

CORRIGENDA

SUMMARY

The proposal to drain and restore Lake Pedder raises matters that impinge on the future management of the Tasmanian Wilderness World Heritage Area and is therefore a matter for joint consideration by the Commonwealth and Tasmania. The Commonwealth is not under any legal obligation to act in this matter but has the power to act if it so chooses. Unilateral Commonwealth action would require the introduction of new or amending legislation.

The proposal to drain and restore Lake Pedder is sufficiently developed to be raised as a question for an in-principle decision but the detail and information currently available does not provide the basis for a commitment to proceed. Technically it is feasible to drain the present impoundment and restore the geomorphological features of the original lake.

If implemented, it is likely that the proposal would enhance the world heritage values of the Tasmanian Wilderness World Heritage Area. There would be risks involved and there would be a significant cost to the Tasmanian community.

More information would be required before an in-principle decision could be taken to proceed with the proposal and even then, there would be a need for research, planning and environmental impact assessment before a final commitment could be made to 'pull the plug'. A final decision would require governments to undertake further research, some site rehabilitation work, monitoring, and ongoing management. Governments would also have to provide new infrastructure and could become committed to costly intervention in the natural rehabilitation process.

Other significant costs could be involved in either breaching the Scotts Peak Dam or installing a spill way to achieve adequate drainage of the Huon catchment.

There would be a reduction in the capacity of the hydro electricity system. Lake Pedder is important to the integrated energy system in Tasmania and, in particular, to the drought proofing of that system. This could become significant in the long term if future demand for power approached the production capacity of the system. Comalco, the largest power consumer, has said that removing Lake Pedder from the system would have a negative impact on future investment decisions to be taken by them. It might also influence investment decisions of other companies. However, with current demand levels, the loss could be accommodated.

There was conflicting evidence given about the impact of tourism. At the very least, any benefits that the proposal might generate through an increase in tourism would be partly offset by the loss of the trout fishery and the costs of managing access to the area.

The most compelling reasons for restoring the lake are symbolic. There is no obligation in world heritage terms to proceed with the restoration proposal nor are there compelling conservation reasons to do so. The proposal does have some world heritage and conservation merit but it is the symbolic value which weighs most heavily with those in favour of proceeding. There is also substantial opposition to the proposal in Tasmania because of the symbolic significance of retaining the current lake. Many of those opposed to the proposal identified in Lake Pedder a representation of the State's history, including the debates about hydro development.

There are more compelling and urgent priorities and environmental goals that the Commonwealth and Tasmanian Governments need to achieve. Given these other priorities it is inappropriate to allocate Commonwealth resources to further development or detailed consideration of the Lake Pedder proposal.

The proposal is opposed by the Government and the Opposition party in Tasmania, and under these circumstances has no real prospect of proceeding in the foreseeable future.

The Committee concludes therefore that, although the proposal could be implemented, it does not have either the priority nor the official support necessary to warrant the commitment of Commonwealth Government resources for further assessment.

Parliament of the Commonwealth of Australia

House of Representatives Standing Committee on
Environment, Recreation and the Arts

**INQUIRY INTO
THE PROPOSAL TO DRAIN AND RESTORE
LAKE PEDDER**

June 1995

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TERMS OF REFERENCE

Matter referred to the Committee:

Inquiry into the proposal to drain and restore Lake Pedder -

the implications of the proposal for the future management of the Tasmanian Wilderness World Heritage Area;

the potential environmental and economic opportunities and costs arising from the proposed drainage and restoration; and

the adequacy of information currently available to assess the proposal and the need for further research.

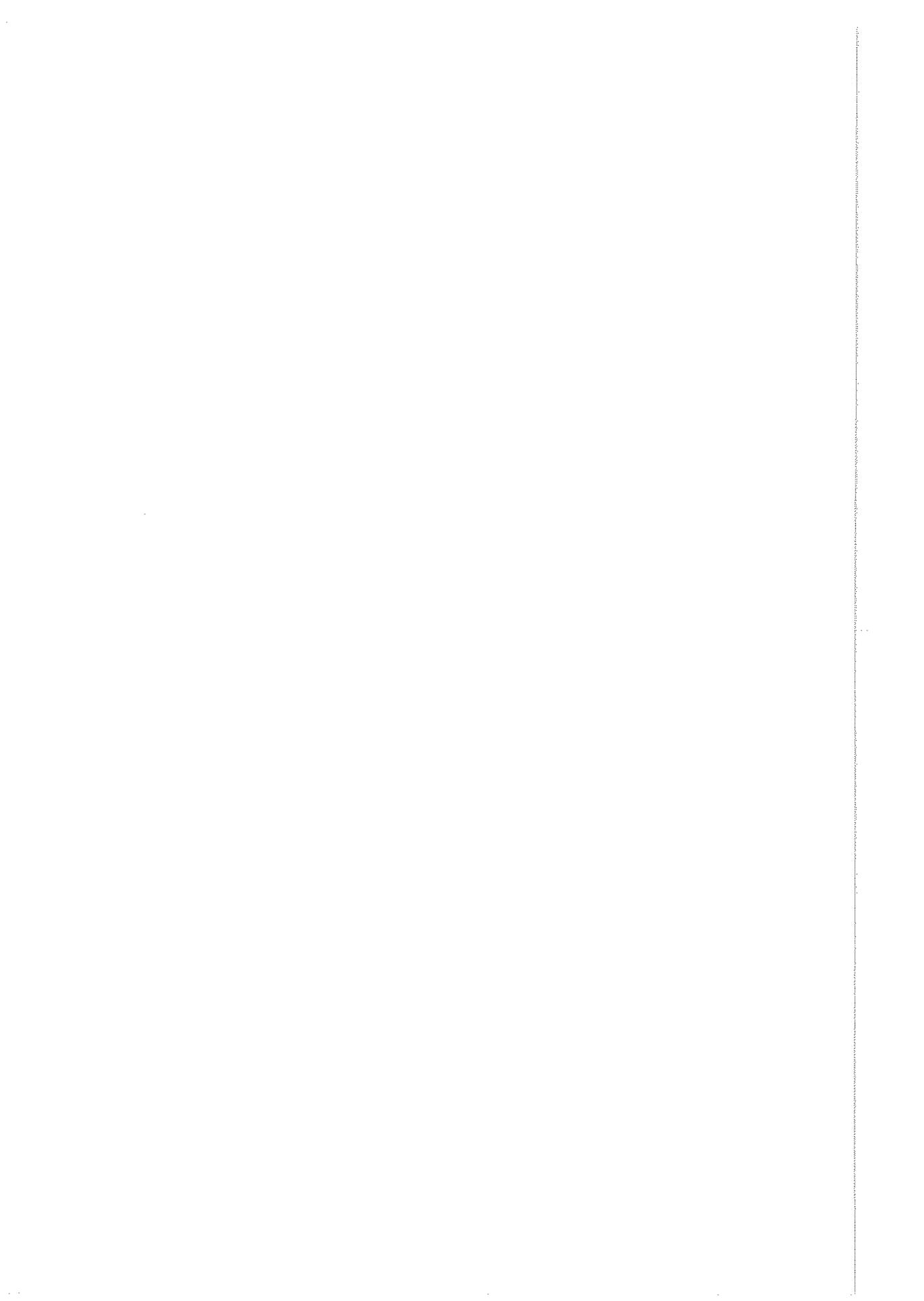


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PREFACE

The inquiry into the proposal to drain and restore Lake Pedder was much more controversial than the members of the House of Representatives Committee on the *Environment, Recreation and the Arts* expected when we decided to study the issue. We began the inquiry in the spirit of serious exploration of the idea, and in the belief that dispassionate study of all sides of the issue would lead to a reasonable conclusion. Some members thought the idea attractive, others that it was silly but all members from all parties agreed that a parliamentary inquiry was warranted and that it was an appropriately low cost method of considering the issue.

However, the inquiry generated wild controversy. Some absurd, seriously misjudged and quite untrue assertions were made. The Committee was attacked from many sides. Some people believed that the Commonwealth Government must have instigated the inquiry for some hidden political reason - when in fact the idea of undertaking the study had been the Committee's own. *Tasmanian state politicians chose to portray the inquiry as a prelude to Commonwealth intervention in the state - when in fact the Committee was interested in and could only consider the potential national responsibilities relating to the issue. Members of the Committee had not realised the continuing emotional intensity of the debate and the symbolic importance of the Lake Pedder, old and new.*

Nevertheless much lucid, informed evidence was presented in submissions and by witnesses, and the Committee appreciates the effort which the main proponents from both sides of the argument put into gathering, preparing and presenting their material. Inevitably there were strong conflicts and sharp contrasts in the perspectives of the witnesses, but some narrowing of those differences occurred during the course of the inquiry.

There were differences in attitude and orientation amongst members of the Committee as well, and therefore I am particularly grateful that members have been willing to make a concerted effort to reach an agreed conclusion. The Committee was aware of the importance of trying to reach a conclusion which would last by being based on a sufficiently thorough examination of the issues to avoid a reopening of the subject for a long time. Inevitably insufficient evidence was available to reach conclusions about some of the issues, but we weighed all the material presented to us and have noted where more would have been of value.

The drafting of the report by the Secretary of the Committee, Ian Dundas, and the research officer, Sue Irvine, was undertaken with intellectual rigour, thoroughness and sympathy to each side of the debate. *They reflected accurately the information and views of witnesses and the opinions of the Committee and prepared a comprehensive and lucid draft. I thank them warmly for their professional commitment to the drafting and, with Marlene Lyons, for the efficiency with which the inquiry was organised.*

I regret that we have had to come to the conclusion that the Lake should not be drained, but do firmly consider this to be the recommendation which most fully reflects the responsibilities of the Committee to all Australians and to Australia's natural environment.

John Langmore
Committee Chair

19 June 1995

SUMMARY

The proposal to drain and restore Lake Pedder raises matters that impinge on the future management of the Tasmanian Wilderness World Heritage Area and is therefore a matter for joint consideration by the Commonwealth and Tasmania. The Commonwealth is not under any legal obligation to act in this matter but has the power to act if it so chooses. Unilateral Commonwealth action would require the introduction of new or amending legislation.

The proposal to drain and restore Lake Pedder is sufficiently developed to be raised as a question for an in-principle decision but insufficient detail and information is currently available to provide the basis for a definite commitment to proceed. Technically it is feasible to drain the present impoundment and restore the original lake.

If implemented the proposal would enhance the world heritage values of the Tasmanian Wilderness World Heritage Area. There would be risks involved and there would be a significant net cost to the Tasmanian community.

More information is required before an in principle decision could be taken and even then, there would be a need for research, planning and environmental impact assessment before a final commitment could be made to 'pull the plug'. A final decision would commit governments to further research, some site rehabilitation work, monitoring, on going management and the provision of new infrastructure. It could also commit governments to a costly intervention in the natural rehabilitation process.

Other significant costs could be involved in either breaching the Scotts Peak Dam or installing a spill way to achieve adequate drainage of the Huon catchment.

There would be a marginal reduction in the capacity of the hydro electricity system. This could become significant in the long term if future demand for power approached the production capacity of the system. Removing Lake Pedder from the system would have a negative impact on future investment decisions to be taken by Comalco, the main power consumer, but with current demand levels, the loss could otherwise be accommodated.

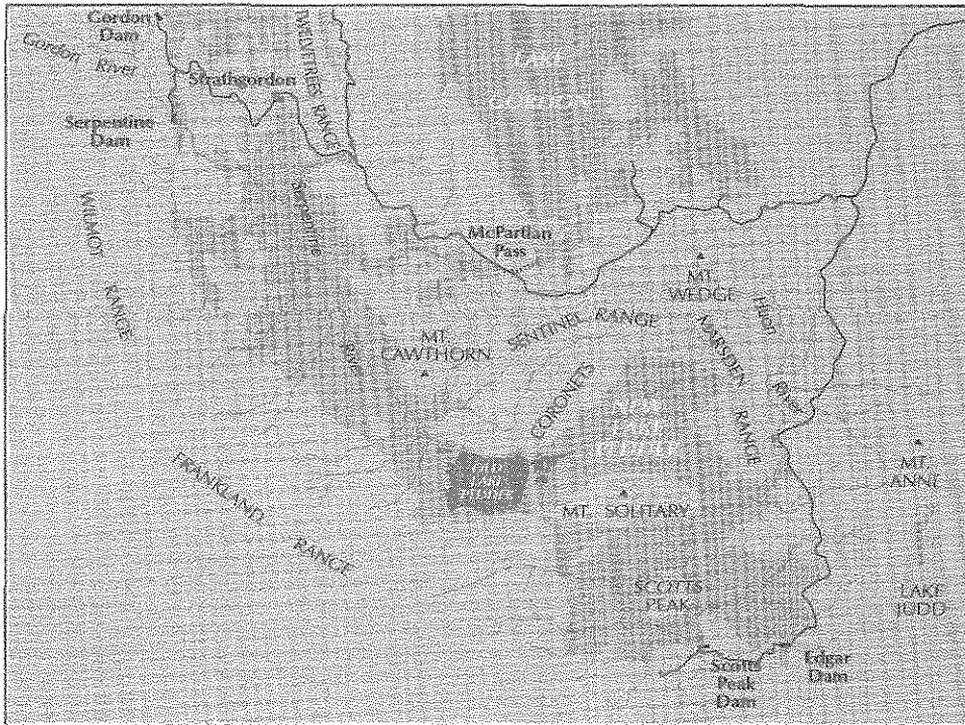
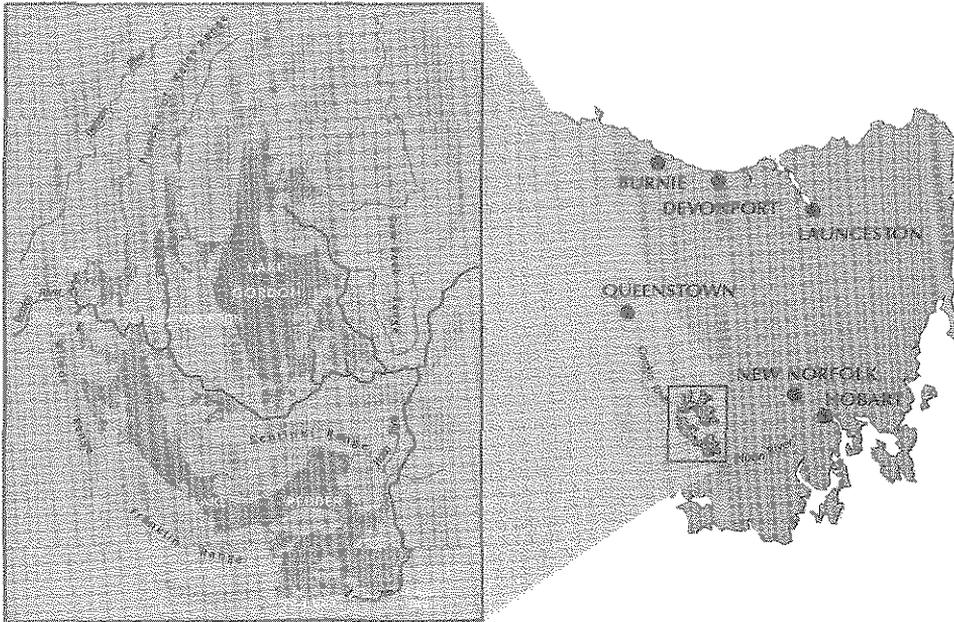
There would be some benefits associated with tourism but this would be partly offset by a loss of the trout fishery and the costs of managing access to the area.

The most compelling reasons for restoring the lake are symbolic - there is no obligation in world heritage terms to proceed with the restoration proposal nor are there compelling conservation reasons to do so. The proposal does have some world heritage and conservation merit but it is the symbolic merit which weighs most heavily in favour of proceeding.

There are more compelling or urgent priorities and environmental goals that the Commonwealth and Tasmanian Governments need to achieve. Given these other priorities it is inappropriate to allocate Commonwealth resources to further development or detailed consideration of the Lake Pedder proposal at the present time. It is opposed by the government and the major opposition in Tasmania and under these circumstances has no real prospect of proceeding in the foreseeable future.

The Committee concludes therefore that, although the proposal could be implemented at some cost and would enhance world heritage values, it does not have either the priority nor the official support necessary to warrant the commitment of Commonwealth Government resources for further assessment at present.

LOCATION OF LAKE PEDDER



Source: Hydro-Electric Commission



CHAPTER 1: INTRODUCTION

Background to the inquiry

1.1 Lake Pedder was flooded in 1972 to create a hydro-electric water storage servicing the Gordon River Power Development scheme. The flooding proposal was a controversial issue. It was strongly opposed by some, divided the Tasmanian community and contributed to the establishment of the national conservation movement. The passionate opposition to the flooding reflected the strong emotional appeal that the original Lake Pedder had for many who had visited its shores or knew of it through photographs. Support for the new dam was, in some quarters, just as passionate because fears had been raised about the threats to the economic security and life styles of Tasmanians, and because the embryonic conservation movement was probably perceived for the first time as posing a real threat to existing power structures.

1.2 Some of those who felt that they had lost a battle in the early 1970s did not give up hope that the lake would be restored and that the decisions taken by the government of the day and the Hydro-Electric Commission (HEC) would be reversed. The deep concern that they felt and the symbolic importance of the drowned lake led eventually, and perhaps inevitably, to the initiation of a concerted campaign for its restoration. The emergence of this campaign also prompted the instigation of a counter campaign initiated by those who felt that the decision to flood Lake Pedder was appropriate or could not now be overturned, except at an unacceptable cost. The proposal to drain and restore Lake Pedder therefore became a very emotional and vigorously contested issue. The question of the future of Lake Pedder once again divided the Tasmanian community.

1.3 The future of Lake Pedder was revived as a serious issue in April 1994 when the Lake Pedder Study Group released a paper, *Why Lake Pedder should be restored*. The Lake Pedder Study Group is a joint Victorian - Tasmanian voluntary body established in 1992. Its paper was based on the findings of six reports that it commissioned on the technical feasibility of restoring the lake. Two years later, and after the IUCN (the World Conservation Union) had passed a resolution calling for the restoration of Lake Pedder, the Lake Pedder Restoration Committee launched the Pedder 2000 campaign with the aim of beginning to drain the current lake. Branches of Pedder 2000 were formed in Sydney, Melbourne, Canberra, Adelaide, Launceston and Burnie, with coordination from Hobart.

1.4 Commonwealth Members of Parliament were asked to support the proposal and to use their powers to ensure that action was taken. After discussions with representatives of the Pedder 2000 campaign, the Environment, Recreation and the Arts Committee decided to hold an inquiry into the issue, and the Minister for Environment, Sport and Territories agreed to this proposal. In consultation with the Minister, the Committee agreed to consider some of the matters that would need to be taken into account in coming to a decision about the merits of the proposal and whether it should be supported. The Committee found that it first needed to consider the feasibility of the proposal and the likelihood that it would attract sufficient support to warrant further serious consideration at the present time.

1.5 The Committee was faced with a considerable challenge in conducting the inquiry. Early in the process of gathering evidence it became apparent that views about restoring Lake Pedder were extremely polarised, and the issue had become the subject of intense and divisive debate. However the Committee's goal throughout the inquiry was to seek accurate information, careful analysis and reasonable argument as a basis for producing a sound report.

1.6 The proposal does not currently have the status of a matter put to the Commonwealth Government by a formally constituted authority, such as the Tasmanian Wilderness World Heritage Area Consultative Committee, or by the Tasmanian Government, which would have a major responsibility in implementing the proposal if it were to go ahead. As such the proposal does not yet require the Commonwealth to make a definitive decision. This does not mean that the proposal should be dismissed without serious initial consideration or that the Commonwealth should simply ignore the public representations that have been made to it. The Commonwealth's response would be significant in determining what further assessment might be given to the proposal and the questions it raises. The Commonwealth would also need to carefully consider its position given that the proposal involves the future management of the Tasmanian Wilderness World Heritage Area.

1.7 The Committee's inquiry provided a forum for the case for the restoration of Lake Pedder to be presented in a more formal way than the public campaign sponsored by Pedder 2000. It also provided a forum for the opposition to the proposal. It appears to have become expected that the Committee would choose between the two alternative points of view and make a definitive recommendation about the proposal's future. This became a threshold question for the Committee and is dealt with in the following chapters.

1.8 The Committee was not specifically asked to recommend whether or not Lake Pedder should be restored. The terms of reference for the inquiry required that it consider:

- . the implications of the proposal for the future management of the Tasmanian Wilderness World Heritage Area;
- . the potential environmental and economic opportunities and costs arising from the proposed drainage and restoration; and
- . the adequacy of the information currently available to assess the proposal and the need for further research.

1.9 The question of whether the restoration proposal should be implemented inevitably arose and the Committee's response to the terms of reference could only be framed against a consideration of the overall merit of the proposal and the likelihood that it might proceed.

1.10 The Committee needed to consider if the proposal had any prospect of success so that it could determine if the information currently available is adequate or if resources should be put into more extensive studies. This was both a legal and a political question, with an answer partly dependent on the balance of legal powers between the Commonwealth and Tasmania, and partly on the balance of public opinion.

1.11 In considering the evidence and reaching its conclusions the Committee closely examined the reasons presented both for and against the proposal. We endeavoured to take a balanced and rational approach to a matter that became highly political and emotional. All of the evidence was carefully considered and the arguments assessed. The costs and benefits

were considered, although it was noted that not all of these could be adequately measured in economic or other terms. There were strong aesthetic and even spiritual values that were associated with the proposal to restore the lake and similar concerns were raised by those wishing to see the lake retained. The Committee considered such values as well as the more easily identified and measured, (but strongly disputed), economic costs and benefits.

The restoration proposal

1.12 Based on the evidence contained in the studies commissioned by the Lake Pedder Study Group, Pedder 2000 believed that the lake and related landforms could be restored as a fully functioning physical feature, and that its aesthetic values could also be restored. The landforms were regarded as the most important attribute of the original lake and these were reported to be clearly recoverable. Pedder 2000 accepted that some endemic species had been lost and that the lake could not be completely restored to its pristine condition, but believed that once rehabilitation work was completed the area would be 'a thoroughly worthy part of the World Heritage Area, functioning and evolving once more, wholly in response to natural processes.'¹

1.13 At the time of the launch of the campaign no studies had been undertaken into the degree of intervention that would be needed to restore the vegetation surrounding the lake, nor was any indication given of what would be an acceptable standard of rehabilitation. It was anticipated that such decisions would be dealt with under the Tasmanian Wilderness World Heritage Area Management Plan, which is subject to community consultation. Pedder 2000 acknowledged at the outset that while an exact restoration to the pre-flooding condition was not possible, the physical possibility of exposing the unique landforms was deemed by them to constitute sufficient grounds for an in-principle discussion to restore the lake.

1.14 While an attempt was made to quantify anticipated benefits and costs, Pedder 2000 believed that Lake Pedder has sufficient intrinsic merit to warrant its restoration regardless of whether it would make money or create jobs. Much of the appeal of the proposal was seen to be in its symbolism, that is, it would be a demonstration that human beings can rectify what Pedder 2000 considered to be environmental mistakes, and can act altruistically to restore a unique treasure for future generations. The aesthetic and spiritual pull of the former lake is still strongly felt by those who visited it, those who fought unsuccessfully to save it as well as others who have seen only photographs.

1.15 In its submission to the inquiry Pedder 2000 examined how the proposal related to the objectives of the Tasmanian Wilderness World Heritage Area Management Plan. This five year plan was prepared by the Tasmanian Department of Parks, Wildlife and Heritage with Commonwealth assistance and approved by both Tasmanian and Commonwealth Ministers. Pedder 2000 considered that their proposal fitted perfectly with the Plan's overall objective, which is 'to protect, conserve, present and, where necessary, rehabilitate the natural and cultural heritage' and that this accorded with the aims of the World Heritage Convention.

1 Pedder 2000, *Why Lake Pedder should be restored*, April 1994, p 16.

1.16 In their initial evidence to the Committee Pedder 2000 explained that the process of draining the impoundment was a matter that had not been finalised and noted that more work needed to be done.² They believed, however, that the proposal would be essentially fairly simple and could involve little more than opening the outlet valves and letting the impoundment drain, with some management of the rate of draw down to minimise damage to the Lake Pedder dunes. Questions were raised about the technical feasibility of this approach, the implications downstream, and the need to dismantle redundant infrastructure.

1.17 The proponents' preferred options in relation to these and other questions were, in some matters, clarified during the course of the inquiry but others were seen not to be central to the 'in-principle' consideration of the proposal. It was stated for example that Pedder 2000 preferred that the dams be removed but that they did not see this as essential to their proposal and was not included in their estimation of the likely costs.³ Other matters were left to be determined at some future time as information and developments allowed. It is sufficient to note as a starting point for the Committee's inquiry that the Pedder 2000 proposal was not fully detailed in specifying engineering options. All that was required to begin consideration of the proposal was the request for an in-principle decision about whether the proposal should proceed. Other issues and matters of detail could be clarified and considered if options for implementing the proposal are developed and questions identified. The Committee's inquiry was particularly useful in exposing the proposal to scrutiny and raising questions that needed to be answered if the proposal were to proceed.

1.18 Initial evaluation of the issues was possible from the evidence presented to the Committee and some conclusions have been made, but further consideration would depend on a clearer definition of the details of the proposal. It is not necessary for Pedder 2000 to prepare a detailed operational plan. In the long run, if a decision were taken to proceed with the proposal, the relevant state government agencies would have to carry out detailed studies and prepare operational plans. It is these agencies, and not Pedder 2000, who would then have to define all the details of the final proposal. The Committee therefore had to consider the views of the Tasmanian Government and its agencies.

1.19 Pedder 2000 stressed in its submission that many of the benefits would be intangible and hence difficult to quantify and it urged the Committee to take the broadest possible view of costs and benefits. These costs would depend partly on the level of intervention and the future management of the area. Pedder 2000 listed the studies that would be required, some of which are being undertaken by members of the scientific arm of the Lake Pedder Restoration Committee, but believed that there was sufficient information already available for a decision to restore the lake. *Among the benefits predicted were an increase in tourism in the area and an opportunity to develop expertise in restoration ecology, both of which would be enhanced by the world wide attention the project could expect to attract.*

2 Evidence pp16-17.

3 Evidence p 11.

1.20 Pedder 2000 gave further evidence relating to the proposal at the Committee's public hearings in February and April. It clarified that it was not calling for the removal of the dams that flood Lake Pedder⁴, and that costs associated with the removal of dams and rehabilitation would be decided by the community once the decision to proceed is made. These matters and the arguments against draining the lake are dealt in the following chapters.

4 Evidence p 296.

CHAPTER 2: WORLD HERITAGE AND THE COMMONWEALTH'S POWERS

The Commonwealth's powers

2.1 Whether or not the proposal to restore Lake Pedder has merit and whether it is likely to be seriously considered as a possible course of action became threshold questions for the Committee's inquiry. Whether it is implemented may depend, in part, on the respective powers of the Commonwealth and the State of Tasmania. A submission from the Tasmanian Government made it clear that, not only did it strongly oppose the proposal, it had initial legal advice that the Commonwealth had no constitutional power to require the State to drain the lake. It considered that the decision on whether Lake Pedder should be drained was a matter for the Tasmanian Government. This view notwithstanding, Dr Daniel Norton, the Secretary of the Department of Premier and Cabinet, told the Committee:

To the extent that Lake Pedder is a part of the world heritage area, obviously the management of a world heritage area is a joint Commonwealth and state issue. So the Commonwealth certainly has a role in that respect. The Commonwealth has seen fit to investigate the issue, and I guess they can investigate any issue in that respect.¹

2.2 If the Commonwealth has no powers in the matter and if the Tasmanian Government continues to oppose the proposal then there would be no prospect of the proposal proceeding. It would not therefore warrant further serious consideration by the Commonwealth. However, some of the submissions to the Committee argued that not only did the Commonwealth have the necessary powers but it also was under an obligation to act because of the world heritage status of the area.

2.3 The Tasmanian Government did not present its legal opinion to the Committee. It had been the Committee's intention to pursue this question with the Government at the public hearing in Hobart on 6 April 1995 but, in a letter received just before the hearing, the Premier of Tasmania said that the Government would not appear at the hearing. The Premier demanded that the Committee immediately wind up its deliberations. This uncooperative attitude to the Committee may have prevented the Tasmanian Government from presenting useful evidence in support of its arguments. The Committee received an authoritative submission from the Commonwealth Department of the Attorney-General and, in the absence of any further advice from the Tasmanian Government, based its assessment of the legal position largely on this submission.

Lake Pedder as world heritage

2.4 The region containing Lake Pedder has been inscribed by the World Heritage Committee of UNESCO on the World Heritage List. This list was established under the Convention Concerning the Protection of the World Cultural and Natural Heritage (the World Heritage Convention).

1 Evidence p 43.

2.5 Dr Bob Brown, co-convenor of Pedder 2000, suggested that consideration of the Lake Pedder restoration proposal should involve negotiation between the Commonwealth Government and the Government of Tasmania, and that the Commonwealth should take an active role in the matter:

This is part of the Tasmanian wilderness world heritage area. From my point of view as a bush lawyer, that means that basically the Commonwealth can intervene to protect an area and can stop things that are untoward or inimical to the world heritage area from happening. It is also charged under the World Heritage Convention with rehabilitating, where it can, world heritage assets, and this would appear to empower the Commonwealth to move towards rehabilitating Lake Pedder - particularly as this area with the lake in it was originally included with the hope that the lake could be restored at some future time.²

2.6 Referring to the Tasmanian Wilderness World Heritage Area Management Plan, Dr Brown suggested that there was an obligation on the Commonwealth and Tasmania to consider the draining of Lake Pedder.³ Others went further than this and suggested that this obligation extended beyond a mere consideration of the possibility of restoration. These views depended in part on an interpretation of Article 5 of the World Heritage Convention which states:

To ensure that effective and active measures are taken for the protection, conservation and presentation of the cultural and natural heritage situated on its territory, each State Party to this Convention shall endeavour, in so far as is possible, and as appropriate for each country:

...

(d) to take the appropriate legal, scientific, technical, administrative and financial measures necessary for the identification, protection, conservation, presentation and rehabilitation of this heritage.

2.7 Dr Geoff Mosley presented evidence on behalf of the Australian Conservation Foundation and the Lake Pedder Study Group. He suggested that the Commonwealth has at least as much responsibility to restore Lake Pedder as it did to stop the construction of the Gordon below Franklin Dam. This opinion was based on the interpretation that the World Heritage Convention places an obligation squarely on Australia to act.⁴

2.8 Dr Mosley supported his submission with a legal opinion by Mr Caston QC and Mr Moore. This opinion rejected the stated position of the Tasmanian Government and expressed a contrary view:

In appropriate cases, the Commonwealth is empowered and, indeed, obligated to take steps to enhance the heritage potential of the property.⁵

2 Evidence p 26.

3 Evidence p 6.

4 Dr Geoff Mosley, Supplementary Submission p 2.

5 Dr Geoff Mosley, Supplementary Submission, attached legal opinion p 3.

2.9 A similar view was expressed in a submission from Mr Stephen Mattingley, a lawyer who has studied world heritage issues:

The High Court of Australia has repeatedly recognised that the World Heritage Convention imposes obligations on the Commonwealth. The Court has found that these obligations provide a basis for the exercise of the Commonwealth's external affairs power ...

... it is clear that the Commonwealth has both an obligation and the power to legislate 'for the ... protection, conservation, presentation and rehabilitation of world heritage, unless the Constitution prevents such legislation.'⁶

2.10 To clarify such views and to help determine whether it was appropriate for the Commonwealth to even consider the restoration proposal, the Committee sought a submission from the Attorney-General's Department. The Department submitted that Australia is not obliged to restore Lake Pedder but that it can do so if it chooses. The Department's view is best summarised by the following extract from its submission:

If the drainage and restoration of Lake Pedder was an 'appropriate' action in the terms of Article 5 of the World Heritage Convention, then the Convention would support legislation under the external affairs power relating to its 'rehabilitation' or 'presentation'. Whether an action is regarded as 'appropriate' in terms of Article 5, would depend upon the Government's consideration of economic, environmental, social and other factors.⁷

2.11 It is clear that the current Lake Pedder is part of the Tasmanian Wilderness World Heritage Area and that any provisions that apply to world heritage can be taken to apply to it. In 1982 the Western Tasmanian Wilderness National Parks area was inscribed on the World Heritage List. The inscribed area was extended by a revised nomination in 1989 which created the Tasmanian Wilderness World Heritage Area. Both the original and revised inscriptions included most of the current Lake Pedder.

2.12 According to the Department of the Environment, Sport and Territories⁸ and the Attorney-General's Department there are few references to Lake Pedder in the nomination documents but the condition of the lake at the time of the two nominations was recognised.⁹ The Department of the Environment, Sport and Territories could only find one reference in either the nomination or the technical evaluation documents that explained why Lake Pedder was taken as world heritage. This reference suggested that Lake Pedder was included because, unlike Lake Gordon which was not included, it is not subject to large fluctuations in water levels and it was advantageous for management purposes to include Lake Pedder. The Department of the Environment, Sport and Territories submitted that world heritage values *per se* were not a paramount consideration in the decision to include Lake Pedder.¹⁰ This does not, however, detract from the lake's legal status as world heritage.

6 Stephen Mattingley, Submission pp 2-3.

7 Attorney-General's Department, Submission p 8.

8 The Department of the Environment, Sport and Territories, Submission p 3.

9 Attorney-General's Department, Submission p 5.

10 The Department of the Environment, Sport and Territories, Submission p 3.

2.13 The IUCN provides the World Heritage Bureau of UNESCO with technical advice on world heritage nominations. In relation to the revised nomination of the Tasmanian wilderness in 1989 the IUCN said, in agreeing that Lake Pedder be retained as part of the world heritage area, that 'some have even suggested that its long term restoration as a natural lake should be considered'.¹¹ This does not establish eventual restoration as a condition of the inclusion of Lake Pedder in the world heritage area nor does it establish an obligation on Australia to restore it. It does suggest, however, that the current Lake Pedder was not seen by the IUCN to add much to the world heritage values of the region.

2.14 The officer of the IUCN responsible for preparing technical advice has recently advised the Pedder 2000 campaign that the IUCN had not initially suggested that Lake Pedder be excised from the nomination, because 'their evaluation in 1989 foreshadowed the eventual prospect of restoration and on that remote (at the time) prospect we left it in'.¹² The IUCN has since raised doubts about the inclusion of the current Lake Pedder in the world heritage area. The general assembly of the IUCN in 1994 adopted a resolution calling on Australia to investigate the feasibility of restoring the lake.¹³ The resolution of the IUCN was adopted by consensus but the delegations from 19 state and government agency members indicated that they would have abstained in the event of a vote.

2.15 The Department of the Environment, Sport and Territories believes that there is no expectation on the part of UNESCO that Lake Pedder will be drained and that the international authorities are comfortable with the impoundment as part of a world heritage site.¹⁴ Dr David Kay, the head of the branch within the Department of the Environment, Sport and Territories that deals with world heritage matters explained this view to the Committee:

The area was listed subsequent to the impoundment. The world heritage committee therefore was obviously of the view that the impoundment did not significantly detract from the nomination and included the area.¹⁵

2.16 The views of the IUCN cannot be taken as binding on Australia. Pedder 2000 argued that Lake Pedder was included in the world heritage area in the expectation that it would be restored. The World Heritage Convention identifies duties of governments in the same way as any other international treaty. It is the provisions of the Convention which need to be examined to identify the nature and scope of the responsibilities that Australia has in respect of restoring Lake Pedder. It is not at all clear that the World Heritage Bureau seriously considered the IUCN expectation that Lake Pedder would be drained or that it was included in the world heritage area on this basis.

11 World Heritage Nomination - IUCN Technical Evaluation 507 Tasmanian Wilderness (Australia) 1989.

12 Exhibit 9, letter from Jim Thorsell to the Lake Pedder Restoration Committee, 17 March 1995.

13 The resolution adopted by the IUCN is at Appendix 5.

14 Evidence p 178.

15 Evidence p 177.

Obligations created by the World Heritage Convention

2.17 Lake Pedder is indisputably subject to the provisions of the World Heritage Convention but the suggestion that the Convention obligates Australia to restore Lake Pedder is not sustainable if the terms of the Convention are given a standard interpretation. The implications of the Convention were discussed by the Attorney-General's Department in its submission to the Committee. The duties imposed by the Convention were explained in the following terms:

Article 4 of the World Heritage Convention refers to each Party's 'duty' of 'ensuring the identification, protection, conservation, presentation and transmission to future generations' of 'natural heritage' as identified under Article 3, and obliges each Party to 'do all it can to this end, to the utmost of its own resources and, where appropriate, with any assistance and co-operation, in particular, financial, artistic and technical, which it may be able to obtain'.¹⁶

2.18 The Attorney-General's Department emphasised that the expression 'to the utmost of its resources' should not be read to mean that the Commonwealth should take action at 'any cost'. The Department explained the nature of the duty relating to world heritage areas defined in section 5 of the Convention. It suggested that if the continued submersion was slowly destroying the old Lake Pedder, for example, the reference to protection might extend to the drainage and restoration.¹⁷ It was also suggested in the Department's submission that 'presentation' of the submerged features could extend to exposing them to view. The more obvious category for action under the convention, according to the Department, is 'rehabilitation'.¹⁸

2.19 The Attorney-General's Department believes that, although the provisions of the World Heritage Convention appear to raise the possibility of draining Lake Pedder for its protection, presentation or rehabilitation, it also provides Party States with considerable discretion:

The language of Article 5 ('endeavour', 'in so far as is possible', 'as appropriate for each country', 'appropriate ... measures') does not constitute an absolute obligation and plainly gives some flexibility and discretion as to the means of implementing the obligations it refers to. This flexibility is given to the Convention Party, Australia, but it is a flexibility which must be exercised in accordance with the international law principle that treaties must be implemented in good faith.

As to the means of, for example, 'rehabilitation', Parties are not obliged to enact specific kinds of legal measures; there is once again, a significant deal of flexibility given to Parties as to the means by which they achieve the required result.

The qualifying words in Article 5 would legitimately allow Australia to take into account factors such as the costs involved in the project, and whether the money could more appropriately be spent in other areas, in determining whether it is appropriate to drain and restore Lake Pedder. Although there is clearly some dispute about the magnitude of the task involved in draining and restoration, it would clearly be a major effort, and it does not appear

16 Attorney-General's Department, Submission p 6.

17 Attorney-General's Department, Submission p 6.

18 Attorney-General's Department, Submission p 7.

to this Department that the applicability of the World Heritage Convention to the submerged features implies any absolute obligation to enter into such an undertaking.¹⁹

2.20 If the Commonwealth were to use its powers to require the draining and restoration of Lake Pedder it would probably first have to enact new legislation or amend the *World Heritage Properties Conservation Act 1983*. The current legislation gives effect to some of Australia's duties under the World Heritage Convention but it operates essentially to prohibit certain actions in its present form. The Act does not provide for 'rehabilitation or presentation' of world heritage areas. The Attorney-General's Department advised that the Act will apply to the Tasmanian Wilderness World Heritage Area only if a Proclamation is first made under the provisions of the Act, but such a step would not make the Act applicable to the restoration proposal unless the Act was first amended:

In any event, even if a Proclamation could be made, the *World Heritage Properties Conservation Act 1983* will not provide a mechanism for giving effect to the Lake Pedder proposal. The Act operates to *prohibit* a person from carrying out an act that is likely to damage or destroy a proclaimed property but it does not allow the Commonwealth to *compel* a person to rehabilitate a proclaimed property.

... It could not effectively impose a positive obligation on a person to perform a particular act, such as would be necessary to effect the rehabilitation of a world heritage area. In particular, section 9 could not effectively provide that a person must take steps to drain Lake Pedder.²⁰

2.21 The Act does allow for the making of regulations but, as the Attorney-General's Department points out, this does not extend to regulations that go beyond the purpose of the Act itself, and this provision alone could not be used in relation to draining Lake Pedder. A regulation requiring the rehabilitation would go beyond the scope and purpose of the Act as it is currently framed, and would be invalid.²¹

2.22 Although it appears that the Commonwealth could introduce valid legislation and, if then necessary, make regulations for the restoration of Lake Pedder, there are certain constitutional limits that would need to be taken into account. The legislation would have to be drafted in such a way as not to discriminate against Tasmania by imposing a special burden that would apply only to it. It would also have to avoid any provision that would offend the implied constitutional limitation that the Commonwealth cannot legislate to impair the essential functioning of a State.

2.23 These matters could be accommodated in new or amending legislation. The Attorney-General's Department believes that it would be possible to enact legislation which would not discriminate against Tasmania, or impair its functioning as a State, particularly if the law was of general application to all world heritage areas and if Tasmania was not left to fund the restoration itself.

2.24 It would also need to be considered if legislation enabling the Commonwealth to direct the restoration of Lake Pedder amounted to an acquisition of property and if the Commonwealth would therefore then be liable to pay compensation.

19 Attorney-General's Department, Submission p 7.

20 Attorney-General's Department, Submission p 17.

21 Attorney-General's Department, submission p 19.

Other legal considerations - Commonwealth and State legislation

2.25 The *Environment Protection (Impact of Proposals) Act 1974* provides that matters affecting the environment to a significant extent are fully considered and taken into account by the Commonwealth when it is involved in making decisions or taking action. If necessary, the Minister for the Environment, Sports and Territories can direct that an environmental impact statement (EIS) be prepared by the proponent of the proposal under consideration.

2.26 The Department of the Environment, Sport and Territories stated in its submission that the Commonwealth Environment Protection Agency (EPA) was of the view that to drain Lake Pedder would, on the face of it, be environmentally significant under the terms of the Act. Therefore if a Commonwealth decision is involved the matter would have to be referred to the EPA.²² It is most likely, given the nature and scale of the restoration project that a detailed EIS would be required.

2.27 The Act provides that the Minister can direct that a public inquiry be carried out to review proposals. This step has rarely been taken but some major proposals have been examined in this way. It is possible that a formal public inquiry under the provisions of the Act would be appropriate.

2.28 An EIS would have to be prepared by the proponent, which for all practical purposes in this case would have to be the Tasmanian Government because it is the owner and manager of Lake Pedder. The proposal would most likely need to be examined under Commonwealth and Tasmanian environmental assessment legislation. The Commonwealth would need to work jointly with the Tasmanian Government, as provided by the Intergovernmental Agreement on the Environment.

2.29 The cost of preparing the EIS could be shared. Mr John Ashe, Assistant Secretary of the Environment Assessment Branch of the Department of the Environment, Sport and Territories said:

In general, under our legislation the costs of preparing, say, an environmental impact statement, would be borne by the proponent. The question then would be: who would be the proponent in this particular case? I assume that it is likely that it would be some arm of the Tasmanian government. Even if the proponent were to bear the cost, that does not preclude the possibility that there could be some particular funding arrangements to meet the cost of the environmental assessment. Conceivably, if the federal government wished this proposal to go ahead, it may wish to fund the proposal including funding the environmental impact assessment.²³

2.30 By the time the Commonwealth and the Government of Tasmania were to reach an agreement to proceed with the proposal it is likely that much more information would be available than has been provided to this Committee. An EIS, or a public inquiry under the Act, at that time would therefore advance consideration of the issues well beyond what has been possible to achieve so far.

22 The Department of the Environment, Sport and Territories, Submission p 1.

23 Evidence pp 186-7.

2.31 Other Commonwealth legislation is relevant to the restoration proposal. The Department of the Environment, Sport and Territories submitted that the Australian Nature Conservation Agency had advised that if the Commonwealth was to be a party to a decision to drain Lake Pedder, the provisions of the *Endangered Species Protection Act 1992* would be relevant.²⁴ An endangered species of fish, the Lake Pedder Galaxias, is known naturally only from Lake Pedder and the Department warned that draining the lake could have a substantial impact on the species. Any Commonwealth action that threatened a species with extinction or significantly impeded its recovery would be contrary to the provisions of the *Endangered Species Protection Act*.

2.32 If the proposal were to proceed, attention would have to be given to Tasmanian legislation, some of which may have to be amended if it was not over-ridden by Commonwealth legislation. The *Hydro-Electric Commission Act 1944*, for example, requires that the Hydro-Electric Commission maintain the level of the lake between 306.93 and 308.46 metres above sea level and this would obviously have to be amended.

Implications for world heritage values

The 'world heritage in danger' list

2.33 One witness who appeared before the Committee proposed that the Tasmanian Government would take action under the 'world heritage in danger' provisions of the World Heritage Convention, if the Committee were to continue its inquiry.²⁵ The Convention provides that the World Heritage Committee is to maintain a list of 'world heritage in danger', which identifies properties inscribed on the World Heritage List where major conservation operations are necessary and for which assistance has been requested under the Convention.²⁶ The Convention also provides that States Parties to the Convention may seek assistance in relation to world heritage properties.²⁷ In the case of the Tasmanian Wilderness World Heritage Area, the relevant State Party is Australia, not Tasmania.

2.34 The Committee's inquiry was essentially been an information gathering exercise and did not itself pose a threat to the world heritage area of the kind envisaged in the Convention for 'world heritage in danger'. Nor could it be said that Lake Pedder was in need of major conservation works, except to the extent that draining the lake would be necessary to reveal its significant geomorphological features. The proposal to seek 'world heritage in danger' status for Lake Pedder presumably therefore anticipated the situation that would arise if a decision to proceed is taken by the relevant authorities. The relevant authorities would include the Tasmanian Government and it is difficult to envisage that this Government would attempt

24 The Department of the Environment, Sport and Territories, Submission p 1.

25 Mr Guy Barnett, Evidence p 275.

26 *Convention concerning the protection of the world cultural and natural heritage*, article 11.

27 *Convention concerning the protection of the world cultural and natural heritage*, articles 6 and 13, and section V.

to invoke the heritage in danger provisions of the Convention if it was itself a party to a restoration effort. In any event, the requirement that assistance first be requested by a State Party means that only the Commonwealth could initiate such action.

2.35 The witness who raised the 'world heritage in danger' proposal also suggested that restoring Lake Pedder would violate other parts of the World Heritage Convention which call on States Parties to protect world heritage within their territory (articles 4 and 5 of the Convention) and not to deliberately damage world heritage in the territory of other States Parties (article 6).²⁸ The Lake Pedder restoration proposal does not threaten world heritage in any other country and the latter provision is not relevant. This provision was apparently raised because of a misunderstanding of the Convention and need not be considered any further, but the concern that the proposal to drain Lake Pedder violates articles 4 and 5 of the Convention warrants examination.

2.36 The proponents of draining Lake Pedder argued that their proposal complies with provisions of the Convention that refer to protection and restoration of world heritage. It is a matter of judgement and interpretation whether restoring the original lake would comply with the restoration provisions or, alternatively, whether removing the current lake would violate the protection provisions. Draining the lake would probably not violate the Convention because, if it could be restored, the original lake arguably would have had greater world heritage values than the current lake.

2.37 From the evidence provided by the Department of the Environment, Sport and Territories it appears that Lake Pedder in its current form does not itself have any significant world heritage values. It may even detract from the value of the Tasmanian Wilderness World Heritage Area as a whole, as suggested by the IUCN. The lake may possess recreational, scenic, environmental and possibly wilderness values but it cannot be said that the loss of these values would diminish the world heritage values of the Tasmanian Wilderness World Heritage Area.

2.38 The Committee believes that the proposal to drain and restore Lake Pedder does not constitute a threat to the integrity of the Tasmanian Wilderness World Heritage Area, except to the extent that there is a risk that the restoration might fail and leave the area permanently in an unacceptable condition. The 'world heritage in danger' list is not a relevant consideration. The most significant world heritage values of Lake Pedder are the unique but submerged geomorphological features and the spectacular scenery these created. The geomorphological features would be presented only if the lake is drained. The world heritage values would be enhanced if the geomorphological features were successfully restored. The proposal that the area be nominated as 'world heritage in danger' is not only unwarranted, but it is based on a misunderstanding of the World Heritage Convention.

28 Mr Guy Barnett, Evidence p 277.

Protection of world heritage values

2.39 The suggestion that draining Lake Pedder would be contrary to the provisions of the World Heritage Convention is difficult to reconcile with the views of the IUCN. The IUCN resolution calling for the restoration of Lake Pedder suggested it would be a significant step to improving the integrity of the world heritage area. It cannot be said that the World Heritage Committee of UNESCO is of this view²⁹ but the views of the IUCN are taken as authoritative by the World Heritage Committee. The opinion of the IUCN's senior adviser on natural heritage is that, from a world heritage point of view, Lake Pedder ought to be restored.³⁰

2.40 Dr Kay told the Committee that the Department of the Environment, Sport and Territories does not see any significant risk to world heritage values from the proposed draining of Lake Pedder, although there are some short term concerns and the restoration work would need to be effective:

In our analysis, we have not seen a significant risk. There are questions associated with the potential impacts on endangered species and rare threatened species are a component of world heritage values. I suppose there are pros and cons: there are obviously short-term impacts on aesthetic values resulting from a draining of the impoundment and those would be a concern. We have stated, I think, that the issues of the rehabilitation of the surrounding area, particularly the revegetation of the areas which have been inundated, would be a concern. We believe that further information is needed on our ability to rehabilitate those areas and the time frame in which rehabilitation might occur. In that sense there is a concern.³¹

2.41 The implications of the restoration proposal for world heritage values and Australia's duties under the World Heritage Convention would depend on the plans and arrangements that are made for rehabilitation and management of the site if it is drained. The rehabilitation task could be a major undertaking and there would be a need to carefully manage access to the site. The continuing management of the area would be carried out by the Tasmanian Government in accord with the management plan for the Tasmanian Wilderness World Heritage Area. This plan has been jointly adopted by the Commonwealth and the Tasmanian Governments. It envisages restoration works in the region but would need to be amended to specifically accommodate such an undertaking as the Lake Pedder restoration proposal.

2.42 The need to consider future management arrangements should the proposal proceed has been recognised by the Lake Pedder Study Group which commissioned Dr Mosley to examine management options. Dr Mosley's report to the Study Group suggested that a rehabilitation plan be produced and the management plan amended. In particular, Dr Mosley noted that, if the revised management strategies were to include a change in the land use

29 The Committee was told by Dr Kay from the Department of the Environment, Sport and Territories that UNESCO did not appear to have a position on whether Lake Pedder ought to be restored, Evidence p 178.

30 Exhibit 9, letter from Jim Thorsell to the Lake Pedder Restoration Committee, 17 March 1995.

31 Evidence p 173.

zoning, the revisions might be treated as a proposed amendment of the plan.³² Dr Mosley considered that the procedures that are currently available for revising the management plan are adequate and involve good opportunities for community consultation.³³

The Commonwealth's role

2.43 Proponents of the proposal to restore the original Lake Pedder argued that restoring the lake would enhance world heritage values, particularly by revealing significant geomorphological features. The risk to world heritage values posed by the possibility of a failed rehabilitation process emphasises the need for careful planning, environmental assessment, and monitoring. The world heritage values, should not be risked and the proposal should not proceed unless the environmental and technical merits of the proposal can be established.

2.44 The duties imposed on the Commonwealth by the World Heritage Convention and the extent of the powers that the Commonwealth has to enable it to carry out those duties have been given various interpretations in the evidence presented to the Committee. The Committee believes that restoring Lake Pedder would be within the bounds of the Convention and would not significantly detract from world heritage values, provided that the short term visual and aesthetic impacts during the rehabilitation phase could be minimised. The Commonwealth is under no legal obligation to force the restoration of Lake Pedder and there is no legally compelling reason for it to do so. The Commonwealth could act if it so chooses because it has the power to enact appropriate legislation or to amend the World Heritage Properties Conservation Act. It would need only to decide that it is appropriate to do so.

2.45 The legal question is only one part of the issue. In whatever action it might take the Commonwealth should recognise the rights and responsibilities of the State of Tasmania and should act in conjunction with the Tasmanian Government. The matter would then cease to be a legal question and become a matter for Commonwealth - Tasmanian negotiation. This should include consideration of cost sharing and compensation.

2.46 The positions of the current state government and of the opposition in Tasmania are quite clear: both are strongly opposed to draining the new Lake Pedder. There is no real prospect of the proposal being adopted by either of the two main political parties in Tasmania in the near future.

This then raises the question of how seriously the proposal should be considered. If the proposal were to proceed the Commonwealth would be involved because the area is world heritage. It would then be necessary to satisfy the provisions of the Environment Protection (Impact of Proposals) Act and the Endangered Species Protection Act. This would almost certainly require the completion of an environmental impact statement in accord with the Environment Protection (Impact of Proposals) Act and be subject to a joint Commonwealth - Tasmanian framework agreement on the administration of environmental assessment

32 *Lake Pedder. Report on the Future Management of the Area Proposed for Restoration*, a study commissioned by the Lake Pedder Study Group and prepared by Dr Geoff Mosley, March 1995, p 34.

33 Evidence p 459.

processes, as required under the Intergovernmental Agreement on the Environment. In the absence of an agreement from the Tasmanian Government to favourably consider the proposal, any moves towards the preparation of a formal environmental impact statement would be premature. Preparation of an environmental impact statement should only be undertaken if both governments have agreed to develop a proposal with the intention of draining and restoring the lake.

CHAPTER 3: THE ENVIRONMENTAL MERITS AND TECHNICAL FEASIBILITY

Basic criteria that must be able to be satisfied before the proposal proceeds

3.1 Before the Lake Pedder proposal, with its uncertain and potentially far reaching consequences, could be considered seriously there needs to be widespread consensus on two fundamental issues, namely that the original lake is worth restoring and that it is technically feasible to do so.

Intrinsic value of the original Lake Pedder

3.2 In his evidence to the Committee in Hobart in February 1995 Dr Kevin Kiernan, a geomorphologist who prepared three reports for the Lake Pedder Study Group, said that the complex of landforms which constituted the original lake was 'very extraordinary' and that he believed it to be 'without parallel anywhere'. Based on his studies of glaciated areas of New Zealand and Patagonia, the only other places in the world where one would expect to find a parallel, he put forward the view that:

There is nothing there that even remotely approaches Lake Pedder in terms of morphology and genesis... it is a very, very special feature on a world scale, and looking at any of the criteria that are normally adopted to assess geoconservation significance ... suggests to me that it would have to be of most extraordinary high priority.¹

3.3 Dr Kiernan concluded in one of his reports, *The Geoconservation Significance of Lake Pedder and its Contribution to Geodiversity*, that 'Lake Pedder is a place of immense geoconservation significance that on the basis of its geomorphological values alone would seem easily to meet the criteria for inclusion on the list of the World's Natural and Cultural Heritage.' Dr Kiernan's evidence suggests that Lake Pedder has values that are worth restoring if it is feasible to do so.

3.4 The unique beauty of the former lake was commented on by many people who made submissions to the inquiry, some of whom made available to the Committee books, photographs and copies of artwork recording the scenic beauty. As Dr Mosley stated in *Why Lake Pedder Should Be Restored*:

Some natural places are quickly recognised as special, not just to a few individuals, but to all who have had the good fortune to experience them. Undoubtedly, Lake Pedder was such a place, and in their minds and hearts the lake has not gone beyond recall.²

1 Evidence p 31.

2 Mosley, G, *Why Lake Pedder Should Be Restored*.

3.5 Speaking for the Wilderness Society at the public hearing in Hobart in April 1995, Mr Chris Harris expressed the opinion that the value of the lake was appreciated by people who had never visited it:

I believe all the evidence and statistics show that a large part of the population support the preservation of areas which they may have no intention of ever visiting because they recognise the importance to humans of doing that. I really do not think it is at all a relevant argument to be asking how many people are going to visit these areas.³

3.6 This view was reinforced by an anecdote in a submission to the inquiry by Professor David Shearman, Professor of Medicine in Adelaide, who remarked that the most common picture in the Royal Adelaide Hospital, where pictures are chosen democratically by staff to improve the working environment, is a 'stunning photograph of Lake Pedder before it was destroyed'. He said that:

I find this an interesting choice for South Australians since the majority has not visited Tasmania and indeed very few have ever seen Lake Pedder. I enquired into the reasons for the choice. I can tell you that after 20 years our Hospital community is still grieving for Lake Pedder.⁴

3.7 Senator John Devereux, Senator for Tasmania, also gave evidence in Hobart in April and observed that he found it interesting that:

'... almost everyone who is opposing the draining of the lake seems to preface their remarks by saying, 'If I had my time over again, I would not have supported the drowning of the original Lake Pedder.'⁵

3.8 Both the flooding of the lake and the proposal to drain it have raised considerable international comment. Ms Christine Milne, MHA, of the Tasmanian Greens commented at the April hearing that:

Lake Pedder is really the birthplace of the green movement internationally - not just in Australia, but right around the world. The United Tasmania Group, which came out of the campaign to save Lake Pedder, was the world's first green party, pre-dating the German Greens and the other green parties around the world. ... In terms of a symbol to the world, it is the birthplace of the green political movement internationally... I would certainly like to see it restored as a symbol of hope to future generations that we have the capacity within ourselves to rectify the mistakes, where we can rectify them, and to take a lead in the global context in that way.⁶

3 Evidence p 248.

4 Professor David Shearman, Submission p 1.

5 Evidence p 421.

6 Evidence p 270.

3.9 According to Dr Mosley in a recent management study for Pedder 2000, the value that was placed on Lake Pedder was demonstrated most effectively at the time it was threatened, with over 1000 people visiting the famous beach on one long weekend in March 1971, just before inundation began. He added that:

... a 10,000 signature petition for the saving of Lake Pedder produced within a month of the scheme being made public was said to be the largest ever presented to the Tasmanian Parliament. ... The decision of the Commonwealth Government of 1973 to conduct the Lake Pedder Enquiry provided people with another opportunity to attest to its values. Those making personal submissions included the landscape painters Max Angus, Patricia Giles and Elspeth Vaughan and the photographer Geoff Parr.⁷

3.10 Dr Mosley observed that a steady stream of books with a major emphasis on Lake Pedder was produced in the two decades after the flooding.

3.11 The launch of the Pedder 2000 campaign in 1994 attracted support from a number of internationally well-known individuals and organisations. A letter from the David Suzuki Foundation strongly supporting the proposal was read to the Committee by Ms Hilary Edward of Pedder 2000 who commented that it was typical of the many letters they had received.⁸ It would appear to the Committee that there is little doubt that Lake Pedder was widely regarded as a special place that should not have been flooded. Whether the potential cost and complications make it now worth restoring, is a vexed question.

Feasibility of restoring the essential features

3.12 The other essential criterion which must be addressed is the feasibility of the proposal. Professor Peter Tyler and colleagues of the School of Aquatic Science and Natural Resources Management, Deakin University and the University of Tasmania considered this question for the Lake Pedder Study Group. In a forthcoming paper they state that:

... a cardinal requirement for the proposal to have credence is that the old lake survived inundation more or less intact and that, if the reservoir were drained, the physical features of the old lake would emerge for restoration.⁹

3.13 To provide a framework for his investigations Professor Tyler established four obligatory criteria for validation of restoration, namely:

- . that the lake would be contained, ie the eastern dunes and other lake rims would be intact;
- . that the original drainage patterns would re-establish, demonstrated by the integrity of original major channels such as Maria Creek and the Serpentine River;
- . that the original lake morphometry (eastern beach, beach step and ripples) remained; and

7 Mosley G, *Lake Pedder: A Report on the Future Management of the Area Proposed for Restoration*, a study commissioned by the Lake Pedder Study Group, March 1994 pp 19-20.

8 Evidence p 300.

9 Peter A Tyler et al *Limnological and Geomorphological Considerations Underlying Pedder 2000 - The Campaign to Restore Lake Pedder*, submitted to "Archiv Fur Hydrobiologie", Stuttgart, 27 March 1995.

that the lake bed was not buried beneath metres of 'silt' and that reoccupation of the basin was probable.

3.14 Other objectives of his survey, desirable criteria as opposed to essential criteria, included the finding of 'Pedder pennies' (ferromanganese concretions), evidence of the texture and integrity of surrounding peats and an assessment of the precision of his methods on a specially selected small creek influx.

3.15 The restoration proposal became a credible proposition and began to gain momentum when Professor Tyler's work found that the key geomorphological features were intact and would most likely re-emerge if the lake was drained. The prospects for the re-emergence of the significant geomorphological features were crucial to the feasibility of the proposal, but consideration also had to be given to the re-establishment of the vegetation and the fauna. The criteria for assessing the feasibility of biological restoration of the 24,000 hectares of inundated plains surrounding the former lake were not so easy to define. Opinions varied widely, both on the similarity a rehabilitated site would have to the original and on what constituted the original. Studies of flora and fauna endemic to the Lake Pedder area showed that some irreversible changes to the biological communities have occurred with the probable extinction of several species including the fish *Galaxia parvus*, some crustaceans and insects.

3.16 Full restoration of the pre-flooding situation was therefore an unrealistic objective but was not a requirement for the proposal to be justifiable. Mr David Steane, a Tasmanian landcare specialist with experience in rehabilitation projects on damaged sites in the Strathgordon area, prepared a brief technical note for the HEC on the possibility of restoring the sand dunes at Lake Pedder. He also made a submission to the Committee and explained at a public hearing that the pattern and composition of the plant and animal communities of any area vary greatly with time and are very much a matter of accident:

There was nothing magic or fixed about the pattern of vegetation of the now flooded area as it was in December 1971. The pattern of distribution of button grass, heath land, scrub and taller forest at that time is largely the result of the accidental occurrence of fires over the preceding decades or centuries, together with the accidental history of climatic or seasonal variations, especially of things such as severe climatic occurrences following severe fires.¹⁰

3.17 Mr Steane went on to propose that in discussing restoration it was preferable not to get caught up in the fine details of what may or may not have been the composition and condition of the vegetation immediately prior to flooding in 1971.¹¹ This view in some ways reflected the claim of Pedder 2000 that revegetation should follow naturally as the underlying geomorphological processes re-establish, and that there was no great urgency in re-establishing the plant communities nor any particular pattern of vegetation which should be reinstated. The principle of plant succession, mentioned by various expert witnesses, would appear to the proponents of the proposal at least, to be the acceptable and natural method of revegetation. This would include monitoring of progress, and intervention where required, to deal with problems that might arise, such as erosion and weed invasion.

10 Evidence p 409.

11 Evidence p 410.

3.18 Throughout the inquiry comment on the biological implications of draining the lake and exposing a large area of drained terrain was characterised by a great deal of confusion about the difference between restoration and rehabilitation. The authors of a Feasibility Study for the HEC gave a useful definition and explanation of the difference between the two:

In the context of this report, it is important to distinguish between the act of restoration and that of rehabilitation. Restoration is the act of restoring the disturbance or damage to the original condition. Rehabilitation is defined as the act of rehabilitating to a useful state, and not necessarily to the original land use.

In the profession of land rehabilitation which has developed over the last 30 or so years both within Australia and overseas, the term rehabilitation has been adopted as it is not seen as possible within a reasonable time frame to establish the original conditions, particularly in pristine environments.¹²

3.19 Given such a definition it may have been more accurate to describe the proposal as the restoration (or uncovering) of Lake Pedder and the rehabilitation of the surrounding terrain. To Pedder 2000, restoring the aesthetic and wilderness values of the area is not dependent on exact restoration of the original flora and fauna, and massive human intervention designed to attempt such an impossibility would be unjustified, expensive and unacceptably damaging to adjacent wilderness areas.

3.20 The polarity of professional opinion about the basic criteria to be determined in re-establishing a satisfactory vegetative cover serves to highlight the need for further site-based scientific investigation if the proposal were to proceed.

Geomorphological and biophysical considerations

3.21 The studies undertaken by Professor Tyler and his colleagues, and by Dr Kiernan, form the core of evidence about the status of the submerged landscape. Both studies were commissioned by the Lake Pedder Study Group in the knowledge that a firm scientific basis was required before the proposal to restore the lake could be considered seriously or raised publicly.

3.22 Professor Tyler explained to the Committee¹³ that in addition to his recent work at Lake Pedder he and a team of other scientists had made some studies of the former lake in the months before inundation. Some of the scientific activity was recorded on film and biological samples were retrieved for later study. The results of Professor Tyler's 1993 survey were compared to the earlier data and the limited amount of other information available for Lake Pedder, the Lake Maria complex and their catchments before inundation. This revealed that the major geomorphological features of the original system escaped damage

12 *The Restoration of Lake Pedder: A Preliminary Feasibility Study*, Land Management and Rehabilitation Services Pty Ltd, p2

13 Exhibit 18.

during the rapid filling of the Huon-Serpentine Impoundment. Professor Tyler's summary of findings included:

- . the original principal drainage channels are largely intact, as are the bed, beaches and dune systems.
- . sediment covering the original lake bed is no more than a few millimetres thick and 'Pedder pennies' are abundant in the northern part of the lake.
- . decomposition of original vegetation covering the surrounding swamps and plains is incomplete and the underlying soil is bound by root systems.

3.23 Professor Tyler attributed the lack of damage partly to the rapidity of the flooding. He noted that wind-driven wave action has clearly scarred parts of the shore line of the present impoundment, but rapid submersion ensured that the vital features did not suffer much erosion damage during inundation.

3.24 The drainage patterns of the Serpentine Valley appear to have been kept open by denser, cold water, particularly melting snow, running into the impoundment along original creek beds. The acidic waters of the impoundment have retarded the rate of decomposition of plant material with the result that trees and shrubs are still standing on the dunes and immediately recognisable remains of original flora lie on the bed of the impoundment.

3.25 Dr Kiernan concluded in volume 3 of his reports to the Lake Pedder Study Group that although the investigations of Professor Tyler and his colleagues were not exhaustive, their results were entirely consistent with what could be predicted on the basis of first principles, the landforms types involved, the materials present, the processes in action, observations made as the dams filled, and evidence gathered from around the impoundment margins since that time.

3.26 Dr Kiernan also informed the Committee¹⁴ that a distinction had to be made between two sets of landforms now submerged, the fossil landforms caused by glacial action which cannot be repeated and which can not regenerate if damaged, and contemporary landforms which are formed by ongoing processes and which can regenerate. Very little damage has occurred to fossil landforms at Lake Pedder and most important contemporary landforms such as the beach, the megaripples and the river and creek channels are undamaged and would in any case be regenerated by natural processes.

3.27 The implications of these findings for the restoration proposal were critical since without evidence that the landforms were intact and would function again as a dynamic and integrated landscape there was little point in investigating further. In an inquiry characterised by widely differing and often unsubstantiated claims, the scientific studies which led to Professor Tyler's claim that the lake and associated landforms remained intact and recoverable were not seriously disputed.

3.28 While accepting that the major land forms are probably intact the HEC referred to evidence that showed that the dunes of Lake Pedder and Lake Maria suffered considerable damage during the flooding process. The HEC suggested that the dunes could be expected to suffer further severe problems during dewatering due to either slumping or wave damage,

14 Evidence p 32.

depending on whether the water level were lowered rapidly or slowly. The HEC's consulting marine engineer, Mr Michael Hunn, recommended that further work be undertaken to determine the properties of the beach and dune sands, that model testing be undertaken to determine the stability of the sand in a saturated condition and the effects of dewatering, as well as measurement of existing dune profiles.¹⁵

3.29 A rather different view of the fate of the dunes during the dewatering process was suggested by Dr Kiernan, who witnessed the slumping in 1972, photographs of which the HEC provided in its feasibility study. His recent observations led him to conclude that the Lake Pedder lunette was not an ancient feature, but was one of the contemporary geological processes that would re-establish. Under natural conditions it was being constantly eroded on its windward western margin by lake water in the winter, and it appears to have been migrating eastward. Pre-flooding photographs consistently showed evidence of windward-slope erosion and the collapse of vegetation from the dune onto the beach. Dr Kiernan claimed that the presence of the peat cover over the dunes would help to retain the form of the dunes during draining as well as serve as a growth medium for revegetation of the area. The same aeolian processes that originally produced the dune would restore the form of its slightly eroded western face over one or two summers of exposure.¹⁶

Biological implications

3.30 The general consensus among those who have investigated the plant and animal communities of the original Lake Pedder is that the original biology of the lake and its surroundings would not be fully recoverable. This opinion was expressed at a symposium on the natural history and restoration of Lake Pedder in Hobart in April 1995 and included in a summary of the symposium proceedings sent to the Committee by the convenor, Dr Chris Sharples.¹⁷ The summary noted that:

it is possible that it would take a considerable period for the botanical successional process to return the vegetation communities to something like those which were present before the flooding, and that initial plant colonisation would be by species able to adapt to the bare substrate; and

some species have disappeared from the area and may be extinct or severely threatened by competition from introduced species in the new impoundment. Exotic species may not be removable.

3.31 Before any restoration regime for the 24 000 hectares surrounding the former lake could be developed and assessed, agreement would have to be reached on what was considered to be the 'natural' condition of the vegetation and what would constitute an acceptable composition of species. Consideration would also have to be given to what

15 *The Restoration of Lake Pedder: A Preliminary Feasibility Study*, Land Management and Rehabilitation Services Pty Ltd, Appendix B, p 3.

16 Kevin Kiernan *Restoring Lake Pedder: a geomorphological perspective of recovery prospects and likely timetables* August 1994 p 7.

17 Exhibit 21.

constituted 'restoration' and what was 'rehabilitation', and a decision then made on which option would be most appropriate given factors such as world heritage values, the location, climate and enormous size of the area, the probable cost and many other factors.

3.32 The absence of definition on these issues gave rise to some of the conflicting opinions and estimates which characterised the inquiry. The HEC, in its first submission, gave an estimate of \$375 million - \$500 million for an intensive program of revegetation around the lake. A consultant to the HEC, Dr Michael Sobczak, vice-president of Malcolm Pirnie Incorporated, a US environmental engineering organisation, appeared at the public hearing in Hobart on 6 April, and quoted figures of \$1.2 - \$2.5 billion for restoration to a mature, successional stage.¹⁸ The contrast between such estimates and the claims of some proponents that revegetation could just be left to nature accentuated the need for a decision on how closely any restoration should replicate the original and for further research into the requirements of a successful revegetation process.

3.33 The difficulty in defining exactly what it is that should be restored appears less problematical if the view of Mr Steane is taken into account. Mr Steane emphasised to the Committee at the public hearing in April the fact that the development of any ecology is dependent on accidents such as fires, floods and disease, and hence is always changing.

3.34 Mr Steane also commented that as an objective, restoring the pattern of vegetation to its pre-flooding condition was neither practicable, important, nor meaningful other than as an interesting academic exercise.¹⁹ Professor Tyler commented at the scientific symposium that a native-looking vegetation would probably be acceptable to most people.²⁰ The subject of plant species and their composition, apart from the requirements for successful colonisation and succession, is clearly a matter of aesthetics which should be exposed for public comment.

Vegetation

3.35 At the April public hearing in Hobart, Mr Tim Duckett, a rehabilitation scientist who prepared the feasibility study for the HEC, identified rapid revegetation to stabilise the soil and prevent erosion as the major technical issue in biological restoration. He considered that natural unassisted revegetation would be too slow to avoid the peat soils drying out, breaking up and eroding, which would result in downstream siltation as well as complicate the revegetation process. His opinion was that the most likely colonising species would not in all cases be those which were present originally, and that without intervention, successional processes might only return the species composition closer to the original over a very long period, measured in centuries. However he was convinced that, because the peat mat is largely intact, synthetic or assisted rehabilitation methods could be used to ensure rapid revegetation and soil stabilisation.

18 Evidence p 358.

19 Evidence p 409.

20 Exhibit 21.

3.36 Dr Kiernan who told the Committee at its February hearing that he had considerable experience in walking and observing in areas where peat that had been inundated for long periods was exposed, said that he had seen little evidence that peat was eroded as a result of drawdown.²¹ He explained that as the surface hardens it cracks open in a polygonal form and the seeds which get trapped in the cracks between the polygons serve as a focus of growth. His personal observation that exposed peat survives very well combined with Professor Tyler's revelation that the peat mat is intact across the floor of the new Lake Pedder indicates the likelihood that one of the essential requirements for revegetation exists. What cannot be determined without further investigation is how long the peat would remain intact if revegetation was very slow. Dr Kiernan's observations would also require further scientific evaluations before they could be accepted.

3.37 Mr Michael Eades, an environmental scientist who outlined in his submission a scenario for a staged release of water from the impoundment, suggested that migration of indigenous native seed into the new landscape would happen naturally due to wind and the activities of native fauna, particularly birds.²² This view was in contrast with others, such as the HEC consultants, who believe that intervention such as seeding and fertilising would be essential. Mr Eades also observed at the public hearing on 7 April that several characteristics of the impoundment would be very helpful in regenerating the plains:

The other thing which quite encouraged me when I was having a look down there is that the perimeter is very convoluted, so there is a very high perimeter line of undisturbed native ecosystems in close proximity to most of it... it is a very linear lake, with a very high perimeter ratio... There are also islands dotted around it. ...All those still retain pristine original ecosystems which will be very helpful to regenerate the plains once that bottom section is drained. I think it will happen quite rapidly.²³

3.38 Mr Eades believed that the gaps in present knowledge, while important, are not crucial to the work, and that restoration, if carefully monitored, could proceed and problems could be dealt with as they arose.

3.39 *While acknowledging that the formation of an algal/moss mat over a newly exposed peat surface could be expected to reduce surface erosion and increase the speed of colonisation, the HEC commissioned feasibility study took a negative view towards the prospect of a successful restoration without massive and expensive intervention. Apparently based on limited examples of research into plant community restoration over several decades and on practical experience gained by the HEC in rehabilitating construction sites, it predicted that natural site recovery would take centuries, if not thousands of years, without assistance. Cost estimates for assisted revegetation were based on a very high standard of rehabilitation, with original plant densities replicated within 10 years and a considerable contingency for assumed disturbances and problems. Many of the predictions appear to be based on a worst case scenario, for instance assuming that much of the peat mat would erode exposing the inhospitable quartzite which made the rehabilitation of road edges and quarry sites associated with the Gordon Scheme such a difficult task.*

21 Evidence p 34.

22 Mr Michael Eades, submission p 9.

23 Evidence p 393.

3.40 This view is in contrast with that of experts within the Tasmanian Parks and Wildlife Service. The Service's views were outlined in documents obtained under Freedom of Information (FOI) provisions and passed onto the Committee by Pedder 2000. The Service stated in a memo about the environmental consequences of draining Lake Pedder that:

- If dead vegetation and roots are still intact, which appears to be so in places, the organic soils will be supported by a dense root mat which together with the undulating topography should help minimise erosion.
- An assessment of the physical and chemical condition of the organic soil would be required before drainage was considered. Viable seed may still exist in the old soil profile.
- Revegetation rates are difficult to predict without trials on growth rates in submerged and unsubmerged samples. Subjective assessments from other areas suggest regrowth will occur in ex-submerged organic soils. Detailed monitoring has been carried out on reclaimed peatland mining sites that have been subject to inundation in the northern hemisphere. There have been considerable success with rehabilitation of disturbed peatland and buttongrass moorland in other parts of western Tasmania.
- An assessment of revegetation and recovery rates at the Gordon impoundment would give strong indications on the rate of stabilisation and likely succession.²⁴

3.41 The re-establishment of the button grass, which covered a high percentage of the terrain now submerged, attracted attention during the inquiry. Mr Tom Walduck, a Tasmanian forester and seed supplier, commented in his submission that any attempt to resow the lake bed would have to proceed without the plant which covered 90 per cent of the area.²⁵ He based his assumption on his knowledge of the difficulties of regenerating button grass artificially by sowing its seed on sites disturbed by mining and road construction. Mr Walduck conceded that button grass regenerates naturally, but he did not believe that any seed would be able to germinate after several decades of immersion and appeared to discount the probability that button grass seed would be carried back into the newly exposed area.

3.42 This prediction contrasted markedly with that of Mr Eades who believed that wind and fauna assisted dispersal of seed from mature adjacent ecosystems would fairly rapidly re-establish button grass, as demonstrated on the banks of Lake Gordon. When asked at a public hearing whether the situation would be different at Lake Pedder due to the huge area to be exposed, he explained that as most of the newly exposed terrain was close to slopes which support a heath community containing button grass, recolonisation would be 'dotted all over the place'.²⁶ This view was complementary to Dr Kiernan's view that cracks in the peat mat become focus points for new growth.

24 Tasmanian Parks and Wildlife Service, memo from Peter Bosworth , Assistant Director, Resources and Planning to Tony Dell, Secretariat, August 1994.

25 Mr T G Walduck, submission p 2.

26 Evidence p 393.

3.43 The subject of the viability of seed that has been submerged for more than twenty years was raised by Pedder 2000 at the February public hearing in Hobart as a likely subject for scientific investigation during the next few months. Dr Sharples' summary of issues raised at the symposium in April noted the suggestion that:²⁷

Perhaps the most important immediate focus for research is testing the viability of seed stored in the drowned peats, and obtaining samples of the peat for revegetation trials with a variety of treatments using both the natural seed store and artificial seeding or planting.

Fauna

3.44 Restoration of the aquatic fauna of Lake Pedder did not raise the emotion and controversy that the vast revegetation project has prompted. The subject attracted few submissions, but one of these, a submission by Dr Sam Lake, contained considerable information based on long term scientific surveys. Dr Lake, a freshwater ecologist and limnologist, and a small team of freshwater biologists conducted a survey of the Lake Pedder area just prior to the flooding and also carried out regular sampling of the littoral fauna at twelve sites at the new impoundment between 1975 and 1989, which enabled them to monitor the major changes that occurred in the shore-dwelling fauna.

3.45 Dr Lake submitted that irreversible changes to the biological communities had occurred in that endemic species originally found in the area inundated by the impoundment have either become extinct or have been greatly reduced in abundance. Dr Lake reported that *Galaxia parvus* has not been found in the impoundment since 1978, and *Galaxia pedderensis*, another native fish relatively common in the former lake, and now regarded as being on the brink of extinction, is the subject of captive breeding trials. Other endemic fauna such as crustaceans and insects probably did not survive the flooding. However, Dr Lake has found that some of the animals of the distinctive *psammon* community which lived in the shallow waters over the fine white quartzitic sand of the original beach have survived, the beach also remains and is still a suitable habitat for some of its original inhabitants.

3.46 In his submission Dr Lake concluded that it would be perfectly feasible to restore Lake Pedder and its surrounds, provided that the task is undertaken with a long-term perspective. He commented that it would be difficult to re-establish the fauna of the lake, due to the large scale of the operation that would be required, combined with a lack of information and expertise in Australia and elsewhere in the restoration of large aquatic environments. He suggested that to allow the re-establishment and recovery of populations of the original animals that dwelt in Lake Pedder, it might be necessary to have a specific program to greatly reduce the numbers of trout and possibly even of the climbing galaxias whose populations would become increasingly concentrated and hence have an increased impact on their prey populations. Dr Lake believed that attention should also be given to the question of whether trout would survive and breed in the shallow restored Lake Pedder.

3.47 One aspect of the biological restoration of the lake that did attract considerable public attention during the inquiry, was the subject of the platypus population of the new lake. Professor Nigel Forteach of the University of Tasmania, who appeared as a delegate of the

27 Exhibit 21.

Huon Valley Council, told the Committee in Hobart on 21 February that draining the lake would present risks to a possibly significant platypus population:

In one bay alone, I have counted probably 70 different animals. That is a very large population of what I consider one of the wonders of the world... So my estimate of 2000 plus platypuses is probably very conservative indeed.²⁸

3.48 Professor Forteath did not claim to have reached his estimates on the basis of a properly conducted scientific survey, but his opinions on matters such as the diet and habits of platypus were reported in the press. Dr Tom Grant, a recognised Australian expert in the biology and ecology of the platypus and author of a report to the Australian National Parks and Wildlife Service, *Distribution of the Platypus in Australia with Guidelines for Management*, made a submission to the Committee in which he gave examples of the lack of knowledge of the biology of the species which had been reported in press statements attributed to Professor Forteath.

3.49 Dr Grant pointed out that even in mark-release-recapture studies there are great difficulties in estimating platypus populations. He suggested that the numbers estimated by Professor Forteath on the basis of incidental observation could not possibly be substantiated:

Because platypuses can forage over considerable distances, it is impossible to distinguish between unmarked individuals, so that such an estimate would almost certainly have involved the double-counting of many individuals.²⁹

3.50 Dr Grant also stated that it was important for scientific work to be carried out on the Lake Pedder populations of platypuses before useful conclusions could be drawn on the possible impact of the proposed draining on the species'. He emphasised the need for a full environmental impact assessment before the lake was drained. The Committee considers that Professor Forteath's methodology was not sufficiently rigorous to provide a reliable estimate of the platypus population but recognises also that no scientific study has been conducted for making an accurate estimates. Nevertheless, Professor Forteath's observations highlight the possibility that populations of some fauna species would be adversely affected if the lake were drained.

Rehabilitation prospects

3.51 Although restoration of the flora and fauna is problematical it was not regarded by proponents of the proposal to be as significant as restoration of the lake's unique physical features. Provided revegetation could be achieved successfully and adequate reservation of species is achieved elsewhere in protected areas, biological restoration of the exposed terrain should be viewed in terms of a carefully managed, aesthetically acceptable rehabilitation.

3.52 There appeared little doubt amongst those qualified to assess the botanical prospects of the restoration proposal that the drained area would gradually revegetate from the outer edge, as occurred around the adjacent Lake Gordon on areas that were exposed when the level dropped after years of inundation. However, opinions professional and otherwise about the length of time that this would take, the degree of intervention that would be required to avoid

28 Evidence p 96.

29 Dr T R Grant, submission p 1.

problems such as erosion and weed invasion and the cost of any essential intervention, vary considerably. The level of tolerance towards the unsightliness of the early stages after draining would also vary. The belief that further research work would be essential before the project could begin was virtually unanimous.

Rehabilitation options

3.53 Opinions varied considerably about the level of intervention that would be required to bring about a satisfactory revegetation of the area which would be exposed if the lake were drained. It was difficult for the Committee to form an opinion when the views of its expert witnesses appeared to be irreconcilable and there were no precedents to draw upon. Analyses of the proposal were not based on the same premise about the likelihood of natural revegetation succeeding without intervention. The lack of information from studies of relevant revegetation projects meant there was no clearly stated objective about this aspect of the restoration proposal, which, in addition to other factors, contributed to an apparent conflict of views about the need for intervention and hence the amount of time, effort and cost that it would involve. A close examination of the evidence revealed more common ground than was immediately apparent.

3.54 There was general acceptance, based on Professor Tyler's work, that the peat mat, essential for ready revegetation, is still intact across the entire area, that it is bound together by the root systems of dead plants and still contains a great deal of undecomposed woody material. There was also considerable agreement on intervention strategies that might be required. These included techniques such as seeding, fertilising and the use of short term, sterile cover crops, but views differ widely on the likelihood and extent to which intervention might be needed. Fundamental to such viewpoints was the perception of the peat mat's capacity to remain intact until recolonisation occurs. The Committee was presented with conflicting evidence on this subject. The predictions of those who submitted revegetation scenarios depended heavily on their interpretation of the long term robustness of the exposed peat. Only further studies would reveal this information conclusively, and even then many management decisions would need to be made throughout the rehabilitation period to accommodate the unpredictable. The element of risk which would remain could have serious financial implications for governments since once the lake was drained and rehabilitation underway, the commitment would be irrevocable.

3.55 Pedder 2000 made it clear at the launch of the restoration proposal that it did not expect the plant and animal communities to be restored to their original numbers and composition. It emphasised that it was the unique geomorphology, combined with the wilderness values of the original lake such as aesthetic naturalness and remoteness from settlement, that made it so valuable. The guiding principle of restoration was deemed to be reinstatement of world heritage qualities and it was predicted that most of the necessary restoration would happen by natural processes.

3.56 A completely different view of the rehabilitation process was taken by Dr Sobczak, at the public hearing on 6 April. He commented that the magnitude of the project was unprecedented in the world and would require major intervention, physical reconstruction, chemical adjustment and biological manipulation over a long period of time.³⁰ He gave the figure of \$2000 per hectare for reseeding, fertilising and stabilising erosion which he regarded as essential for rehabilitation. Restoration of vegetation to a mature successional stage would, in the United States, cost \$50 000 to \$100 000 per hectare which, for a project involving 24 000 hectares, would be a prohibitive expense. The degree of intervention on which Dr Sobczak based his estimates is obviously vastly different from that thought probable by other witnesses such as Dr Kiernan and Mr Eades, and still an order of magnitude away from the Australian consultants who advised the HEC.

3.57 In his written submission to the inquiry Mr Eades predicted that without rapid stabilisation of the landscape there could be serious sheet, rill and gully erosion. This would be caused, he thought, by the impact of run-off flowing into unvegetated channels below the present top water line. He provided a scenario for revegetation which incorporated strategies to prevent this. Mr Eades gave evidence after he had examined exposed areas around Lake Gordon and revised the position taken in his written submission. He said he believed that with slow drainage, careful monitoring and limited intervention, erosion would not be much of a problem.³¹ He agreed to a suggestion that it would be very valuable if the HEC would agree to hold the level of the current Lake Pedder at its lowest level 1.5 metres down from the top so that detailed observations could be made over a period of several years. However he said that he believed that the positive evidence of successful revegetation that he had observed around Lake Gordon was a good indication of how regeneration would take place around a resurrected Lake Pedder.³²

3.58 In his written submission to the inquiry Mr Steane commented that the proposal, if left to natural processes, would take a very long time and incur the risk of weed invasion and erosion. Based on the objective of achieving a 'near natural restoration in a reasonable time', he believed it would be a costly exercise. He thought the project 'would be fraught with environmental risks and would be an exciting challenge for the environmental managers.'

3.59 At the April public hearing in Hobart Mr Steane told the Committee that instead of trying to revegetate the whole area hurriedly by artificial means, at great cost, it might be better to concentrate on selected areas such as steeper slopes, dunes, creek banks, knolls and a series of nucleus clumps or lines which would serve as seed sources for the surrounding land.³³ This approach of selective intervention, combined with monitoring, was not incompatible with the views of Pedder 2000 and others who did not view the rehabilitation process as necessarily expensive and fraught with risk.

30 Evidence p 356.

31 Evidence p 396.

32 Evidence p 403.

33 Evidence p 411.

3.60 Mr Duckett told the Committee at the same public hearing³⁴ that his examination of exposed sites on the banks of Lake Gordon demonstrated the importance of mats of moss and algae which bind the peat surface and provide excellent erosion control. In his preliminary feasibility study for the HEC he illustrated the way in which moss and lichen will colonise the remaining base of plants killed by inundation, an observation which when considered with Professor Tyler's findings of undecomposed remains of vegetation, may auger well for plant recolonisation. He voiced his concern that if this binding mat did not form, the devegetated area would be at risk of erosion and siltation from the increased velocity of runoff from the huge catchment area. He stated that to avoid erosion, artificial intervention and stabilisation would be required at the perimeter of the impoundment where the protective peat is broken by wave action.³⁵

3.61 In one of the documents obtained under the FOI provisions and sent to the Committee, the Parks and Wildlife Service, which is responsible for the management of the area, suggested that rehabilitation of the exposed lake bed may not require seed spreading over the entire 272 sq km.

If the peat layer is present in a physical and chemical state to support vegetation growth this could be a positive start because most rehabilitation problems require top soil spreading. It would therefore be more of a revegetation problem ...

Revegetation cost would need further assessment but aerial seeding and, if deemed necessary, fertilising could be considered. ...

Subjective assessment from other areas suggest regrowth will occur in ex-submerged organic soils ... There have been considerable success with rehabilitation of disturbed peatland and buttongrass moorland in other parts of western Tasmania ...

A best guess estimate is that within 20-30 years (of the date of the last pool of water drying up on the exposed lake bed) considerable progress should be evident in revegetation.

3.62 A major consideration in the effort and cost of visually restoring the exposed terrain would be the very obvious wave erosion that has occurred at the new water line over the last 23 years. Dr Kiernan's observation based on field inspections coupled with air and ground photo interpretation is that this erosion would resemble discontinuous stretches of roadway.³⁶ This he likened to a fossil shoreline which is a feature of many large lakes, due to the fact that lake levels decline over time. As the depth of incision is limited it would not present serious problems. He asserted that:

... from an aesthetic perspective the terrain visible from Pedder Beach contains relatively limited areas of severe scarring. Many of the classic photographic images of Lake Pedder, focussed as they are on the beach environment, will probably be achievable again almost immediately upon draining of the dams.³⁷

34 Evidence p 359.

35 Evidence p 360.

36 Kiernan K, *Restoring Lake Pedder: A Geomorphological Perspective on Recovery Prospects and Likely Time Scales*, August 1994.

37 Kiernan K, *Restoring Lake Pedder: A Geomorphological Perspective on Recovery Prospects and Likely Time Scales*, August 1994.

3.63 Dr Kiernan told the Committee in February³⁸ that the scarring around the perimeter is not deep erosion, apart from a few places around the Scotts Peak Dam, but that it is a break in the peat cover which exposes the white rock and should not require engineering works. The Tasmanian Parks and Wildlife Service expressed a similar opinion:

Most obvious erosion occurs around the shoreline exposed to wave action. From limited visual observation erosion is not extensive or severe.³⁹

3.64 Views varied considerably on the likelihood of weed invading the newly exposed area, with Mr Walduck expressing the opinion that the presence of weeds growing in small cleared areas at places frequently visited by people in the Lake Pedder region is proof of the threat which weeds would pose to the vast area of bare soil exposed after draining the lake. Mr Duckett said at the public hearing in April that weed invasion would be a threat to the rehabilitation process and would initially be a problem in areas adjacent to access roads and sites available to the general public. He stated:

A weed management plan would be a component of any rehabilitation program, should be concentrated in these areas, and should involve control and monitoring. Any public access into the area being re-established with native vegetation will require stringent hygiene requirements, to the point where access should be limited.⁴⁰

3.65 On the subject of weeds, Dr Brown suggested to the Committee:

...if ever there is anywhere in the world that has got a head start, this is it. It is a wilderness with its western boundary on the west coast of Tasmania. It does not have the developed areas, farmlands or weed infestations upwind of the area which make such problems for most other wild areas in the world.⁴¹

3.66 Mr Eades expressed a similar opinion in his written submission to the inquiry:

The threat from weed invasion may not be serious since the impoundment is extensively surrounded by natural lands, and sources of entry for weed seeds are few. Some weeds may enter but be out-competed later as native plants return.⁴²

3.67 It appears to the Committee from the balance of the evidence that weeds could cause some problems in some areas but it is possible that widespread weed invasion might not present a serious risk. This cannot be taken for granted and there would be a need for appropriate monitoring and a weed management strategy if the proposal were to proceed.

3.68 The summary of the scientific symposium noted that research on restoration techniques should be encouraged, not only for Lake Pedder proposal, but because the knowledge may be needed for the draining of lakes elsewhere. A similar point was made in a submission focussing

38 Evidence p 37.

39 Tasmanian Parks and Wildlife Service, memo from Peter Bosworth , Assistant Director, Resources and Planning to Tony Dell, Secretariat, August 1994.

40 Evidence p 362.

41 Evidence p 315.

42 Mr Michael Eades, Submission p 7.

on the implications of the eventual decommissioning of the Gordon River Power Development by Dr Robert Walker who pointed out that:

As sections of the scheme are eventually decommissioned for any of a number of reasons, the future of either of the impoundments becomes a matter of public concern. Tasmania must have to hand well researched and up to date contingency plans for such events.

Provision has to be made for the eventual retirement of the scheme. Partial or complete de-watering will be a future project for reasons quite separate from the purpose of geo-heritage conservation which is the purpose of the current debate.⁴³

What questions need to be answered before commencing any restoration?

3.69 Evidence from many parts of the world after various types of disasters show that nature has an amazing capacity for regeneration.⁴⁴ It would therefore be surprising that if drained, the area now covered by the new Lake Pedder did not at least gradually recover without any intervention and, that if assisted, the recovery would be faster and more complete. However, many aspects of that process would have to be studied if the proposal ever proceeds.

3.70 An environmental restoration project such as the draining of Lake Pedder which was acknowledged to be of a scale unprecedented in the world was bound to raise a great many questions. While acknowledging the work which was done by Professor Tyler, Dr Kiernan and other scientists to establish the state of the drowned landscape, the Committee is aware that there are enormous gaps in other areas of essential knowledge.

3.71 There are too many uncertainties about the revegetation process to justify an in-principle decision to proceed with the proposal, unless the government is prepared to accept the risk that revegetation may not become established successfully and that extensive intervention might be needed to prevent serious erosion. However, the Committee is aware that further scientific investigations are already proposed by the Lake Pedder Study Group, the priorities for which are evolving as debate about the proposal raises further questions.

3.72 The evidence about environmental aspects of the restoration proposal was characterised by enormous diversity of opinion and not a great deal of established fact. At best, discussion about the prospects for a successful restoration was based on predictions which in turn were based on extrapolations from similar studies and the wisdom of experience. While this discussion was valuable in stimulating debate about the potential benefits as well as risks and costs involved with the proposal, it also served to highlight the lack of directly relevant studies. In effect, the Committee's inquiry appears to have raised a great many more questions than it answered.

43 Dr R Walker, Submission p 1.

44 Wilson E O, *Naturalist*, Ireland Press 1994.

The questions for further consideration

3.73 If at any time in the future serious consideration were to be given to a proposal to drain Lake Pedder, there would be questions that would need to be considered. Some of the questions, such as whether viable seed existed in the submerged peat, should be fairly easy to answer. Other questions may be answerable only after the area is exposed and the unpredictable forces of nature begin to work. Given the potential risks to such a valuable world heritage area, there must be a high degree of confidence about the outcome, or a financial commitment to rectify any mistakes. Opinions varied enormously on what could be expected in the revegetation process and what would be acceptable. Fundamental questions which should be answered before any future proposal could progress include:

- . Should the aim of the proposal be restoration or rehabilitation and what degree of intervention, if any, would be involved?
- . What was the original vegetation and was this in a natural or a manipulated state?
- . How closely should restoration try to replicate the vegetation pattern of the pre-flooding period?
- . What would be required to maintain the vegetation pattern that is re-established?

3.74 Many questions were raised about the peat mat which has been established as a basic essential for plant rehabilitation, for instance:

- . How long would the peat mat stay intact once it was exposed?
- . Is there viable seed in the peat mat?
- . Is the establishment of a moss and algae cover essential to bind the peat until larger plants become established and if so, would this require intervention? Would the presence of the lower order vegetation cause any problems?
- . Is there a role for intervention strategies such as aerial seeding and fertilising, cultivation and sowing of a temporary cover crop?
- . What is the risk of weeds becoming established?

3.75 Once answers have been found for questions of such a fundamental nature, it should be easier to deal with the many others which depend on them, such as:

- . Would the button grass regenerate naturally, what assistance might it need, would it be likely to re-establish in the proportions that existed before flooding, and if the proportion is different, is this a cause for concern?
- . Would other species regenerate on the scale required? Would a seed collecting project be necessary to facilitate regeneration and if so, what implications would this have for adjacent areas?
- . Would there be significant erosion and what strategies would be needed to eliminate this and repair any damage?

Would the dunes slump during drawdown and what extent of intervention might be necessary to repair any damage incurred both during and after drawdown?

What rate of drawdown would be best to protect the dunes, maximise opportunities for natural revegetation and avoid unnecessary further wave erosion around the perimeter?

What would happen to endangered species and what would be involved in returning endemic species to the area?

Is there a large population of platypus to consider, what would happen to them after the area is drained, should their preservation be a factor in the rate of drawdown and is there a case for offering this species special protection?

What impact would trout have on fauna in a restored Lake Pedder? Should there be a program to eliminate them from this lake and would such a program be possible without adversely affecting other, endemic species?

Would there be serious erosion and increased run off and what implications would this have for downstream communities?

What restrictions would need to be placed on access to the area during the draining and rehabilitation process?

The feasibility of the large scale seed collection that would be necessary?

How should the region be zoned and what would be the implications of different zoning categories on future visitor access?

The need for a research program

3.76 The existence of all these questions raises the need for a coordinated research program. Further investigation would probably identify even more questions which warrant scientific study before any future proposal to drain Lake Pedder proceeds. This would particularly be the case if a decision on the future of the proposal was dependant largely on answers to these questions. However, the extent to which such studies should be embraced is very much a matter of priorities. Apart from the academic value of such research, a major push for research to answer many of the questions which were raised would only be warranted if the proposal has any real prospect of being implemented. The question of priorities and the need to allocate resources to further study are discussed in chapter 5.

The possible draining process

3.77 The way the impoundment is drained would affect the extent of damage that may be caused to landscape features such as the dunes and would also influence the re-establishment of the vegetation. There are two basic alternatives. The lake could be drained as quickly as possible to minimise erosion around the changing shore line, or it could be drawn down slowly to allow a process of natural regeneration to follow the receding water level. Retaining water

water in the impoundment for a longer period would also allow access to the shore line for erosion control work.

3.78 The draining options that could be considered would depend on what is technically feasible. The current impoundment has flooded parts of two catchments - the Serpentine River basin and the upper reaches of the Huon River catchment. The most important consideration would be to draw down the water level in the Serpentine part of the impoundment, where the original Lake Pedder is located. This would expose the original Lake Pedder.

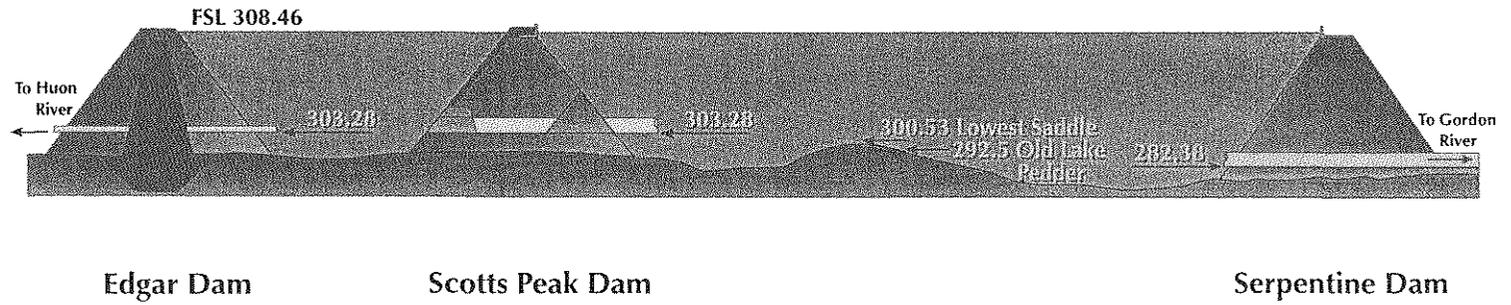
3.79 There are two outlets in the dams impounding Lake Pedder. There is a serviceable diversion tunnel at the site of the Serpentine dam and there is a small outlet valve in the Edgar dam to provide riparian flow in the upper Huon River. There is also a canal to divert water from Lake Pedder into Lake Gordon. A diversion tunnel was built into the Scotts Peak Dam when it was being constructed, but it was permanently blocked when the dam was completed.

3.80 The HEC simulated the draining process and calculated how long it would take to drain the impoundment using the current outlets. With a July start the Serpentine impoundment had a 50 per cent chance of draining down to the level of the Serpentine Dam outlet by March of the following year (ie about nine months). With average conditions the level would then begin to rise again. With a January start, there is a 50 per cent chance of Serpentine water levels dropping down to level of the outlet in twelve months. The level would then remain close to this level until April when it would begin to rise.

3.81 Draining the impoundment would require more than simply opening the outlets on the dams. If the Scotts Peak Dam is not breached the following process could be followed:

- . the McPartlan Pass Canal would be used to drain as much of Lake Pedder as possible into Lake Gordon to recover the energy value of the water - this would draw the lake down to a level of 306.0 metres above sea level;
- . the Edgar Dam riparian outlet and the Serpentine Dam outlet could be used to drain the lake down to 303.3 metres;
- . the Edgar Dam outlet would not operate once the water level dropped below 303.3 metres and only the Serpentine outlet would draw the water down any further, with water in the Huon part of the impoundment spilling into the Serpentine Basin;
- . the water level would continue to drop to the level of the saddle separating the valleys of the Serpentine and the Huon Rivers at which point no more water from the Huon part of the impoundment would drain through the Serpentine outlet; and then
- . the Serpentine outlet would continue to drain the Serpentine part of the lake until a level of 282.4 metres was reached - the original Lake Pedder would then be exposed because it had a level some ten metres above the level of the Serpentine outlet.

LAKE PEDDER STORAGE AND DAMS



Source: Hydro-Electric Commission

3.82 The HEC reported that with this scenario, depending on the pattern of future catchment flows, the level of water that would be retained behind the Serpentine Dam would vary from the level of the outlet valve up to about the level of old Lake Pedder. In wet years the level would completely flood the original lake. If the Scotts Peak Dam were not breached there would be a pondage behind the Scotts Peak Dam and Edgar Dam inundating about 47 square kilometres of the upper Huon catchment.⁴⁵ The water in this pondage would periodically spill over into the Serpentine catchment because the outlet on the Edgar Dam is higher than the level of the saddle between the two catchments.

3.83 If the Scotts Peak Dam was breached and no water from the Huon part of the impoundment spilled back over the dividing saddle into the Serpentine catchment then the maximum level behind the Serpentine Dam would reach only 288 metres and would not re-inundate the original Lake Pedder. The HEC cautioned however that any inflow from Lake Gordon, increased runoff, or blockage of the Serpentine outlet would result in higher water levels. It was also pointed out that at best there would still be routine flooding of the Serpentine Valley behind the Serpentine dam for a distance of up to 10 kilometres and this would maintain a large area of mud flat.

3.84 This outcome would appear not to be acceptable to Pedder 2000 because Dr Brown, in rejecting a partial draining option that would leave part of the Serpentine flooded, expressed the hope that the Serpentine Basin would be fully rehabilitated:

We also aspire to see the Serpentine Valley, in particular, return to its essential naturalness, albeit with the dam left across bridging the lower part of it, and a pondage proposal which is a halfway house would not allow for that.⁴⁶

3.85 Mr Ted Pritchard, Chief Operations Officer of the HEC explained the likely flooding of the Serpentine Valley that was predicted by the HEC's modelling of the catchment. This predicted what would have happened over a 70 year period from 1924 with historic rainfall and streamflow data if the dams were in place with the outlets:

... you would flood right back to Lake Pedder quite regularly. ... there are 12 times when you would get pretty close in that period. ... there are three times when you get above it but clearly you get pretty close on a lot of occasions. You would end up with quite a big lake behind Serpentine. If you breach Scotts Peak then there is a lesser amount but even at that there are a lot of occasions when it will flood some 10 kilometres back into the existing impoundment.⁴⁷

3.86 Winter flooding of the original Lake Pedder was common place and the beach usually all but disappeared. A submission received from Mr Paul Tanner, for example, included a photograph of Lake Pedder in full winter flood with only the outer margin of the beach and shore line visible. Mr Tanner submitted that the beach was generally only exposed for about 3 - 4 months per year. A similar view was put by Mr Raymond Tilley who submitted that the Aero Club of Southern Tasmania, which organised scenic flights to Lake Pedder, was often disappointed because the beach was not exposed and that in some years it only appeared for a few weeks.

45 Mr Ted Pritchard, Chief Operations Manger, HEC, Evidence p 328.

46 Evidence p 313.

47 Evidence p 328

3.87 Winter flooding in a natural unrestricted catchment is not the same as a increase in water levels behind a dam and there might be a greater risk of periodic inundation of the original Lake Pedder and the Serpentine catchment if the dams were retained. The HEC explained that to drain the Huon impoundment it would be necessary to remove Scotts Peak Dam and that if the Dam is not removed the water from the Upper Huon will spill into the Serpentine River.⁴⁸ It would be preferable to either remove or modify the Scotts Peak Dam. With this proviso, it can be said that draining the impoundment would be physically possible but it might be expensive. Breaching or removing the Scotts Peak Dam would also reduce the option of retaining some flood mitigation capacity.

3.88 The concept of a partial draining of the present Huon-Serpentine impoundment was raised during the inquiry. The Lake Pedder Committee of Enquiry, in its Interim report of June 1973, had recommended a moratorium on the filling of the lake to allow time for detailed investigation into possible alternatives to flooding the lake. The Committee of Enquiry favoured most the alternative of abandoning the Huon waters and pumping from the reduced Serpentine storage into the Gordon storage. The possibility of re-employing such alternatives as compromise proposals in the draining of Lake Pedder aroused a certain amount of comment.

3.89 Senator Devereux made a submission to the Committee, in which he proposed a partial draining alternative based on lowering the level of the impoundment by about 16 metres, thus creating three separate bodies of water, a Serpentine impoundment, a restored Lake Pedder and a Huon impoundment. The Serpentine would be pumped into Lake Gordon if needed, and the Huon could be used for flood mitigation, irrigation in the Huon Valley and recreation. No estimate was made of the cost but it would involve building a tunnel, a pumping station and spillways on both the Serpentine and Scotts Peak Dams.

3.90 Dr Alan Polack also submitted that the proposal made prior to the flooding of Lake Pedder to install a pump at or near the Serpentine dam could be implemented as a compromise which would enable the original lake to be restored, while retaining two separate, substantial bodies of water, possibly linked by a tunnel. While estimating that such an alternative would only reduce the power generating capacity of the Gordon power station by approximately 2 per cent, Dr Polack acknowledged that this compromise position would involve substantial costs. He claimed that this would be offset by a reduction in the amount of exposed terrain that would have to be revegetated.

3.91 At the public hearing on 6 April Dr Brown said that he was not in favour of partial draining as it was a solution that nobody would be happy with,⁴⁹ a view that was also expressed by the HEC:

Partial draining options are technically feasible, but to examine them in the necessary detail would require a study of considerable expense. At this stage, it is far from evident that any of the possible options would be any more acceptable for the proponents of draining the existing lake, than is the present arrangement.

Any partial draining option would involve very considerable new capital works ...⁵⁰

48 *Hydro-Electric Commission, Supplementary Submission (April)*, p 9.

49 Evidence p 313.

3.92 Although he did not favour retaining a Huon impoundment Dr Brown referred to the role that the Scotts Peak Dam could play in flood mitigation on the Huon River. Fears have been expressed by primary producers in the Huon Valley that removal of the dam would make them vulnerable again to the pre-1972 flood regime. Dr Brown argued that keeping the dam's release mechanism intact would allow a temporary flooding of the plains as a sensible alternative to downstream flooding.⁵¹

3.93 It appears that partially draining the current impoundment would be technically feasible and would overcome some of the concerns of those opposed to the restoration proposal, at least to the extent that it would satisfy flood mitigation requirements and would retain part of the hydro water storage capacity. However the engineering works that would be required to provide a continued supply of water to the Gordon Power station and to allow the Huon catchment to be drawn down and maintained at the required level would be very costly.

3.94 If the proposal were to proceed then work would be required to either modify or remove Scotts Peak Dam regardless of whether it was decided to retain an impoundment behind the dam. Retaining or fully draining the impoundment in the Huon catchment would not make any difference to restoring Lake Pedder, provided that the level in any retained impoundment was kept below the level of the saddle between the Huon and the Serpentine catchments. If the restoration proposal were to proceed, it would make sense to retain an impoundment behind the dam if it were required for flood mitigation.

3.95 Retaining an impoundment behind the Serpentine seems less sensible. It would not augment the hydro system unless costly engineering works were installed, and a reduced Serpentine impoundment would make only a marginal contribution to the system. It would also prevent rehabilitation of the Serpentine Valley and might increase the risk of flooding extending back up the valley and inundating the re-exposed original Lake Pedder.

50 Tasmanian Government , Submission p 34

51 Evidence p 312

CHAPTER 4: ECONOMIC COSTS AND BENEFITS

4.1 Technical feasibility is not a sufficient reason for attempting to drain and restore Lake Pedder. Before proceeding with the proposal it would have to be clear that the benefits would outweigh the costs. This argument is not thrown up simply to stop debate on the proposal but is a position also adopted by proponents. Senator Devereux, for example, in presenting a compromise proposal that he believed would reduce the area around the original Lake Pedder to be restored, said that:

My support was always going to be based on evidence that this Committee gathered and if there were good reasons put forward for not draining the lake, I certainly would not have proceeded with my support ...¹

4.2 The principal proponents of the restoration of Lake Pedder said they expected a positive cost-benefit outcome and believe that part of the viability of their proposal is enhanced because it has net economic benefits. Dr Brown told the Committee:

We are saying that there will be an actual benefit economically and that it is not going to be cost neutral. We are saying that Tasmania is going to be advantaged economically by the restoration of the lake. The idea that there is a cost is one that we all have to question in our minds because it is a very simplistic and wrong perception to begin with. What we believe is that there will be an inflow of profit to Tasmania ...²

4.3 The proponents and the antagonists disagreed most when it came to the calculation and assessment of costs and benefits. This is never an easy task for projects with significant environmental implications and, in this case, the Committee found that virtually every claim about potential costs and benefits was contested. Problems occur even when well established techniques are available to identify and quantify costs and benefits. This is illustrated by the debate about rehabilitation costs discussed in the previous chapter where it was not so much the technique for estimating costs that was in dispute as much as the need to actually do so.

The future value of Lake Pedder electricity

4.4 A major argument put against draining Lake Pedder was the value of the electricity production that would be lost, or the cost of replacing that electricity from alternative sources. The value of the electricity can be directly calculated if assumptions are made about future demand but such calculations do not fully account for the role that Lake Pedder plays in the Tasmanian hydro electricity system. An important aspect of this role was said to be its contribution to drought proofing the system and thus reducing the likelihood of power rationing.

1 Evidence p 421.

2 Evidence p 23.

Lake Pedder's role in the system - water storage

4.5 The hydro system in Tasmania consists of 28 power stations. Most of these are either run of river power stations without adjacent water storage or power stations with comparatively small to medium sized adjacent impoundments. The Lake Gordon - Lake Pedder complex is one of two large hydro electricity impoundments in Tasmania. Lake Pedder has a surface area of 242 square kilometres and a total volume of about three cubic kilometres.³ The surface area of Lake Gordon is 278 square kilometres but it has a much greater capacity of 12.5 cubic kilometres due to its much greater depth.

4.6 Lake Gordon and Lake Pedder were described by the Tasmanian Government as a 'vital component' of the integrated hydro system.⁴ The importance of the integration in the system was explained by the Government:

The integrated operation of the system is so important that if the component stations were viewed as operating in isolation, the sum of the electrical energy demands they could meet reliably by themselves would be considerably less than the total electrical energy demand that can be met reliably by operating the system in an integrated fashion.⁵

4.7 Lake Pedder's main function in the system is to extend the catchment of the Gordon River Power Development. As the Tasmanian Government explained:

Lake Pedder provides 40 percent of the inflow into Lake Gordon, one of the two major long term storages in the HEC system. Because Tasmania's electricity supply is almost entirely dependent on a secure and steady supply of water, the long term storages provide a bank of reserve energy for use in periods of low rainfall, when the Commission's 'run of river' systems are unavailable for production.⁶

4.8 Lake Pedder's catchment is about 34 per cent of the total catchment supplying the Gordon Power Station which generates about 13 per cent of the State's electricity. Lake Pedder's catchment includes areas of comparatively high rainfall and it contributes about 42 per cent of the water used by the Gordon Power Station.⁷ However, Lake Pedder adds only one per cent to the effective storage capacity of the entire Tasmanian hydro system. Mr Pritchard explained:

The issue for Lake Pedder is that it increases the effective catchment of Lake Gordon, which has a very large storage. In fact, it contributes about 40 per cent of the flows into Lake Gordon. Lake Gordon, of course, has got something like a third of our total storage, so it is not a question of the amount of storage in Pedder; it is the contribution that [it] makes to the overall water that is available out of Gordon.⁸

3 Tasmanian Government, Submission p 22.

4 Tasmanian Government, Submission p 23.

5 Tasmanian Government, Submission p 10.

6 Tasmanian Government, Submission p 10.

7 The Tasmanian Government initially submitted that Lake Pedder contributes 40 per cent of the water used in the Gordon River Power Development but this estimate was later refined to 42 per cent in the Supplementary Submission presented by the Hydro-Electric Commission.

8 Evidence p 62.

4.9 Lake Pedder is managed in an entirely different way to Lake Gordon. Section 46 of the Hydro-Electric Commission Act provides that the level of Lake Pedder can normally only be varied between 306.93 and 308.46 metres above sea level. Most of the water in the lake is therefore 'dead storage' and inaccessible to the system. Even in an extreme drought where the statutory limit on drawing down Lake Pedder might be set aside, it could still only be taken down to the level of the canal at 306.0 metres, at which point it would be too low to drain into Lake Gordon. Lake Gordon is not subject to such restriction and is drawn to very low levels during times of drought.

4.10 Tasmania is almost entirely dependent on hydro electricity for its power supply. The hydro electricity system can be put at risk by variability in rainfall and there have been instances when electricity rationing has been required. This occurred and as recently as 1991, when it was necessary to generate electricity from the Bell Bay oil fired power station because the capacity of the hydro system was affected by drought.

4.11 It was argued that Lake Pedder provides a significant degree of drought proofing for the hydro electricity system, which at times has had insufficient capacity to meet demand. In a letter to the Committee the Tasmanian Premier stated:

Lake Pedder has strategic importance to the integrated energy system in this State. Lake Pedder is vital to the drought proofing of that system and has been a major factor in the avoidance of power rationing. The Tasmanian Government is not prepared to compromise this situation.⁹

4.12 The limitation on drawing down Lake Pedder means that Lake Gordon, with its considerably larger active storage capacity, probably provides significantly more insurance against drought. Mr Les Southwell, an engineer and member of the Lake Pedder Study Group, pointed out in a submission to the Committee that Lake Gordon contains about three years' supply of average total inflow to the power station.¹⁰

4.13 In support of the argument that Lake Pedder needs to be retained for its drought proofing value, and that there is no surplus storage capacity, the HEC referred to the low level of the storages:

The Commission's storages are currently at 60 per cent ... But in 1991, storage was down to 21 per cent and that was despite thermal injection from Bell Bay. ... we have been hovering around the 40 per cent line for a significant period and, in 1991, we went under the thermal control and had to get into thermal generation. ... if the commission had a very large surplus of energy, you would not have storages under 50 per cent for a long period of time.¹¹

4.14 The Hon Peter Rae, Chairman of the HEC suggested that:

Perhaps the most extreme way of putting it would be that, until such time as you have water lapping over the top of every storage, you cannot say you have got a surplus.¹²

9 Evidence p 41.

10 Mr Les Southwell, Submission p 5.

11 Evidence p 52.

12 Evidence p 64.

4.15 However it was stated by Mr Pritchard that:

One of the virtues that Gordon-Pedder has and Great Lake has is because of its very large size we virtually have no spill from those systems, so every drop that falls is captured.¹³

4.16 Mr Pritchard's comments suggest that the low level of the dams may not necessarily be due to near capacity use of the system. The low levels may occur because the dams are so large that they do not usually fill. A HEC pamphlet on the Serpentine Dam refers to the outlet gate which can be used to control spillage but notes that '... regulation is almost 100% (owing to the large size of the reservoir) and water is rarely discharged'. Similarly, a HEC touring guide to the Gordon, Central Highlands and Lower Derwent power developments states that the bulk of the storage capacity is contained in two very large lakes, the Great Lake and Lake Gordon, and that water entering these two lakes has 'very little chance of spilling while water entering smaller storages has a much higher chance of being lost'.

4.17 Since the last time that storage levels were so low that the Bell Bay station had to be used the average actual load on the hydro system has declined but two new schemes, the King and Anthony, have come on line. Therefore, the historically low storage levels referred to by the HEC may now be less relevant. The HEC have reported that the Bell Bay Power Station has now been placed in reserve, with a cost saving of at least \$1.5 million per annum.¹⁴

Lake Pedder's role in the system - electricity production

4.18 The HEC find it difficult to separately identify the contribution of any single element of the hydro system:

In an integrated hydro-electric system, the value provided by a particular scheme is not simply the energy generated by the power stations that form part of that scheme. Neither is it simply the sum of this energy added to the energy generated from the use of the water diverted by this scheme in the power stations of another scheme.

The value of a particular scheme cannot be determined correctly in terms of the energy that scheme has generated historically. This is especially true of Lake Pedder, the water from which is collected from a high rainfall catchment and diverted by gravity flow to Lake Gordon where it contributes to the long term storage of the Gordon scheme.¹⁵

4.19 The Tasmanian Government submitted that the production capacity of the hydro system is currently rated at 1173 MW.¹⁶ This is considerably less than the total installed maximum generating capacity of 2278 MW¹⁷ and is more than the actual load demand of 1010 MW in 1993/94. The difference between the generating capacity and the total installed capacity was explained by the Chairman of the HEC:

When we talk about hydro-generation, however, the availability of fuel is weather dependent. If you do not get the rain at the right time in the right place, you simply have not got fuel to run the machine. That basically means that the nameplate capacity of the machine does not

13 Evidence p 50.

14 Hydro-Electric Commission, Annual Report 1994, p 15.

15 Tasmanian Government, Submission p 26.

16 Tasmanian Government, Submission p 9.

17 Hydro-Electric Commission annual report 1994, p 48.

approximate the available output. You can put a hundred megawatt turbine in, but if the water is not available for it 100 per cent of the time, you do not get 100 megawatts. The reality with most hydro systems is that you do not have a supply of water necessarily available all the time. That is especially the case with run-of-river stations.

As a consequence of that, of course, the total capacity of multiple power stations does not approximate the sum of the individual machine capacities.¹⁸

4.20 Mr Pritchard explained that some value judgements have to be made when rating the actual production potential of a hydro electric system because they are dependent on rainfall events that cannot be predicted with certainty and there are production options available when managing an integrated system.¹⁹ This also means that it is difficult to give an absolutely precise rating to such systems:

Moving on to specific hydro system rating issues, the first point to make is that in terms of system capacity there is no one right answer. For a hydro system as a whole there are a range of equally valid ratings. It depends on those assumptions ... and how conservative you want to be or how optimistic you want to be.²⁰

4.21 If Lake Pedder were drained the operating capacity would be reduced but the installed capacity of the hydro system would remain the same because there is no separate power station at Lake Pedder. The capacity to operate the Gordon Power Station would be affected, because it would reduce the volume of water that can be drawn down to drive the turbines. Given the recent additions of the King and Anthony developments to the state-wide system a reduction in the rated capacity of the Gordon River Development may not necessarily significantly diminish the ability of the entire system to service that current level of demand.

4.22 The significance of any reduction in system water storage or generating capacity that might occur if Lake Pedder were removed would depend on several factors. If demand for electricity does not grow, or if it contracts, then a small decrease in system rating may be acceptable. On the other hand, a decrease in rainfall due to climate change or an increase in demand might increase the risk of power rationing.

4.23 The increases in storage levels in recent years and the apparent capacity of the HEC to efficiently manage the systems as an integrated whole, at current levels of demand, suggests that the loss of Lake Pedder, if it were to occur, might be manageable, but this alone does not make draining the lake an acceptable outcome.

Is there a current surplus capacity?

4.24 Based on current circumstances, it appears that the current demand for electricity amounts to about 86 per cent of the calculated average capacity of the system. This is a situation that some have described as evidence of a surplus capacity of about 15 per cent in the system. The Tasmanian Government referred to this difference between demand and potential supply as a 'modest energy cushion' and suggested that the ratio of load to capacity was comfortably within an internationally accepted operating band for hydro based systems.²¹ It

18 Evidence p 48.

19 Evidence p 51.

20 Evidence p 51.

21 Tasmanian Government, Submission p 9.

can be seen that draining Lake Pedder, which contributes about 65MW to the capacity of the system, would reduce the buffer to about 9 per cent. Such a potential outcome is confirmed by Comalco, the state's largest single electricity customer:

The estimated average surplus energy capability in the system is thus approximately 14 % or 160 MW at the generation source with 149 MW available to a customer. Lake Pedder's 65 MW can be seen to be nearly half of this surplus.²²

4.25 The HEC suggested that if there were an over capacity in the storage system then the dams would overflow. As discussed above, this statement needs to be considered in the context of the very large capacity of some storages and some of the people who made submissions to the Committee challenged the HEC's portrayal of the situation. Mr Brian Kohl, for example, suggested that the increase in the storage levels in the hydro dams in recent years confirmed the existence of a surplus capacity²³ that has been increasing in the last few years and Dr Andrew Blakers, an electrical engineer at the Australian National University, predicted that the dams could overflow within the next few years:

It is very likely to happen in the near future, because three new schemes namely, the Pieman, the King and the Anthony have been brought on-line over the last 10 years, and demand has shrunk over the last three years. The corollary is that, if average rainfall occurs, those lakes will overflow. If you look at the percentage fullness of the hydro-electric schemes in Tasmania, you find that it has risen from about 27 per cent, as it was three years ago, to 60 per cent. In a couple of years they are likely to be full, unless another drought occurs.²⁴

4.26 If it does come to pass that the dams overflow or are maintained at near maximum capacity then perhaps it could be said that the retention of Lake Pedder is not essential for the viability of the hydro system as a whole. Even if this proves to be the case however it will not be a sufficient reason to allow the lake to be drained. Perhaps the most important factor in calculating the continuing value of retaining Lake Pedder is the likely future demand for electricity. If it can be shown that the value of lost electricity revenue or the replacement cost is significant then this will overshadow any concerns about Lake Pedder's contribution as a drought proof storage. On the other hand if demand does not grow, or declines as it might if Comalco closes its aluminium plant at Bell Bay, then the modest cushion would undeniably be a surplus.

Discounted net value of future electricity production

4.27 The electricity generated from the water diverted from Lake Pedder to Lake Gordon has averaged 11363 GWh per annum.²⁵ The HEC used this production as a basis for calculating the net present value of electricity likely to be produced in the future. They assumed continuing production at past levels and a price of 5.21c/kWh, the average price paid by all customers in Tasmania. This led the HEC to calculate that the total value of lost electricity production would be \$450 million.

22 Comalco Aluminium (Bell Bay) Pty Ltd, Submission p 6.

23 Evidence p 121.

24 Evidence pp 151-152.

25 Hydro-Electric Commission, Supplementary Submission p 6.

4.28 Dr Blakers suggested that a different set of values should be used to calculate the value of the electricity that could be generated with Lake Pedder water. His views were either endorsed and repeated by others who agreed with the proposal to drain Lake Pedder or were supported by similar analyses presented in some other submissions.²⁶ Dr Blakers argued that the electricity would only have a value in the future if it has a market. In his submission Dr Blakers suggested that:

The draining of Lake Pedder would make no difference to either energy production or energy storage. The conclusion is therefore that the water in Lake Pedder is presently valueless. It will only ever have value if it can be sold. ... Using the technique of discounted cash flow analysis it is possible to calculate the value of Lake Pedder. ... To do this calculation it is necessary to know when demand will catch up with supply; ie, the year in which Lake Pedder electricity can be sold and the water becomes of value. ... There is no reason to expect power demand to increase rapidly in Tasmania. It has been falling over recent years. Nevertheless, if the assumption is made that demand grows at a rate of 1.5% per year then demand will exceed the capacity of the hydro system (excluding Lake Pedder and Bell Bay) in the year 2005.

The value of Lake Pedder electricity is approximately equal to the cheapest source of alternative supply. This will be either the cost of demand management measures (in terms of c/kWh), or the lowest price paid by Comalco and the other industrial users which is about 2 c/kWh (plus an allowance for any additional distribution costs).

... If the power from Lake Pedder could be sold for 2 c/kWh it would bring a net benefit to the HEC of about \$10 million/year, after allowing for marginal costs of production and sale.

... If demand catches up with supply in the year 2005 the value today (1995) of Lake Pedder is about \$30 million.²⁷

4.29 Dr Blakers included in his calculations a slightly higher rate of increase in demand than that proposed to the Committee by the HEC, but unlike the HEC, he argued that this increase would not immediately create a need to utilise the water in Lake Pedder. He presented a range of estimates which depended on when demand and supply reach the same level and suggested that this would occur in the year 2005, with a 1.5 per cent growth in demand. If, as quoted above, there were no surplus and if there were already a market for all the electricity then Dr Blakers' figures suggested that the net present value of future production would be a little less than \$90 million. This figure was so much lower than the \$450 million proposed by the HEC because Dr Blakers used a much lower price in his calculations. Dr Blakers assumed a price of 2 c/kWh, the marginal price that could be obtained, whereas the HEC used the larger average price in their calculations.

4.30 Mr Southwell submitted a similar analysis to that presented by Dr Blakers. Using a medium price of 2.5 c/kWh and a maximum price of 3.5 c/kWh for power sales through the proposed Basslink cable, and assuming sales could be made immediately, he calculated an annual value of \$13 million but suggested this could be as much as \$18 million if Comalco

26 The submission from Mr L S Southwell, an engineer and a member of the Lake Pedder Study Group, presents an argument similar to that made by Dr Blakers and supports his conclusion.

27 Dr A Blakers, Submission pp 7-9.

were to stay and upgrade its operations. With an interest rate of 10 per cent Mr Southwell reported that the net present value of this production in perpetuity would be \$131 million. Mr Southwell noted however that:

... at the earliest, there is no prospect of selling all the power surplus until Basslink is installed. On present indications, this will be at least seven years away. The corrosive effect of a real interest rate of 10% would halve the present value of energy foregone to \$66 million (or a maximum of \$92 million).²⁸

4.31 Comalco submitted an assessment of the annual value of the electricity that would be lost if Lake Pedder were drained and they also thought it appropriate to use the marginal price. This led Comalco to estimate the annual value of electricity produced from the waters of Lake Pedder to be \$13 million, a figure similar to that calculated by Mr Southwell and much closer to Dr Blakers' estimate of \$10 million per annum than the HEC's estimate of \$27.8 million per annum. Comalco said:

Whilst the price for power to any customers in the future may be lower (or higher) than that currently paid, one estimate of the value of the 65 MW of power is that paid by today's average Major Industrial Customer ie. for power delivered at high voltage and high load factor without the costs associated with transformation, distribution, and individual customer service. This would deliver some \$13 million per year (65 MW (7% loss) @ 2.5 cents per kilowatt hour).²⁹

4.32 Calculating net present value is a standard cost-benefit analysis technique. The results that can be obtained are sensitive to the assumptions made and the data available to be included in the analysis. The results do not indicate the amount that would actually have to be paid out, for example, to decommission the dams or the power station, but estimate the economic loss that would occur over the period of the project.

4.33 Although the HEC made assumptions which resulted in the maximum cost scenario they acknowledged the validity of other approaches which used different assumptions and agreed that at least two prices other than that used in their own analysis could be taken.³⁰ They added the qualification however that even though the cost could be lower it would still be significant:

So what we have tried to do here is say that at the end of the day, if this was to go ahead, there would be a very long and hard fought academic debate over what is the appropriate number. We have attempted to demonstrate that no matter what number it is, it is a big one. The one that we have given in the first case, the \$450 million, is based on actual numbers. It is based on actual revenues at the moment. Whether those revenues in the future are more or less is another issue.³¹

4.34 In this case the assumptions made about price, and particularly about future production, vary greatly between the HEC and the proponents of restoring Lake Pedder. The calculation of net present value is a theoretical methodology and there is room to debate

28 Mr Les Southwell, Submission p 5.

29 Comalco Aluminium (Bell Bay) Pty Ltd, Submission p 10.

30 Mr Ted Pritchard answered 'absolutely' when asked if a rigorous argument could be made for at least two other prices to be used in the calculations. Evidence p 343.

31 Evidence p 343.

whether it is better to use average, marginal or minimum acceptable price when making such calculations. Comalco appeared to agree with Dr Blakers about the appropriate price to use in these calculations, that is 2 c/kWh, and although they did not calculate the net present value, they took a similar approach to the question of the disparity between supply and demand. Comalco observed that:

The National Grid Management Council's most recent estimate of future electricity demand growth in Tasmania suggest this surplus will be taken up shortly after the turn of the century. Whilst such projections can be examined with the benefit of hindsight as the end data of any estimate approaches, Comalco has no particular reason to doubt this estimate as one, albeit optimistic, possibility. There are however other possibilities of future electricity demand growth which considerably extend the time at which the system reaches full capacity.³²

4.35 Recent expansion of generating capacity and the contraction in demand, due to the downturn in aluminium production at Bell Bay following the international agreement on production levels, has diminished the need to draw water from Lake Pedder for generating purposes, although it would continue to be useful to divert water to Lake Gordon until such time as it reaches full capacity. It is possible that Lake Pedder may have a continuing, but diminishing, marginal role as a back up against drought. If demand increased the converse would apply.

4.36 In the short to medium term the view of Dr Blakers is that that the water from Lake Pedder is not necessary for electricity production given the 'modest cushion' in capacity that exists at present, and therefore it could reasonably be described as having no current market value. The Committee considers, however, that in the longer term, it is quite possible that demand will eventually catch up with supply capacity. Long range forecasts of demand are uncertain and may be influenced by such things as changes in consumption, energy conservation, installation of the Basslink cable and new technology either in generating or in the end use of electricity.

4.37 The value of the future electricity production would be reduced if the system has long periods of surplus capacity but this value would not fall to zero if there is eventually an increased demand for power and the waters of Lake Pedder have to be used to produce electricity.

4.38 If Dr Blakers was right and if demand diminishes, it is inevitable that some power stations would be operated at reduced output. This would not necessarily be economically inefficient because the system could be operated to maximise long term storage and minimise spill.

4.39 If Dr Blakers was wrong and it is economically sensible or necessary to continue to operate Lake Pedder in the present way then the value of the electricity would be significant, although probably considerably less than the \$450 million proposed by the HEC. Dr Blakers' range of \$20 million to \$90 million, depending on when demand catches up to supply, was probably somewhat low but is more indicative of the value based on marginal prices. Dr Blakers' estimates were consistent with an analysis presented to the Committee by Mr Southwell and, at least in some of the assumptions made, accorded with the evidence presented by Comalco.

32 Comalco Aluminium (Bell Bay) Pty Ltd, Submission p 6.

4.40 The future balance between generating capacity and demand is a more pertinent question in the context of consideration of the proposal to drain Lake Pedder. It is possible that the comfortable position that the HEC currently finds itself in with a generating capacity in the acceptable range of risk may in the future alter to one where the demand is considerably less than the average capacity. It may also find that demand will grow slowly and that it will eventually need to consider alternative sources or make greater savings through energy use efficiency. The major influence on future demand will be the decision of Comalco to either expand or close its operations at Bell Bay.

Future demand

4.41 In a supplementary submission presented to the Committee in April 1995 the HEC forecast that the overall annual demand growth for the next five years will be about one per cent.³³ It was noted, however, that the final outcome would depend on the actual business strategies actually adopted by the State's major industrial users. In a further submission presented in May 1995 the HEC pointed out that demand growth had strengthened in the period after the presentation of the earlier submission. A number of plans for major developments, with significant power requirements, were reported to be in various stages of negotiation.³⁴ Four projects were cited, with a power requirement of 95 MW. The HEC also said in its submission in May that negotiations between Comalco and the Tasmanian Government had formally resumed.

4.42 Some of the submissions made to the Committee suggested that the HEC did not have a good record when it comes to projecting future demand and the HEC itself acknowledged that it had made mistakes.³⁵ Its projection of a modest growth rate could be seriously astray if Comalco closes its Bell Bay plant and a new customer is not found quickly. Some of the witnesses who appeared before the Committee had no doubts that Comalco would close its Bell Bay plant. They referred to the age and inefficiency of the plant and to Comalco's developments in Queensland and New Zealand.

4.43 Comalco has reduced its operations at Bell Bay in response to an international agreement to reduce global production but told the Committee it had considered bringing its full capacity back on-line.³⁶ In the longer term however it will either redevelop and expand the Bell Bay plant, in which case it will require an additional 50 MW of power,³⁷ or close it all together. Dr Anthony Kjar, representing Comalco told the committee that:

The chances of Bell Bay coming back into the picture and being seriously considered are now reappearing. We see that there will be a window between 1998 and 2000. The window can

33 Hydro-Electric Commission, Supplementary Submission (April 1995) p 8.

34 Hydro-Electric Commission, Supplementary Submission (May 1995) p 2.

35 Mr Pritchard, Evidence p 60.

36 Evidence p 444. An article in the *Australian* on 26 May 1995 quoted Comalco's Chief Executive Officer as saying that there was 'no intention at this stage' of restoring suspended production at Bell Bay.

37 Evidence p 441.

be explored quite seriously to see whether we can resolve the issue of power price, the certainty of power, and the security of power, both in quantity and sovereign risk.³⁸

4.44 Dr Kjar told the Committee it is a 'pretty likely scenario' that Bell Bay would be closed if Lake Pedder were drained but retaining Lake Pedder would not guarantee that Bell Bay would not close.³⁹ Comalco's concern about the possible draining of Lake Pedder was explained on the grounds that Comalco 'cannot see our way clear to expanding the facilities, to put money into a system that does not have the power to sustain us in the longer term'.⁴⁰

4.45 Some witnesses speculated that Comalco will close down its plant at Bell Bay, and its decision to cut back production at Bell Bay in 1994 might be an indication of its long term plans. The Committee, however, cannot go beyond what Comalco itself says. To do so would be to enter into speculation. The HEC appear to be confident that Comalco will stay and redevelop at Bell Bay but they acknowledge that this question is undetermined and advised the Committee that 'after examination of all its business options Comalco may or may not choose to leave Tasmania and only time will tell'.⁴¹

4.46 Closure of Comalco's Bell Bay plant would not, according to the HEC, result in a large surplus capacity in the generating system:

... in the event that Comalco does decide to close, HEC is of the view that alternative customers will be readily obtained.⁴²

4.47 This view was explained in comments made by Mr Pritchard and Mr Rae:

Mr Pritchard - The Comalco load represents a very attractive block of energy and if that company chose to leave the state then it would be possible for the HEC and the government to offer it to others at very attractive prices.

Mr Rae - The question of Comalco going is one where, if I could just express a personal opinion, for what it is worth, I do not believe that there will not be a consumer of the very large block of power at Bell Bay in the year 2002 and beyond. That is a carefully worded statement but is a very firm belief...⁴³

4.48 It seems implicit in the HEC's response that they are keen to find an alternative purchaser if Comalco closes down and it is reasonable to expect that this eagerness would extend to offering a new purchaser a similar deal to that which has applied to Comalco's power purchases. It would certainly take a major user to take up the capacity that Comalco currently uses and any potential major user would expect to pay a price similar to that usually paid by major customers. It is appropriate therefore, when calculating net present values to use the price that a major user, such as Comalco, is likely to pay. This might settle the price argument but it does not directly resolve the arguments about future demand. This will become clearer in future years as growth is monitored and as Comalco's position is resolved.

38 Evidence p 440.

39 Evidence p 452.

40 Evidence p 448.

41 HEC, Supplementary Submission p 12.

42 Evidence, p 333.

43 Evidence, p 335.

4.49 The Committee believes it is better to wait until predictions of future demand can be made with more confidence before an attempt is made to put a value on the electricity that may or may not be generated with the waters of the current lake. The three most likely outcomes - a significant and sudden decrease in demand, a slow growth, or a significant surge if Comalco redevelops - are too widely divergent and equally uncertain to provide a basis for a sound decision at this stage. A 'wait and see' approach to this question should be acceptable because it is likely that Comalco's position will be clarified by the end of the century. The prospects for Tasmania and Victoria proceeding with Basslink should also be clearer as time passes. A decision to proceed with Basslink could be expected to increase the value of generation from Lake Pedder but could provide some alternative security for Tasmania during dry periods.

Tourism - possible gains and losses

4.50 Pedder 2000 and others who supported the restoration proposal went beyond the argument about the value of any electricity production foregone and attempted to identify economic benefits that might accrue from the proposal. The main purported benefit would come from the additional tourism that the proposal might generate. Tourists could be attracted to the area by the chance to visit Lake Pedder and to witness the rehabilitation process. The publicity that the project would create could further enhance the perception of Tasmania as a tourist destination with major natural attractions. To create a net benefit this tourism would need to more than compensate for any loss of tourism that might occur due to the loss of the Lake Pedder trout fishery and other tourism. It would also have to result in more tourists actually going to Tasmania or extending the length of their visits rather than simply causing tourists to reschedule their itineraries to include Lake Pedder at the expense of some other attraction.

4.51 Shortly after it was flooded and stocked with trout Lake Pedder developed a reputation as a world class trophy fishing venue. This was not an unusual phenomena for new impoundments and results from the rapid expansion of food sources and habitat niches as lakes flood and vegetation rots. The size and numbers of the fish then stabilise at near normal levels. This stabilisation occurred in Lake Pedder but it remained an important and attractive fishing site. According to the Tasmanian Government a 'substantial' proportion of Tasmanians visiting the Lake are trout anglers.⁴⁴ There is no dispute that trout fishing is currently one the major attractions of the area. The Freshwater Anglers Council of Tasmania explained that:

Fishing in Lake Pedder is excellent and the trout compare favourably in size, quality and numbers with Lake Sorell the recognised prime fishing location in the State. While trophy fish of recent times are now increasingly rare, this is the normal progression as any artificial water matures and anglers accept this with equanimity. ... The current IFC census (1993/94) indicates that almost 3000 angler-days were spent at Lake Pedder and the catch per day is 2.2 fish. This figure compares very favourably with other popular waters in the State such as the Central Plateau Conservation Area where the average is 1.5 fish/day.

44 Tasmanian Government, Submission p 14.

At a recent Seminar conducted by the Department of Tourism, three world renowned experts from America (*The Travelling Fly Fisherman*) advised that Lake Pedder was known around the globe for its spectacular brown trout fishing. Their recommendation was to promote Lake Pedder as a trophy trout water and do it vigorously and well.⁴⁵

4.52 The recent introduction of carp to some of the other trout fisheries in Tasmania will, at least in the short term, re-emphasise the importance of Lake Pedder, which remains free of carp. The numbers of anglers fishing in Lake Pedder might rise significantly if other waterways remain closed because of the presence of carp.

4.53 The Tasmanian Government submitted to the Committee that in 1989-90 only seven per cent of local licensed anglers fished in Lake Pedder.⁴⁶ A memo from the Tasmanian Inland Fisheries Commission included in the papers obtained under FOI and forwarded to the Committee indicates that the Commission was of the view that there has been a consistent decline in this percentage since 1987-88. The Commission also reported a large decline in angling activity at the lake in 1992-93, possibly due to the introduction of park entry fees.⁴⁷

4.54 The Lake is particularly important to interstate and overseas anglers visiting Tasmania:

Lake Pedder achieved its fame because of the massive size of the trout captured in the 1975-1983 period. It has a worldwide reputation and has served as the gateway/magnet for international and mainland anglers to fish the Tasmanian lakes and rivers. In 1989-90, one third of the interstate anglers surveyed by the Inland Fisheries Commission had fished Lake Pedder during their visit. This indicates the popularity of the lake amongst anglers outside of Tasmania.⁴⁸

4.55 This view was confirmed by Mr Harvey Taylor and Mr Noel Green, two of the representatives of the Freshwater Anglers Council of Tasmania, who appeared before the Committee in Hobart:

Mr Taylor - ... I would say that probably more people from interstate and overseas would fish it than do locals, at this point.

Mr Green - I think there are a lot of interstate and overseas people fishing there.⁴⁹

4.56 The economic importance of this tourism was indicated in figures submitted by the Tasmanian Government. The value of interstate and overseas tourism attributable to angling was worth \$4.4 million in 1989-90 and local investment in angling was \$23.6 million.⁵⁰

4.57 A preliminary assessment of economic and other values prepared for Pedder 2000 suggested that the overall tourism potential of the restored Lake Pedder represents a substantial source of added revenue for Tasmania, of the order of \$20 million annually, and would create around 600 jobs. This would be achieved by an increase of four per cent in

45 Freshwater Anglers Council of Tasmania, Submission p 3.

46 Tasmanian Government, Submission p 15.

47 The impact of the visitor fees on angling activity was confirmed in the submission from the Freshwater Anglers Council of Tasmania.

48 Tasmanian Government, Submission p 15.

49 Evidence p 117.

50 Tasmanian Government, Submission p 16.

tourism from overseas and interstate, which combined with an increase in intrastate tourism, would be worth over \$20 million per year. This figure was based on existing tourism levels and an average expenditure of \$1000 per tourist.

4.58 The actual impact that the restoration project might have on tourism is a matter for speculation and might not occur in the way that some are predicting.⁵¹ Mr Malcolm Wells, the Deputy Secretary of the Tasmanian Department of Tourism, Sport and Recreation speculated on the impact of the proposal on tourism:

I think the answer to that is that we do not know. There would obviously be some increased interest in an activity like that by a percentage of people that we are unable to determine at this point in time. At the same time, you are also losing some of the existing market, particularly the fishing market. So you have an increase which is yet to be determined, and it is the view that we need more research in that regard. I think that the sorts of figures that are talked about in the Pedder 2000 report are, at best, unsubstantiated.⁵²

4.59 This view contrasts with the apparent position of the Parks and Wildlife Service which advised the Department of Environment and Land Management that 'Lake Pedder will undoubtedly become a major visitor destination, with annual visitors at least in the tens of thousands'.⁵³ This is not an unrealistic prediction when compared to current visitor levels which have very recently risen following the re-opening of the Gordon Dam visitor centre, as outlined by the Chairman of the HEC, and which indicate that Lake Pedder is already a significant tourist destination:

The most helpful figures in relation to that are the figures which have been kept since the visitor centre was reopened, and those have shown a fairly steep increase. It was opened in October, and, from October to November, there were 4,000. In January alone it was more than 2,500 and one would expect the number to be higher during those months than they would in the winter months. That gives some indication, though, that there is not an insignificant number - an average of about 22 000 ...⁵⁴

4.60 The projected increase of only four per cent may appear substantial in terms of overall tourist numbers but the actual number that would be involved are large when compared to the current numbers of visitors to Lake Pedder. The Tasmanian Government doubted that the projected increase in tourism would be achieved, but if it were then it would be significant in terms of the number of people visiting the lake:

Domestic tourism is growing at three percent. It is highly unlikely that the restoration of the lake by itself would attract an additional increase of four percent in interstate traffic annually. This would mean an additional 15,000 Australians who would travel to Tasmania simply

51 A similar situation appears to have occurred with tourism growth in relation to the decision not to dam the Gordon River below the Franklin. The Committee was told that the tourism bonanza predicted for the Franklin did not eventuate but there has been a significant growth in tourism centred on Gordon River cruises operating from Strahan.

52 Evidence p 71.

53 Memo from Peter Bosworth, Assistant Director, Resources and Planning, Parks and Wildlife Service to Tony Dell, Secretariat, Department of Environment and Land Management, August 1994.

54 Evidence p 69.

because the lake was being drained. This represents a 75 percent increase in the number who currently visit Lake Pedder and is a doubtful outcome of simply draining the lake.⁵⁵

4.61 It was also pointed out to the Committee by Mr Wells that predictions about tourism of the kind made for the Pedder 2000 Committee can some times go astray:

But we really believe that to identify the quantum of people who would actually come to the state because of the lake being drained requires a deal of research. It is more speculative than some of the figures that the hydro are currently doing on future demand.⁵⁶

4.62 Nevertheless there are some trends that can be used to identify future tourism levels. The preliminary economic impact assessment prepared for Pedder 2000 reported that the Tasmanian Visitor Survey showed an increase in wilderness visits of 30 per cent between 1988 and 1992. This figure may be explained largely by the expansion of the world heritage area in Tasmania in 1989 but it suggests that this is a comparatively fast growing aspect of tourism when compared to the overall increase of 9 per cent in tourism generally in Tasmania.

4.63 The Committee agrees that projected increases in tourism and the predicted benefits forecast by Pedder 2000 need to be treated with caution and are, at best, only indicative. An increase in intrastate tourism is unlikely to result in the additional economic benefits predicted in Pedder 2000's assessment given that a significant amount of the local tourism that already occurs is fishing based. An increase in intrastate visits to a restored Lake Pedder would only contribute to the domestic economy if it resulted in a substitution for expenditure on tourism to other states and did not occur at the expense of visits to other parts of the State. If tourism were to increase by four per cent the benefits would not be as great as predicted in the paper prepared for Pedder 2000 because they do not take account of any losses due to the decline in fishing based tourism that would occur.

4.64 The figures prepared for Pedder 2000 also do not take account of the cost of managing that additional tourism. Mr Wells pointed that:

... a great deal of work would need to be done in order to validate the sorts of economic benefits that are suggested by the draining of the lake. If you take that four per cent figure or if you even say, 'Let's double the number of walkers on the overland track', which is currently 5,000 a year, you are talking about an economic benefit. This is not a net economic benefit because you have got a loss at the other end of \$4 million or \$5 million as opposed to \$24 million.⁵⁷

4.65 The Parks and Wildlife Service identified several aspects of the management of visitors to the site of a newly exposed Lake Pedder that might require new works. These included proper construction and surfacing of access tracks at a cost of \$0.5 million, provision of camping areas with adequate toilet facilities, day visitor facilities, construction of a track to a suitable lookout and the deployment of rangers.

4.66 It is likely that the draining of Lake Pedder, if it were to proceed, would create considerable international interest and additional ecotourism to Tasmania. In the long run it would also enhance Tasmania's image as an ecotourism destination. It is difficult to be

55 Tasmanian Government, Submission p 13.

56 Evidence p 71.

57 Evidence p 72.

confident about any of the predictions about future tourism. However, the interest that the project could create and its potential to further enhance Tasmania's reputation as a prime ecotourism destination is likely to be considerable. If there were a net benefit from any change in tourism it would need to be balanced against any costs of draining and restoring Lake Pedder or replacing the lost power production capacity. If the costs associated with the loss of Lake Pedder as a hydro storage and with its restoration were significant, the possible net benefits of tourism would not alter the cost - benefit outcome.

Other potential costs and benefits

4.67 The proposal, should it proceed, would involve a range of other costs. The Tasmanian Government identified several cost items including expenditure on an environmental impact assessment and monitoring as well as civil works, initial site stabilisation and infrastructure rehabilitation. This was estimated to amount to between \$150 million and \$180 million⁵⁸ not including the cost of any extensive revegetation works. There would also be a need for some preliminary research before the proposal could be implemented with an adequate degree of confidence that it would succeed, and there would be costs associated with planning and supervision as well as ongoing management.

4.68 The cost estimates proposed by the Tasmanian Government were at the high end of the range and they included works that others, including Pedder 2000, did not consider would be necessary. Nevertheless there would be some unavoidable costs. The proposal should not proceed without an environmental assessment and the preparation of a formal environmental impact statement. Implementation of the restoration proposal would involve some risk that a suitable vegetation cover would not be established and that there would be some erosion. This would make some form of monitoring obligatory. It would also be necessary to establish a program to monitor weed invasions. These activities would involve costs and are the minimum that would have to be undertaken.

Possible down stream implications

4.69 Since the current Lake Pedder was established there has been considerable development in the Huon Valley and the Huon estuary - D'Entrecasteux Channel, some of which was based on an expected decrease in flood severity and the maintenance of high water quality. The Scotts Peak Dam and Edgar Dam have impounded about 9 per cent of the upper Huon catchment and it has been stated that the incidence of flooding has decreased significantly since the upper Huon was impounded. It is the view of the Huon Valley Council that since the dams were built there has been 'no major flooding' in the Upper Huon area and there has been no flooding in the Huonville township.⁵⁹ Cr Ted Norris, the mayor of Huonville told the Committee that:

Since that Scotts Peak Dam has been in place, we have had no major flooding and very little flooding of any description, the flooding we have had in Huon has been mostly from easterly conditions. Prior to that, there were floods that washed away major bridges. There was four

58 Tasmanian Government, Submission p 41.

59 Huon Valley Council, Submission p 9.

or five feet of water in the main street of Huonville on several occasions. So that is one of the major consequences of removal of the dam that we are concerned about.⁶⁰

4.70 Cr Norris agreed that if the Scotts Peak Dam and Edgar Dam could be retained for flood mitigation purposes then most of his objections to the proposal to drain Lake Pedder would be overcome.⁶¹

4.71 The view that flooding has ceased since the dams were put in place was disputed, as indicated by Ms Helen Gee, of Pedder 2000, who told the Committee that:

Data on the Huon River heights was obtained from the Hydro-Electric Commission. This data shows that large floods have occurred since the closure of Scotts Peak Dam in 1972. One occurred in 1975. ... The main street of Huonville was four feet under water. Another major flood occurred in 1981 and was the second largest flood recorded at the gauging station since 1948.

The Bureau of Meteorology was reported as saying that the flood in 1975 was caused by a combination of heavy rain and a quick thaw of the heavy mantle of snow in the southern highlands. This indicates that Scotts Peak Dam does not hold a large enough percentage of the catchment to ... prevent fast melting snows causing major floods.⁶²

4.72 The question of the flooding history since the damming of Lake Pedder was examined in some detail by the HEC which reported that there were large floods in 1975 and 1981.⁶³ The HEC cautioned that flood frequency analysis is a probabilistic process and any comparison of the size and frequency of pre and post dam floods must allow for the uncertainty inherent in flood frequency analysis techniques. Nevertheless, the HEC submitted that data recorded over a period of 24 years before the Scotts Peak Dam was closed and 23 years since provides a basis for reasonable estimates of 2, 5, 10 and 20 year average recurrence flood levels, although estimates of 50 and 100 year floods are less certain.⁶⁴ The HEC concluded that the Scotts Peak Dam has 'significantly' reduced flooding in the Huon River. It also appears clear from other evidence that the dam has not eliminated flooding and that the HEC may have been using the term 'significant' as a statistical term rather than in the popular sense.

4.73 The HEC also submitted that flows in both the Huon River and the Gordon River would be altered if Lake Pedder were permanently drained:

Huon River flows would revert to pre 1972 conditions if Scotts Peak Dam was removed. In the Lower Huon River median flows would increase by about 15 percent and low flows would increase by about 8 percent. The size of floods with the same frequency would increase in proportion of the catchment area ratio raised to the power 0.8, that is, by about 10 percent.

60 Evidence p 95.

61 Evidence p 109.

62 Evidence p 301.

63 Hydro-Electric Commission, Supplementary Submission p 41.

64 Hydro-Electric Commission, Supplementary Submission p 42.

The frequency of low flows in the lower Gordon River would not change significantly but the frequency of mid range flows would decrease while the frequency of higher flows would increase.⁶⁵

4.74 The concern about the change in flooding regimes was raised because of the prospect of damage to industries in the Huon Valley. The Tasmanian Aquaculture Council submitted that the managed quantity and quality of water in the Huon River supports an aquaculture industry of 21 marine farms.⁶⁶ The major products are Atlantic Salmon, oysters and mussels with an annual turnover in the area of \$60 million. All of the marine farm leases in the Huon River have been granted since 1986 with the expectation that river conditions would not change substantially.⁶⁷

4.75 Algal blooms that occur in autumn already have a 'major economic impact' on shellfish farms in the Huon and Channel area.⁶⁸ The Tasmanian Aquaculture Council suggested that there may be an association between algal blooms and run off from the land. Other concerns identified by the Council included runoff of nutrients and other contaminants that may reduce dissolved oxygen levels or affect fish health, and deterioration in water quality due to increased sediment load. The Council's concern was that, whereas the Scotts Peak Dam effectively manages the flow of water in the Huon River, the draining of Lake Pedder may significantly modify the river flow.

4.76 Agriculture in the Huon Valley could also be affected if the pre dam flooding regime were re-established. One apple grower who developed an orchard in the Huon Valley after the river flow had been modified by the Scotts Peak Dam submitted to the Committee that:

Any flooding on the scale of the Huon River actually running through the orchard would be devastating. Debris, logs and all other forms of trash would certainly ensure that the apple trees, together with all the extensive irrigation equipment would be lost downstream forever. Considering history, flooding to this extent must be regularly expected if the proposal to drain and restore Lake Pedder is eventually undertaken.⁶⁹

4.77 It appears that recollections and perceptions of pre and post dam flooding were inconsistent but the impact of increased flooding could be serious. Recent river flows may be within the normal fluctuations for the relatively short period that records are available and it cannot be assumed that flooding would either not occur in the future or that the draining of Lake Pedder would of itself cause serious flooding. A longer period would be needed before the impact of the Scotts Peak Dam on the behaviour of the Huon River could be discussed with a greater degree of certainty. The implications for river flows of removing the dams to drain the lake are not known with any certainty and large, damaging floods may occur in the future regardless of the presence of the Scotts Peak Dam. The impact of removing the dam on aquaculture and agriculture is equally difficult to predict.

65 Hydro-Electric Commission, Supplementary Submission p 51.

66 Tasmanian Aquaculture Council, Submission p 1.

67 Tasmanian Aquaculture Council, Submission p 2.

68 Tasmanian Aquaculture Council, Submission p 2.

69 Mr Peter D Calvert, Calvert Bros, Submission p 2.

4.78 The contribution that the Scotts Peak Dam is making to the maintenance of water quality for the aquaculture industry is even more difficult to assess. There are forestry and agriculture activities in the catchment but these do not appear to prevent the operations of the aquaculture industry. However, it needs to be recognised that the industry is particularly sensitive to environmental conditions and there is a risk that removal of the dams could cause at least a short term decline in water quality due to erosion and works in the upper catchment. In the long term the situation may be stabilised and water quality re-established but by that time irreparable damage could have been done.

4.79 The evidence suggests that there is little sediment in the lake and it seems unlikely that draining the waters of the current Lake Pedder would add significant amounts of sediment from the lake to the river and estuary. There is a risk however that erosion from the impoundment or in downstream channels would add some turbidity to the waters in the lower reaches of the river. The impact that this could have on the aquaculture industry is unknown but it is clear that a valuable industry could be irretrievably damaged if the impact was serious.

4.80 The possible impact on flooding and water quality would need to be considered in detail in the environmental impact assessment that should precede any plan to remove the Scotts Peak Dam and Edgar Dam.

Employment implications

4.81 If the restoration of Lake Pedder were undertaken on the basis of extensive intervention in the revegetation process and if it were to involve the removal of infrastructure, there would be the opportunity to create employment. This would be at considerable cost and would have to be subsidised by the whole Australian community. The number of jobs created would depend on the funds available and the amount of work it was decided to undertake. If the project were to go ahead it is most likely to do so in circumstances where the electricity that could be generated from the waters of Lake Pedder was not required. This circumstance could coincide with a contraction of industry in Tasmania and increased local unemployment. Jobs created by such a scheme as the restoration of Lake Pedder would then be particularly valuable. However, any possible job creation would have to be balanced against the losses that would follow the closure of Comalco's Bell Bay plant. At present Comalco itself employs 630 people at its Bell Bay plant as well as about 150 full time contractors. In addition, it creates employment for 1600 others who depend directly on the economic benefits of the smelter.⁷⁰ The potential to employ people would depend on the nature and extent of the restoration that might be required.

4.82 The potential for employment creation is indicated though by the tourism projections suggested by Pedder 2000 which suggest that tourism eventuates as proposed then over 600 new jobs could be created. On the other hand there are 170 people employed directly by the aquaculture industry in the Huon region and their industry could be adversely affected if removing Scotts Peak Dam resulted in a deterioration of water quality in the Huon River.

70 Comalco Aluminium (Bell Bay) Ltd, Submission p 3.

Continuing research opportunities

4.83 Pedder 2000 suggested that the restoration of Lake Pedder be accompanied by the establishment of a 'centre for excellence in restorative technology and science'.⁷¹ Draining Lake Pedder is not a prerequisite for establishing such a centre. However, a major effort to rehabilitate the Lake Pedder impoundment would provide an obvious focus for such a centre and attract significant international academic interest.

4.84 It was suggested that the Commonwealth should contribute funds to the establishment of the proposed centre. This would need to be considered in the context of priorities for research funding and would be likely to occur if funds were forthcoming from other sources. As it stands the proposal to establish the centre has some merit but, to the extent that it is linked to the Lake Pedder proposal, it would be difficult for the Commonwealth to give high priority to funding the centre while the Tasmanian Government remained opposed to draining Lake Pedder. Even if the Tasmanian Government were to change its position, the Commonwealth could only commit funds to a research centre if to do so accorded with other research priorities.

Impact on business confidence

4.85 Comalco made it clear that draining Lake Pedder would impact on their perception of Tasmania as a reliable supplier of bulk electricity and the consequences for business confidence generally was a matter discussed by the Tasmanian Government in its submission:

By decreasing the State's ability to supply cost competitive energy, draining of the lake directly undermines the promotion of a situation in which business can expand or invest with certainty. Business would be reluctant to plan for larger investments requiring significant energy inputs knowing that capacity had been significantly reduced and where potential for further hydro development is limited.

In fact a decision to drain Lake Pedder would send a clear message to investors that other Government policies could be subject to reversal or significant alteration. Business would perceive a policy reversal on an important issue like energy generation as weakening any government 'commitments' on a range of issues including taxation, resource security and the environment.

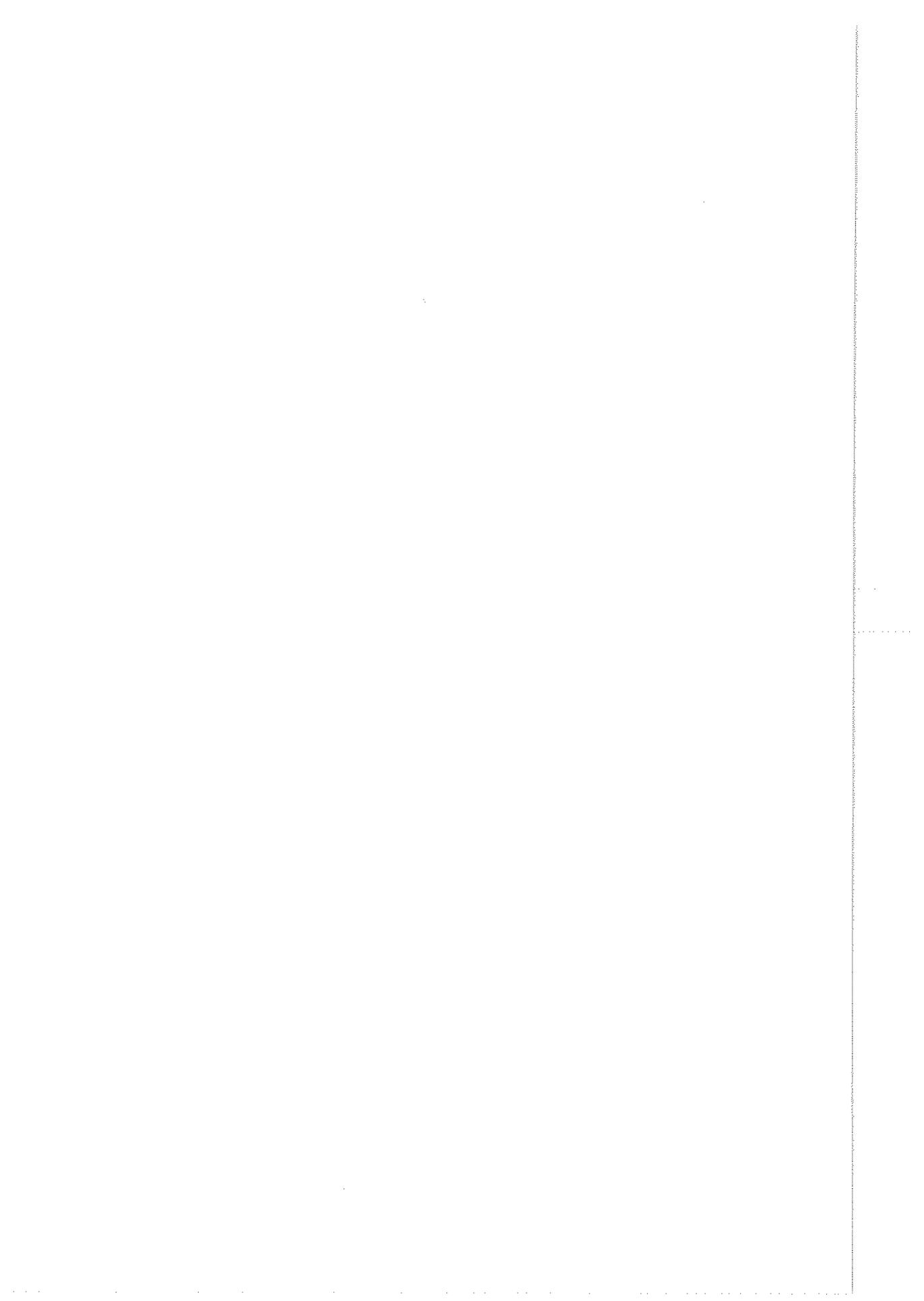
4.86 This is a matter that is easier to speculate on than forecast with any precision. It was suggested, for example, that draining Lake Pedder would enhance Tasmania's reputation as a 'clean - green' supplier and this could significantly boost the marketability of some products. It would require extensive market and industry research to establish a definite picture of which industries would be affected by draining Lake Pedder and whether the overall impact would be negative or positive. The loss of generating capacity would only be significant to consumers of large quantities of power (such as Comalco) who find that the existing capacity of the hydro system is only just sufficient. For other potential investors the suitability of Tasmania is more likely to be influenced by a multitude of other factors rather than by a marginal decrease in the rated capacity of the hydro system.

71 Evidence p 14.

4.87 It was the perception of witness representing Comalco, and other witnesses, that if Lake Pedder were drained businesses confidence would decline. Business would perceive this as severely undermining the attractiveness of Tasmania as a place to invest. Comalco put it that:

the loss of Lake Pedder's 65 MW would have a major negative influence on both the ability to reach a satisfactory power arrangement and the assessment of Comalco directors and shareholders concerning any major investment in Tasmania ...⁷²

72 Comalco Aluminium (Bell Bay) Ltd, Submission p 14.



CHAPTER 5: LAKE PEDDER AND OTHER PRIORITIES

5.1 A decision to proceed only with further consideration of the restoration proposal would still require the commitment of government resources. There would be a need to meet the cost of preliminary research, environmental assessment, planning, monitoring and management. This would raise the question of whether further consideration of the proposal could be accommodated within the current funding priorities of governments.

5.2 In the longer term, an allocation of significant funds from the Commonwealth budget could be required to share the cost of rehabilitation and to either compensate or provide an inducement to the Government of Tasmania. The Committee found that it was important therefore to take a long term perspective when considering priorities and to at least allow for the possibility that a commitment to the proposal could require that significant funds be quarantined from other use for a considerable period.

5.3 The Tasmanian Government argued that other, more urgent, environmental problems had a higher priority to any proposal to drain and restore Lake Pedder:

If funding is available to tackle environmental problems it would be far more productive to consider the environmental challenges already existing in the State. The recent discovery of the European carp in Tasmanian waterways, the emergence of a new strain of *Phytophthora* which is threatening Tasmania's pencil pines, the pollution in the King and Queen rivers and the resultant damage to Macquarie Harbour and the plague proportions of the Pacific sea star in Tasmanian waters are all real problems which are threatening the Tasmanian environment. All of these projects rate well ahead of the draining of Lake Pedder.¹

5.4 The Tasmanian Government apparently has not sought Commonwealth financial assistance in relation to these problems and not all of them may be amenable to expenditure of large amounts of money, nor are they all matters in which the Commonwealth would have an interest. However, concern about some of these other problems was raised in a world heritage context and this could have implications for the Commonwealth's budget. When asked whether the Tasmanian Government had raised its concerns with the Commonwealth a representative of the Department of the Environment, Sport and Territories told the Committee that:

... the Tasmanian minister has raised a number of issues associated with the world heritage property management and other parts of Tasmania. The two most recent concerns to be expressed deal with the discovery of European carp in lakes in central Tasmania and the potential for those to spread to other river systems and also the discovery of rootrot fungus *phytophthora* which seems to be capable of surviving and expanding rapidly at relatively high altitudes in colder temperatures. In terms of conservation not just of the world heritage area but more broadly within Tasmania, they are obviously both major concerns.²

1. Tasmanian Government submission, covering letter from the Hon Ray Groom MHA, Premier of Tasmania

2. Evidence p 187.

5.5 The allocation of funds to the draining of Lake Pedder could necessitate a reduction in funds available for the management of the Tasmanian Wilderness World Heritage Area as a whole. This possibility was raised by the Tasmanian Government in its argument about priorities:

There is also work which is required to be undertaken within the WHA. A large number of essential programs have been identified and agreed upon, ranging from visitor interpretation work through to necessary protection and preservation projects. While several will be funded under the current five year management plan, a large number of important projects will not be undertaken due to a lack of funds. Again, if funding were available, these projects would and should be given priority over a proposal which could lead to the generation of a major environmental problem within the WHA.³

5.6 If the Commonwealth were to commit resources, it would first need to consider where its priorities should lie. It would also need to consider whether there would be a risk that it might become committed to a costly intervention in the restoration of the area around Lake Pedder if the low cost option of natural rehabilitation proved to be unsuccessful. The question of priorities would then go beyond the State issues raised by Tasmania, but it would need to be considered in a Tasmanian context because the State Government would also be called upon to commit resources. It might be able to allocate funds only at the expense of management of other parts of the world heritage area generally.

5.7 Other national environmental priorities could require the allocation of significant resources, possibly amounting to several hundred million dollars in each case. Land degradation continues to be a major problem that is almost too serious to measure. Landcare programs may have assisted in reducing the rate of acceleration of land degradation, but a significant proportion of Australia's agricultural lands require attention. The only national survey of land degradation conducted over twenty years ago, found that works in excess of \$600 million (in 1975 prices) were required. Similarly in 1993, the Committee identified a need to spend more than \$200 million over six years on biodiversity programs. A small portion of such funding has since been allocated but not nearly enough to ensure the survival of Australian ecosystems through the establishment of a national comprehensive representative system of protected areas.⁴

5.8 Some of the other potentially expensive environmental problems that require urgent attention are the deterioration of inland water resources, ecologically unsustainable land clearing, protection of endangered species, eradication of feral animals, restructuring of forest industries and urban air pollution. Some problems, such as the emission of greenhouse gases, may require substantial economic adjustments. The retention of Lake Pedder in its current form will not adversely affect the environment in the same way that these other problems are causing environmental deterioration and economic loss. The Lake Pedder restoration proposal is therefore an optional project compared to the other pressing environmental concerns.

3 Tasmanian Government, Submission p 12.

4 In the 1995-96 budget, the Commonwealth allocated \$17 million over four years for a restructured biodiversity program.

5.9 The need for resources to be committed to urgent and damaging environmental problems exceeds the capacity of governments to allocate funds without a significant re-ordering of budget priorities or an increase in revenue. This reduces the opportunities to bring forward the consideration of optional or less pressing proposals and the question of priorities inevitably then becomes an issue.

5.10 The Committee raised the question of priorities with some of those who made submissions in favour of restoring Lake Pedder and was told that assigning priorities to environmental programs was not a valid way of assessing the need to proceed with the proposal. Ms Milne argued that a hierarchical list of priorities was not a meaningful way to consider the environment because '... the immediate short-term goal is obviously to stop further environmental destruction from occurring and to stop things before they happen.'⁵

5.11 Ms Milne explained that the Tasmanian Greens supported the Lake Pedder proposal and she also noted the urgency of several other environmental problems in Tasmania:

In the short term, we are constantly engaged in issues where the destruction is imminent. For example, there is the destruction of Tasmania's old-growth forests as a result of the woodchip licence decision and the destruction of the Tarkine as result of a road being pushed through it destroying world heritage values. We have the degradation of our rivers and streams and our coastal system.

The Greens are working on a number of immediate issues. We have European carp infestation. We have Phytophthora in our central highlands which, no doubt as a result of the Tarkine road, is spreading in the north west.⁶

5.12 The Tasmanian Greens' concern with immediate problems was matched by long term goals:

We are working on a number of short-term, immediate, urgent issues, because we are engaged in a policy of prevention. But we also have a longer term goal of restoring the destruction that has already occurred. So rather than see things in a hierarchical order, I would prefer things to be seen in terms of a circle whereby you have all the issues listed and you network the circle according to which issue has priority, which accords with the fastest destruction.

Taking one issue out of that circle means that the whole web loses its integrity. You cannot say 'This issue is more important than another issue,' or, 'This issue should be dropped or put back on the agenda.'⁷

5 Evidence p 263.

6 Evidence p 263.

7 Evidence p 263.

5.13 A similar position was put on behalf of the Australian Conservation Foundation and the Lake Pedder Study Group by Dr Mosley, who referred to the need for Australia to honour the commitments it made when it became a party to the World Heritage Convention.⁸ Dr Mosley considered that priorities would only become an issue if the amount proposed to be spent was 'so enormous' that it would 'swamp the budget'.⁹ He went on to submit that:

... we do not think the amounts are likely to be anything like of that order so that the obligation that the Commonwealth has, both legally and morally, to restore the area, can be applied ...¹⁰

5.14 The Pedder 2000 committee saw no need for it to consider priorities. Dr Bob Brown stated that '...it is not a priority for Pedder 2000 to restore Lake Pedder. That is our single reason for being. We do not have a list of priorities ...'¹¹ Dr Brown also expressed a personal view:

... there are more urgent issues. They are not of a higher priority; they are more urgent ...

There are other urgent issues around this country which must be addressed now because there is no getting them back once the damage is done.

These are short-term issues. If you are looking at long term issues in this country, I do not think there is anything with a greater positive priority than the restoration of Lake Pedder.¹²

5.15 From a government perspective it is essential to set priorities, particularly with discretionary expenditure such as that which would be involved in the Lake Pedder proposal. Priority setting and close examination of expenditure proposals is an entrenched part of the budget preparation. If the Commonwealth and Tasmania become involved in any detailed consideration and assessment of the proposal there would need to be an allocation of resources. It is not possible for the Commonwealth to make such allocations without regard to its very difficult budgetary circumstances or to the urgent need to allocate resources to achievement of other goals.

5.16 The merits and the urgency of the proposal to restore Lake Pedder have to be considered along with the merits and urgency of all the other major programs, projects and proposals to which the Commonwealth could conceivably need to contribute. As discussed in chapters 3 and 4 above, the Committee does not accept that the costs associated with the proposal would necessarily be minimal, nor does it consider that further assessment of the proposal would be without significant cost. The Lake Pedder proposal could not simply be added to an existing program as a minor expenditure item, to be funded out of current budget allocations as circumstances allow.

5.17 Neither the Commonwealth nor the State could, or should, approach this project unilaterally. Joint funding would be required, possibly with the bulk coming from the Commonwealth, with the Tasmanians making mostly 'in kind' payments of labour and

8 Evidence p 467.

9 Evidence p 470.

10 Evidence p 470.

11 Evidence p 309.

12 Evidence p 307.

materials. Neither side could commit resources until an agreement is reached. If the proposal were to be advanced there would be a need for work to be done to diminish the uncertainty about the restoration work and the likely costs. In the current circumstances it would not be appropriate for the Commonwealth alone to commit significant funds to such work. Even if the circumstances change and it becomes appropriate to contemplate allocating resources to further studies, the proposal would still have to be considered in terms of priorities and, for the present, other priorities would be more worthy of funding.

5.18 The Lake Pedder proposal would only have a priority if it attracts considerably more political and community support. Such support is currently quite inadequate for it to be allocated funds ahead of other projects. Some of the proponents have accepted that draining Lake Pedder is not an urgent matter even though they regard it as extremely important to do so. A delay until priorities change would not appear to diminish the merits of the proposal, except to the extent that it would close off the possibility of initiating the process by the symbolically significant year of 2000. As discussed in the preceding chapter, this would also allow time for the clarification of uncertainties about possible costs and benefits.

CHAPTER 6: CONCLUSION - IS FURTHER ASSESSMENT WARRANTED

6.1 The flooding of the original Lake Pedder was regarded by many people a mistake that should not have happened. More objective and detailed assessment twenty-five years ago probably may have led to the identification of alternatives that could have allowed the original lake to be protected. Public perception of the importance of conservation has changed considerably in the last quarter of a century and it is unlikely that such a project as the flooding of Lake Pedder would now be approved. This does not mean that the Australian community would now support draining the new lake.

6.2 Draining Lake Pedder would be a symbolic event that would inspire conservationists around the world and create considerable interest in Tasmania, but it would also involve some costs. Although the proposal has already attracted international interest and support there is spirited opposition from many sectors of the Tasmanian community and the Tasmanian Government and the opposition. This opposition also has a symbolic basis. The HEC and its predecessor since 1985 has employed many thousands of Tasmanians and they identify the HEC with jobs, security, quality of life and their families. To many Tasmanians the hydro dams have a heritage significance in terms of working history. The opponents of the proposal also believed that draining Lake Pedder would symbolically denigrate those who supported the decision to flood the lake and those who worked on the Gordon River Power Development.

6.3 The area in question is world heritage. The proposal is therefore a matter for consideration and assessment by the Commonwealth as well as the Tasmanian Government. The proposal, if successfully implemented would enhance the world heritage values of the Tasmanian Wilderness World Heritage Area by exposing unique geomorphological features, but world heritage values might be diminished while the area inundated by the current lake is rehabilitated. Careful management, monitoring, research and, possibly, a costly intervention in the rehabilitation process would be required to ensure that any short term damage would not be made permanent.

6.4 Although draining and restoring Lake Pedder would enhance the world heritage area there is no obligation on Australia to do so nor are there any compelling biological conservation or environment protection reasons for implementing the restoration proposal. So although Lake Pedder is subject to the provisions of the World Heritage Convention, the suggestion that the Convention obligates Australia to restore the original Lake Pedder is not sustainable if the terms of the Convention are given a standard interpretation. To proceed with the proposal would be a matter of choice and negotiation between the Commonwealth and Tasmania.

6.5 Recent investigations show conclusively that the key geomorphological features are intact and will re-emerge if the current lake is drained. Rehabilitating the biological features of the lake, its surrounds and, if need be, the whole area of inundation is more problematical but could be achieved. The proposal therefore is technically possible. More than this, it is also a proposal that has symbolic and spiritual value to some people. It has the potential to inspire conservationist around the world. As such it could be one of the largest environmental rehabilitation projects ever attempted.

6.6 Those who advocate restoring Lake Pedder argue that it would be a wonderful asset with high universal value. Much of the benefit of restoring Lake Pedder would be aesthetic and inspirational in nature and therefore difficult to assess. The Committee believes that such values, however measured, would be significant. There is some doubt however that the environmental benefits would offset the costs.

6.7 It is clear that the proposal involves significant costs as well as substantial risk. The existing lake has its own aesthetic and environmental values that would be lost if it were drained. The costs and benefits of the impact on the hydro-electric system and tourism would also need to be considered before an in-principle decision could be made but at present this is largely an area of speculation. The consequences of removing Lake Pedder as a hydro-electric system water storage would vary with changes in future demand. Removing this lake from the system could well have a negative impact on future investment decision in the State.

6.8 It is not necessary for the lake and the impounded area to be restored to its pre-flooding pristine condition. It is possible, although unlikely, that the vegetation would naturally re-create a near pristine condition. It is more likely that, after a long period of time and with intervention, a vegetation cover similar to that which existed before flooding could be established. However, there is a risk that weeds would invade and other exotic species might become established. A view was also expressed by some witnesses that draining the lake would cause a reduction in the platypus and the introduced trout populations.

6.9 The proposal to drain and restore Lake Pedder was sufficiently developed to be raised as a question for an in-principle decision but insufficient detail and information is currently available to provide the basis for a definite commitment to proceed. More information would be required before an in-principle decision could be taken and even then there would be a need for research, planning and environmental impact assessment before a final commitment could be made to 'pull the plug'. A final decision would commit governments to further research, some site rehabilitation work, monitoring, on-going management and the provision of new infrastructure. It could also commit governments to a costly intervention in the natural rehabilitation process.

6.10 Even without intervention, significant costs would be incurred if the proposal were to proceed. There would be a need to commit resources to research, planning, environmental impact assessment, monitoring and some restoration work to prevent erosion in key areas. Management of access during the rehabilitation phase would also require considerable resources, particularly if the tourism benefits posited by Pedder 2000 were to eventuate. It is also likely that the only feasible ways of draining the Huon catchment would be to either breach the Scotts Peak Dam or to install a spillway. The latter option could be costly but might be the preferred option if it is found that it is necessary to retain a flood mitigation capability to protect downstream communities and industries.

6.11 Although it is not possible at present to predict with certainty what the costs would be, it is most likely that they would be significant. The Commonwealth and Tasmania would have to commit considerable resources to the project if the proposal were to proceed. Even in the initial stages, millions of dollars could be required before a final decision could be made and the draining begun. It would therefore inevitably become a question of priority in the allocation of budget funds. There are other more urgent and pressing environmental concerns that need to be dealt with and the resources available seem increasingly inadequate. There are

already necessary projects within the Tasmanian Wilderness World Heritage Area that are not proceeding because of a lack of resources.

6.12 By comparison, retaining the current Lake Pedder would not constitute an environmental problem. Governments have much less discretion in deciding how and when they will respond to other problems and Lake Pedder can be left as an option to be possibly pursued as circumstances and resources allow. The most compelling reasons for restoring the lake are symbolic - there is no obligation in world heritage terms to proceed with the restoration proposal nor are there compelling conservation reasons to do so. The proposal does have some world heritage and conservation merit but it is the symbolic merit which weighs most heavily with those in favour of proceeding.

6.13 Even if the questions identified in the preceding chapters can be answered and it can be shown that there are net benefits, it would not automatically follow that a decision to proceed would be made. To do so would be a matter for the Commonwealth and State governments of the day and they would need to be sensitive to the weight of public opinion.

6.14 The matter is not urgent and this acknowledged by Pedder 2000. Things are changing very slowly under the current Lake Pedder. The Pedder 2000 Committee acknowledges that it may take some time for the attitude of the Tasmanian Government to change. This would presumably occur if the weight of public opinion was clearly in favour of the proposal. If the views of the State Government and the Tasmanian community changed and it appeared that the proposal had more likelihood of success, then the Commonwealth could review its position on funding further studies and assessments.

6.15 The identification, evaluation and balancing of the costs and benefits would not be an easy process and would involve some cost. The effort and expenditure required to answer quickly all the possible questions is not an appropriate use of the resources of either the Commonwealth or the State, given the absence of any real prospect that the proposal will get the go ahead in the near future.

6.16 The request from the Pedder 2000 Committee for the Commonwealth to support research, further investigation and the establishment of a Centre for Restorative Ecology should be evaluated in the context of general budgetary considerations. This evaluation should include consideration of the need to direct resources to other high priority environmental concerns and the extent of the opposition to the current proposal. The Commonwealth's role should be to encourage and support investigations undertaken by the Tasmanian Government and to ensure that whatever is done does not detract from the world heritage values of the region. For the time being the question is academic, and any research support from the Commonwealth should be limited to the pursuit of academic research.

6.17 There are more compelling and urgent priorities that make it inappropriate to allocate Commonwealth resources to consideration of a proposal that is not supported by the relevant government and which has no real prospect of proceeding in the foreseeable future.

6.18 In view of these factors it is the opinion of the Committee that further research or evaluation of the feasibility of draining Lake Pedder would be inappropriate at this time. It is unfortunate that the beautiful, geologically unique lake was ever flooded but with finite resources and many competing environmental goals, it is unlikely that enough of the other higher priority tasks will be accomplished in the near future to make way for the allocation of resources for the restoration of the original lake. Members of the Committee understand the

disappointment which those who advocate draining the lake will feel when they read this conclusion, but we consider this recommendation to be the one which most fully reflects our responsibilities to all Australians and to Australia's natural heritage. One lesson from the history of Lake Pedder is that, in future, a much greater weight must be given to the preservation of biological and geological diversity when considering use of pristine areas.

John Langmore, MP
Committee Chair

19 June 1995

APPENDIX A

CONDUCT OF THE INQUIRY

After discussions with representatives of Pedder 2000 the Committee decided to conduct an inquiry into the proposal to drain and restore Lake Pedder. The Minister for the Environment, Sport and Territories agreed to the inquiry and its terms of reference on 8 December 1994.

On 17 December 1994 the Committee placed newspaper advertisements which called for submissions. It also circulated a press release and wrote to individuals and organisations that might have had an interest in the subject.

The Committee inspected the new Lake Pedder and the Gordon River Power Development on 20 February and held a public hearing in Hobart on 21 February 1995. Further public hearings were held in Canberra, on 27 March and 8 May, and in Hobart on 6-7 April 1995.

In March the Committee agreed that it would be appropriate for two supplementary members to be nominated as members of the Committee for the purpose of the Lake Pedder inquiry. Two additional members, who were nominated by the Chief Whips, joined the Committee on 9 March.

The Committee received 171 submissions to the inquiry as well as 25 exhibits. The submissions, witnesses and exhibits are listed in the Appendixes.



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- 7 Mr Michael Byers
- 8 Mr Sam Rando
- 9 North Western Fisheries Association
- 10 Mr Gary Brooker
- 11 Mr Peter Calvert
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- 13 Miss Nicole Long
- 14 Mr Bruce Rhind
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22	Ms Kate Phillips
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27	Ms Laurie Dillon
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32	Mr Peter Jones
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34	Mr David Brock
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- 78 Ms Susanne Sticher
- 79 Mr Joan Powling
- 80 Mr Mike Cooke
- 81 Mr K Morley
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- 85 Dr J G Mosley
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- 89 Mrs Kay Geeves
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- 95 Dr Gideon Polya
- 96 Mrs Z Polya
- 97 Mr Max Angus
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- 109 P Clements
- 110 West Coast Council
- 111 Greenwell's Club
Albury-Wodonga
- 112 Mr Adrian Heard
- 113 The South Australian Fly Fishers' Association Inc.
- 114 Mr Peter Singer

- 115 Ms Joan McVilley
- 116 Mr Paul Smith
- 117 Mr Geoff Baxter
- 118 NW Fly Fishers Club of Tasmania
- 119 Dr Kathleen Petrovsky
- 120 Mr Ross Scott
- 121 Dr Richard Donaghey
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LIST OF WITNESSES

HOBART, TUESDAY 21 FEBRUARY 1995

Tasmanian Government - Hydro-Electric Commission

Dr Daniel Norton
Secretary
Department of Premier and Cabinet

Mr John Ramsay
Secretary
Department of Environment and Land Management

Mr Malcolm Wells
Deputy Secretary and Director of Industry Development
Department of Tourism, Sport and Recreation

The Hon Peter Rae
Chairman
Hydro-Electric Commission

Mr Edward Pritchard
Chief Operations Officer
Hydro-Electric Commission

Freshwater Anglers Council of Tasmania

Mr Bernard Creed
President
Southern Tasmanian Licensed Anglers Association

Mr William Ferrier

Mr Noel Green

Mr Harvey Taylor
Secretary

Huon Valley Council - Save Lake Pedder Association

Cr Gregory Norris
Mayor
Huon Valley Council

Mr Geoffrey Cockerill
General Manager
Huon Valley Council

Professor George Forteath

Mr Mark Ashton
Save Lake Pedder Association

Dr Kevin Kiernan

Pedder 2000 Campaign

Dr Robert Brown
Convenor

Ms Hilary Edwards
Coordinator

Ms Helen Gee
Coordinator

Social Ecological Economic Cultural Alliance

Mr Brian Kohl
Co-convenor

Dr Louise Crossley
Member

Mr Thomas Baxter
Member

CANBERRA, MONDAY 27 MARCH 1995

Dr Andrew Blakers

Environment, Sport and Territories Portfolio

Dr David Kay
Assistant Secretary
World Heritage and Biodiversity Branch
Department of the Environment, Sport and Territories

Mr John Ashe
Assistant Secretary
Environment Assessment Branch
Environment Protection Agency

Mr Malcolm Forbes
Executive Director
Biodiversity, Species and Threats Branch
Australian Nature Conservation Agency

Mr Harry Quick, MP
Member for Franklin

HOBART, THURSDAY 6 APRIL 1995

Dr Julian Amos MHA
Member for Denison

Dr Ralph Chapman

Hydro-Electric Commission

The Hon Peter Rae
Chairman

Mr Edward Pritchard
Chief Operations Officer

Mr Timothy Duckett
Director
Land Management and Rehabilitation Services Pty Ltd
Consultant

Dr Michael Sobczak
Vice President
Malcolm Pirnie Inc
Consultant

Liberal Party of Australia Tasmanian Division

Mr Guy Barnett
State Executive Member

Mr Bruce Lord
Environment Policy Subcommittee Member

Pedder 2000 Campaign

Dr Robert Brown
Convenor

Ms Hilary Edwards
Coordinator

Ms HelenGee
Coordinator

Mr Brian Kohl
Economic Consultant

Tasmanian Aquaculture Council - Tasmanian Salmonoid Growers Association

Mr Robert Lister
Executive Officer
Tasmanian Aquaculture Council

Dr Stephen Percival
Veterinary Consultant
Tasmanian Aquaculture Council

Mr Peter Bender
Board Member
Tasmanian Salmonoid Growers Association

Mr Anthony Smithies
Executive Officer
Tasmanian Salmonoid Growers Association

Tasmanian Wilderness World heritage Are Consultative Committee

Dr Ralph Chapman
Consultant

The Tasmanian Greens

Mrs Christine Milne MHA
Leader

Mr Chris Harries
Energy Policy Adviser

The Wilderness Society (Tasmania)

Mr Alec Marr
Campaign Coordinator

Mr Chris Harris
Consultant

Mr Paul Smith

FRIDAY, 7 APRIL 1995

Senator John Devereux - Social Ecological Economic Cultural Alliance

Senator John Devereux
Senator for Tasmania

Mr Peter Newton
Organiser
Social Ecological Economic Cultural Alliance

Mr Graham Wootton

Mr Michael Eades

Mr David Steane

Mr Thomas Walduck

MONDAY, 8 MAY 1995

Comalco Australia

Dr Anthony Kjar
Managing Director
Minenco Pty Ltd

Dr Anthony Filmer
General Manager
Comalco Bell Bay

Australian Conservation Foundation

Dr John Mosley
Councillor

APPENDIX D

LIST OF EXHIBITS

Exhibit No. 1

Document presented by Ms Helen Gee, Pedder 2000 Committee, Hobart,
Tuesday 21 February 1995:

'Posthumous Submission' by Sir Edward St John.

Exhibit No. 2

Overhead projections presented by the representatives of the Tasmanian Government,
Hobart, Tuesday 21 February 1995.

Exhibit No. 3

*Annual Report presented by the representatives of the Tasmanian Government, Hobart,
Tuesday 21 February 1995:*

'Hydro-Electric Commission Annual Report 1994'.

Exhibit No. 4

Document presented by Mr Ashton, Save Lake Pedder Association, Hobart,
Tuesday 21 February 1995:

'A submission from the Save Lake Pedder Association'.

Exhibit No. 5

Letters presented by Mr Brian Kohl from Senator Devereux, Hobart,
Tuesday 21 February 1995:

Exhibit No. 6

Poster presented by Ms Beth Roberts.

Exhibit No. 7

Overhead projections presented by Dr Bleachers, Canberra, Monday 27 March 1995.

Exhibit No. 8

Report presented by the representatives of the Australian Nature Conservation Agency:

'Distribution of Platypus with Guidelines for Management'.

Exhibit No. 9

Letters presented by Mr Chris Harries, Wilderness Society, from the International Rivers Network and the INCUR, Hobart, Thursday 6 April 1995.

Exhibit No. 10

Documents presented by the representative of the Tasmanian Greens, Hobart, Thursday 6 April 1995:

"Tasmanian Greens' position on the Pedder 2000 proposal".

Exhibit No. 11

Transcript of a radio interview with Professor Fortieth presented by Mr Harries, representative of the Tasmanian Greens, Hobart, Thursday 6 April 1995:

Exhibit No. 12

Document presented by Ms Helen Gee, Pedder 2000 Committee, Hobart, Thursday 6 April 1995.

Exhibit No. 13

Overhead projections presented by Dr Sobczak, Hobart, Thursday 6 April 1995.

Exhibit No. 14

Documents presented by Mr Thomas Walduck, Hobart, Friday 7 April 1995:

'Native species recommended for resowing on Lake Pedder site'.

Exhibit No. 15

Album of photographs presented by Mr Thomas Walduck, Hobart, Friday 7 April 1995.

Exhibit No. 16

Photographs presented by Mr Michael Eades, Hobart, Friday 7 April 1995.

Exhibit No. 17

Documents presented by Mr Peter Newton, Hobart, Friday 7 April 1995:

'Pedder Papers'

Exhibit No. 18

Video prepared by Professor Peter Tyler.

Exhibit No. 19

Documents prepared by Professor Nigel Forteach.

Exhibit No. 20

Documents prepared by Dr Geoff Mosley for the Lake Pedder Study Group.

'Future Management of the Area Proposed for Restoration'.

Exhibit No. 21

Document prepared by Dr Chris Sharples:

'Notes on the symposium on the Natural History and Restoration of Lake Pedder'.

Exhibit No. 22 - 23

Documents obtained under FOI procedures and forwarded by Pedder 2000.

Exhibit No. 24

Letters received from Professor Nigel Forteach, dated 31 May 1995.

Exhibit No. 25

Lake Pedder. A report on the future management of the area. A report prepared by Dr J G Mosley commissioned by the Lake Pedder Study Group.

APPENDIX E

IUCN GENERAL ASSEMBLY RESOLUTION REGARDING LAKE PEDDER 1994

Restoration of Lake Pedder, Tasmania, Australia

RECOGNIZING that the flooding of Lake Pedder to produce hydro-electric power was an environmental disaster which severely affected the integrity of the Tasmanian World Heritage Site;

AWARE that some endemic species which were lost at the time of inundation will never be recovered;

RECOGNIZING that the restoration of Lake Pedder would be a significant step towards improving both the integrity and ease of management of the Tasmanian World Heritage Site;

RECOGNIZING the need to restore degraded wilderness areas where feasible;

AWARE that the restoration of Lake Pedder would be a symbol to the world of a determination to redress some of the environmental mistakes of the past;

AWARE that the predicted power demand from the Tasmanian grid has not eventuated;

The General Assembly of IUCN - The World Conservation Union, at its 19th Session held in Buenos Aires, Argentina, 17-26 January 1994:

1. CALLS UPON the Tasmanian State Government and the Commonwealth Government of Australia to investigate the feasibility of:
 - (a) *the restoration of the original Lake Pedder, including the most appropriate method of restoring the vegetation around the lake;*
 - (b) *undertaking a detailed analysis including the environmental, social and economic benefits to flow from a rehabilitation programme;*
 - (c) *the potential for Australia to capitalize on such benefits and to use the expertise gained from this experience to assist in similar projects elsewhere in the world in future;*
 - (d) *instigating a comprehensive energy efficiency and power conservation programme to diminish electricity demand and generation in Tasmania;*

2. **REQUESTS** the Director General to make available to the Tasmanian State Government and the Commonwealth Government of Australia relevant technical expertise and advice to achieve the restoration of this magnificent natural wonder.¹

¹ This Recommendation was adopted by consensus. The delegations of the State members Australia, Canada, Denmark, Finland, France, Germany, Greece, Malaysia, Netherlands, New Zealand, Norway, Oman, South Africa, Sweden, United Kingdom, United States, Zaire and Zimbabwe, and the delegation of the Department of Environment and Conservation, Papua New Guinea (a Government Agency member), indicated that had there been a vote, they would have abstained.

DISSENT

ON THE REPORT OF THE INQUIRY INTO THE PROPOSAL TO DRAIN AND RESTORE LAKE PEDDER

I wish to record my dissent from the conclusion of the report.

I truly believe from evidence presented to the Committee that the Federal Government should begin to take the steps that are necessary to restore Lake Pedder.

A large part of the evidence given to the Committee was on economic costs, and this I believe is the only argument of the opponents to the proposal to restore Lake Pedder. What price is beauty? What price is a symbol that can inspire people forever? What price for the wonder of looking at a scene unspoilt by human intervention? What price to walk, and listen to the quiet? What price for restoration of the soul? What price to admire the Creator's work? These prices were not computed in our report. Surely they outweigh the other costs.

The inundation of Lake Pedder was the start of the environmental movement in Australia, and for many around the world, it was the beginning.

The restoration of Lake Pedder would show how far we have progressed in our consideration of the environment. It would also be a symbol of humankind coming to terms with our world. To restore to nature such an area would convince others that we in Australia are serious about the environment, and would inspire all. In doing so we would leave a gift to our children and generations to come, the gift of the wonders of nature.

These words in the preface of the book *The World of Olegas Truchanas* by Max Angus sum up my feelings:

*For beauty is the most unforgettable thing in the world, and
though of it a few perish, and the myriads die unknowing and
uncaring, beneath it the nations of men move as beneath their
pilgrim star. Therefore he who adds to the beauty
of the world is of the sons of God.*

FIONA MACLEOD in
Deirdre and the Sons of Usna

ROBERT CHYNOWETH, MP
19 June 1995

