5.4.5—at any time after the day the certificate is given.

Sections 5.4.2 is as follows:

5.4.2 Compensation for reduced value of interest in land

An owner of an interest in land is entitled to be paid reasonable compensation by a local government if—

- (a) a change reduces the value of the interest; and
- (b) a development application (superseded planning scheme) for a development permit relating to the land has been made; and
- (c) the application is assessed having regard to the planning scheme and planning scheme policies in effect when the application was made; and
- (d) the assessment manager, or, on appeal, the court—
 - (i) refuses the application; or
 - (ii) approves the application in part or subject to conditions or both in part and subject to conditions.

Sections 5.4.3 is as follows:

5.4.3 Compensation for interest in land being changed to public purpose

An owner of an interest in land is entitled to be paid reasonable compensation by a local government if because of a change, the only purpose for which the land could be used (other than the purpose for which it was lawfully being used when the change was made) is for a public purpose.

RECOMMENDATION 13:

That s 5.6.3 of the Integrated Planning Act 1997 be amended to remove the exemption for public housing that makes operational works (which includes vegetation clearing) for public housing exempt development.

Even public housing should not be exempt development if it includes Operational Works. At least that part of it which is Operational Works should be assessable development.

S 5.6.3 as it stands now is as follows:

Part 6 Public housing

5.6.3 How IDAS applies to development under pt 6

Development to which this part applies is, to the extent the development is self-assessable development or assessable development under a planning scheme, exempt development.

The recommended amendment is as follows:

Part 6 Public housing

5.6.3 How IDAS applies to development under pt 6

Development to which this part applies is, to the extent the development is self-assessable development or assessable development under a planning scheme, exempt development to the extent that the development is not operational works.

RECOMMENDATION 14:

That s 5.8.6 of the Integrated Planning Act 1997 be amended to require the Environmental Protection Agency to prepare all EISs at the expense of the proponent of the development application.

S 5.8.6 as it stands at the moment is as follows:

5.8.6 Preparation of draft EIS

(1) The proponent must prepare a draft EIS and give it to the chief executive together with the fee prescribed under a regulation for administering the remaining EIS process.

There's a fundamental flaw here. Namely, the entity in whose interest it is to have an EIS that gives no cause for criticism of the development is the same entity responsible for preparing the EIS. This is Caesar judging Caesar. There is absolutely no cause to trust the EIS produced when it is produced by the entity with most at stake if the EIS is not favourable to their interests. It is very easy to write an EIS that simply leaves out anything that might be contrary to the interests of the person paying for the EIS to be prepared. And even if the entity responsible for preparing the EIS hires someone else to prepare the EIS on their behalf, there is considerable pressure on the people preparing the EIS to prepare an EIS that pleases the people paying them to prepare it - otherwise they won't be employed to do such work again. It's simply protecting their reputation in the industry. If they get a reputation for writing EISs that result in the project being rejected, then very quickly they'll find nobody hiring them any more to prepare an EIS.

The recommended solution is to have EPA prepare ALL EISs, for a fee that more than covers their expenses in doing so. And it has to be ALL EIS's, otherwise they won't get enough work to provide steady work for their employees who have been engaged to do the EISs. Democracy demands that the public service, in their capacity as instruments of our elected representatives, have a key role in the EIS process. Not just scrutinising the EISs, but actually preparing them, to ensure that they have been prepared to consistent standards without leaving anything out that might be contrary to the interests of the proponent to include.

The recommended amendment to S 5.8.6 is as follows:

5.8.6 Preparation of draft EIS

(1) The proponent must apply for the preparation and evaluation of an EIS by the Environmental Protection Agency for the fee prescribed under a regulation for preparing and evaluating that EIS and for administering the remaining EIS process.

RECOMMENDATION 15:

That s 5.8.8 of the Integrated Planning Act 1997 be amended to ensure that the authors of all submissions on any draft EIS are protected by law from legal action by any person on the grounds of libel, defamation, or damages.

It is recommended that submissions on an EIS should receive legal protection from libel, defamation, and damages suits. In the past that has never been a problem, but Australia is becoming more and more litigious with every passing day, and it is only a matter of time before the risk inhibits responses to draft EISs. Now is the time to anticipate that future problem and amend the Act accordingly.

RECOMMENDATION 16:

That item (g) be deleted from Schedule 8 Table 4 (1A) of the Integrated Planning Act 1997.

Schedule 8 Table 4 is the part of the Act most responsible for the continuing clearing of remnant native vegetation in Queensland, particularly in urban areas. For that reason, it will be examined here in some depth. Schedule 8 of the

Act defines what is and is not assessable development, and Table 4 of Schedule 8 defines what is and is not assessable development if the development involves clearing of vegetation on freehold land and indigenous land. (The full definition of operational works is contained in the glossary of this paper, but the important part of it for the purposes of this paper is that it includes "clearing vegetation, including vegetation to which VMA applies".)

It is the exceptions specified in Schedule 8 Table 4 (1A) that allow land clearing in urban areas to happen. But for the exceptions, land clearing in urban areas would be assessable development, and under Schedule 8A, the application would be assessed by Local Government (unless it's only land clearing, in which case it's assessed by NRM). But Schedule 8 Table 4 (1A) exempts it and makes it non-assessable development.

Schedule 8: Assessable Development

Table 4 (1A): Operational works - for clearing native vegetation on freehold land and indigenous land
Operational work that is the clearing of native vegetation on freehold land and indigenous land [is assessable development], unless the clearing is—

- (a) the clearing of vegetation to which VMA does not apply; or
- (b) for a forest practice, other than on indigenous land on which the State owns the trees; or
- (c) to the extent necessary for building on a lot a single residence, and any reasonably associated building or structure, if the building of the residence—
 - (i) is building work for which a development permit for a building development application under the Standard Building Regulation has been issued; or
 - (ii) is building work mentioned in part 2, table 1, item 1; or
 - (iii) is development to which chapter 5, part 6 a applies; or
- (d) necessary for essential management; or
- (e) in an area shown on a property map of assessable vegetation as a category X area; or
- (f) in an area for which there is no property map of assessable vegetation and the vegetation is not remnant vegetation; or
- (g) for urban purposes in an urban area that is—
 - (i) shown on a property map of assessable vegetation as a category 2 area or a category 3 area; or
 - (ii) if there is no property map of assessable vegetation for the area—a remnant of concern regional ecosystem or a remnant not of concern regional ecosystem; or
- (h) necessary for routine management in an area of the land—
 - (i) shown on a property map of assessable vegetation as a category 3 area; or
 - (ii) for which there is no property map of assessable vegetation and the vegetation is a remnant not of concern regional ecosystem; or
- (i) on indigenous land, gathering, digging or removing forest products for—
 - (i) the purpose of improving the land or for use under the *Local Government (Aboriginal Lands) Act 1978*, section 28; or
 - (ii) use under the *Community Services (Aborigines) Act 1984*, section 175; or
 - (iii) use under the *Community Services (Torres Strait) Act 1984*, section 185; or
- (j) for a specified activity.

(Note that item (c), which exempts the clearing of vegetation for a house site, is not affected by any of the recommendations of this paper.)

The Act defines "specified activity", but, broadly speaking, the label covers activity by government. (It's full definition is contained in the glossary of this paper.) "Category 2", "Category 3", and "category x" are defined in both the Vegetation Management Act 1999 and the Integrated Planning Act 1997, and are crucial to understanding Schedule 8 Table 4, so the definitions of them (and the other categories) are reproduced here.

category 1 is an area that contains an endangered regional ecosystem.

category 2 is an area that contains an of concern regional ecosystem.

category 3 is area that contains an a not of concern regional ecosystem.

category 4 is an area that has been cleared and does not contain remnant vegetation.

category X is an area that has been cleared and contains regrowth vegetation.

So, translated into plain English with the trivial bits discarded, Schedule 8 Table 4 (1A) means that:

Operational work that is the clearing of native vegetation is assessable development unless the clearing is:

- (a) the clearing of vegetation to which VMA does not apply (eg, plantation); or
- (e) land that has been cleared and contains regrowth vegetation; or
- (f) land containing vegetation that is not remnant (ie, original Australian native) vegetation; or
- (g) for urban purposes in an urban area that contains vegetation classified as either of concern or not of concern

("Urban purposes" and "urban area" are precisely defined in the Integrated Planning Act 1997, and their definitions can be found in the glossary of this paper. Broadly speaking, they mean what you would expect them to mean.)

So according to Schedule 8 Table 4 (1A), just when is urban operational work assessable development?

Once you translate it and convert the jargon into plain English, then one discovers that if the development application is for "urban purposes in an urban area", then it is only assessable development if there is no vegetation there anyway (category 4), or if the vegetation there is officially classified as "endangered" (category 1). Otherwise it is "exempt development", which is development that doesn't require assessment of any kind whatsoever!

And if it's exempt development, then there is absolutely no opportunity for any public servant in any part of the Government at any level of Government to reject the application even if they could find a valid reason to do so if given the opportunity - because the clearing of the vegetation can quite legally be done without the developer even having to lodge an application for development approval in order to do it!

So what will be the process once the recommended change (ie, the deletion of item (g)) has been made to Schedule 8 Table 4 (1A) of the Integrated Planning Act 1997? Well, then the Vegetation Management Act 1999 becomes authoritative in the matter. Division 6 Section 21 of that Act modifies the Integrated Planning Act 1997 as it applies to vegetation clearing applications and requires that assessment of the development application comply with the applicable Vegetation Management Act 1999 code. And under most circumstances, the application must be refused.

Vegetation Management Act 1999

Division 6 Modifying effect of Planning Act

21 Modifying effect on vegetation clearing applications

(1) This section applies for a vegetation clearing application.

(2) If the chief executive is the assessment manager for the application, a property vegetation management plan is a mandatory requirement in addition to the requirements stated in the Planning Act, section 3.2.1(3)(a).

(3) If the chief executive is a concurrence agency for the application, the applicant must give the chief executive a property vegetation management plan in addition to the things mentioned in section 3.3.3(1) of that Act.

(4) For the aspect of the application relating to the clearing of vegetation—

(a) section 3.5.13 of that Act does not apply; and

(b) the assessment manager's decision must comply with the applicable code.

22A Particular vegetation clearing applications may be assessed

(1) Despite the Planning Act, section 3.2.1, 4 if a vegetation clearing application is not for a relevant purpose under this section—

(a) the application is taken, for the Planning Act, not to be a properly made application; and

(b) the assessment manager must refuse to receive the application.

(2) A vegetation clearing application is for a relevant purpose under this section if the applicant satisfies the chief executive that the development applied for is [basically, for a reasonable purpose]

And thus, native vegetation in urban areas becomes protected simply by deleting one tiny item of Schedule 8 Table 4 (1A) of the Integrated Planning Act 1997.

Accordingly, it is recommended that item (g) be deleted from Schedule 8 Table 4 (1A) of the Integrated Planning Act 1997.

RECOMMENDATION 17:

That Schedule 8 Section 7 item (c) be amended to require referral coordination if the development shares a common boundary with or is within 1km of the boundary of the nominated areas, instead of just 100m.

From the perspective of the natural environment, 100 metres is so close that it might as well be zero. One kilometre (1km) is a much more realistic rule-of-thumb distance to use as a binary measure of impact upon the natural environment. (But in many instances even 1 km is far too close!)

10.2 THE INTEGRATED PLANNING ACT 1997 REGULATIONS

RECOMMENDATION 18:

That the Regulations of the Integrated Planning Act 1997 be amended to require Environmental Impact Statements for all development applications that have the potential to damage the natural environment.

At present the Integrated Planning Act 1997 includes provision for EISs through the IPA Regulations, but at present the Regulations include no mention of EIS at all.

The relevant section of the Integrated Planning Act 1997 is as follows:

Part 8 Environmental impact statements

Division 1 Preliminary

5.8.1 When EIS process applies

This part applies for development prescribed under a regulation, if the development is—

(a) or is proposed to be, the subject of a development application; or

(b) for community infrastructure intended to be carried out on land proposed to be designated for the infrastructure.

EIS's provide for improved environmental protection. *It is recommended that the IPA Regulations be amended to require an EIS whenever there is potential for the natural environment to be damaged.*

RECOMMENDATION 19:

That Schedule 2 Table 3 Item 4 (Acid sulfate soils) of the IPA Regulations be amended to make the chief executive under the Land Act 1994 a concurrence agency instead of an advice agency.

Acid sulfate soil is an environmental nightmare. Development in regions of acid sulfate soil has the potential to cause damage to the natural environment that is so widespread and so severe that it would be nothing short of disastrous, with permanent ill consequences. It is imperative that the chief executive under the Land Act 1994 have the powers of a full concurrence agency, so that his opinion of whether a development should proceed, and the conditions under which it may proceed, can not be disregarded.

10.3 SOUTH EAST QUEENSLAND REGIONAL PLAN 2005-2026

The recommended changes to the Integrated Planning Act 1997 will improve the protection of all native vegetation in Queensland - unless the land falls within the scope of the South East Queensland Regional Plan 2005-2026. Those changes are not sufficient if the urban native vegetation happens to be in South East Queensland.

Accordingly, this paper also addresses the changes necessary to the South East Queensland Regional Plan 2005-2026 that are necessary to protect native vegetation in south east Queensland.

A basic understanding of the role of regional land use categories is essential for understanding the regulatory provisions of the South East Queensland Regional Plan 2005-2026, so that will be very briefly presented first before the recommended changes to the Plan are presented.

Which regional land use category a particular parcel of land lies within defines what development is permitted on it and whether development approval is required before development can proceed.

"Regional land use categories

The Regional Plan allocates all land in SEQ into one of five regional land use categories. These categories provide the spatial context for the Regulatory Provisions of the Regional Plan. The land use categories are shown in Map 2 and are more precisely defined on the Regulatory Maps (at 1:50,000 scale) that form part of the Regional Plan. The regional land use categories are:

- Regional Landscape and Rural Production Area;
- Urban Footprint;
- Rural Living Area;
- Investigation Area; and
- Mt Lindesay/North Beaudesert Study Area."¹¹⁰

RECOMMENDATION 20:

That native vegetation be protected in South East Queensland by amending the South East Queensland Regional Plan 2005-2026 in the manner described in recommendations 20(a), 20(b), 20(c), and 20(d).

In spite of all the wonderful promises to look after the environment that abound in the text of the South East Queensland Regional Plan 2005-2026, an examination of the Part H Regulatory Provisions of the Plan reveals that the real truth is somewhat different. And it is the Regulatory Provisions that determine what the Plan really does and how it really works, so it is the Regulatory Provisions that need to be amended in order to achieve real, meaningful changes in the impact of the Plan upon South East Queensland.

Full implementation of the recommendations of this paper requires no changes to principles, and no changes to policies. No changes are required to any portion of the South East Queensland Regional Plan 2005-2026 outside of the Regulatory Provisions except to a couple of sentences buried deep within the descriptions of each regional land use category that describe what the regulatory provisions actually do for that land use category. Everything else in the

¹¹⁰ *South East Queensland Regional Plan 2005-2026*, Office of Urban Management, Department of Local Government, Planning, Sport and Recreation, Queensland, June 2005, p13.

Plan is already entirely consistent with the recommended amendments to the Regulatory Provisions.

In fact, because the Plan promises to do far more for the natural environment than the Part H Regulatory Provisions actually permit it to do, making the recommended amendments to the Regulatory Provisions will cause the Plan to actually do what the rest of the Plan says it already does (but doesn't). And that is the reason that so few changes are required to the rest of the Plan in order to accommodate the recommended amendments to the Part H Regulatory Provisions.

Desired Regional Outcome 2, its principle, and its policies are a classic example of how the Plan promises much more than the Part H Regulatory Provisions actually permit the Plan to deliver. According to it, the Plan already does what the recommended amendments to the Part H Regulatory Provisions are designed to achieve, but in reality, Desired Regional Outcome 2 can not be achieved without implementing the recommendations of this paper.

SEQ REGIONAL PLAN 2005-2026

"Desired regional outcome 2

A healthy natural environment supports the region's rich biodiversity, clean air and water; and is sustainably managed to support economic development, outdoor lifestyles and community needs.

Natural environment

2.1 Biodiversity

Principle

Conserve and manage the region's biodiversity values and maintain supporting ecological processes.

Policies

2.1.1 Protect, manage and enhance the region's nature conservation and biodiversity values and supporting ecological processes, including areas of state, regional and local biodiversity significance.

2.1.2 Ensure land use planning and development activities within areas of state or regional biodiversity significance respect identified biodiversity values, taking account of existing land use rights.

2.1.3 Protect, manage and enhance areas of state, regional and local biodiversity significance in areas outside the Urban Footprint, having regard to the Vegetation Management Act 1999 and existing land use rights.

2.1.4 Avoid or mitigate potential adverse impacts in areas of state or regional biodiversity significance inside the Urban Footprint, having regard to the development intent for the land in local government planning schemes and associated planning instruments.

2.1.5 Develop and implement local nature conservation strategies, addressing biodiversity values within the regional nature conservation framework.

2.1.6 Develop an integrated, accessible regional biodiversity information system and associated guidelines to assist planning and decision making."¹¹¹

Note that all the changes proposed in recommendation 7 are entirely consistent with Desired Regional Outcome 2, its biodiversity principle, and its policies.

The protection of native vegetation in South East Queensland can not be achieved without amending the Regulatory Provisions of the South East Queensland Regional Plan 2005-2026 to require that all development applications which involve operational works in South East Queensland are assessed, and are code assessed. Recommendations 7(a) to 7(d) inclusive document the changes necessary to the Part H Regulatory Provisions in order to achieve that outcome.

RECOMMENDATION 20(a): Make the following amendment to Part H Regulatory Provisions, Division 2, Provisions affecting planning schemes

It is recommended that item (1) of 3. Urban activities be amended as follows:

from:

(1) A material change of use of premises for urban activities is assessable development requiring impact assessment to the extent the premises are in the -

(a) Regional Landscape and Rural Production Area;

(b) Rural Living Area; or

(c) Investigation Area; or

(d) Mt Lindesay/North Beaudesert Study Area.

to:

(1) A material change of use of premises for urban activities is assessable development requiring impact assessment to the extent the development does not involve operational works and to the extent the premises are in the -

¹¹¹ *South East Queensland Regional Plan 2005-2026*, Office of Urban Management, Department of Local Government, Planning, Sport and Recreation, Queensland, June 2005, p26.

- (a) *Regional Landscape and Rural Production Area;*
- (b) *Rural Living Area; or*
- (c) *Investigation Area; or*
- (d) *Mt Lindesay/North Beaudesert Study Area.*

Note that as this regulation stands now, a material change of use for urban activities is exempt development in the Urban Footprint. (In other words, no development assessment is required whatsoever!) As a result, there is absolutely no protection for native vegetation in the Urban Footprint.

The addition of the operational works condition in the proposed new form of this provision will exclude land requiring clearing of vegetation from the provisions of this regulation. Recommendation 7(b) relies upon that exclusion to require that land requiring clearing of vegetation is assessed, and is code assessed, not impact assessed.

RECOMMENDATION 20(b): Make the following addition to Part H Regulatory Provisions, Division 2, Provisions affecting planning schemes

It is recommended that an item (4) be added to 3. Urban activities as follows:

- (4) *A material change of use of premises for urban activities is assessable development requiring code assessment to the extent the development involves operational works.*

In conjunction with recommendation 7(a), this recommendation will ensure that applications to clear land containing native vegetation are assessed, and are code assessed, not impact assessed. Code assessment will ensure that the assessment process takes full account of the requirements and provisions of the Vegetation Management Act 1999, whereas impact assessment is much broader and requires so many other factors to be taken into account in deciding whether or not to approve the application that it offers negligible protection for native vegetation.

RECOMMENDATION 20(c): Make the following amendment to Part H Regulatory Provisions, Division 2, Provisions affecting planning schemes

It is recommended that item (1) of 4. Rural residential purposes be amended as follows:

from:

- (1) *A material change of use of premises for rural residential purposes is assessable development requiring impact assessment to the extent -*
 - (a) *the premises are not zoned for rural residential purposes; and*
 - (b) *the premises are in the -*
 - (i) *Regional Landscape and Rural Production Area; or*
 - (ii) *Investigation Area; or*
 - (iii) *Mt Lindesay/North Beaudesert Study Area.*

to:

- (1) *A material change of use of premises for rural residential purposes is assessable development requiring impact assessment to the extent -*
 - (a) *the premises are not zoned for rural residential purposes; and*
 - (b) *the premises are in the -*
 - (i) *Regional Landscape and Rural Production Area; or*
 - (ii) *Investigation Area; or*
 - (iii) *Mt Lindesay/North Beaudesert Study Area.*
 - (c) *the development does not involve operational works.*

Note that as this regulation stands now, a material change of use for rural residential purposes is impact assessable development in all areas except the Urban Footprint. Impact assessment offers inferior protection to native vegetation than code assessment.

The addition of the operational works condition in the proposed new form of this provision will exclude land requiring clearing of vegetation from the provisions of this regulation. Recommendation 7(d) relies upon that exclusion to require that land requiring clearing of vegetation is assessed, and is code assessed, not impact assessed.

RECOMMENDATION 20(d): Make the following addition to Part H Regulatory Provisions, Division 2, Provisions affecting planning schemes

It is recommended that an item (3) be added to 4. Rural residential purposes as follows:

- (3) *A material change of use of premises for rural residential purposes is assessable*

development requiring code assessment to the extent the development involves operational works.

In conjunction with recommendation 7(c), this recommendation will ensure that applications to clear land containing native vegetation are assessed, and are code assessed, not impact assessed. Code assessment will ensure that the assessment process takes full account of the requirements and provisions of the Vegetation Management Act 1999, whereas impact assessment is much broader and requires so many other factors to be taken into account in deciding whether or not to approve the application that it offers negligible protection for native vegetation.

RECOMMENDATION 21:

That the maps associated with the South East Queensland Regional Plan be made available on paper at cost, and digitally free of charge.

When the draft South East Queensland Regional Plan was released for consultation, assessment of the impact of it was made extremely difficult by the fact that the relevant maps for it were only available on paper, and only available at considerable cost.

That situation has not changed. Those maps are still only available at a price, and for a considerable price at that. For effective public scrutiny, they must be available free of charge, and available digitally in a form suitable for examination in GIS software. (eg, as ESRI .shp shapefiles and georeferenced raster images.) Anything less than that is an inhibition of the public's democratic right to scrutinise the actions of their elected representatives and their employees.

Accordingly, it is recommended that the maps associated with the South East Queensland Regional Plan be made available on paper at cost, and be made available digitally free of charge.

11.0 CONCLUSION

This paper has described the consequences of climate change for our State's native vegetation, and reported what native vegetation is already protected, and what is not. It has presented a case for protecting that portion of our native vegetation which is not already protected, and demonstrated that the predicted impacts of climate change are such that the protection of all our native vegetation is imperative to maximise the quantity and quality of that which will survive climate change. And it has proposed specific legislative action which will achieve these objectives.

Stabilising the atmosphere will take decades, if not centuries. Very few countries have reduced their emissions below 1990 levels, and many have actually raised them. The atmosphere can not stabilise until long after emissions match extraction of carbon dioxide from the atmosphere, and there is so little prospect of that occurring this century that the climate change literature makes hardly any reference to the possibility. And a stable climate in Australia will not occur till centuries¹¹² after the atmosphere stabilises. Act now, and we have a chance of retaining at least some areas of native vegetation throughout that long period of climate change. Fail to act, and we could very well lose the lot.

The lot. Everything. Every last tree. And every last species that depends upon those trees.

Unless we act now to save them.

¹¹² B.Pittock (ed.), *Climate Change: An Australian Guide to the Science and Potential Impacts*, Australian Greenhouse Office, Canberra, 2003, p3.

GLOSSARY

AREA OF HIGH NATURE CONSERVATION VALUE¹¹³

"area of high nature conservation value means an area declared to be an area of high nature conservation value under the following—

- (a) a regional vegetation management plan;
- (b) a declaration made by the Governor in Council under section 17;
- (c) an interim declaration made by the Minister under section 18."

ASSESSABLE DEVELOPMENT¹¹⁴

Assessable development means—

- (a) development specified in schedule 8, part 1; or
- (b) for a planning scheme area—development that is not specified in schedule 8, part 1 but is declared under the planning scheme for the area to be assessable development.

BIODIVERSITY¹¹⁵

Biodiversity (biological diversity) is defined as the variety of all life forms, including plants, animals and micro-organisms; the genes they contain; and the ecological systems of which they form a part. Conserving biodiversity and supporting ecological processes, such as the water cycle, is fundamental to achieving ecological sustainability. Biodiversity also supports natural resources and makes a significant contribution to economic, cultural, spiritual, social and physical wellbeing. The need to safeguard biodiversity is an essential component of national, state, regional and local planning.

CATEGORY¹¹⁶

category 1 area means an area that is an endangered regional ecosystem.

category 2 area means an area that is an of concern regional ecosystem.

category 3 area means an area that is a not of concern regional ecosystem.

category 4 area means an area that has been cleared and does not contain remnant vegetation.

category X area means an area that has been cleared and contains regrowth vegetation.

CODE¹¹⁷

Code means a document or part of a document identified as a code—

- (a) in a planning instrument; or
- (b) for IDAS in this Act or another Act; or
- (c) in a preliminary approval.

CODE ASSESSMENT¹¹⁸

Code assessment means the assessment of development by the assessment manager only against the common material and applicable codes (other than codes, or parts of codes, a concurrence agency is required to assess an application against).

COMMON MATERIAL¹¹⁹

common material, for a development application, means—

- (a) all the material about the application the assessment manager has received in the first 3 stages of IDAS, including any concurrence agency requirements, advice agency recommendations and contents of submissions that have been accepted by the assessment manager; and
- (b) if a development approval for the development has not lapsed—the approval.

DEFORESTATION¹²⁰

"Under internationally agreed Kyoto carbon accounting rules, deforestation is the direct human action to clear forest for a different land use such as grazing, cropping or settlements (and is generally described as "land clearing"). "Forest" is defined as having the potential to reach a minimum 20 percent canopy cover, 2 metres in height and minimum areas of 0.2 hectares. Deforestation is referred to as "land use change" in the inventory reported under the

¹¹³ (from the Vegetation Management Act 1999)

¹¹⁴ *Integrated Planning Act 1997* (Qld), Dictionary.

¹¹⁵ *South East Queensland Regional Plan 2005-2026*, Office of Urban Management, Department of Local Government, Planning, Sport and Recreation, Queensland, June 2005, Glossary.

¹¹⁶ *Integrated Planning Act 1997* (Qld), Dictionary; and *Vegetation Management Act 1999* (Qld), Glossary.

¹¹⁷ *Integrated Planning Act 1997* (Qld), Dictionary

¹¹⁸ *Integrated Planning Act 1997* (Qld), Dictionary

¹¹⁹ *Integrated Planning Act 1997* (Qld), Dictionary

¹²⁰ *Queensland Greenhouse Strategy*, Environmental Protection Agency, Queensland, 2004, pB:28

ECOSYSTEMS¹²¹

endangered regional ecosystem means a regional ecosystem that is prescribed under a regulation and has either—

- (a) less than 10% of its pre-clearing extent remaining; or
- (b) 10% to 30% of its pre-clearing extent remaining and the remnant vegetation remaining is less than 10000ha.

grassland regional ecosystem means a regional ecosystem prescribed under a regulation as a grassland regional ecosystem.

not of concern regional ecosystem means a regional ecosystem that is prescribed under a regulation and has more than 30% of its pre-clearing extent remaining and the remnant vegetation remaining is more than 10000ha.

of concern regional ecosystem means a regional ecosystem that is prescribed under a regulation and has either—

- (a) 10% to 30% of its pre-clearing extent remaining; or
- (b) more than 30% of its pre-clearing extent remaining and the remnant vegetation remaining is less than 10000ha.

ESSENTIAL MANAGEMENT¹²²

Essential management means clearing native vegetation—

- (a) for establishing or maintaining a necessary fire break to protect infrastructure other than a fence or road, if the maximum width of the fire break is equivalent to 1.5 times the height of the tallest vegetation adjacent to the infrastructure, or 20m, whichever is the greater; or
- (b) for establishing a necessary fire management line if the maximum width of the clearing for the fire management line is 10m; or
- (c) necessary to remove or reduce the imminent risk that the vegetation poses of serious personal injury or damage to infrastructure; or
- (d) by fire under the Fire and Rescue Service Act 1990 to reduce hazardous fuel load; or
- (e) necessary to maintain infrastructure including airstrips, buildings, fences, helipads, roads, stock yards, watering facilities and constructed drains other than contour banks, other than to source construction material; or
- (f) for maintaining a garden or orchard, other than clearing predominant canopy trees to maintain under-plantings established within remnant vegetation; or
- (g) on land subject to a lease issued under the Land Act 1994 for agriculture or grazing purposes to source construction timber to repair existing infrastructure on the land, if—
 - (i) the infrastructure is in need of immediate repair; and
 - (ii) the clearing does not cause land degradation as defined by VMA; and
 - (iii) restoration of a similar type, and to the extent of the removed trees, is ensured; or
- (h) by the owner on freehold land to source construction timber to maintain infrastructure on any land of the owner, if—
 - (i) the clearing does not cause land degradation as defined by VMA; and
 - (ii) restoration of a similar type, and to the extent of the removed trees, is ensured.

EXEMPT DEVELOPMENT¹²³

Exempt development is development other than assessable or self-assessable development.

IMPACT ASSESSMENT¹²⁴

impact assessment means the assessment (other than code assessment) of—

- (a) the environmental effects of proposed development; and
- (b) the ways of dealing with the effects.

LAND USE CHANGE¹²⁵

"Commonly referred to as "land clearing", land use change is the deliberate, human-induced removal of forest cover and replacement with pasture, crops, urban development or other uses (deforestation). Emissions arise from burning and decay of aboveground biomass, and changes in soil carbon from current and past events. Regrowth on cleared lands provides a carbon sink."

¹²¹ *Vegetation Management Act 1999* (Qld).

¹²² *Integrated Planning Act 1997* (Qld), Dictionary.

¹²³ *Integrated Planning Act 1997* (Qld), Dictionary.

¹²⁴ *Integrated Planning Act 1997* (Qld), Dictionary.

¹²⁵ *Queensland Greenhouse Strategy*, Environmental Protection Agency, Queensland, 2004, pB:28.

MEGATONNE (Mt)¹²⁶

One million tonnes. Greenhouse gas emissions are often measured in megatonnes of CO₂ -e.

NATIVE VEGETATION¹²⁷

Native vegetation means a native tree or plant other than the following—

- (a) grass or non-woody herbage;
- (b) a plant within a grassland regional ecosystem prescribed under a regulation under VMA;
- (c) a mangrove.

OPERATIONAL WORK¹²⁸

Operational work means—

- (a) extracting gravel, rock, sand or soil from the place where it occurs naturally; or
- (b) conducting a forest practice; or
- (c) excavating or filling that materially affects premises or their use; or
- (d) placing an advertising device on premises; or
- (e) undertaking work in, on, over or under premises that materially affects premises or their use; or
- (f) clearing vegetation, including vegetation to which VMA applies; or
- (g) undertaking operations of any kind and all things constructed or installed that allow taking, or interfering with, water (other than using a water truck to pump water) under the Water Act 2000; or
- (h) undertaking—
 - (i) tidal works; or
 - (ii) work in a coastal management district; or
 - (i) constructing or raising waterway barrier works; or
 - (j) performing work in a declared fish habitat area; or
 - (k) removing, destroying or damaging a marine plant; or
 - (l) undertaking roadworks on a local government road.

Operational work does not include—

- (a) for items 1(a) to (f) or (j)—any element of the work that is building, drainage or plumbing work; or
- (b) clearing vegetation on—
 - (i) a forest reserve under the Nature Conservation Act 1992; or
 - (ii) a protected area under the Nature Conservation Act 1992, section 28; or
 - (iii) an area declared as a state forest or timber reserve under the Forestry Act 1959; or
 - (iv) a forest entitlement area under the Land Act 1994.

PROPERTY MAP OF ASSESSABLE VEGETATION¹²⁹

Property map of assessable vegetation means a property map of assessable vegetation as defined under VMA.

PROPERTY MAP OF ASSESSABLE VEGETATION¹³⁰

Property map of assessable vegetation means a map—

- (a) certified by the chief executive as the property map of assessable vegetation for a particular area; and
- (b) maintained by the department for the purpose of showing, for the area—
 - (i) category 1 areas; and
 - (ii) category 2 areas; and
 - (iii) category 3 areas; and
 - (iv) category 4 areas; and
 - (v) category X areas; and
- (c) showing areas subject to a remnant map or regional ecosystem map for the area.

REGROWTH VEGETATION¹³¹

Regrowth vegetation means vegetation that is not remnant vegetation.

ROUTINE MANAGEMENT¹³²

Routine management means clearing native vegetation—

- (a) to establish a necessary fence or road if the maximum width of clearing for the fence or road is 10m; or
- (b) for establishing necessary infrastructure other than contour banks, fences or roads if—
 - (i) the clearing is not to source construction timber; and
 - (ii) the total extent of clearing is less than 2ha; and

¹²⁶ *Queensland Greenhouse Strategy*, Environmental Protection Agency, Queensland, 2004, Glossary.

¹²⁷ *Integrated Planning Act 1997* (Qld), Dictionary; and the *Vegetation Management Act 1999*

¹²⁸ *Integrated Planning Act 1997* (Qld), Dictionary.

¹²⁹ *Integrated Planning Act 1997* (Qld), Dictionary.

¹³⁰ *Vegetation Management Act 1999* (Qld).

¹³¹ *Vegetation Management Act 1999* (Qld).

¹³² *Integrated Planning Act 1997* (Qld), Dictionary.

- (iii) the total extent of the infrastructure is on less than 2ha; or
- (c) by the owner on freehold land to source construction timber for establishing necessary infrastructure on any land of the owner, if—
 - (i) the clearing does not cause land degradation as defined by VMA; and
 - (ii) restoration of a similar type, and to the extent of the removed trees, is ensured; or
 - (d) before 30 June 2004, for sustainable harvesting of fodder for stock on freehold land, in drought conditions only.

SEQUESTRATION OF CARBON¹³³

The removal of carbon dioxide from the atmosphere by storing it away in places such as biomass (trees, soils and crops), the ocean depths, disused oil wells, or suitable geological formations.

SPECIFIED ACTIVITY¹³⁴

specified activity means—

- (a) clearing under a development approval for a material change of use or the reconfiguration of a lot, if the approval is given for a development application—
 - (i) made after the commencement of this definition; and
 - (ii) for which the chief executive administering VMA is a concurrence agency; or
- (ab) clearing an area of vegetation that is less than 0.125ha within a watercourse or lake for an activity (other than an activity relating to a material change of use of premises or the reconfiguring of a lot) that is subject to an approval process and is approved under this or another Act if—
 - (i) the area is shown on a property map of assessable vegetation as a category 3 area, a category 4 area or a category X area; or
 - (ii) for the area, there is no property map of assessable vegetation and the vegetation is a remnant not of concern regional ecosystem or the vegetation is not remnant vegetation; or
- (b) a traditional Aboriginal or Torres Strait Islander cultural activity, other than a commercial activity; or
- (c) a mining activity or a petroleum activity as defined under the *Environmental Protection Act 1994*; or
- (ca) any aspect of development for geothermal exploration carried out under a geothermal exploration permit under the *Geothermal Exploration Act 2004*; or
- (d) an activity under the *Fire and Rescue Service Act 1990*, section 53, 68 or 69; or
- (e) an activity under—
 - (i) the *Electricity Act 1994*, section 101 or 112A; or
 - (ii) the *Electricity Regulation 1994*, section 14; or
- (f) for a State-controlled road under the *Transport Infrastructure Act 1994*—
 - (i) road works carried out on the State-controlled road; or
 - (ii) ancillary works and encroachments carried out under section 50 of that Act; or
- (g) clearing, for routine transport corridor management and safety purposes, on existing rail corridor land, new rail corridor land, non-rail corridor land or commercial corridor land (within the meaning of the *Transport Infrastructure Act 1994*) that is not subject to a commercial lease; or
- (h) any activity authorised under the *Forestry Act 1959*.

URBAN AREA¹³⁵

Urban area means—

- (a) an area identified as a priority infrastructure area in a priority infrastructure plan; or
- (b) if no priority infrastructure area exists, an area identified in a gazette notice by the chief executive under VMA as an urban area; or
- (c) if no priority infrastructure area exists or gazette notice has been published—an area identified on a map in a planning scheme as an area for urban purposes, including future urban purposes, but not rural residential or future rural residential purposes.

URBAN PURPOSES¹³⁶

Urban purposes means purposes for which land is used in cities or towns, including residential, industrial, sporting, recreation and commercial purposes, but not including environmental, conservation, rural, natural or wilderness area purposes.

¹³³ *Queensland Greenhouse Strategy*, Environmental Protection Agency, Queensland, 2004, pA:11.

¹³⁴ *Integrated Planning Act 1997* (Qld), Dictionary.

¹³⁵ *Integrated Planning Act 1997* (Qld), Dictionary.

¹³⁶ *Integrated Planning Act 1997* (Qld), Dictionary.

BIBLIOGRAPHY

Adaptation to Climate Change in Regional NRM Plans, Queensland Government, September 2004.

A.Kirby, *Grim climate warning: Climate change threatens to leave us sick, hungry and thirsty*, Sci/ Tech., British Broadcasting Commission, 07: 09 GMT Monday, November 2, 1998. <http://news.bbc.co.uk/1/hi/sci/tech/205867.stm>. (The Hadley Centre does the same work for the UK on climate change as CSIRO does for Australia)

Allen Consulting Group, *Climate Change Risk and Vulnerability: Promoting an efficient adaptation response in Australia*, Final Report, Australian Greenhouse Office, Department of the Environment and Heritage, Canberra, March 2005.

B.Pittock (ed.), *Climate Change: An Australian Guide to the Science and Potential Impacts*, Australian Greenhouse Office, Canberra, 2003.

Building a better future for South East Queensland: Your guide to the South East Queensland Regional Plan and South East Queensland Infrastructure Plan 2005-2026, Office of Urban Management, Queensland Government.

Bureau of Meteorology, *Australia's hottest year on record*, Annual Australian Climate Summary 2005, 4th January 2006, Bureau of Meteorology, http://www.bom.gov.au/announcements/media_releases/climate/change/20060104.shtml 5/01/2006

Bureau of Meteorology, *Hot December ends warmest year on record for Queensland*, Media Release - Queensland Regional Office, Tuesday 5th January 2006, Bureau of Meteorology, http://www.bom.gov.au/announcements/media_releases/qld/20060105.shtml 6/01/2006

Bureau of Meteorology, *Hopes pinned on March rainfall following record hot summer in Queensland*, Media Release - Queensland Regional Office, Wednesday 1st March 2006, Bureau of Meteorology, http://www.bom.gov.au/announcements/media_releases/qld/20060301.shtml 5/03/2006

Climate Smart Adaptation: What does climate change mean for you?, Department of Natural Resources and Mines, Indooroopilly, 2005.

H. Gitay *et. al.* (eds), *Climate Change and Biodiversity*, IPCC Technical Paper V, Intergovernmental Panel on Climate Change, April 2002.

Integrated Planning Act 1997 (Qld)

J.J.McCarthy *et. al.* (eds.), *Climate Change 2001: Impacts, Adaptation, and Vulnerability*, Contribution of the Working Group II to the Third Assessment Report of the Intergovernmental Panel on Climate Change, Cambridge University Press, Cambridge, 2001.

M.Gabriel *et. al.*, *Climate Change: the Challenge for Natural Resource Management*, Department of Natural Resources and Mines, Brisbane, 2004, p

National Strategy for Ecologically Sustainable Development, prepared by the Ecologically Sustainable Development Steering Committee and endorsed by the Council of Australian Governments, December, 1992.

Natural Resource Management Ministerial Council (2004), *National Biodiversity and Climate Change Action Plan 2004–2007*, Australian Government, Department of the Environment and Heritage, Canberra, ACT.

P. Lafferty & J. Rowe (eds.), *The Hutchinson Dictionary of Science*, Helicon, Oxford, 1995.

Queensland Greenhouse Strategy, Environmental Protection Agency, Queensland, 2004.

Regional Nature Conservation Strategy for South East Queensland 2003-2008, Environmental Protection Agency, Brisbane, 2003.

Scientists Prove Less Trees, Less Rain. March 11, 2005 - By Reuters. Environmental News Network, <http://www.enn.com/today.html?id=7307>.

South East Queensland Regional Plan 2005-2026, Office of Urban Management, Department of Local Government, Planning, Sport and Recreation, Queensland, June 2005.

T.J.Lyons (Prof.), *Clouds form preferentially over native vegetation*, School of Environmental Science, Murdoch University, Australia.

Vegetation Management Act 1999 (Qld), Glossary.

W. Cai *et. al.*, *Climate Change in Queensland under Enhanced Greenhouse Conditions*, Final Report 2002-2003, Annual Report 2003, CSIRO Atmospheric Research, Aspendale Victoria, May 2003.

INDEX

- 19508, 13, 41
197013, 14
20,000 years.....9, 14
4AR9
Amazon30, 31
assessable development.42, 46, 53, 54, 55, 58, 59, 60, 62
biodiversity15, 17, 19, 22, 23, 24, 25, 28, 29, 30, 37, 38, 39, 40, 42, 52, 58, 60
Bureau of Meteorology.....7, 10, 11, 13, 41, 65
bushcare.....29, 31
bushfire.....20, 21, 32
carbon dioxide.....8, 13, 26, 27, 28, 31, 32, 34, 60, 63
carbon sink.....26, 33, 34, 40, 62
carbon source.....26
category.....17, 18, 46, 54, 55, 57, 61, 63, 64
clearing..5, 6, 16, 17, 18, 19, 20, 21, 22, 24, 25, 26, 30, 31, 33, 34, 40, 42, 46, 47, 48, 49, 51, 52, 53, 54, 55, 56, 59, 61, 62, 63, 64
cloud.....19, 30, 40
CO₂.....8, 32, 42
compensation.....6, 40, 42, 48, 49, 50, 51, 52, 53
conservation reserves23
corridor15, 64
Councils.....6, 37, 42, 46, 50, 51
CSIRO ...7, 9, 10, 11, 12, 14, 20, 31, 32, 35, 36, 42, 64, 65
deforestation.....30, 31, 61, 62
economic impact40
emissions scenarios.....8, 15, 41
employment.....40, 44
endangered5, 15, 22, 24, 37, 46, 51, 52, 55, 61
Environment Protection Act 199416
environmental value24, 25, 37, 42
Eucalypt.....28
Eucalyptus.....28, 41
eutrophication.....19, 27, 28
Eutrophication3, 27
exponential13
extinct19, 25, 51
extinction22, 23
Fourth Assessment Report9
fragmentation8, 15, 19, 22, 24
Fragmentation3, 21, 22
gene pool.....23
greenhouse gas emissions ...7, 8, 9, 10, 14, 16, 17, 19, 20, 25, 26, 40, 52
ice age9, 14
Integrated Planning Act 1997....1, 2, 5, 6, 7, 15, 16, 17, 18, 19, 21, 24, 25, 26, 28, 29, 30, 31, 32, 33, 34, 40, 42, 43, 44, 45, 46, 47, 48, 51, 53, 54, 55, 56, 57, 60, 61, 62, 63, 64, 65
intergenerational equity.....19, 32, 33, 42
Intergovernmental Panel on Climate Change...7, 8, 15, 20, 21, 22, 23, 24, 31, 41, 65
IPCC.....7, 8, 9, 10, 12, 15, 22, 23, 24, 31, 41, 65
Kyoto Protocol.....7, 16, 17, 40
Land clearing16
map18
migrate15, 22, 23, 40
migration8, 15, 22, 24, 38, 39
National Biodiversity and Climate Change Action Plan3, 20, 37, 38, 39, 65
national parks.....17, 23
Natural variability13
Nature Conservation Act 1992.....16, 50, 51, 63
nature reserves24
precautionary principle.....19, 33, 34, 44, 52
protected area.....17, 23, 38, 39, 63
Queensland....1, 2, 3, 5, 6, 7, 9, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 54, 57, 58, 60, 61, 62, 63, 64, 65
RECOMMENDATIONS IN BRIEF5
remnant vegetation17, 26, 52, 55, 61, 62, 64
research14, 19, 21, 29, 30, 31, 40
revegetation19, 29, 40, 42
scenarios.....8, 10, 14, 20, 21
sea-level.....8, 15
sequestration19, 40
Soil moisture12
South East Queensland Regional plan 2005-2026 ..17, 25, 30
state forests23
sustainable development .20, 32, 33, 34, 35, 42, 44, 45
TAR.....8, 9, 10
Third Assessment Report7, 8, 9, 10, 20, 21, 22, 65
threatened24, 38, 51
tolerance19, 28, 41
transpiration19, 40
trend.....11, 12, 13, 14, 20, 35, 36
UNFCCC7, 16
United Nations Framework Convention on Climate Change7, 16, 61
Urban Footprint17, 18, 57, 58, 59
urban heat island effect.....19, 25, 40
Vegetation clearing22, 26
Vegetation Management Act 1999 .2, 5, 16, 17, 19, 21, 24, 26, 51, 52, 55, 56, 58, 59, 60, 61, 62, 63, 65
vulnerable21, 24, 28, 38, 39, 51
water8, 9, 10, 11, 12, 15, 20, 25, 27, 28, 30, 31, 34, 35, 36, 37, 40, 44, 45, 51, 58, 60, 63
weed.....19, 29, 40
weeds.....28, 29, 31, 40
Western Australia.....11, 12, 30, 31, 36
wildfires8, 15, 19, 20, 21