

Can The Catchments Sustain Us?

The 2nd Sydney Catchment Project

Final Report
and Recommendations
July 2003



Australian
Conservation
Foundation



Colong Foundation
for Wilderness



NATURE
CONSERVATION
COUNCIL OF
NSW Inc.



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SYDNEY COASTAL
COUNCIL



TOTAL ENVIRONMENT CENTRE INC

A Project of the Peak Environment Non-Government Organisations

Australian Conservation Foundation, Nature Conservation Council of NSW, Total Environment Centre, National Parks Association of NSW, Colong Foundation for Wilderness, Sydney Coastal Councils Group

In addition to this report and the appendices full copies of consultant reports are available on <http://www.tec.org.au/member/tec/projects/NaturalAreas/scp.html/>

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EXECUTIVE SUMMARY

The Second Sydney Catchment Project reviewed some of the Sydney Catchment Authority's (SCA) major environmental planning and reporting documents and took part in the development of the Regional Plan and Regional Environment Plan for the Sydney drinking water catchments. From this work we have been able to draw the following conclusions.

INTEGRATION OF INSTITUTIONAL ARRANGEMENTS

One of the consistent messages coming from the environment sector, reinforced by the catchment auditor and Healthy Rivers Commissioner, is the need for better integration of the management and monitoring of the catchments. A single body should have overriding powers, responsibilities and resources for implementing Integrated Catchment Management of the drinking water catchments, including planning, assessment, management and compliance operations.

There are views that the existing environmental institutions have failed to protect the environment and that they are not fully independent from political whim. Integrated catchment management must be seen to be independently committed to environmental protection above all else, and must be supported by an unambiguous commitment of successive governments to this aim.

In conjunction with institutional integration is the need for the integration of water demand management, development control and environmental catchment management into a long-term plan for Sydney's drinking water catchments and urban water cycle.

DEVELOPMENT CONTROL/REGULATORY POWERS

In order to reduce the risks to water quality, and to enable the application of the principles of Ecologically Sustainable Development, strengthened development control is needed throughout the catchments. We do not support the use of pollution offsetting which effectively transfers the responsibility of new polluting developments to future generations.

The SCA has not used its existing regulatory powers as widely as could be expected in its environmental protection role under the PEO Act 1997. SCA needs to take a more proactive stance in development control and regulatory compliance.

SCA AND INTEGRATED CATCHMENT MANAGEMENT

The environment groups identified a need for the Sydney Catchment Authority to place greater emphasis on their responsibilities for managing catchment health, as well as for water quality and supply. SCA could expand its vision beyond water supply to consider its role as overall caretaker for the environmental health and productivity of the catchments.

A holistic approach to environmental management is needed, which incorporates the rehabilitation of present environmental damage with the prevention of future damage.

Incorporated into the total catchment management process, there must be defined rights and responsibilities for landholders, which include a 'duty of care' for the land. Once such a duty of care is defined, it will be possible to provide a system of benefits and penalties associated with environmental management performance of landholders.

ECOLOGICALLY SUSTAINABLE DEVELOPMENT

Throughout the findings, a consistent message was identified – if the principles of Ecologically Sustainable Development were put into practice, many of the existing problems could be resolved and future problems averted. There is a need for clearer implementation of these principles, and a transparent process for the justification of all strategies and actions against them. The SCA is obliged to use the principles of ESD in all its activities, and they must underpin decisions throughout the organisation. A system needs to be installed to ensure that all decisions are compared against the principles at an early stage of planning, as recommended by the Institute for Sustainable Futures¹.

In particular, there is a need for improved valuation and pricing of the water resource. Valuation must include environmental factors such as loss to natural ecosystems and damage to the natural infrastructure, long-term factors and social factors. Improved pricing will remove the incentive to fail to meet demand management targets, as identified by the Independent Pricing and Regulatory Tribunal (IPART)². It will also provide a market impetus to achieve water savings. Financial penalties, such as step or penalty pricing, and disincentives on Sydney Water are needed for any water supplied by the Sydney Catchment Authority in excess of demand management forecasts.

1. Institute for Sustainable Futures (1999), Sydney Water environment plan framework. report prepared for the Total Environment Centre in collaboration with the Peak Environment Non-Government Organisations

2. Independent Pricing and Regulatory Tribunal, 2002 Issues paper for water price path review

1. INTRODUCTION

Water in the Sydney Drinking Water Catchments is under converging pressures – the government has committed to no new dams in the foreseeable future, environmental flows should be provided to the river systems, and there are dramatic increases in the population of Sydney. Sixty percent of the population of New South Wales take their tap water from the rivers, lakes, wetlands and groundwater systems covering two percent of New South Wales. Biodiversity and water quality are suffering from the high levels of water extraction from the catchments, and also from the increasing pressures of urban and rural development. The levels of growth appear to be unsustainable at present rates of water use and land degradation.

Historically, the catchments have been managed for different purposes, including agriculture, residential and commercial development, industry, tourism, mining, conservation and water supply, by different levels and departments of government, and a range of committees and boards. This has resulted in conflicting management aims, compromised environmental outcomes and risks to human health. With the converging pressures on Sydney's water supplies, it is timely that the NSW government now prioritises management of the catchments for their environmental health, in order to provide reliable and healthy water supplies for Australia's largest city. As a by-product of the need for improved Integrated Catchment Management (ICM) around Sydney, the new Regional Plan will act as a test case which, if successful, could be adopted as a model throughout the catchments of NSW.

The management of the catchments must be integrated under a single ICM body, with the power, responsibility and resources to carry out planning, assessment, management and compliance operations. Water demand management and catchment land and water management must be integrated into a long-term plan for the Sydney water markets and their supply catchments. Only this way will we ensure the Sydney drinking water catchments have the capacity to sustain the residents of Sydney and surrounds, into the future.

2. THE SYDNEY CATCHMENT PROJECT

BACKGROUND

The Peak Environment Non-Government Organisations (PENGOs) have provided environmental expertise to the Sydney Catchment Authority since its inception. The PENGOs have also provided research, consultation and advice for Sydney Water since 1994. Sydney Water and the Sydney Catchment Authority have contributed towards these consultation processes to enable the PENGOs to employ and commission the expertise to carry out the work.

The major outcome of the first project for Sydney Water was the set of documents comprising "A New Course for Sydney Water", which provided comprehensive policy advice for the management of Sydney's water supplies and the catchments. Since then, there has been ongoing consultation between the PENGOs and Sydney Water and, more recently, between the PENGOs and the Sydney Catchment Authority (SCA).

This most recent contract between the PENGOs and SCA aimed to provide reviews of SCA's planning and reporting documents, as well as consultative input towards the "Sustaining the Catchments" Regional Plan and its associated catchment management strategies. Funds were provided to allow for the employment of staff and for consultation processes with the environmental sector which form the PENGOs' constituency.

PROJECT ACHIEVEMENTS

The second Sydney Catchment Project, commenced in March 2002 and lasted for one year. During that time a number of submissions have been prepared on government documents and proposals relating to the management of the Sydney drinking water catchments. The reports and submissions are available on the Sydney Catchment Project's web-site, at <http://www.tec.org.au/member/tec/projects/NaturalAreas/scp.html/>

Submissions on the SCA's environmental planning and reporting include: the Annual Environment Report 2000-2001; Annual Water Quality Monitoring Report 2000-2001; Environment Plan 2000-2005; and Business Plan 2002-2007. Consultants were commissioned to study and make recommendations on the provision of Environmental Flows to the Hawkesbury-Nepean, Shoalhaven and Woronora river systems (summaries of the reports are found in Appendices 1 and 2.)

Submissions on the Regional Plan include: May draft Regional Plan; August draft Regional Plan; Green Offsets Concept Paper; Pilot Pollution Offset Scheme for the Sydney Drinking Water Catchments; and Pilot Pollution Offset Scheme for South Creek. The PENGOs commissioned a consultancy to investigate and report on the "Neutral or Beneficial Effect" guidelines for the Regional Plan, and the resulting report is summarised Appendix 3. In addition, the PENGOs have been represented at Regional Advisory Committee meetings, and at meetings with PlanningNSW (now department of Infrastructure, Planning and Natural Resources) and Sydney Catchment Authority to discuss the development of the Regional Plan.

The second Sydney Catchment Project attended several meetings with the SCA at Penrith, as well as continuing liaison by phone, mail and email. Although we found discussions with SCA staff to be always amiable, we believe there was scope for a greater level of collaboration, regular contact and quicker response from SCA. The funding provided for PENGO advice is well-directed and provides an excellent avenue for consultation with the broad environment sector, but SCA could have made better use of this channel of communication.

Outcomes from this Second Sydney Catchment Project are summarised in this report, with lists of recommendations provided. We recognise that the SCA is continuing to develop its policies and reporting procedures in response to the challenge of ESD - and the PENGOs would welcome further interaction.

CONSULTATION

As part of the consultation and research work undertaken by the PENGOs, a public workshop called "Thirst!" was held in Sydney in conjunction with the Fourth PENGO Sydney Water Project.

Three further workshops, which were planned for the catchments, in the Southern Highlands, Southern Tablelands and Blue Mountains, following the release of the second draft Regional Plan, were not held because the second draft of the Regional Plan was not released by PlanningNSW during the term of the project.

SYDNEY WORKSHOP 'THIRST!'

Some of the major points arising from attendees and speakers included:

Catchment management

- The need for integrated management of natural resources at catchment, state and national levels, including agencies, institutions and data. The Healthy Rivers Commission Statements of Joint Intent should be used by government.
- The Regional Environment Plan needs to focus on catchment management.
- Environmental institutions need to be independent of political influence.
- Equity between catchment and city is needed in costs of water supply. No more intercatchment transfers.
- Weirs and artificial lakes must be removed where possible and no new ones built.
- Water extractions for irrigated agriculture should be replaced by treated effluent.

Development control

- Need improved valuation and pricing of the water and land resources, to compare the costs and benefits of the development impact with the environmental and water benefits of no development.
- Present rates of growth and development in the catchments are unsustainable.
- SCA needs to be taking a stronger lead on development control, long-term catchment planning and the assessment of cumulative impacts.
- Environmental Impact Assessments should include the impact on the water cycle.

Demand management

- Need improved valuation and pricing of the water resource to reflect the real environmental impact of extraction, so that there can be full cost recovery for water. This will influence demand and promote water efficiency savings.
- We need a national strategy for water, to include supply, catchment management, "education, enforcement and engineering".
- There is a great need for more action rather than more studies and policies.

THE FUTURE

Due to delays in the release of government documents, it was not possible to review all of the Project's contract items. In particular, it was expected that the Regional Environmental Plan (REP) would be finalised in 2002, and that the REP catchment strategies would form the major components of this Project. Although the SCA has begun work on these strategies (Strategic Land and Water Capability Assessments, Rectification

Action Plans, Catchment Information System and Best Management Practices), these have not yet been made available to the PENGOs for review.

There is potential for an expanded role in the PENGO/SCA collaboration to provide input and advice towards the Authority's operations. The joint Projects help to build a positive consultative relationship between the environmental sector and government, allowing for improved communication in developing policy and planning. Because major components of the 2002 contract have yet to be viewed by the PENGOs, in relation to the Regional Plan, the associated catchment management strategies and the developing role of the SCA in environmental and catchment management, we would encourage the continuation of an arrangement which provides resourcing to the PENGOs.

RECOMMENDATIONS FOR FUTURE SYDNEY CATCHMENT PROJECTS:

- 1.** Future consultation include a more collaborative approach by SCA, in order to include the PENGOs at an early stage of planning and policy development.
- 2.** Future consultation take place in a more strategic and targeted way, rather than as a reaction to planning documents provided by government.
- 3.** That a longer term proposal be agreed, which covers SCA's identified critical planning phase, of the next three to five years.
- 4.** Future Sydney Catchment Projects investigate the progress on recommendations and agreements contained in the catchment audit, statements of joint intent and catchment blueprints (see section 5).

3. SYDNEY CATCHMENT AUTHORITY

BACKGROUND

Set up in 1999 as a result of the McLellan enquiry into Sydney Water, the Sydney Catchment Authority has legislated responsibilities for catchment health and supply of water to the storage dams of Sydney and its surrounds. The Sydney Water Catchment Management Act of 1998 is supported by an Operating Licence³ to enable the SCA to carry out its responsibilities, and to define its matrix of planning and reporting requirements.

POLICY AND PLANNING

VISION

The SCA's Vision embodies three concepts into its brief statement "Healthy catchments, quality water - always", which reflect its responsibilities in managing the catchments for environmental health, providing high quality water to the customers, and providing a reliable source of water. A brief review of the relevant documents follows.

BUSINESS PLAN/STRATEGIC ACTION PLAN

Some major areas still to be addressed by SCA in the 2002-2007 Business Plan were identified by the PENGOS⁴.

Consultation As the SCA's central planning document, the business plan should be available for public and stakeholder review prior to finalisation. SCA's Environment Plan Objective 2 states that "the SCA will involve the community in its strategic decision making".

Ecologically Sustainable Development There is no clear system in place to ensure the implementation of the principles of ESD in the business plan, as required under the Sydney Water Catchment Management Act 1998. The four principles defined in the Protection of the Environment Administration Act (1991), and the seven principles listed in the National Strategy for Environmentally Sustainable Development (1992) provide a basis against which to measure all Key Result Areas, Outcomes and Strategies. There must be mechanisms in place to ensure that ESD principles are taken into consideration at every level of policy and strategy development. Where trade-offs are considered amongst environmental, social or economic objectives, these need to be detailed to provide transparency.

Catchment management and protection Drinking water quality cannot be separated from broader catchment health issues. However, SCA's Structure, Role, Values, Key Result Areas (KRAs) Outcomes and Strategies do not include clear and comprehensive responsibility for SCA's role of management and protection of the inner and outer catchments, for environmental health, water quality and public health. The opportunity exists for SCA to take a leading role in catchment management and protection.

Plan structure and implementation The business plan needs clear linking of Strategies, Performance Indicators (PIs), Targets and Budgetary components. The links between performance indicators, targets and sources of data are often tenuous.

3. See www.sca.nsw.gov.au/about/oplicence.html

4. Refer Appendix 4

Budget figures Budgets and priorities for the various strategies are needed for each of the Key Result Areas and Strategies. Many of the PIs do not extend to the full five year period of the Business Plan.

Targets Many of the Targets are modest in comparison to the extent of environmental damage already present in the catchments. Present catchment management practices continue to cause environmental damage and the demands of population and development are increasing. The SCA must set bold targets which will succeed in addressing the inherited environmental damage, and preventing future damage.

ENVIRONMENT PLAN

The PENGOS' submission on the 2000-2005 Environment Plan details many of the identified shortcomings and proposals for improvement⁵.

Consultation The only strategy for SCA's 'involving the community in its strategic decision making' is the consultative committees. This does not indicate an effective commitment by the SCA to this particular objective. Further strategies should be expanded to include more innovative means of community consultation.

Ecologically Sustainable Development The Environment Plan and Environment Policy should include SCA's commitment to ESD principles. The application of ESD principles should be explained and justified within the objectives of the Plan. There is also the need, as in the Business Plan, for a greater emphasis on catchment health.

Catchment management and protection SCA's stated responsibilities need to extend beyond preventing environmental degradation to restoring degraded environments. The environmental management strategies described in the environment plan apply to SCA infrastructure, special areas and land-holdings only, rather than to the 'catchment areas', as defined under the Sydney Water Catchment Management Act 1998.

Plan structure and implementation There is confusion and inconsistency amongst Targets, Strategies and Performance Indicators, with a lack of clear and measurable targets and timetables, as required under the SCA Operating Licence. More defined targets, with strong links to strategies, measurable objectives and performance indicators, are needed.

Objectives More robust objectives for green energy are needed. A process is needed for the review and incorporation of research results into decision making processes, to allow for adaptive management.

RECOMMENDATIONS ON SYDNEY CATCHMENT AUTHORITY POLICY AND PLANNING:

Consultation

1. More in-depth consultation methods are needed as part of the environmental planning process. Future Business Plans should be made available for public or stakeholder review before finalisation.
2. SCA reconsider the need for further consultative committees, and integrate and engage with previous, existing and proposed consultation systems and outcomes, such as the Catchment Management Boards and Catchment Blueprints.

Ecologically Sustainable Development

3. SCA must justify all aspects of the Business Plan and Environment Plan against ESD principles and set ESD objectives for its operations.

4. SCA should assess all its operations against ESD principles, including off-site and long-term environmental impacts.
5. Improved valuation of the water resource must lead to improved pricing.

Catchment management and protection

6. The Business Plan and Environment Plan be revised to demonstrate a commitment to SCA's responsibilities for catchment management as stated in the Sydney Water Catchment Management Act 1998, "To manage and protect the catchment areas". The Environment Policy should include a clear and integrated objective of catchment protection and improved catchment health for the whole catchment area.
7. Strategies should address all land and river uses which impact on catchment health, such as chemical contamination and applications, mining and associated activities, land clearing, weirs, residential development and animal access to dams and watercourses. Strategies should include land constraint assessment, planning controls, assessment of cumulative impacts, rectification planning and native vegetation/ecosystem protection and management.
8. The Environment Plan and Environment Policy must be incorporated as integral components of the Business Plan, and the objectives of the Environment Plan considered at an early stage of development of the Business Plan. Improved commitment and resourcing to SCA's environmental objectives is vital.

Plan structure and implementation

9. The Business Plan and the Environment Plan require greater integration, clearer definition and stronger links amongst Targets, Strategies, Performance Indicators and data sources.
10. The prioritisation of strategies is needed to enable transparent budgetary decisions.
11. Greater clarity, time limits and measurability of targets and performance indicators is needed, for example 'kilometres of riparian land with stock access reduced' and 'kilograms of phosphorus and nitrogen released from Sewage Treatment Plants reduced'.

Objectives and Targets

12. Provide an environment plan strategy which relates to 'extent and condition of native vegetation in the water supply catchment area'.
13. More robust targets are needed for reductions in sewage load, stormwater pollution, sediment loads, and increases in stormwater re-use and riparian rehabilitation.
14. Set meaningful targets for 'building and sharing knowledge' for the full extent of the Plan.

REPORTING/REVIEW MECHANISMS

ANNUAL ENVIRONMENT REPORT 2000-2001

The PENGOs have provided detailed comments on the 2000-2001 Annual Environment Report⁶.

Reporting requirements

While SCA has reported on a complex array of reporting requirements, including environmental, ESD and operational performance indicators, there is no reporting on the Environmental Policy Objectives.

Targets

The Report states that the indicators do not provide targets to which the SCA aims. Unless SCA sets targets for environmental condition and water quality, it will not be possible to assess SCA's short and long-term environmental performance⁷.

Analysis

Although the Environment Report addresses the bare minimum requirements, there is much potential for using the data to analyse the trends, the relationship of the observed trends with issues of catchment health and water quality, the impacts of SCA's activities on the environment and SCA's proposed management responses to the impacts.

Data requirements

More quantitative and comparative data is needed throughout the Report. There are also a number of targets and performance outcomes within the 2000-2005 Environment Plan which have not been included in the report, as required under SCA's Operating Licence.

Report Structure

A simpler and more consistent approach is needed. Where three sets of indicators are used in conjunction with three methods of reporting, and with the additional reporting requirements recommended in this report, there is a need for a clear guide to the relationships of the various indicators.

Any inbuilt redundancy, or repetition of indicators within different parts of the report, needs to be addressed.

INDICATORS

The robust use of adaptive management will ensure that indicators used to monitor the impact of SCA's activities on the health of the catchment will continue to be refined.

Water Quality Monitoring Report 2000-2001

The PENGOs provided comment on the Annual Water Quality Monitoring Report 2000-2001⁸.

Adaptive management

The exceedance reporting provides for monthly reports, but there is also a need for the triggering of appropriate management actions to address the exceedance. It is not clear how the data will be used to feed back into catchment management processes.

6. Appendix 6

7. NHT (2000), A Framework for Public Environmental Reporting

8. Refer Appendix 7

The Annual Report summarises hot spot, investigative and event-based monitoring. However, there is a need for greater analysis in the body of the report, with discussion of all incidences of exceedance.

Integration with other water testing and research programs

There is potential for greater integration with other testing programs being carried out in the drinking water catchments. These could include the programs carried out by the Environment Protection Authority, Department of Land and Water Conservation (now Infrastructure, Planning and Natural Resources), Sydney Water Corporation, Local Governments and Streamwatch. Through better integration of the programs, targeted monitoring could be improved to gain an overall picture of catchment health.

Data requirements and testing sites

The Sydney Catchment Authority's role in catchment protection and management leads to a need for its water quality monitoring to test against the guidelines for ecosystem health, not just for drinking water. The level of data obtained must be sufficient to allow a complete audit of catchment health. The water quality monitoring report should discuss the effects on catchment health of any measures exceeding the guidelines.

The water quality monitoring program will in future be used to underpin and support the use of the Neutral or Beneficial Effect assessment and pollution offsetting as part of the Regional Environmental Plan for the drinking water catchments. The data provided must be sufficient to support these schemes.

Testing for pesticides and other items listed in schedule 4 of the Operating Licence were identified in the Operational Audit⁹ as deficient.

RECOMMENDATIONS ON SYDNEY CATCHMENT AUTHORITY REPORTING AND REVIEW MECHANISMS:

Targets

- 1.** SCA needs to report against its Environmental Policy objectives.
- 2.** SCA needs to set targets for environmental condition and water quality. There is a need for outcome-oriented indicators which "focus information to answer important questions"¹⁰.

Greater analysis needed

- 3.** Greater analysis of the data is needed in both the Environment Report and the Water Quality Monitoring Report, to indicate trends, the implications for catchment health and water quality and the impacts of SCA's activities, including SCA's assessment of development applications. Comparisons of results with the targets, indicating causes and proposed solutions for future completion of targets where shortfalls have occurred, or where there are pollution exceedances. Also needed is an analysis of the relationship of this report to other environmental reports, such as State of the Environment reports, and to bring together the strands of data to present a summary picture of the state of the catchment and its water quality, the risks posed by human activities and future management to mitigate against the impacts.

Greater integration needed

- 4.** Greater integration of the water monitoring program with monitoring carried out by other agencies.

9. IPART, 2002 SCA Operational Audit

10. CSIRO (1999), Web Guidebook to Environmental Indicators

Ecologically Sustainable Development

5. Reporting based on ESD principles will provide a more direct and meaningful demonstration of SCA's compliance with ESD principles, as required under SCA's operating licence.

Adaptive management

6. Adaptive management mechanisms to provide feedback from the Environment and Water Quality Monitoring Reports to SCA planning, risk analyses and management are needed to improve future planning – indicators should be “part of the management cycle, and not an end in themselves”¹¹.

Data requirements

7. Further detail of recommended indicators for use are included in the PENGOS' submission¹² and the 1999 auditor's recommendations¹³. Further development of environmental indicators, particularly biological and biodiversity indicators, is needed throughout the upper and lower catchments.
8. The water quality monitoring program must enable an analysis of ecosystem health throughout the catchments and must be rigorous enough to support the Neutral or Beneficial Effect (NorB) assessment and offsetting components of the Regional Plan. There needs to be sufficient routine monitoring sites to build up a long-term picture of variability and average water quality. Water quality testing sites in use must be comprehensive, adequate and representative, and relate to known polluting sources.
9. Further effort is needed in the development of routine, event-based and investigative testing programs for Schedule 4 items.
10. Identified shortcomings in the capabilities and accreditation of some of the testing laboratories must be rectified.

Report structures

11. The report layout needs clarifying, by defining and cross-referencing the relationships amongst the indicators, and providing a simplified summary table to present a snapshot of water quality, catchment health and SCA environmental performance.

11. CSIRO *ibid*

12. Appendix 6

13. CSIRO, 1999 Audit of Sydney's drinking water catchments

ENVIRONMENTAL FLOWS

SCA's Operating Licence requires the introduction of environmental flows to the river systems. Designing flows which best serve the environmental needs of the catchments, while allowing for the continued removal of the great majority of the Hawkesbury Nepean River's flow, is an inherently complex task. The PENGOS commissioned two consultants to carry out a comparative review of environmental flow strategies used in other catchments nationally and internationally¹⁴, and to provide recommendations for the Sydney drinking water catchments¹⁵.

Returning sufficient flows to Sydney's water supply rivers to keep them from continuing degradation requires a commitment by all sectors of the community.

The environmental flow strategy needs to be a cornerstone of a wider strategy guiding the overall management of water within and for the Greater Sydney Region. It needs to set the targets and outcomes for water users and water managers. Implementing such a holistic strategy challenges the current institutional responsibilities and policy for different 'bits' of the water cycle and requires the integration of the many current water-related programs and initiatives. The water management strategy must ensure secure water releases for environmental flows and set out principles for the sustainable water "footprint" of Sydney - including such issues as inter-catchment transfers of water. Currently there are no principles for the containment of this footprint, which already assumes the resources of four major river systems.

RECOMMENDATIONS ON ENVIRONMENTAL FLOWS:

Holistic strategic planning

1. There must be a holistic, water cycle based, water management strategy for Sydney. The strategy would bring together the operations of the SCA, SWC, demand management programs across the government agencies and the various catchment and water management strategies to provide a strategic framework for the sustainable use and management of the resource and the ecological health of the water supply rivers. The development and implementation of the strategy must be a transparent process involving key sectors of the community.
2. An evaluation of irrigated agriculture in the Sydney Basin needs to be undertaken, including the quantity and timing of water used. If agriculture is to be retained, a statutory plan must ensure the security of agricultural land around Sydney to ensure long-term investment in land management and infrastructure as necessary to utilise treated effluent.

Ensuring the environmental flow principles

3. The flow releases from the SCA storages should be classified as "environmental health water" under the Water Management Act 2000. They should:
 - Allow 20% of the flows that enter the storages to be released to the rivers (20% translucent flows).
 - Protect the low flows (80th percentile transparent flows)
 - Release contingency flows to "piggyback" translucent flows at critical times to provide ecological triggers or natural scouring and flushing actions within the river system
 - Provide supplementary flows from time to time to address specific conditions.
4. Adaptive management of the environmental flow releases is essential, and must be linked to on-going monitoring of the effectiveness of the environmental flow releases and to allow for new data, climate change and innovation.

14. Alexandra & Associates (2003), Sydney Catchment Project Environmental Flows Comparisons - Appendix 1

15. Smith, J. (2003), Sydney Catchment Project Environmental Flows Strategy for the Hawkesbury-Nepean, Shoalhaven and Woronora Rivers - Appendix 2

5. Water storage infrastructure under SCA control must have the capacity to release the quality and quantity of flows that the environmental flow regime requires (some modification of infrastructure may be required such as variable off-takes.)
6. As many as possible of the downstream weirs under SCA control should be removed.

Gaining a share of the water for the rivers

7. New water demand targets are required that effectively set ecological “caps” to ensure the environmental flows are provided and protected.
8. Reliability levels for supply of water from the SCA water storages should be revised immediately to 95% and an investigation of reducing it further undertaken to provide greater ability to deliver environmental flows .
9. The valuation and pricing of water needs to better reflect the value and scarcity of the resource and the environmental impacts, and drive water conservation.
10. Reliable metering of all in-stream (including riparian) water use and groundwater usage in the catchments of the Sydney water supply rivers, and volumetric conversion of licences needs to be implemented as a matter of urgency. Low flow protection must be implemented as an integral component.
11. Access to water must not be recognised as a property right, but rather that landowners may gain temporary access to the water resource that is ultimately a public responsibility.

Keeping the rivers healthy

12. Phase out bulk water transfers through the natural river system and construct a piped transfer system. Any bulk water transfers through the natural river systems must observe the timing, variability and water quality principles underpinning the environmental flow releases.
13. Pumping from the Shoalhaven to the Hawkesbury-Nepean water storages should not occur, in line with the Shoalhaven Statement of Joint Intent, which states that, “no one system should be disadvantaged for the sake of the other”. If pumping from the Shoalhaven does occur, it should not occur before full water restrictions are imposed on the users of the water supply, and it must not compromise environmental flows for the Shoalhaven River.

Protecting the environmental flows

14. The flows of the tributary rivers entering the Hawkesbury, Nepean, Shoalhaven and Woronora Rivers below the Sydney water storages must be protected to ensure the environmental flow regime is maintained through the river system and the flow releases are not wasted. Flow rules for the protection of these streams must be developed as a matter of urgency.
15. No artificial lake schemes, such as Penrith Lakes, which have the potential to impact on river flows, should be permitted.
16. Long wall mining beneath the rivers and storages must be prohibited to avoid the risk of bedrock cracking and waters being drained, with consequent environmental impacts.
17. The degrading impact of sewage effluent discharges on the environmental flow regime must be phased out. No further development should take place in the catchment until strategies are in place for the management of effluent that ensures river health. Treated effluent should be used for agriculture instead of freshwater river extractions.

DEMAND MANAGEMENT

The review of water pricing carried out by the Independent Pricing and Regulatory Tribunal (IPART) involved consideration of SCA's water price path, as it relates to demand management. The following is based on the submission prepared by Total Environment Centre's Leigh Martin¹⁶.

PRICE STRUCTURE AND REGULATORY BALANCE

Sydney Water's failure to meet operating licence demand management targets indicates that current incentives to reduce demand are inadequate. While the current demand management targets provide a strong regulatory driver for reducing consumption, they are insufficient on their own to ensure the achievement of the required water savings.

An inherent incentive for failure to meet demand management targets has been identified, that is, the failure to meet demand management targets has resulted in increased revenue for the Sydney Water Corporation (SWC) of between \$35m and \$72m¹⁷. In order to remove this incentive for failure to meet demand management targets we believe that financial penalties must be applied. This would provide a commercial incentive for SWC to pursue leakage control, re-use schemes and more aggressive demand management.

SCA has pointed out¹⁸ that a net difference of approximately 74c between the bulk water and variable costs and the retail price for water sends inconsistent signals to SWC between selling more water and fostering demand management. It is unfortunate, however, that SCA supported SWC's call for delay in introducing step pricing in their submission.

Should demand management fail to prevent the need for augmentation of the water supply, SCA will be required to invest in new infrastructure. However, the NSW Government has stated its policy that no new dams will be built for Sydney's water supply. Therefore it is imperative that all identified means for improving demand management performance are implemented as a matter of urgency.

RECOMMENDATIONS ON DEMAND MANAGEMENT:

- 1.** Financial penalties should be applied immediately for failure to reach demand management goals – to include step or penalty pricing for any water supplied by the Sydney Catchment Authority in excess of demand management forecasts.
- 2.** Permanent water restrictions should be applied, such as for hosing concrete and limits to standing sprinkler times, as recently announced by the Victorian Government for Melbourne.
- 3.** Improved valuation and pricing of the water resource, including present environmental impacts, is needed so that there can be full cost recovery, including environmental costs.

16. Total Environment Centre (2002), Submission on price path review

17. IPART, 2002 Issues paper for price path review

18. Sydney Catchment Authority, 2002 Submission to IPART on price path review

4. "SUSTAINING THE CATCHMENTS" REGIONAL PLAN

BACKGROUND

The management of Sydney's drinking water catchments has been the responsibility of a large number of state and local government agencies, boards and committees. One of the recommendations of the catchment auditor, the Healthy Rivers Commissioner, and of the PENGOs, is the urgent need for institutional and planning integration.

A Hawkesbury Nepean Catchment Management Board is being formed, to take the place of several Catchment Management Committees and the former Hawkesbury Nepean Catchment Management Trust. The Sydney Catchment Authority must work closely with the Board in forming joint and unambiguous goals for the health of the catchments.

One of the provisions of the Sydney Water Catchment Management Act, is for the formation of a Regional Environment Plan (REP), which ensures that only new developments which demonstrate a "Neutral or Beneficial Effect" on water quality will be approved. The REP has been under development since 2001, and a second draft of the Plan is expected to be exhibited in 2003. The PENGOs provided input towards the development of the Plan, and detailed comments on the 2002 proposals are appended¹⁹.

The 2002 drafts of the "Sustaining the Catchments" Regional Plan (RP) comprised the Regional Environment Plan and catchment management strategies, such as Land and Water Capability Assessments (SLWCAs), Rectification Action Plans (RAPs), a Catchment Information System (CIS), Best Management Practices (BMPs) and Small Area Management Plans (SAMPs). The Plan includes a requirement for local governments to review their Local Environment Plans (LEPs) for consistency with the Regional Plan objectives and detail. The SLWCAs form the basis of the LEP reviews and are therefore a central strategy.

CATCHMENT HEALTH

The stated aims of the Sydney Catchment Management Act, the draft RP, the REP, the SOJI and the Catchment Audit²⁰ is to protect the ecological health of the drinking water catchments. However, the detail of the RP and REP emphasise water quality protection as an outcome.

Protections for water quality must not be at the expense of overall catchment health, including land and biodiversity/habitat viability. In particular, any pollution trading scheme must not sacrifice land or biodiversity values and integrity for water quality values.

REGIONAL ENVIRONMENT PLAN

The Regional Plan includes a Regional Environment Plan, which provides the statutory basis for development control within the catchments. The PENGOs believe the REP has the potential to provide a transformation to sustainable catchment management. However, there is a risk that the original intent of the document has been weakened to the extent that these aims will not be realised. In particular, the removal of the planning control table and the reduction of SCA concurrence levels places too much reliance on local government and weakens the SCA's role.

Local governments do not generally have the expertise or resources to adequately administer, monitor and defend the Neutral or Beneficial Effect Assessment. Nor does the community have access to the expertise or resources to undertake court action on the Neutral or Beneficial Effect Assessment.

19. Appendix 8

20. CSIRO, 2001 Catchment Audit

ECOLOGICALLY SUSTAINABLE DEVELOPMENT

The principles of Ecologically Sustainable Development must be recognised as the guiding principles, under the Act, for the assessment of catchments, management practices and development proposals.

CUMULATIVE IMPACT

The assessment of the cumulative impact of many small developments which do not require consent has not been addressed. Nor does the present draft RP address the assessment of cumulative impact for staged developments.

Catchment carrying capacities identified in Strategic Land and Water Capability Assessments (SLWCAs) should lead to the setting of development limits as going some way to addressing cumulative impact.

STRATEGIC LAND AND WATER CAPABILITY ASSESSMENTS

SLWCAs are the only avenue for consideration of cumulative impact, and therefore need to be constructed using clear guidelines and formats. The Section 117 Direction allows for an "equivalent assessment" to SLWCAs to be used in LEP reviews but there are no standards to measure equivalence.

SECTION 117 DIRECTIVE

This is a Directive to local governments to carry out reviews of their Local Environment Plans to ensure consistency with the Regional Plan and Strategic Land and Water Capability Assessments. This will help to provide consistency in planning across the catchments.

RECOMMENDATIONS ON THE REGIONAL PLAN:

Catchment health

1. Catchment health should be given equal emphasis to water quality in the RP, in order to provide greater consideration of biological and ecological factors in the listed impacts of activities. There need to be binding provisions which relate to the consideration of ecological integrity as well as to water quality.
2. Remaining Special Area lands should be transferred to NPWS and no new development to take place within the Special Areas.
3. The contribution of wetlands to catchment health and water quality needs greater recognition in the RP, and the impacts of draining and filling wetlands on water quality and catchment health.

Ecologically Sustainable Development

4. ESD principles must be recognised as the guiding principles for the assessment of catchments, management practices and development proposals. Where adherence to ESD principles is claimed, throughout the planning process, there must be a clearly stated justification of how the proposals align with the principles.
5. The impact of development activities needs to be compared with the environmental and water benefits of no development, to include full pricing of the environmental services provided by natural areas, and recognition of the less tangible services which are impossible to price.

Coordinating and integrating framework

6. The RP is to provide a 'framework for coordinated action that identifies links between the many NRM bodies, committees and action plans that exist for the catchments'. Integration must be ensured through: cross-referencing and complementary clauses in all catchment planning

documents, stating the relationship, and mutual incorporation of provisions and priorities.

7. An adaptive management mechanism is needed to ensure SCA can monitor “..pressures on the catchments, particularly potential cumulative impacts..” and that the results will be fed back into SLWCAs and LEPs.

The Regional Plan

8. The SLWCAs should be the fundamental planning mechanism for protecting water quality and catchment health. The SCA should, with the advice of an expert committee, produce standards for the production of SLWCAs. SLWCAs should only be carried out by SCA, not by local governments or landowners. SLWCAs should be used to set natural constraints to development and catchment health goals. There needs to be public consultation, set times for completion, availability, and periodic monitoring and review, as with RAPs.
9. A planning control table is needed to provide security and consistency of assessment, at least while the second level strategies are developed, defined and trialed. The table simplifies and adds certainty, predictability and consistency to the process. Having the table will reduce the amount of court action and will be easier to defend in court. Regulatory guidelines are needed to specify measures to be taken to meet the water quality and catchment health requirements.
10. Water Quality Protection Areas (WQPAs) should be incorporated into the RP as a precautionary measure, to be refined as further information becomes available through the SLWCAs. WQPAs address the need for a risk management zone approach, as agreed in the SOJI for the Hawkesbury Nepean River System²¹.
11. Provisions addressing the impacts of existing development need to be binding and enforceable. All of the catchment management strategies need to have a binding legal status, including on government, with time-limited targets for implementation.
12. Landuse activities not captured by the REP must be included in the catchment planning processes.
13. There should be an additional independent assessment mechanism or body for implementation of the REP.
14. A penalty or enforcement system should be linked to the REP requirements. Third party merit appeal rights are needed to allow the community to challenge Councils where decisions do not reflect regional or local plans. Monitoring of consent conditions requires more resourcing and consistency across the catchment than at present, to ensure a reliable level of compliance.

LEP Reviews

15. LEPs must be consistent with SLWCAs.
16. LEP reform must capture all developments with potential for water quality and catchment health impact, for consistency with the aims and objectives of the Regional Plan. SCA should provide tables of provisions for use across the catchments. Cumulative impact considerations must be included in LEP reviews.
17. LEP reform needs to be completed within 12 months of commencement. There should be further periodic reviews of LEPs, based on new information from the auditing of developments determinations, NorB assessments, and reviews of SLWCAs.

Funding

18. SCA contributions to state treasury should be reduced and funds redirected to catchment works. Catchment management is a core activity and should be funded from the core budget.
19. The RP needs to be associated with a funding framework that clearly links polluting activities, water users and remediation activities. A catchment protection levy or return on water pricing could be used to provide a funding mechanism.

21. Healthy Rivers Commission (2001), Statement of Joint Intent for the Hawkesbury Nepean River System

NEUTRAL OR BENEFICIAL EFFECT GUIDELINES

Under the Sydney Water Catchment Management (SWCM) Act (1998) requirements for a Regional Environmental Plan, “..consent authorities must refuse to grant development consent to a development application relating to land to which the plan applies unless the consent authority is satisfied that the carrying out of the proposed development would have a neutral or beneficial effect on the quality of water” (SWCM Act, s.53(3)(c)).

The PENGOs commissioned a consultant to review the associated guidelines for assessing Neutral or Beneficial Effect (NorB).²²

INTEGRATED PLANNING AND TARGETS NEEDED

The Sydney Water Catchment Management Act is unambiguous in its intention but the NorB Guidelines are unlikely to be sufficient to deliver on this intention of the Act. They seem to focus more on providing technical details rather than identifying a clearly defined and easily applied development approval process.

Furthermore, an underlying weakness is that the NorB guidelines use existing water quality as the benchmark rather than a desired water quality or water quality target.

COMPREHENSIVENESS AND CONSISTENCY OF ASSESSMENT

Land use controls are a primary mechanism for water quality protection in the catchments, and in this case granting or refusing of consent are based on the predicted impacts on water quality. Therefore, the quality of both the predictive capacity and the development and land use controls will be fundamental in determining the future catchment conditions and the resultant water quality.

The NorB guidelines state that both on and off-site effects of the development should be taken into consideration and that the entire life-cycle of the development must be considered, including its construction, operation and decommissioning. The NorB effect concept is underpinned by the assumption that the effects of proposed developments can be predicted with sufficient accuracy to determine all future water quality impacts, a risky assumption.

The NorB assessment can vary depending on the current condition of the waterway, the quality of available information and the assessor’s knowledge of water management. In addition, knowledge of catchment and aquatic systems in Australia is dynamic and at best capable of providing only interim solutions²³.

RECOMMENDATIONS ON NEUTRAL OR BENEFICIAL ASSESSMENT:

Comprehensiveness and consistency of assessment

1. The catchments should be covered by uniform planning conditions to ensure a consistent approval process in all areas of the catchments to provide confidence that the guidelines are being applied uniformly.
2. The primacy of the purpose of the land within Sydney's drinking water catchments to yield suitable water should be unambiguously protected through the statutory planning scheme and enforced by reference to an effective set of NorB guidelines.
3. The capacity of consent authorities to implement the guidelines should be assessed and if necessary deficiencies should be overcome with suitable training. Adequate institutional capacity

22. Alexandra & Assoc. P/L 2003 Sydney Catchment Project Neutral or Beneficial Affect Assessment, for NSW Peak Environment Non-Government Organisations - Appendix 3

23. Cullen, P. (1998) Water in the Australian Environment: Ecology, Knowledge and Reform. CRCGE Canberra

must be available for planning and assessment of permit applications and for compliance monitoring and enforcement.

4. There should be legal rights to challenge development consent based on an inadequate implementation of NorB.
5. Groundwater impacts need to be considered in the guidelines. "Containment" must demonstrate no impact on groundwater quality, surface or groundwater flows or habitat value.

Integrated planning and targets needed

6. Rather than weighing down the guidelines with technical information, it would be preferable to have clear guidelines on how to undertake the assessment of applications with a range of technical manuals or references where necessary to a series of existing standards and technical manuals developed for other reasons.
7. A comprehensive assessment of present land use is needed, complemented by a vision of future land use. A plan for how to drive beneficial changes in land use would be desirable. A maximum population target or limit for the catchment could be set to minimise the impacts of cumulative loads, as an increase in population has a direct increase in pollution of water quality.
8. Sydney's catchments and the NorB guidelines would benefit from a defined pollutant reduction scheme based on a predefined cap and trade system like New York's phosphorous reduction scheme. This is likely to be more effective and transparent than the proposed offset scheme, and may also be an option for dealing with cumulative impacts. The caps would be set at levels known to be within limits and could be reviewed in the future. A framework could be implemented where new pollutant load targets could be set on a regular basis - a "screw-down target". This would allow for market dynamism to elucidate the most cost-effective pollution reduction methods and opportunities.

POLLUTION OFFSET SCHEMES

Proposed as part of the Neutral or Beneficial Effect guidelines within the Regional Plan, the pollution offset scheme allows polluting developments to take place as long as an environmentally beneficial activity is implemented as part of the proposal. In a major statement the Peak Environment Non-Government Organisations provided a submission on the EPA's concept paper.²⁴

The proposal for introducing pollution offsets includes several trial offset schemes, one of which is for Sydney's drinking water catchments, and the other specifically for South Creek. The PENGOs provided submissions on each of the trial schemes during 2002.

The PENGOs are strongly opposed to the use of offsetting. Offsetting allows development to continue 'business-as-usual', with an additional complex administrative justification mechanism, which has been shown to be unsuccessful in overseas examples. Government must accept the challenge of protecting the catchments by providing a strong regulatory environment to ensure that future developments do not increase the pollution load or damage native ecosystems.

PREVENTION BETTER THAN REHABILITATION

The costs of creating pollution prevention systems, such as wetlands, buffer strips and detention basins, or of rehabilitating damaged environments, far exceeds the cost of retaining natural wetlands, riparian corridors and vegetation. Constructed habitats seldom reach the level of structural and functional success and complexity of original natural habitats.

NOT CONSISTENT WITH ESD PRINCIPLES

Offsetting allows new, "more expensive to reduce" polluting activities, while offsetting with "cheaper to reduce" activities, resulting in cost-shifting to future generations. Therefore, the scheme does not meet the 2nd principle of Ecologically Sustainable Development as described in the Protection of the Environment Administration Act 1991, *inter-generational equity*, nor the 4th, *improved valuation - polluter pays*.

DISCOURAGES INNOVATION

Offsetting aims to facilitate development, rather than encouraging innovative means of preventing pollution. There is a need for clear incentives to develop innovative, non-polluting techniques for new and existing development activities. There will be little incentive for landholders or government agencies to achieve environmental improvements and best practice management, without expecting to be compensated through involvement in an offset scheme. This, in effect, provides a reward for poor environmental practice.

INDEPENDENCE AND COMPLIANCE

Independent monitoring, enforcement and compliance are needed, and the ongoing resources required to ensure compliance must be committed by government. There is a need for guaranteed ongoing political commitment and increasing resources as the number of schemes, and their concomitant need for monitoring, increases.

The responsibility for accurately gauging a development's environmental impact should not fall to the developer, but should be carried out by an independent body or consent authority. There is a clear lack of objectivity, and obvious conflict of interest, in depending on self-assessment.

24. Peak Environment Non-Government Organisations (2002), Submission on Green Offsets for Sustainable Development Concept Paper - Appendix 9

RECOMMENDATIONS ON POLLUTION OFFSETTING:

Offsets should not be used

1. There should be no offsetting capability for damage to natural ecosystems, land clearing or wetland destruction. There should be no offsetting for polluting activities which do not meet the Neutral or Beneficial Effect test.

In the case of offsets being used

2. Offsets must not replace the core business or 'duty of care' of government, landholder or developer. Minimum environmental standards, or duty of care, need to be defined as part of the offset scheme to allow for an objective assessment of a landholder's performance.
3. The principles of Ecologically Sustainable Development must be used to benchmark any proposed pollution offset scheme, including all environmental values and costs, including off-site impacts and time factors, to be included in any offset or trading scheme.
4. Environmental objectives and maximum pollutant loads (Maximum Daily Loads) must be set at the local and regional levels prior to the implementation of any offset scheme. Ongoing monitoring and adaptation of the scheme is needed to ensure that the objectives are met.
5. There must be expert justification for the particular offset activity. The bundling of offset activities into larger schemes does not necessarily provide the best result for catchment health. Where bundling is to take place, it must be shown to be the best environmental option, not just for administrative efficiencies.
6. Any offset scheme must be designed with sufficient precautions built in to allow for failure and to ensure a net environmental gain, as required in the National Water Quality Management Strategy. To include:
 - minimum 10:1 ratio,
 - pollutant-for-pollutant only,
 - damage/offset proximity,
 - offset to be completed and audited as complying prior to the polluting or degrading activity taking place,
 - offset continuing for the life of the impact, usually in perpetuity, with security in the long-term provision of the offset, such as entries on land title deeds,
 - if ecosystem offsets are to be instituted, at least double the ratio of offset to debit to be used (20:1), to build in further precautionary measures to account for the unknown and irreplaceable environmental values of any natural ecosystem.
7. Offsets need to be transparently defined, through a public consultation and notification process, and not be subject to discretion; the scheme manager's reporting on the pilot schemes must be independently verified.
8. Until guidelines and pilots for the Pollution Offset Scheme are completed, informal offsetting should not be an option.
9. Voluntary labour must not be used to offset polluting activities, without their explicit approval.
10. Monitoring and compliance to include:
 - ongoing, regular, robust monitoring of development and offset impacts for the full period of the impact, which may be in perpetuity,
 - full details of the scheme manager's auditing and compliance monitoring for the construction and ongoing maintenance of the offset activities, including the penalties for non-compliance,

- minimum overall standards for monitoring,
- independent auditors, independently accredited for offset auditing, should be included in these standards,
- ongoing legal identification of the body responsible for compliance in the long-term, for example, following company structural, financial or ownership changes.

Pilot schemes

- 11.** The pilot schemes need to be undertaken to enable scientific evaluation, including:
 - comparable control schemes within the same sub-catchments,
 - specific water quality monitoring before and after the trial period,
 - guidelines to assess the success or otherwise, of the trials.
- 12.** Results of remediation and catchment restoration programs planned or expected for the same trial period need to be distinguished and compared with the results of the trial schemes.
- 13.** Reporting on offset activities must remain separate from reporting on Rectification Actions or Catchment Protection programs to avoid confusion between catchment improvement and pollution offsetting.

5. OTHER CATCHMENT MANAGEMENT TOOLS

CATCHMENT AUDIT

The 2001 catchment auditor has found that there has been no improvement in catchment health, under SCA management, since the previous audit and provided a set of 31 recommendations.

A need for a greater degree of ground-truthing and verification of the remote-sensing data has been identified in the background papers for the Catchment Audit 2001, and it would be of interest to know of the operations to be undertaken to address this need in future reports. We note that a model is being prepared for the Warragamba and Wingecarribee Special Areas, and will be 'adapted to other areas of SCA owned and managed lands'. We recommend that such a model could be used for the whole of the drinking water catchments to assist in the future reporting on Environmental Indicators.

HEALTHY RIVERS COMMISSION

As a result of the investigations of the Healthy Rivers Commission, the NSW Government has agreed to a number of Statements of Joint Intent (SOJIs) for each of the river systems. Of relevance to the Sydney Catchment Authority are the Hawkesbury-Nepean and the Shoalhaven SOJIs.

CATCHMENT BLUEPRINTS

The PENGOS provided comment on the draft catchment blueprints for Sydney's drinking water catchments²⁵. These are the Warragamba, Hawkesbury Lower Nepean, Southern and Southern Sydney blueprints.

The Blueprints provide an opportunity for greater integration and inter-governmental collaboration in catchment management. There is a need for clear and close relationships between the planning and management processes of the SCA and the Catchment Management Boards.

25. PENGO submissions on catchment blueprints - see <http://www.tec.org.au/member/tec/projects/NaturalAreas/scp.html/>

6. "A NEW COURSE FOR SYDNEY WATER"

The fourth Sydney Water Project for the Peak Environment Non-Government Organisations has produced a report²⁶ on progress made by Sydney Water on the recommendations of 'A New Course for Sydney Water', which was published by the first Sydney Water Project²⁷. The report contains responses to the recommendations which were provided by Sydney Water in 1995 and again in 2002.

Since the initial recommendations were published, the SCA has been formed to take on part of the previous Sydney Water's responsibilities. A number of the recommendations have been implemented by the SCA, but there are also some remaining relevant recommendations.

In order to avoid 'reinventing the wheel', and to provide a report card on progress from previous consultative work for Sydney's drinking water catchments, it is timely that the SCA now also provide a response to the PENGOS on the recommendations of relevance to the SCA. However, some recommendations require a whole-of-government response, and need to be forwarded to other relevant agencies. The PENGOS assessment follows:

"The next ten years" from 1995 A New Course for Sydney Water

	Recommended program	Progress	Result (1995-2005 estimated)
4.2.1	Sydney Water's special lands should be transferred to the National Parks and Wildlife service to be managed as nature reserves or wilderness areas to permanently protect them from commercial exploitation, including further mining operations and subdivision.	Yes	Lands were transferred from Sydney Water to the Sydney Catchment Authority in 1999 after the introduction of the Sydney Catchment Management Act. In late 2001 the National Parks and Wildlife Amendment (Transfer of Special Lands) Bill successfully passed through NSW Parliament. The amendment gives effect to the transfer of Special Lands to NPWS.
4.2.3	Sydney Water should cease planning for Welcome Reef Dam or for the raising of the Warragamba Dam wall to increase water storage.	Yes	Welcome Reef Dam off the agenda in line with Government policy. Warragamba Dam wall not to be raised - new spillway constructed.
4.2.12	NSW Fisheries should implement strategies which facilitate the movement of fish between upstream and downstream reaches of the Hawkesbury-Nepean River System, after a comprehensive investigation of the ecological impacts.	No	Weir review process assessing weirs for removal or retention. Decisions required on each weir before strategies could be implemented.
4.2.13	NSW Department of Water Resources should construct suitable fishways on Theresa Park Weir, Bronlow Hill Weir, Mt Hunter Weir and Douglas Park Weir. Sydney Water should construct suitable fishways on Pheasants Nest Weir and Broughtons Pass Weir.	No	SCA now responsible for operation of weirs. Fishways not constructed.
4.2.14	NSW Fisheries should retain the damaged weirs within the Hawkesbury-Nepean River system which have become important habitat for aquatic species.	?	Weir review process considering whether these structures should be retained or removed.
4.2.15	In operating its dams and weirs Sydney Water should avoid abrupt flow stoppages to prevent the local concentration and isolation of fish immediately below dams and weirs.	No	Would require modifications to outlet structures to allow variability of flows and adjustment of temperatures. Needs to be part of environmental flows package. No flows package yet developed (see below)
4.2.16	Sydney Water should not use inter-basin transfers to augment its water storage capacity.	No	Transfers from Tallowa Dam (Shoalhaven River system) have been reduced but continue at up to 150ML/year.
4.2.18	Sydney Water, with the DWR, should develop operational rules for all water storages, included in the Upper Nepean water Supply Scheme, in order to allow for release of environmental flows. The objective will be to approximate a natural flow regime, including periodic flooding.	No	Environmental flows rules approximating natural flow regime not developed, but being investigated.

26. Envirostrategy (2002), Review of A New Course for Sydney Water Recommendations

27. Dowsett, B, Mather, G., Pearson, B., & Vincent, D. (1995), A New Course for Sydney Water

7. CAN THE CATCHMENTS SUSTAIN US?

Under present management regimes and future population projections, it would appear that the answer is NO, the catchments cannot sustain us. However, with sustained will from state and local government, strong strategic planning and development controls, and a healthy level of resourcing for catchment rehabilitation projects, we believe it is possible to protect the catchments' and our own health. A clear policy statement is needed to prioritise catchment health in Sydney's drinking water catchments.

The research and detailed recommendations contained in this document provide a thorough blueprint for better management of the catchments for environmental health and high quality water.

RECOMMENDATIONS FOR THE FUTURE SUSTAINABLE MANAGEMENT OF SYDNEY'S DRINKING WATER CATCHMENTS:

1. Ecologically Sustainable Development

- There is an urgent need for clearer implementation of the principles of Ecologically Sustainable Development, and a transparent process for the justification of all strategies and actions against these principles. The SCA is obliged to use the principles of ESD in all its activities, and they must underpin decisions throughout the organisation.
- In particular, there is a need for *improved valuation and pricing* of the water resource. Valuation must include environmental factors such as loss to natural ecosystems and damage to the natural infrastructure, long-term factors and social factors. Improved pricing is needed in order to remove the incentive to fail to meet demand management targets.
- An holistic approach to environmental management is needed, which incorporates the rehabilitation of present environmental damage as well as the prevention of future damage, in order to ensure *inter-generational equity*.
- *Conservation of biological and ecosystem diversity* must be a priority in the future management of the catchments. The flow-on effects of ecosystem conservation include improved water quality for the residents of Sydney and surrounds.
- Where our knowledge of the impacts of development in the catchments is incomplete, then planning decisions must err in line with the precautionary principle.

2. Improved institutional and planning arrangements

- A single body should have over-riding powers, responsibilities and resources for implementing Integrated Catchment Management of the drinking water catchments, including planning, assessment, management and compliance operations. Environmental institutions need to be independent of political influence.
- In conjunction with institutional integration is the need for the integration of water demand management, development control and environmental catchment management into a long-term plan for Sydney's drinking water catchments. Integrated management of natural resources is needed at the catchment, state and national levels, including agencies, institutions and data, including existing and past work. The strategy would bring together the operations of the SCA, SWC, HRC, CMBs, demand management programs across the government agencies and the various catchment and water management strategies, to provide a strategic framework for the sustainable use and management of the water resource, its full water cycle, and the water supply rivers. The development and implementation of the strategy must be a transparent process involving key sectors of the community.

- We need a national strategy for water, to include supply, catchment management, “education, enforcement and engineering”.

3. Duty of care

- To enable an assessment of the environmental performance of landowners in the catchment, for project funding, support for environmental services and the assessment of pollution offset allowances, it is necessary to define a minimum ‘duty of care’. This should be enshrined in legislation and should include the need to prevent harm to the environment. Queensland legislation defines environmental harm to include land degradation, air pollution, water pollution, invasion of weeds and pests, noise, the destruction of ecosystems and habitat, and loss of species.

4. Strengthened development control

- In order to reduce the risks to water quality, and to enable the realistic application of the principles of Ecologically Sustainable Development, strengthened development control is needed throughout the catchments. Environmental Impacts Assessments should include the impact on the water cycle. SCA needs to be taking a stronger lead on development control, long-term catchment planning and the assessment of cumulative impacts.
- Improved valuation of the water and land resources will allow a comparison of the costs and benefits of a development’s environmental impact with the environmental and water benefits of no development

5. Pollution Offsetting

We strongly oppose the use of pollution offsetting which effectively transfers the responsibility of new polluting developments to future generations, while not ensuring overall environmental improvement through rehabilitation of past environmental damage.

6. Sydney Catchment Authority and catchment management

SCA must place greater emphasis on their responsibilities for managing catchment health, as well as for water quality and supply. SCA should expand its vision beyond water supply to consider its role as overall caretaker for the environmental health and productivity of the catchments. The Regional Environment Plan needs to focus on catchment management.

7. Environmental flows

Security of environmental flows for river health is vital. The flow releases from the SCA storages should be classified as “environmental health water” under the Water Management Act 2000. As a minimum starting point, they should:

- Allow 20% of the flows that enter the storages to be released to the rivers (20% translucent flows).
- Protect the low flows (80th percentile transparent flows)
- Release contingency flows to “piggyback” translucent flows at critical times to provide ecological triggers or natural scouring and flushing actions within the river system
- Provide supplementary flows from time to time to address specific conditions.
- Not comprise effluent.

8. No new dams/demand management

- Existing demand management strategies are not effective in reaching demand goals. Demand control needs to be addressed more strenuously, through regulation, penalties, restriction and education, to ensure that there is never a need for further augmentation of the water supply and the construction of new storage dams.

- Full cost recovery for water is needed, to reflect the true value and long-term cost to the environment of extraction and to influence demand. Permanent water restrictions should be imposed, as an educational and awareness measure, as well as for demand management. . Alternative water sources such as rainwater tanks and recycling systems must be imposed.
- Reliability levels for supply of water from the SCA water storages should be revised immediately to 95% and an investigation of reducing it further undertaken.
- Reliable metering of all in-stream (including riparian) water use and groundwater usage in the catchments of the Sydney water supply rivers, and volumetric conversion of licences needs to be implemented as a matter of urgency. Low flow protection must be implemented as an integral component.

9. Water “rights”

We do not support the recognition of water access as a property right, but rather that landowners may gain temporary access to the water resource, that is ultimately owned and managed as a public resource and responsibility.

10. Limits to dams, weirs and artificial lakes

There must be a limit to the volume of water capable of being stored on farms and other private properties. Land and water capability must decide the maximum volume of water capable of being removed from the catchment for storage. An equitable system of sharing the water amongst landowners can then be devised. Weirs and artificial lakes must be removed where possible and there be no new weirs or artificial lakes.

11. No inter-basin transfers

Inter-basin transfers from the Shoalhaven, as well as from the Fish River, should be phased out due to the environmental risks to biodiversity, the energy costs, and the equity issues involved in the transfer of environmental impact from one catchment to another. An emphasis should be on moving people into the catchments rather than water to the city. Equity between catchment and city is needed in the costs of water supply.

12. No long wall mining

Long wall mining beneath the rivers and storages must be prohibited to avoid the risk of bedrock cracking and waters being drained from the catchments.

13. Irrigation Extractions

Treated effluent should be used for irrigated agriculture where possible, in place of fresh river water.

APPENDIX 1

SYDNEY CATCHMENTS PROJECT ENVIRONMENTAL FLOWS COMPARISONS FINAL REPORT 2002

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INTRODUCTION

The Peak Environment Non-Government Organisations (PENGOs) have received funding from the Sydney Catchment Authority to carry out consultation and review of the major and minor planning instruments for Sydney's drinking water catchments under the Sydney Water Catchment Management Act 1998.

The PENGOs commissioned Alexandra and Associates and Jenny Smith (the consultants) to investigate, assess and advise on the proposed Environmental Flows Strategy for the Hawkesbury-Nepean, Shoalhaven and Woronora catchments. An experimental environmental flow strategy was prepared by the Australian Museum Business Services in 2000, and a response assessment has been produced by the Independent Expert Panel for the Hawkesbury-Nepean River Management Forum in 2002.

Overall the consultants are required to:

1. Investigate comparable strategies in use, both in Australia and overseas, and provide a summary document of the research and findings.
2. Provide a critique report of relevant reports for the Sydney drinking water catchments, including their scientific accuracy, and their attention to ecosystem protection.
3. Provide options which will best address the need for riverine and wetland habitat protection through the release of environmental flows.
4. Consider relevant factors such as supply reliability and demand management.
5. Make recommendations as to the options and alternatives which will best meet the principles of Ecologically Sustainable Development, as defined under the Protection of the Environment Administration Act 1991.

Alexandra and Associates were responsible for Task 1: *The investigation into comparable strategies in use in Australia and overseas*. This is the final report of that investigation.

1. ACCURACY OF CLAIMS

This assessment was based on a limited review of the literature and documentation available on the worldwide web. With a very limited budget it has been necessary to rely largely on a desk top review.

Due to the time and budget constraints the consultant has undertaken limited consultation to determine the accuracy of claims made by government agencies regarding their achievement of environmental flows or environmental water allocations.

It is illustrative to contrast the glowing statements made by NRE Victoria regarding their achievement of environmental flows with the assessment undertaken by Maher et al (2001) of the same process. If this assessment is correct and typical, governments have been able to allocate all remaining or previously unallocated water to the environment without upsetting any existing user's rights. Effectively an elaborate set name for a "cap".

In one sense, achieving a cap and ensuring that all remaining unallocated water is allocated to the environment is an important achievement and one worth protecting.

2. OVERVIEW AND OBSERVATIONS

In general, it is worth stating that the science, management and politics of environmental flows are formative and that there is yet to be developed an agreed professional approach to regional water planning or "river planning", including the planning of appropriate flow regimes. As expected, there is considerable debate about appropriate methods etc (Arthington et al, 1992). It is therefore unlikely that any flow strategy will "get it right" the first time and there must be a real commitment to the evolution and refinement of any flow strategy. However, even this may have problems, as based on recent experience in Washington, Ladson et al (1999) quote Hollings as raising serious doubts about the usefulness of "adaptive management" as a method when applied to environmental flows due to the politics and jurisdictional complexity of making big decision like removing dams that disrupt the salmon runs.

On the West Coast of the US the debate is very much structured around salmon and the re-engineering of rivers (removing dams etc). This provides a clear purpose or goal for changing how the rivers are being managed and very tangible symbol or icon for the campaigns to remove dams etc.

More importantly, it is the necessary process of society setting broad management objectives for rivers that can then help inform the technical aspects of river management and environmental flows. This will inevitably be a political debate because it's about choices and values.

The first step on getting clarity seems to be definition of objectives based on what aspects or components of the river ecosystem are valued (NL and Melbourne Water). Furthermore without clearly defined objectives, attempts to document or define the necessary environmental flows will continue to be bogged down in massive technical detail - including detail on aquatic biology such as habitat factors and icon species (fish), hydrology, water quality and flood plain and estuary relationships. There is no such thing as the perfect or ideal environmental flow - therefore no attempts at simply driving refinement in methods, based on technical detail, will arrive at the perfect answer. Instead, explicit recognition of the political and technical characteristic of the planning process is required to arrive at the preferred societal outcome (or compromise).

Very often documentation on flows is constrained to a discussion on the amount of water available for release. Instead of a narrow focus on determining flows, broader frameworks for river or bioregional water planning are required.

3. APPROACH TO ANALYSIS

This report examines the following in its analysis of environmental flow strategies:

- Opportunities for establishing environmental flows;
- Comparisons with rural environmental flow strategies;
 - Use of the Maher report;
 - Comparisons with other urban rivers in Australia; and
 - Comparison with urban rivers overseas.

APPENDIX 2

SYDNEY CATCHMENT PROJECT ENVIRONMENTAL FLOWS STRATEGY FOR THE HAWKESBURY-NEPEAN, SHOALHAVEN AND WORONORA RIVERS 2002

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EXECUTIVE SUMMARY AND RECOMMENDATIONS

A challenge faces the people of Sydney. Have they enough vision, will and sense of equity, to pull back from their water-rich lifestyle and embrace the reality that we live in a water-poor environment. Giving back sufficient flows to Sydney's water supply rivers to keep them healthy must be a commitment by all sectors of the community, not just for the sustainability of the catchments and rivers, but for the long-term wellbeing of the city.

The environmental flow strategy needs to be a cornerstone of a wider strategy guiding the overall management of water within and for the Greater Sydney Region. The environmental flow strategy will provide basic sustainability requirements for the rivers and set the targets and outcomes for water users and water managers to achieve.

Implementing such a holistic strategy challenges the current institutional responsibilities and policy for different 'bits' of the water cycle and would require the integration of the many current water-related programs and initiatives.

The water management strategy will have to ensure the securing of water for the environmental flow releases and set out principles for the sustainable water "footprint" of Sydney – including such issues as inter-catchment transfers of water. Currently there are no principles for the containment of this footprint, which already assumes the resources of four major river systems.

The strategy for environmental flows in the rivers comprises 4 key elements.

1. Gaining a share of the water from the current users to give back to the river.
2. Ensuring the water supply infrastructure and network operates compatibly with the environmental flow principles.
3. Releasing from the water storages flows that will sufficiently mimic natural flows to keep the rivers ecologically healthy.
4. Protecting the released environmental flows from other impacts so that they are effective.

The following recommendations refer to the wide range of issues involved in securing an environmental flow strategy, including the role of the SCA in its delivery.

RECOMMENDATIONS

STRATEGIC FRAMEWORK

1. There must be a holistic water management strategy for Sydney. The strategy would bring together the operations of the SCA, SWC, demand management programs across the government agencies and the various catchment and water management strategies to provide a strategic framework for the sustainable use and management of the resource and the ecological health of the water supply rivers. The development and implementation of the strategy must be a transparent process involving key sectors of the community.

2. To support the water management strategy, a basic natural resource planning blueprint for the development of Sydney is needed to provide a fundamental outline of the capacities of the natural infrastructure and the constraints and opportunities that they impose.
3. Integral to the water management strategy and the planning blueprint must be the cyclical management of water. A comprehensive investigation of opportunities for reuse and recycling of treated water is required which must include an investigation into endocrine-disrupting compounds in effluent and the risks posed by the long-term discharge of effluent to land or water. Reuse strategies need to be incrementally introduced and their monitoring be part of the wider adaptive management required for the Sydney water management strategy.
4. A comprehensive and long-term evaluation of the multifaceted benefits of retaining sustainable irrigated agriculture in the Sydney Basin needs to be undertaken as a matter of urgency to inform the planning of Sydney. If agriculture is to be retained, a statutory plan must ensure the security of agricultural land around Sydney to ensure long-term investment in land management and infrastructure such as that necessary to utilise treated effluent.
5. A review of the water currently used for irrigation is required. This should include a review of total water extracted, its timing, the controls needed and the opportunities for improvements in both environmental flows and water use efficiency, and its role in the integrated effluent strategy.
6. There is a need for an independent inquiry into all water allocation within the Sydney systems that explores the full and long-term implications of water property rights and water trading on ESD policies and environmental objectives.
7. Ensuring environmental flows are accommodated and their release is effective must be a whole of government commitment. (Ensuring the quality and quantity of the required flow releases and their passage through the rivers, streams and structures under their control, is the responsibility of the Sydney Catchment Authority.)

ENSURING WATER FOR THE RIVERS

8. Education strategies are required to better instil the real implications of living within the natural capacity of the world's driest inhabited land. Community understanding of the very variable rainfall patterns and vulnerable nature of the rivers issue would be greatly increased if Government policy clearly demonstrated the relationship between the water supplied to the taps and water in the environment.
9. Current demand management strategies do not relate to the sustainable health of the river systems. New targets for water consumption for both potable and in-stream demand are now required that effectively set ecological "caps" to ensure the environmental flows are provided and protected.
10. These new demand management targets will not be met by SWC alone. Across all sectors, permanent water conservation measures and water demand strategies must ensure these outcomes.
11. Reliability levels for supply of water from the SCA water storages should be revised immediately to 95% and an investigation of reducing it further undertaken. There must be a clear statement to all water users about levels of reliability to avoid unrealistic expectations of water supply. Possible fluctuations in supply must be calculated into water use strategies by the end user.
12. Water restrictions imposed on communities in the water supply catchments due to drought should also trigger first level restrictions for water supply customers.
13. The pricing of water needs to better reflect the value and scarcity of the resource and drive water conservation.
14. Reliable metering of all in-stream (including riparian) water use and groundwater usage in the catchments of the Sydney water supply rivers, and volumetric conversion of licences needs to be implemented as a matter of urgency.
15. Water property rights must only be established after the securing in legislation of environmental flows.

SCA RESPONSIBILITIES

16. Water storage infrastructure under SCA control must have the capacity to release the quality and quantity of flows that the environmental flow regime requires;
17. A statutory requirement for adaptive management of the environmental flow releases is essential to optimise the health of the environment and the efficient and sustainable use of the resource. This must be linked to on-going monitoring of the effectiveness of the environmental flow releases and to allow for new data, climate change and innovation (see 8.2)
18. The flow releases from the SCA storages should:
 - Allow 20% of the flows that enter the storages to be released to the rivers (20% translucent flows)
 - Protect the low flows (80th percentile transparent flows)
 - Release contingency flows to "piggyback" translucent flows at critical times to provide ecological triggers or natural scouring and flushing actions within the river system.

→ Provide supplementary flows from time to time to address specific conditions.

These flows assume that measures are in place to protect them. If not, greater flows may be required.

19. The SCA needs to continue its support for investigations into the river systems to ensure a sound scientific basis for the environmental flow regime and a full exploration of the opportunities to put in place measures to sustain the rivers from which they take the water;
20. SCA water storages need to be managed so that the quality of the water released is suited for its ecological role;
21. Drinking water catchments are to be managed so that the inflows to the water storages are not compromised;
22. As many as possible of the downstream weirs under SCA control should be removed. As a start, Bergins and Thurns Weirs (which are already substantially collapsed) should be totally removed, and Brownlow Hill and Sharpes removed as soon as alternative supplies for water users are found. The remaining weirs need to be modified and managed so that the ecological benefits of the flow releases can pass through and fish passage is effective;
23. Conveying bulk water transfers through the natural river systems must observe the timing, variability and water quality principles underpinning the environmental flow releases.
24. An independent investigation should be conducted into the feasibility and long-term benefits of phasing out bulk water transfers through the natural river system and the construction of a piped transfer system.

SHOALHAVEN TRANSFERS

25. Pumping from the Shoalhaven to top up the Hawkesbury-Nepean water storages should not occur.
26. The Shoalhaven environmental flow regime must ensure the protection of low flows and be classified as "environmental health water" under the Water Management Act 2000.
27. If pumping from the Shoalhaven does occur and is triggered by a low-level pumpmark on the Hawkesbury-Nepean storages, it should not occur before full water restrictions are imposed on the users of the water supply;
28. Any pumping from the Shoalhaven must not transfer stress from one catchment to another in line with the Shoalhaven SOI that "No one system should be disadvantaged for the sake of the other."
29. If pumping from the Shoalhaven does occur it must not compromise the release of the environmental flow regime for the Shoalhaven River.
30. Long term strategies for supplying water directly to the Illawarra from the Shoalhaven (rather than via the Hawkesbury-Nepean storages) should be thoroughly and independently investigated.

PROTECTING THE ENVIRONMENTAL FLOW REGIMES

31. The flows of the tributary rivers entering the Hawkesbury, Nepean, Shoalhaven and Woronora Rivers below the Sydney water storages must be protected to ensure the environmental flow regime is maintained through the river system and the flow releases are not wasted. Flow rules for the protection of these streams must be developed as a matter of urgency.
32. The environmental flow regime, including transparent, translucent and contingency flows for ecological and geomorphological purposes, must be classified as "environmental health water" under the Water Management Act 2000.
33. No artificial lake schemes, such as Penrith Lakes, which have the potential to impact on river flows should be permitted within the Hawkesbury-Nepean catchment. An independent inquiry into the long-term impact of the Penrith Lakes Scheme on the flows of the Hawkesbury-Nepean is urgently required.
34. Long wall mining beneath the rivers and storages must be prohibited to avoid the risk of bedrock cracking and waters being drained.
35. The impact of sewage effluent discharges on the environmental flow regime must be addressed. The current loads of pollutants and the constant discharges from sewage treatment plants are grossly degrading the depleted flows in the Hawkesbury-Nepean River. Increased development in the catchment means increased effluent therefore no further development should take place in the catchment until strategies are in place for the management of effluent that ensures river health.
36. As an interim phase, in order to reduce the current impact of sewage on the Hawkesbury-Nepean River, holding ponds should be established at sewage treatment plants to allow discharge to the rivers in a manner that mimics the natural hydrograph. However, as this does not address the issue of water quality, discharge to the rivers (particularly in times of low flow) must be phased out.

Long-term effluent reuse strategies should not allow discharge of polluted water to the environment that has cumulative ecological or human health risks. Ecological risks are higher when discharged to the aquatic environment.

APPENDIX 3

SYDNEY CATCHMENTS PROJECT NEUTRAL OR BENEFICIAL EFFECT ASSESSMENT FINAL REPORT 2002

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EXECUTIVE SUMMARY

The purpose of the project is to investigate and assess the Neutral or Beneficial (NorB) Effect Assessment Guidelines (PlanningNSW 2002a) on behalf of the PENGOS (Peak Environment Non-Government Organisations). The Guidelines are a planning instrument to support the Regional Environmental Plan (REP) under development by PlanningNSW for Sydney's drinking water catchments.

The Sydney Water Catchment Management (SWCM) Act (1998) requires that a Regional Environmental Plan (REP) be prepared for Sydney's drinking water catchments. The Act also requires: "consent authorities to refuse to grant development consent to a development application relating to land to which the plan applies unless the consent authority is satisfied that the carrying out of the proposed development would have a neutral or beneficial effect on the quality of water" (SWCM Act, s.53(3)(c)).

The NorB guidelines are an attempt to ensure that this intention of the Act is upheld and applied. According to the NorB guidelines approval for a proposed development will only be granted if it is deemed to have a neutral or beneficial effect on water quality.

As Sydney has some mixed use catchments - those not dedicated entirely to production of high quality water - effective water quality protection and enhancement programs are required. Land use controls are a primary control mechanism used to restrict or permit land based activities for wide range of reasons. In this case the controls - granting or refusing a permit - are to be based on predicted impacts on the quality of water flowing into Sydney's water storages. Therefore, the quality of the both the predictive capacity and the development and land use controls will be fundamental in determining the future catchment conditions and the resultant water quality.

Key issues: Ensuring the best available information is used to support the predictive assessments will be critical.

The NorB guidelines apply only to those developments that require government approval. The cumulative impacts of continuing existing landuse, or activities or landuses that do not require approval are therefore not addressed. It is likely that some of these will continue to have negative impacts on water quality resulting in a decline in quality in certain streams from which the neutral assessments will be made. These exemptions could be seen as a failing of the guidelines to adequately protect water quality from some kinds of development pressures.

Key issues: the nature of those activities exempted from the planning process needs to be reviewed based on their potential water quality impacts.

The NorB guidelines aim to provide a framework for determining if a proposed development will have a neutral or beneficial effect on water quality. They state that both on and off-site effects of the development should be taken into consideration and that the entire life-cycle of the development must be considered, including its construction, operation and decommissioning. The NorB effect concept is underpinned by the assumption that the effects of proposed developments can be predicted with sufficient accuracy to determine all future water quality impacts. This goes against the understanding that catchments are interlinked and

complex systems and that various impacts and risk are likely to accrue from changes in the activities within and around the development rather than the development itself. For example, various risks could result from transport of goods to and from a development.

Key issues: applying a consistent approach to life cycle assessment method is required.

Determination of what constitutes a neutral or beneficial effect can vary depending on a wide variety of factors. These include the current condition of the waterway, accuracy and comprehensiveness of background information, knowledge of water management of the person making the assessment and clarity of the information provided to the assessor. In addition to this the knowledge of catchment and aquatic systems in Australia is dynamic and at best capable of providing interim solutions (Cullen 1998).

Key issues: the capacity and understanding of the assessors will be critical to the effective application of the NoB guidelines.

The Act maintains clearly that a development should not proceed unless it has a neutral or beneficial impact on water quality. This is the underlying principle or purpose of the guidelines. If the guidelines are effective, the people of NSW should have confidence that if a proposed development is to have a negative impact on water quality it will not be approved.

Key issues: the people of Sydney and the wider community of NSW need to have confidence in the effectiveness of the guidelines

While the principle behind the guidelines is clear, the clarity is reduced by including within the definition of a development the notion of "offsets". The certainty about the integrity of the guidelines is undermined by the introduction of the "green offset" scheme. In effect, a proposal with negative water quality impacts can be approved if its proponents balance the impacts by restorative works off the development site (off-site) via other activities which are intended to improve water quality for example by way of revegetation. The offset scheme assumes a virtually unlimited requirement for positive works that can't be funded in other ways; however, a genuine commitment to the protection of water quality would ensure that revegetation works are carried out in areas where it is needed independently of what developments are proposed.

Key issues: the offsets proposal provides an out for developments which don't satisfy the intent of only permitting developments with neutral or beneficial effects and are likely to be the most contentious aspect of the guidelines and their application. Alternatives to offsets should be investigated.

The Sydney Water Catchment Management Act is unambiguous in its intention but the NorB Guidelines are unlikely to be sufficient to deliver on this intention of the Act, and seem to focus more on providing technical details rather than identifying a clearly defined and easily applied development approvals process.

Furthermore, an underlying weakness is that the NorB guidelines use the existing water quality as the benchmark rather than a desired water quality or water quality target. As such, a development only needs to not have an adverse impact on the existing background levels rather than a desired standard. Over time it would be possible that due to many complex trends, developments would need to meet lower and lower water quality standards, while the impacts would contribute to a declining background level.

Key issues: the guidelines are conceptually flawed if developments need only to meet standards based on current background levels rather than desired levels because doing so will reinforce that status quo rather than the desired water quality.

DRAFT RECOMMENDATIONS

1. If they do not already the catchments should be covered by uniform planning conditions to ensure a consistent approvals process in all areas of the catchments so there is confidence that the guidelines are being applied uniformly.
2. The capacity of local authorities to implement the guidelines should be assessed and if necessary deficiencies should be overcome with suitable training etc.
3. The primacy of the purpose of the land within Sydney's drinking water catchments to yield suitable water should be unambiguously protected through the statutory planning scheme and enforced by reference to an effective set of NorB guidelines.
4. Sydney's catchments and the NorB guidelines would benefit from a defined pollutant reduction scheme based on a predefined cap and trade system like New York's phosphorous reduction scheme. This is likely to be more effective and transparent than the proposed offset scheme.
5. NorB needs to be linked to spatially specific plans so that adverse impacts can be determined on the basis of site capacity and background water quality.

6. Rather than weighing down the guidelines with technical information, it may be simpler to have clear guidelines on how to undertake the assessment of applications with a range of technical manuals or reference where necessary to a series of existing standards and technical manuals developed for other reasons.
7. A comprehensive assessment of present land use is needed, complemented by a vision of future land use. A plan for how to drive beneficial changes in land use would be desirable.
8. Adequate institutional capacity must be available for planning and assessment of permit applications and for compliance monitoring and enforcement.
9. A maximum population target or limit for the catchment could be set to minimise the impacts of cumulative loads, as an increase in population has a direct increase in pollution of water quality.
10. Development of a "cap and trade" pollution or development permit system within each catchment may be an option for dealing with cumulative impacts. The caps would be set at levels known to be within limits (set using precautionary principles) and could be reviewed in the future. Furthermore, a cap and trade system would stimulate the closure of dirty industries in order to permit new housing or higher value industries and lifestyles.
11. NorB assessment would be complemented by the development of catchment profiles with different modelled and measured pollutant loads. A framework could be implemented where new pollutant load targets could be set on a regular basis - a "screw-down target". This would allow for market dynamism to work out what the most cost-effective pollution reduction methods and opportunities are.
12. It is important that the guidelines don't institutionalise incorrect beliefs about catchment processes. Therefore, the technical basis of offset schemes would need to be constantly reviewed as new knowledge comes to hand. For example, despite common perceptions about the pollutant buffering role of native vegetation, technical doubts have arisen from work by Hairsine et al (CRC Catchment Hydrology) as to the way that native vegetation in riparian zones buffers pollutants. Their work demonstrates that establishing and maintaining grass swards in these areas may have a more beneficial effect on water quality than revegetation.
13. There is a need to thoroughly investigate the background trend regarding water logging, salinisation, acidification within the Sydney catchments, as these will impact on water quality and on the capacity of sites to effectively absorb effluent irrigation or sustain specific land uses.
14. There is a need to investigate whether agriculture should be an as of right use in all areas where it is currently practiced. In some degraded catchments it may be better to plan to phase out agricultural production and concentrate on activities improving water quality.
15. Encouragement of organic agriculture and other pesticide minimisation strategies would improve water quality.
16. Rigorous control of the products used in households, by industry and on land may be useful to reduce risks associated with the activities during the lifecycles of a development.

APPENDIX 4

SYDNEY CATCHMENT AUTHORITY'S BUSINESS PLAN 2002-2007

Submission by the Peak Environment Non-Government Organisations

December 2002

1. SUMMARY

The Peak Environment Non-Government Organisations (PENGOs) found the Business Plan to be an easily understood planning document, setting out the complex tasks of the SCA into a clear hierarchical format.

However, we identified some major shortcomings to the Plan:

- Lack of public consultation
- Weak application of ESD principles
- Lack of emphasis on catchment management and protection
- Lack of a budget component
- Regional Plan strategies not included
- Lack of integration of the Environment Plan

2. LACK OF PUBLIC CONSULTATION

The SCA Business Plan is the overriding planning document that aims to incorporate the Environment Plan, along with the Energy Management Plan, Waste Management Plan, and SCA's Strategic Action Plan. As the SCA's central planning document, the Business Plan should be available for public and stakeholder review, as well as the SCA's consultative committee, prior to finalisation. SCA's Environment Plan objective 2 states that "the SCA will involve the community in its strategic decision making".

The PENGOs are some of the major stakeholders in the management of the catchments and waterways, and we would expect to be able to provide more input towards this process. Through allowing for greater input towards the Business Planning process, SCA will ensure that the maximum amount of information and transparency is provided.

Recommendation: That future Business Plans be made available for public or stakeholder review before finalisation

3. WEAK APPLICATION OF ESD PRINCIPLES

Under the Sydney Water Catchment Management Act 1998, the SCA is obligated to implement the principles of Ecologically Sustainable Development. However, it is not explained how these principles have been applied within the Business Plan, nor are the principles referred to or discussed in any way. This shortcoming has been pointed out in a number of submissions to SCA already from the PENGOs and constituent environmental groups, along with a range of suggested approaches, actions and indicators.

We are concerned that the SCA has not yet taken on board the many well-researched suggestions and recommendations to date on addressing the principles of ESD in its planning documents. In particular, we refer you to the submission by the Blue Mountains Conservation Society on the draft ESD Indicators, of 18th December 2000.

The four core ESD principles, as defined in the Protection of the Environment Administration Act 1991, and the seven guiding principles listed in the National Strategy for Environmentally Sustainable Development 1992 provide a basis against which to measure all Key Result Areas, Outcomes and Strategies.

There must be mechanisms in place to ensure that ESD principles are taken into consideration at every level of policy and strategy development. Where trade-offs are considered amongst environmental, social or economic objectives, these need to be detailed to provide transparency.

Recommendation: That SCA justify all aspects of the Business Plan against ESD principles and set ESD objectives for its operations

4. LACK OF EMPHASIS ON CATCHMENT MANAGEMENT AND PROTECTION

SCA's Vision is well-worded, embodying three concepts into its brief statement "Healthy catchments, quality water – always", which reflect SCA's responsibilities in managing the catchments for environmental health, providing high quality water to the customers, and providing a reliable source of water. The listed corporate values are commendable, and should provide a firm basis for SCA operations.

However, the Sydney Catchment Authority's Structure, Role, Values and Key Result Areas do not include clear responsibility for the legislated, regulated and licenced role of management and protection of the inner and outer catchments, for environmental health, water quality and public health. The SCA's Role in this Plan, "...responsible management and partnerships with stakeholders", differs from the Vision statement of the previous Business Plan, "...responsible management of the catchments and resources." We see this change as a retrograde step, particularly in light of the findings of both the 1999 and the 2001 catchment auditors that SCA has tended to neglect integrated catchment management in favour of managing water quality issues.

The PENGOS' and constituent groups' previous submissions have reiterated the need for the SCA to attend to total catchment protection and rehabilitation. Sydney Water inquiry commissioner Peter McLellan, healthy rivers commissioner Peter Crawford and catchment auditor John Williams have all emphasised that drinking water quality cannot be separated from broader catchment health issues. The catchment auditor has found that there has been no improvement in catchment health, under SCA management, since the previous audit, and yet the SCA appears determined to continue in the same direction.

Recommendation: The Role and Business Plan be re-written to demonstrate a commitment to SCA's responsibilities for catchment management as stated in the Sydney Water Catchment Management Act 1998, "To manage and protect the catchment areas". Include a Key Result Area to this effect

5. LACK OF A BUDGET COMPONENT

The Business Plan is incomplete in many ways. One of the major items missing from the Plan is budget figures for each of the Key Result Areas and Strategies. We would expect to see forward budget figures for each strategy in the SCA's Business Plan throughout the life of the Plan, in order to have confidence in the resourcing levels required to implement the strategies by the target dates.

The Plan is also in need of a statement of priorities for the various strategies. Providing a priority rating to each strategy will allow for budgeting decisions.

Recommendations: Incorporate a priority rating for each of the strategies, and full forward estimates for each strategy for each year of the five year term of the Plan

6. LACK OF INTEGRATION WITH SCA ENVIRONMENT PLAN

The Operating Licence requires the Environment Plan to be recognised in the Authority's business plans. However, the Environment Plan is given only a cursory mention under the compliance-focussed statement '...SCA will comply with statutory and regulatory requirements', in KRA 7 Quality Systems and Processes, Outcome 7.1.

Recommendation: The Environment Plan and Environment Policy should be integral components of the Business Plan, and the objectives of the Environment Plan considered at an early stage of development of the Business Plan

7. KEY RESULT AREAS

KRA 5 includes the Catchment Rectification Action Masterplan, but not Rectification Action Plans nor Small Area Management Planning.

Recommendation: Include the preparation and implementation of Rectification Action Plans and Small Area Management Plans

8. OUTCOMES AND STRATEGIES

Of the first KRA, only one of the Intended Outcomes (1.8) describes the SCA's responsibility for catchment health and environmental protection: '...sustainable land use and vegetation management'. However, the strategies for this outcome are too narrow to achieve the outcome. The strategies do not address other land and river uses which impact on catchment health, such as chemical contamination and applications, mining and associated activities, land clearing, weirs, residential development and animal access to dams and watercourses.

SCA's role in the Sustaining the Catchments Regional Plan will include catchment management strategies such as Strategic Land and Water Capability Assessments, Rectification Action Planning and Small Area Management Planning, as well as a concurrence role in development control under the Regional Environmental Plan. These activities should link to catchment health outcomes, rather than just water quality, as described in outcome 1.6.

Recommendation: Outcome 1.8 be expanded to include strategies for land constraint assessment, planning controls, rectification and small area planning and native vegetation/ecosystem protection and management

The development and implementation of the Catchment Rectification Action Masterplan in 5.4.5 does not include allowance for community consultation. We would expect the SCA to provide opportunities for key stakeholders, including environmental representatives, to have input towards the CRAM.

Recommendation: Strategy 5.4.5 be moved to 1.8 and include suitable public consultation processes

9. PERFORMANCE INDICATORS

A majority of the Strategies described do not have associated Performance Indicators and Targets. In addition, the links between performance indicators, targets and sources of data are often tenuous. These are weaknesses in the Business Plan which will afford unclear future investment priorities.

Recommendation: Expand the Plan by providing:

- integrated performance indicators and targets for all strategies
- prioritisation of strategies and
- strengthened links between performance indicators, targets and data sources

Many of the PIs do not extend to the full five year period of the Business Plan. For this Plan to be adequate as a working document, targets must be defined for the period of its operation, until 2007.

Recommendation: Expand all PIs and Targets to the full extent of the Plan, that is, from 2002-2007, with defined dates and figures included

1.2.B The 20% reduction in sewage load by 2004 is a good start. However, beyond that the 'To Be Determined' target is not good enough.

Recommendation: That the target for sewage load reduction for 2005-2007 include a further 20% continually for each subsequent five years

1.3.B A 10% reduction of stormwater-borne pollutants by 2004 is insufficient. In addition, the 'To Be Determined' target for 2005-2007 is not good enough.

Recommendation: That the target be increased to 20% reduction in stormwater-borne pollutants by 2004 and a further 20% for each subsequent five years

Recommendation: That stormwater capture and reuse be included as a major component of the strategies

1.4.B Sediment load reductions should have the same target as sewage load and stormwater pollutant.

Recommendation: That the target be set at 20% reduction in sediment load by 2004 and a further 20% each subsequent five years

1.8.A & B The targets for riparian rehabilitation are too low and do not increase into year 5. In addition, the budget resourcing does not reflect the increasing targets for rehabilitation of years 2 to 4. Given that stock have access to around 21,000 km of river within the catchment (2001 Catchment Audit), and that this is a major contributor to river degradation, there must be greatly increased resourcing towards addressing this threat to environmental and water quality health.

Recommendation: That the targets for riparian rehabilitation be increased substantially, to 100km over five years, and that a target of 500km over five years be set to prevent stock access to rivers

KRA 4 There are few targets for 'building and sharing knowledge' beyond the first year of operation, and 4.2 provides only for a benchmark to be set by 2005.

Recommendation: Set meaningful targets for KRA 4 for the full extent of the Plan

4.3.C This PI relates to strategy 4.1.3, and should be linked.

5.3. We appreciate the emphasis on improved community consultation expressed in KRA5. However, one of the key recommendations made by the community and the Healthy Rivers Commissioner, and now implemented through the creation of the Hawkesbury-Nepean Catchment Management Board, is the need for better integration of management systems and institutions.

The community have provided extensive voluntary services over the years towards consultative processes, and now expect to see the responsible institutions implementing the outcomes of the many processes to date.

Recommendation: SCA reconsider the need for further consultative committees, and integrate and engage with previous, existing and proposed consultation systems and outcomes, such as the Catchment Management Board and Catchment Blueprints

6.3 There is no PI to reflect the degree of education provided to staff. Environmental education is an important part of the Environment Plan reflected in Environmental Objective 3 and should be included into the staff education program of the Business Plan.

Recommendation: Incorporate a PI to measure the degree of environmental education provided to staff and contractors

KRA 6 There are few targets for creating a 'dynamic, supportive workplace' beyond the first 2 years of operation.

Recommendation: Set meaningful targets for KRA 6 for the full extent of the Plan

APPENDIX 5

SYDNEY CATCHMENT AUTHORITY'S ENVIRONMENT PLAN 2000-2005

Submission by the Peak Environment Non-Government Organisations

December 2002

We congratulate the Sydney Catchment Authority on its commitment to the principles of ESD and the expression of this commitment through the development of an Environmental Policy. We note that the Policy's Purpose statement discusses preventing environmental degradation but we believe that it should also include the SCA's role in restoring degrading environments.

While we understand the difficulties inherent in reporting on the Environmental Policy Objectives as well as the range of environmental, ESD and operational performance indicators, these objectives need to be also included in future Annual Environment Reports in order to assess the success of the SCA's activities in reaching the objectives. We also refer you to the PENGOS' submission on SCA's Annual Environment Report 2000-2001, in which there are comments relevant to the present Environment Plan.

The Operating licence provided for the Environment Plan to be completed by June 2001, and for mid-term review in January 2003. However the plan was not completed until August this year, therefore there will be little opportunity for the plan to be implemented prior to the review date. We note that the Plan is based on environmental objectives outlined in the SCA's Environmental Policy, and that there is an intention for the Policy to be reviewed in conjunction with the mid-term review of the Environment Plan. We therefore hope that the Policy and Plan will be made available for public comment during the mid-term review process.

ESD PRINCIPLES AND CATCHMENT HEALTH

The Environment Plan and Environment Policy should include SCA's commitment to ESD principles. The application of ESD principles is not explained nor justified within the objectives of the Plan. Refer to point 3 of our comments on the Business Plan regarding the incorporation of the principles into the planning process.

We also reiterate our comments on the Business Plan in relation to providing an emphasis on catchment health. The Environment Policy should include a clear objective of catchment protection and improved catchment health.

PLAN STRUCTURE

The strategies within the Environment Plan make a good start at addressing the overall environmental management of the Sydney drinking water catchments. However, there are also many weaknesses, repetitions and gaps.

Targets are sometimes confused with strategies (eg, EO2, community consultation under targets instead of strategies; EO3, environmental education program and contract management system under strategies instead of targets) and strategies are sometimes duplicated (eg, consultative committees under objective 1 and 2, energy management program under objective 4 and 7).

The Plan does not comply with the requirements of the Operating Licence in providing unambiguous and measurable targets and timetables for the majority of strategies, as requested in the PENGOS' submission on the draft Environment Plan. Many targets are vague, do not provide measurable objectives and do not relate directly to the Performance Indicators. Some PIs do not relate to any strategy, (eg, EO2, number of hits on SCA web-site).

OBJECTIVE 1

- In order to improve the integration of catchment management structures and institutions, as advised by the catchment auditor, the SCA should ensure that it provides representation to each of the relevant catchment management boards covering the catchment areas.
- More detail is needed on the SCA's Catchment Advisory Program, with specific targets related to key risk areas identified in the catchment audit.
- Consultative Committees - A PI is needed to measure the success of the consultative committees.
- A distinction needs to be drawn between community consultation and education/leadership. It would be more logical to include the consultative committees in EO2 only.
- Healthy Catchments Program (HCP) - Restoration of riverine ecosystems is an important goal, but there needs to be funding also for projects which exclude stock from riparian areas.
- Performance measures of HCP projects should include outcomes of projects in relation to the objectives, not just number of projects.
- There is no indication of the development of policy initiatives within this goal. This should be part of SCA's leadership role and indicate a two-way communication strategy achieved through the consultative committees and other forums.

OBJECTIVE 2

- The consultative protocols were to be delivered by July 2001, prior to the release of the Plan.
- The only remaining strategy for SCA's 'involving the community in its strategic decision making' for the remaining period of the Plan is the consultative committees covered in EO1. This does not indicate a strong commitment by the SCA to this environmental objective. Further strategies should be expanded to include more detail of existing and proposed means of consultation.

OBJECTIVE 3

- The Education PIs provide a measure for only the degree of training provided or attended. A measure of the success of the education programs is needed which reflects improved knowledge and awareness of staff and contractors.

OBJECTIVE 4

- All of the SCA's activities, including the level of water extraction from the catchments, need to be assessed against ESD principles. It may be found that the existing level of water extraction is not ecologically sustainable.
- The Plan mentions the problems posed by existing weirs, but also needs to include a strategy to address the problems.
- The energy cost of inter-basin transfers must be considered, as well as the environmental impact, including risks to biodiversity through the introduction of non-local organisms into the river system, and the effects on the supply catchment. Inter-basin transfers from the Shoalhaven, as well as from the Fish River, should be phased out.
- Improved valuation of the environmental resource is to be applauded, however this is followed by a statement that pricing will not reflect the true value of the resource. It is obvious that this ESD principle will not be implemented unless the improved valuation leads to improved pricing.

OBJECTIVE 5

- This provides for environmental management strategies for SCA infrastructure, special areas and land-holdings only. However, the SCA's responsibilities extend to the 'catchment areas', as defined under the Sydney Water Catchment Management Act 1998. SCA needs to provide environmental management strategies and targets for the whole catchment area, including the inner and outer catchment.
- Targets include the development of policies for 'all key areas of environmental management within the SCA' and some of the PIs extend to the whole catchment, so there is confusion in intent between the objective and the targets and PIs. SCA needs to clarify the purpose and extent of this environmental objective.
- There is no strategy which relates to some of the PIs, such as 'extent and condition of native vegetation in the water supply catchment area'

OBJECTIVE 7

- Energy Management Program - The purchase of 6% of electricity from green electricity schemes is not enough. SCA should aim for a 5% increase every year, to a total of 100% green electricity within 20 years.
- There is no mention of gas-powering the vehicle fleet or trialing hybrid or electric vehicles. The target for the vehicle fleet should be more aggressive. All new vehicles purchased should be gas powered, resulting in total fleet replacement within 5 years.

OBJECTIVE 8

- A time target is needed for the development of a process of review and incorporation of research results into decision making processes.

OBJECTIVE 9

- The only strategy under this objective is the Regional Plan. There is no strategy, target or PI which relates to SCA's existing controls and actions under SEPP58.
- Some of the catchment management targets are already unmet, such as SLWCAs, BMPs and CIS. We expect that the SCA would address these shortcomings through improved resourcing and commitment to its environmental objectives.
- Some of the listed projects should be more far-reaching, eg, to include the implementation of the Rectification Action Plans.
- Targets should include measurable catchment health objectives, such as kilometres of riparian land with stock access reduced and kilograms of phosphorus and nitrogen released from Sewage Treatment Plants reduced.

APPENDIX 6

PENGO REVIEW OF ANNUAL ENVIRONMENT REPORT 2000-2001

1. GENERAL COMMENTS

1.1 We strongly support the need for a greater level of analysis of the environmental impact of the Authority's activities, as noted by the independent verifier. The Draft ESD Indicators report states that the Annual Environment Report will include an "analysis of observed trends" and detail SCA's response to any issues identified by the indicators. The Draft Environmental Indicators report also states that the Environment Report will "address the Authority's contribution to the identified changes in the environmental indicators".

Although the minimum reporting requirements were met in most areas, a greater depth of discussion is needed to explain the relationships of all of the measured factors to catchment health and water quality. Where shortfalls or potential problems have been identified, proposals for data collection or impact amelioration should be included.

1.2 Feedback mechanisms from the Environment Report to SCA planning processes need to be included.

1.3 More quantitative and comparative data is needed throughout the Report, such as for project funding and wetland condition.

1.4 There are a number of targets and performance outcomes within the draft Environment Plan 2000-2005, which go beyond the ESD and Environmental Indicators and have not been included in the report, as required under the Operating licence. Reporting needs to compare results with the targets, indicating plans for future completion of targets where shortfalls have occurred. Additional performance outcomes listed in the Environment Plan include:

- average daily per capita water consumed
- environment plan strategies recognised in the business plan
- audited development sites in compliance with consents
- Catchment Improvement Grants provided, types of projects and outcomes for catchment health and water quality
- level of response from the public to exhibition of strategic environmental plans
- percentage of capital works projects that underwent environmental assessment per annum
- percentage of construction or works projects audited per annum
- number of fines for pollution offences
- quantity of chlorine used by SCA in bulk water operations per annum
- percentage of construction contractors received induction training
- percentage of construction and works contracts with environmental provisions
- and number and content of submissions received on Annual Environment Report.

1.5 SCA's actions under the Sydney Water Catchment Management (Environment Protection) Regulation 2001 and the Sydney Water Catchment Management (General) Regulation 2000 should be included in the Report.

1.6 We understand that the finalised five-year Environment Plan was forwarded to Minister Debus by 19/6/01, to be presented to Parliament within one month of receipt, under the Sydney Catchment Management Act 1998. We understand that it has still to be finalised, although we are not aware of the reasons for delay. This late completion of the final Environment Plan may cause difficulty in reporting for this year.

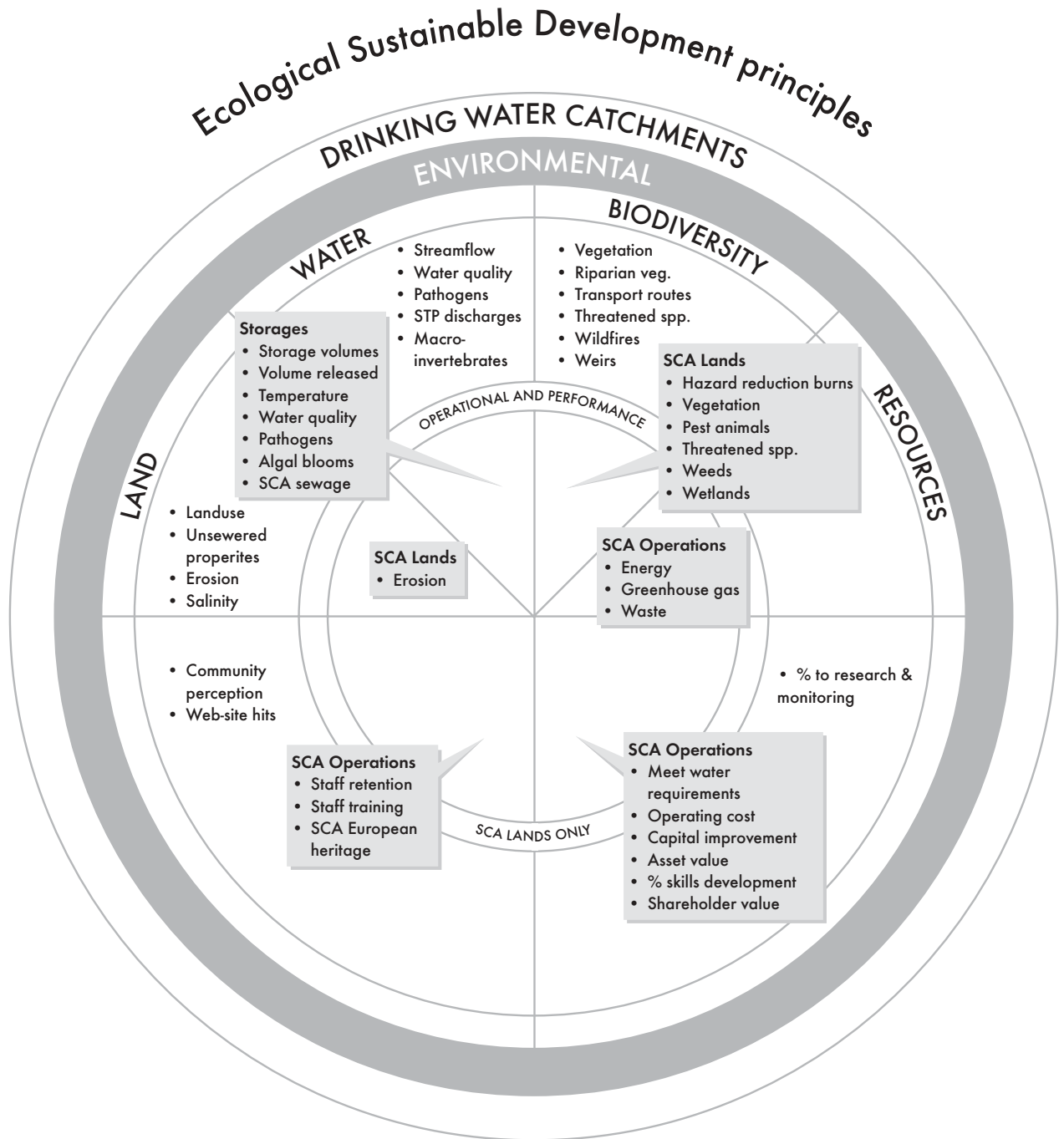
1.7 Figures, tables and graphs are obscure and difficult to interpret because of their small scale and indistinct colour separation. It would be preferable to present these with clear colour separation and a larger size to facilitate reading.

1.8 The maps include O'Hares Creek in the Sydney drinking water catchment and SCA's area of operation, although we understand that this area has been removed from the Special Areas and the area of operation. However, the issue of future reporting on its condition should be clarified.

1.9 The need for a simpler and more consistent approach. Where three sets of indicators are used in conjunction with three methods of reporting, the corresponding relationships must be clearly defined and any cross-referencing clarified. The Environmental Indicators could feed into the triple-bottom-line reporting structure (see Figure 1).

1.10 It is stated that the indicators do not provide targets to which the SCA aims. However we hope that, over time, the SCA will be able to use the accumulated data to set targets for environmental condition and water quality.

Figure 1: SCA Environmental Reporting



The natural systems of the Sydney Drinking Water Catchment do not fall easily into the complex array of reporting and administrative mechanisms. The Annual Environment Report should more clearly reflect the catchments' natural systems. The following diagram is a suggested representation of the relationships amongst the levels of reporting required under the operating licence, and the systems on which the reporting is imposed.

The suggested relationships recognise that SCA is reporting on areas of immediate relevance to their operational activities, as well as those within the broader context. The challenge is to extend the SCA's reporting into the newer legislated areas of responsibility, particularly in the areas of biodiversity and resource use in the whole drinking water catchments, as well as in the broader social and economic areas.

2. SPECIFIC COMMENTS

2.1 Operational Performance

- A greater level of detail is needed in defining the terms of vegetation condition. For example, it is unclear what the Normalised Difference Vegetation Index describes. It is also unclear what the term 'vegetation health' describes.
- It is stated that Figure 7 shows that most of the Upper Nepean catchments have very healthy vegetation cover, whereas the relevant NDVI class indicates only a 'mean' level of health.
- A need for a greater degree of ground-truthing and verification of the remote-sensing data has been identified in the background papers for the Catchment Audit 2001, and it would be of interest to know of the operations to be undertaken to address this need in future reports. We note that a model is being prepared for the Warragamba and Wingecarribee Special Areas, and will be 'adapted to other areas of SCA owned and managed lands'. We recommend that such a model could be used for the whole of the drinking water catchments to assist in the future reporting on Environmental Indicators.
- More information is needed on the total populations of feral pigs, the proportion killed of total populations in the control areas, the effectiveness of the control methods and the long-term plans for control.
- More information is needed on the pest control monitoring program. We recommend that a report on this be included in the next Annual Environment Report.
- More information is needed on total areas of weeds, proportion of areas controlled, effectiveness of control methods, follow-up control and the long-term plans for control.
- We note that the proportion of Green Power declined from the previous reporting year, but that proportion is to increase to 6%.
- We note that feasibility studies confirm the viability of renewable energy sources, such as mini-hydro. We look forward to more detailed reporting on the outcomes of further investigations into these options.
- We applaud the Authority on its use of a partially recycled office paper. We also suggest the use of a paper which uses a greater proportion of recycled product, such as the Canon 100 or Cane products.

2.2 Development Control

- More detail is needed on Development Applications, for example, types, any refusals, types of conditions applied and their relationship to the matters for consideration, and the types of development requiring concurrence. This was raised in our comment for last year's report, where we asked whether "...SCA's actions have instigated any improvements in development control...". In addition, the causal links between SCA's assessment of DAs and water quality and catchment health need to be included.
- Details on level of compliance, types of non-compliance and associated action should be included.
- This year's Environment Report should indicate progress on the actions for the Special Areas and Wingecarribee Plans of Management.

2.3 Ecologically Sustainable Development

Given the limitations of the indicators in use, it is necessary for the Authority to provide more in-depth information and analysis of the data presented. The ESD parts of the report did not include an analysis of the environmental, social and economic impacts of the Authority's activities. It is stated in the listing of indicators, that "each ESD indicator alone can not demonstrate ecological sustainability" and that they will be assessed as a "suite of indicators". It is not clear how this integrated assessment has been undertaken in the report.

All of the seven ESD environmental indicators are simply referred to, or are contained within, other sections of the report, indicating a high level of redundancy in the report's design. Reporting based on the principles of ESD may be more direct and meaningful in demonstrating the SCA's compliance with these principles, rather than just repeating other parts of the report.

- We look forward to future reporting on progress towards implementation of the Tarrawarra Land Resource Management Plan.
- The Community Awareness Research Project is a commendable initiative, and should be extended to those living outside the catchments and in the water receiving regions.
- Definitions of good, fair and poor as descriptors of the condition of European cultural heritage should be included.
- The Economic ESD indicators do not provide a comparison with previous years.

2.4 State of the Water Supply Catchment

This section reports on the Environmental Indicators.

Water

- We look forward to future reporting on the contaminant export rate study and pollution source tracing.
- The Annual Report notes that monitoring for pesticides and chemicals is being undertaken, but these results are not included in the physico-chemical measures of water quality in the Environment Report. We note that AWT is not certified to test for all pesticides and hope that a certified laboratory is used in future, as recommended by the auditor.
- The discussion of weirs needs to also include impacts on water quality and pest species.
- The low level of information on fishways, and the very low number of fishways present, indicates that future research and construction is a high priority. We look forward to a report on the fishway feasibility study.
- Macroinvertebrate levels were lower than expected. If verified in this year's report, we hope to see a plan for future rehabilitation of the populations.
- Storage volumes need more comparisons with previous years' figures and with total available storage.
- Where problems are identified in storage water quality, proposals for their remediation are needed.
- It would be of interest to provide information on the types of recreation allowed in some storages, their effects on water quality and how it is controlled.

Land

- More information is needed on the comparable impacts of the different land uses on water quality and catchment health.
- Reporting should be included on the results of mine inspections and results of long-term monitoring programs on the impacts of mines.
- We look forward to seeing a report on the soil erosion and erosion risk mapping, as well as extent, description of the types of erosion, areas affected in the catchment and proposals for remediation.
- More quantitative information is required on the types of projects funded under the Catchment Protection Scheme.
- More information is needed about plans for amelioration of the effects of river crossings on river integrity and water quality.
- We look forward to a report on the investigations into types and extent of salinity in this year's Environment Report. Again, there is a need for more information on SCA's plans towards the amelioration of the causes and effects of salinity. We agree that the "long-term solutions require a catchment response".

Biodiversity

- More information on vegetation community types is needed - also which sources of information/types of categories have been used?
- Information on the condition of native vegetation needed
- Mention of expanding the report on extent and condition of native vegetation on SCA owned and managed lands, to the remainder of the catchment - what timeline?
- Grass fires should be included?
- Comparisons with other years?
- Remote monitoring of recovery effects necessary - waste of money?
- This year to report on study into riparian vegetation
- Threatened species - no discussion of plans for protection, threat abatement, recovery plans
- This year to report on wetland condition - how defined? Very little information has been presented on wetlands - better maps needed

3. INDICATORS

3.1 General Comments

The Report states that refinement of some indicators are needed, and this will be carried out in the reporting period for 2001-2002. We would appreciate information about which indicators are being refined, and the consultative mechanisms being employed. The following comments are provided towards that refinement.

Many of the previous PENGO comments during early consultation still apply. For example:

- inclusion of stocking rates/feedlots and length of watercourses exposed to stock access.
- feedback mechanisms to ensure that the indicators are used to improve future planning – they should be “part of the management cycle, and not an end in themselves” (CSIRO web guidebook to Environmental Indicators 1999).
- the need for outcome-oriented indicators which “focus information to answer important questions” (CSIRO again) – in particular, the social indicators are not based in an ESD context, which reflects the environmental, social and economic impacts of the Authority’s activities.
- periods for comparisons of data need to be over the long-term, not just year-to-year as stated in the Draft Environmental Indicators report, to provide a good indication of the SCA’s impacts on catchment condition.

It is not clear why some of the 1999 auditor’s recommendations for indicators have not been recognised – these include “catchment population, population distributions, densities, trends, urban and rural subdivisions; current and old mining sites, including extractive industries; industrial and manufacturing sites; water extracted and used from rivers, streams and groundwater by all forms of human activity; and number of weirs, dams and riparian structures.”

3.2 Operational Performance Indicators

- It is stated that these indicators are a subset of the Environmental Indicators, but this relationship is not clear – some are part of the Environmental Indicators and some are part of the ESD Indicators.
- The volume of water released, in itself, does not reflect an environmental impact – this needs to be based on the volumes released for environmental flows, their periodicity and speed, and the effects of the environmental flows on riparian structure and ecology.
- We look forward to reporting on any discussions as held with NSW Agriculture and Local Governments on weed mapping, and the use of satellite imagery to map all infestations.
- We notice that SCA’s chlorine and herbicide use are not included in the final list of indicators, as proposed in the Draft Environmental Indicators report. We recommend that these be included, as a measure of resource use, and environmental and health impact.
- Further indicators for energy consumption were to be included in this year’s Annual Environment Report.

3.3 Environmental Indicators

We look forward to seeing a report on the further development of biological and biodiversity indicators in this year’s Annual Environment Report. Aquatic, riparian and fish population indicators are among those to be developed. Indicators for endangered ecological communities are also to be developed and should be included in this year’s report.

- The list of criteria for the development of the Environmental Indicators (Draft Environmental Indicators report, p11) does not include the operating licence requirement for consideration of recommendations of the catchment auditor.
- The Draft Environmental Indicators report (p20) states that pest animal and plant populations were considered within the Operational Performance Indicators. However, these only include SCA lands. This shortfall highlights the importance of using a simplified approach to indicators, to avoid discontinuities and duplications. Reporting on the extent of pest animal and plant species is needed throughout the catchment, as an indicator of catchment and biodiversity health.
- In recognition of the cumulative impact of land use, indicators should include capital works activities where these involve land clearance or changes to water regimes.
- Biosolids application to land, and other disposal of sludge, should be included due to their effects on water quality.
- The extent and condition of wetlands is included in the indicators for streams but only applies to SCA owned and managed lands. This is inconsistent with other Environmental Condition Indicators which apply to the catchment as a whole, and leaves a gap in overall environmental reporting for the water catchment. Wetlands provide one of the major first-level sources of water pollution amelioration throughout the catchment. We look forward to future reporting on SCA’s investigations into “the potential for developing a practical measure for wetlands in the remainder of the water supply catchment area” (Draft Environmental Indicators report, p29), and to reporting on how the SCA will use wetland data to “assist in maintaining ecological integrity of these systems”.
- Algal growth is an indicator in SCA storages, but should also be included for streams, as an indicator of environmental health, as well as for its effect on human health.
- Physico-chemical measures of water quality in streams and storages do not include pesticides and other health-related water quality measures. These measures are required under the operating licence and should be included in the Environment Report.
- Sediment contamination is recognised as an important potential source of pollutants in drinking water, and therefore should be included as an indicator, for streams and storages. We understand that SCA is looking at incorporating a sampling regime for metal and pesticide levels as an environmental indicator.

- Occurrences of microbial pathogens are measured only in the lower catchments. A more comprehensive picture of the sources of pathogens may be obtained by sampling further afield.
- We understand that discussions with NSW Fisheries have taken place regarding the development of an indicator for fish populations, and look forward to more information in this year's Environment Report.
- Information on weirs needs to be broadened to include all barriers, and information gained used to gain an understanding of their effects on biodiversity, as well as on water quality and quantity. Such information would include the water storages and their impacts on fish populations and movement.

3.4 ESD Indicators

These indicators reflect the triple-bottom-line approach to environmental reporting, but do not indicate the "degree to which the Authority's activities comply with the principles of ecologically sustainable development", as required under the operating licence. It is not clear how the indicators relate to the four principles of ESD defined under the Protection of the Environment Administration Act. These principles should be brought more obviously into the planning and reporting activities, and be used as a measure against which SCA's actions are justified.

The native vegetation and erosion Environmental ESD indicators apply only to the Authority owned and managed land - these need to be broader to include the whole drinking water catchment, as a reflection of the SCA's legislated core activities: "manage and protect the catchment area and catchment infrastructure works; supply bulk water; and regulate certain activities within the catchment area".

Environmental

- The volume of water released alone does not provide a good indication of environmental impact. An alternative mechanism, which would better reflect the impact of the SCA's activities, would be the total percentage of water extracted from each of the catchments, as provided for in the ANZECC Core Environmental Indicators 2000. This is consistent with the approach to energy use and would allow a more comprehensive pricing mechanism to be developed.

Social

- These ESD indicators do not appear to address the broader social context and impacts of the activities of the SCA. Indicators which could be included are: the social effect of clean drinking water on health; the social effects of healthy natural areas in the catchments (recreational, educational, spiritual, air quality, awareness of biodiversity); the social capital gained through sharing responsibility for water supply between catchment residents and water users, community/landholder education, whole-of-government commitment to best practice environmental management for the catchment.
- Staff retention could include staff health.
- Web site hits, although easy to monitor, are not a good indicator of educational effectiveness.
- A particularly important social indicator which must be included is the condition of areas and items of Aboriginal cultural heritage and significance.
- Contractor training/awareness should be included alongside staff training.

Economic

- The indicators used relate only to SCA's financial management. These should include percentage of budget spent on environmental improvement.
- Other, broader economic indicators should also be used to aid in "improving the valuation and pricing of environmental resources". They could include the comparative costs of clean water provision vs. potential public health expenditure, pricing mechanisms which take into account the long-term benefits of conservation management, such as carbon-sink resources, inherent biodiversity values, amelioration of greenhouse gas production, improvements to air quality, and the effects of those less tangible items listed above under social indicators.

Thank you for the opportunity to comment on last year's Environment Report and we hope that these comments are of value in developing this year's Environment Report, and in reviewing the indicators. We would appreciate receiving your response to the issues raised.

APPENDIX 7

WATER QUALITY MONITORING REPORT ANNUAL WATER QUALITY MONITORING REPORT 2000-2001

Submission from the Peak Environment Non-Government Organisations

September 2002

DATA SUFFICIENCY

The Sydney Catchment Authority's legislated role includes catchment protection and management, not just bulk water supply. Therefore the water quality monitoring program should test water quality against the water quality guidelines, not just for drinking water, but also for ecosystem health, throughout the catchments and storages. The level of data obtained must be sufficient to allow the complete audit of catchment health. In addition, the discussion sections of the report should include discussion of the effects of exceedances on catchment health. For example, in 4.1.5, the effects of high eutrophication levels "...on the outer edges of the catchment or in minor tributaries.." should not be ignored as having little effect on stored water quality.

The Statement of Joint Intent for the Hawkesbury Nepean River System (2001), arising from the Healthy Rivers Commission investigations, provides for more stringent guideline levels for Phosphorous, Nitrogen and Chlorophyll-a than those recommended by ANZECC. We recommend that these levels be adopted by the SCA in future monitoring programs.

The water quality monitoring program will in future be used to underpin and support the use of the Neutral or Beneficial Effect assessment and pollution offsetting as part of the Regional Environmental Plan for the drinking water catchments. It will be important to ensure that the data provided is sufficient to support these schemes.

Some additional parameters which should be included, to provide a greater level of detail in the monitoring program and in the annual report, are:

- An analysis of the water quality needs related to environmental flows
- An analysis of the quantities of water extracted from the catchment, as a major risk component of SCA operational activities on water quality
- An analysis of the effects of existing and proposed effluent management systems
- An analysis of diffuse sources of pollution

DIAGNOSTIC AND RISK-BASED APPROACH

The exceedance reporting provides for monthly reports, but there is also a need for the triggering of appropriate management actions to address the exceedance. There is a need for clear feedback mechanisms into catchment management processes and advice.

The Annual Report summarises hot spot, investigative and event-based monitoring. However, there is a need for greater analysis in the body of the report, with discussion of all incidences of exceedance. Discussion of the results needs to provide an analysis of the implications of the various exceedances, the possible causes, potential future risks and proposed solutions. For example, when the DO is exceeded, what is the relationship to algal blooms, what catchment management actions may have caused the bloom, and what changed management actions are proposed, etc.

There is also a need to bring together the strands of data to present a big picture summary of the state of the catchment and its water quality, the risks posed by human activities and future management to mitigate against the impacts.

SELECTION OF TESTING SITES

It is not clear how the existing testing sites have been arrived at. It appears that the testing sites in use may have arisen through historical precedent and are related to bulk water supply only.

Are the testing sites in use comprehensive, adequate and representative? Are there sufficient routine monitoring sites to build up a long-term picture of variability and average water quality?

There needs to be discussion on the rationale for the use of these sites and their relationship to polluting sources. In order to gain a complete picture of catchment health, it may be necessary to revise the testing site locations to provide data for upper catchments.

It may be appropriate to use EPA pollution licensing as one of the bases for selecting routine testing sites.

INTEGRATION WITH OTHER WATER TESTING PROGRAMS

There is potential for greater integration with other testing programs being carried out in the drinking water catchments. These could include the programs carried out by the Environment Protection Authority, Department of Land and Water Conservation, Sydney Water Corporation, Local Governments and Streamwatch. Through better integration of the programs, targeted monitoring could be improved to gain an overall picture of catchment health. In addition, an integrated and publicly available water quality database should be devised for the catchments.

Where data is required to complete the water quality monitoring report, there needs to be a mechanism developed to ensure that the data is made available in a timely fashion.

INTEGRATION WITH RESEARCH PROGRAMS

There is a need for clarification of the mechanisms for incorporating the results of the research programs into the development of future testing programs, risk analyses and management plans.

In addition, some areas of research identified as needing to be developed further, include:

- defined guideline values for Biological Oxygen Demand
- appropriate testing mechanisms for pathogens and their behaviour and implications for ecosystem and human health
- appropriate testing mechanisms for the contaminants listed in schedule 4 of the Operating Licence
- equipment accuracy of automatic samplers. These have been found to become less accurate over time and there needs to be mechanisms in place to ensure that such equipment remains sufficiently accurate to provide useful water quality data
- improved methodologies for evaluating pesticides at a more comprehensive catchment level than at present. Endocrine-disrupting chemicals should also be considered for research leading to possible future routine testing

OPERATING LICENCE SCHEDULE 4 TESTING AND LABORATORY CAPABILITY

Pesticides and other items listed in schedule 4 of the Operating Licence were identified in the Operational Audit as a deficient area of testing, with insufficient accreditation of testers. As these contaminants are an area of increasing concern for ecosystem and public health, we would strongly encourage further effort in the development of routine, event-based and investigative testing programs.

The operating licence auditor identified shortcomings in the capabilities and accreditation of some of the testing laboratories in use. We expect that these problems have been rectified for the present year's reporting period.

DATA PRESENTATION

The tables of data presented in Appendix C do not always provide the available guideline values for comparison. It would aid the reader's interpretation if the acceptable ranges were always included.

It is unclear why the results for the Schedule 4 contaminants have been pooled in Table D4. We suggest that these should be provided in greater detail and with a discussion of the shortcomings of present testing methods and potential for improvements.

Should you wish to discuss any of the above comments further, please feel free to contact me. We look forward to receiving the annual water quality monitoring report for the 2001-2002 year.

APPENDIX 8

'SUSTAINING THE CATCHMENTS' REGIONAL PLAN AUGUST 2002 DRAFT

Submission from the Peak Environment Non-Government Organisations

REGIONAL ENVIRONMENTAL PLAN

The REP needs strengthening in significant ways, particularly in the areas of consistency, transparency and accountability.

The major items for providing consistency and security in the previous draft of the Regional Plan were the planning control table and water quality protection areas. We strongly recommend the re-introduction of these items. The planning control table was requested by the majority of councils and environment groups during the previous round of consultation. This system provides a greater degree of objectivity and legal robustness when the consent authority decides which NorB assessment level is appropriate, based on information supplied by the proponent. Water quality protection areas would address the need for a risk management zone approach, as agreed in the Statement of Joint Intent for the Hawkesbury Nepean River System, 2001 (SOJI). The SOJI agrees to incorporate all endorsed recommendations of the Healthy Rivers Commission in the REP.

Other means of improving public faith in the rigour and transparency of the process include ensuring that Strategic Land and Water Capability Assessments (SLWCAs), which are the basis for LEP reviews, and the only avenue for consideration of cumulative impact, are constructed using clear guidelines and formats. The Section 117 Direction allows for an "equivalent assessment" to SLWCAs to be used in LEP reviews but there are no standards to measure equivalence. The SCA should, with the advice of an expert committee, produce standards for the production of SLWCAs by the SCA and councils. SLWCA guidelines should require the consideration of cumulative impact, maximum pollution loads, ecological/habitat constraints and maximum land-carrying capacities. Wording related to SLWCAs should clarify that biological, as well as physical, constraints are to be included. There needs to be public consultation, set times for completion, availability, and periodic monitoring and review, as is provided for Rectification Action Plans (RAPs).

In addition, RAPs should be binding, at least on government agencies, and a Ministerial disputes process provided for conflict between agencies and the Sydney Catchment Authority (SCA). The most urgent RAPs should be completed within 12 months of gazettal of the REP. When SCA carries out its yearly review of RAPs, there must be an obligation for other parties subject to the REP, such as agencies and councils, to provide relevant information to SCA for the report, rather than having to negotiate access to data. RAPs and their annual reporting must be available for general viewing on the SCA web-site as soon as practicable following their release.

To allow for sufficient public comment, the exhibition period for RAPs needs to be defined as a minimum 40 day period.

Where draft environmental planning instruments are referred to, the conditions and considerations should also apply to the final EPI. The water quality objectives referred to should conform with the agreed objectives in the SOJI.

To ensure that there is sufficient transparency, we ask that there be no exemptions or variations to be permitted by the Chief Executive Officer (CEO). Planning decisions should outline reasons for determining whether a development will or will not have a neutral or beneficial effect. Where LEPs are inconsistent with SLWCAs, there must be explanations for the inconsistencies. The CEO should carry out an audit of the application of the NorB test, to ensure consistency with the guidelines.

NEUTRAL OR BENEFICIAL EFFECT GUIDELINES

Shortcomings have been identified in the objectivity, robustness, accuracy, consistency and accountability of the neutral or beneficial effect (NorB) guidelines.

These may be improved through the inclusion of a risk management framework to determine the chances of NorB being exceeded at some time in the lifecycle of the development. Examples of predictions necessary include - the extent of river or catchment to be affected, the impacts of a residential development throughout its life cycle, the impacts on the complex arrays of catchment ecosystem characteristics and level 3 impacts on naturally variable catchment characteristics.

Objectivity could be improved through using an independent assessor (SCA) and an accreditation scheme. Previous advice from the PENGOS on Integrated Development Assessment has been vindicated with the present problems with private accreditation of certifiers. There is a need for third party challenge rights to ensure accountability.

The present guidelines do not adequately provide for the cumulative impacts of developments in the catchments, nor for the impacts of staged developments. These problems need to be addressed directly to improve the robustness of the assessment process. In addition, the fact that almost all development will make changes to surface flows, and therefore to groundwater flows, has not been taken into account in the guidelines. Containment should show no impact on groundwater quality, surface or groundwater flows or habitat value to demonstrate neutral or beneficial effect.

Accuracy can be improved through the provision of water quality monitoring guidelines. In assessing 'no measurable adverse change to the existing average (or median) or variability of water quality conditions', there are many variables, and values can change dramatically depending on how existing water quality is determined. Guidelines should include frequency and timing of monitoring relative to rainfall, storms, and events, etc.

The Regional Plan states that offsets should only be offered as a last resort. However, the guidelines allow the use of offsets after consideration of "one or more of the first 3 rules". The guidelines need to clarify that offsets may only be used after all 3 assessment levels have been exhausted.

The Monitoring section of the guidelines does not yet exist. We hope that this is not an indication of the importance given to this vital component of the NorB process. At present, full monitoring of consent conditions by consent authorities can be difficult to sustain due to insufficient resourcing, expertise and commitment. Therefore, it is imperative that monitoring is given a high priority in the guidelines and in resourcing.

SECTION 117 DIRECTION

The Direction for draft LEPs should also apply to final LEPs, to ensure consistency with the objectives of the Regional Plan. In addition, the Direction needs to include catchment health as well as water quality, for consistency with the aims and objectives of the Regional Plan and the REP.

To ensure that the LEP reviews are finalised we recommend that they be completed within 12 months of commencement. This would be achievable through the provision of SCA funding to assist councils. The Direction should also require further periodic reviews of LEPs, based on new information from the auditing of developments determinations, NorB assessments, and reviews of SLWCAs, in order to maintain the LEPs' ongoing currency.

To provide robust catchment and water quality protection, the Direction needs to stipulate that cumulative impact considerations be included in LEP reviews.

POLLUTION OFFSET PILOT SCHEME

The PENGOS have many reservations about the use of offset schemes, and would like to see this pilot undertaken with a strong scientific grounding. Proper evaluation of the scheme will require a comparable scheme, which does not use offsets, for the same trial period. Pre- and post- pilot water quality monitoring programs, at the local and sub-catchment level, will enable an evaluation of the pilot's achievement of water quality objectives. It is also necessary to prepare a comprehensive plan of remediation and catchment restoration works (such as Landcare or Healthy Catchments programs) planned or expected for the same trial period. This will enable the measurement of catchment health and water quality factors which relate to the offsets, separate from those which relate to existing catchment improvement programs.

Offset ratios are too low to allow for robust catchment protection, incorporating error, predictive inaccuracies, unforeseen events and the requirement for ongoing improvement of water quality. We recommend setting a more conservative ratio of offset to damage, such as 10:1 for pollutants.

REGIONAL PLAN (CATCHMENTS PLAN)

The Catchment Plan (CP) requires greater levels of consistency, robustness, transparency and completion.

The CP's priority issues, vision, objectives and outcomes include 'catchment health' as a core aim, but within the action items of the CP water quality issues predominate. The SOJL also requires 'ecological integrity' to be given equal consideration to water quality. Wherever 'water quality' is discussed in the CP's action items, it would aid consistency to also specify catchment health.

The implementation of this would result in better consideration of biological and ecological factors in, for example, the listed impacts of vegetation clearing, which should include biodiversity, threatened species, erosion, salinity, etc.

The contribution of wetlands to catchment health and water quality has not been recognised sufficiently. Land Use items should include 'draining and filling of wetlands', as a key activity with severe impacts on water quality and catchment health.

Action planning for 'Catchment Management Strategies' needs to be more robust and complete, including action tables for 'Catchment Management Strategy 7 - Rectification Action Planning' and 'Catchment Management Strategy 8 - Development Controls', to define actions, timing and responsibilities for each of these strategies. For internal consistency, the Figure - Planning for the Future should include Catchment Management Strategy 7 - Rectification Action Planning. There is no corresponding Catchment Management Strategy for "Improved project design based on information and recommended practise".

The implementation framework is weak and does not fully explain the mechanisms for implementation. The weakness of the monitoring section also concerns us, since public confidence in many of the provisions of the Regional Plan and Regional Environmental Plan rely on strong, consistent monitoring. The monitoring section needs to include indicators for the CP's listed outcomes, and a clearly defined feedback mechanism to Catchment Management Strategies. Improvements are needed to councils' ability to carry out compliance monitoring, which can be variable. Further training, resourcing and auditing are highly recommended.

It is not clear how transparency will be provided for amendments to the Regional Plan. It is also unclear how SCA will monitor ".. pressures on the catchments, particularly potential cumulative impacts". A mechanism is needed within the CP to ensure that this is possible, that it will take place and that the results will be fed back into SLWCAs and IEPs.

APPENDIX 9

SUBMISSION ON GREEN OFFSETS FOR SUSTAINABLE DEVELOPMENT CONCEPT PAPER

Peak Environment Non-Government Organisations

July 2002

1. INTRODUCTION

The NSW Government agrees that "...the concept of Ecologically Sustainable Development should be used by all levels of government in the assessment of natural resources, land use decisions and approval processes" (Inter-Governmental Agreement on the Environment 1992). The title of the introductory paragraph to the Concept Paper (EPA 2002), which places the Pollution Offset Scheme within the larger context, should therefore be strengthened to "The NSW Government requires sustainable development", rather than 'encourages'. This then provides the philosophical underpinning for the following proposal and its outcomes.

The principles of Ecologically Sustainable Development (ESD), as defined in the Protection of the Environment Administration Act 1991, provide the tools against which to benchmark any new or existing planning schemes, and should be incorporated into the ideas for the proposed pollution offset scheme.

- a) Precautionary Principle - "lack of scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation"
- b) Intergenerational Equity - "the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations"
- c) Conservation - "Conservation of biological diversity and ecological integrity should be a fundamental consideration"
- d) Improved valuation pricing and incentive mechanisms - "environmental factors should be included in the valuation of assets and services"

2. OPPOSITION TO OFFSET SCHEMES

Environmental offset schemes could include those for water, air and land pollution, land degradation and ecosystem destruction. Damage to particular ecosystems, such as wetlands, has been offset through informal mitigation or compensation in NSW under the Environmental Planning and Assessment Act, the Native Vegetation Conservation Act, the National Parks and Wildlife Act, the Fisheries Management Act and State Environmental Planning Policy 14 - Coastal Wetlands.

The Peak Environment Non-Government Organisations have previously expressed their opposition to the use of offset schemes, in their submission on the first draft of the Sydney Drinking Water Catchment Regional Plan. In addition, the Nature Conservation Council (NCC) provided a submission to the Department of Land and Water Conservation's discussion paper on Offsets, Salinity and Native Vegetation (NCC 2001). In their submission, the NCC argues that the proposed scheme does not promote sustainable agriculture, changes in behaviour and resource use, or the avoidance of clearing. It does not prevent inappropriate clearing or result in reversing the long-term decline in Australia's native vegetation, as required under the Commonwealth/New South Wales Partnership Agreement under the Natural Heritage Trust of Australia Act 1997 (Commonwealth of Australia 1997). The scheme was found by NCC to be inconsistent with the principles of ESD and was not able to be monitored sufficiently within the present levels of scientific knowledge, data availability or government resourcing.

The Peak Environment Non-Government Organisations' (PENGOs) are opposed to the introduction of offset schemes. Reasons for our opposition include:

2.1 Scheme is driven by environmental damage

The schemes use habitat destruction or pollution of the environment as a 'driver' for environmental conservation and improvement (NCC 2000). The PENGOs do not accept that this will lead to positive environmental protection and the reversal of environmental degradation. We believe that a more positive approach to development control is needed which is driven by the needs of environmental protection, along with the development of alternative economic activities which recognise that conservation is an 'investment in natural capital, which underwrites material wealth' (Natural Resource Management Ministerial Council 2001).

Market incentives are needed which encourage the use of 'best practice' management, research and development of innovative methods which will prevent environmental damage and pollution at the early stages of planning.

2.2 A public responsibility

The schemes attempt to transfer responsibility for environmental protection and improvement from the public to the private sectors. The principle of Intergenerational Equity applies to the environmental debt inherited by the present generation of Australians from previous generations. The Australian public, as a whole, continues to reap economic and social benefit from past management practices and the unsustainable use of our natural resource capital. Therefore it is primarily a public responsibility to pay off the existing environmental debt. However, we also recognise that a partnership approach is essential, between government, community, landowners and industry.

2.3 On-going support

High levels of ongoing, long-term political and administrative commitment are needed for the scheme's regulation, coordination, management and monitoring. Without this guaranteed political commitment and capability, the schemes' implementation cannot be secure.

The Committee on Mitigating Wetlands Losses (2001) and Environmental Defense (1999) have found that the levels of monitoring and the available data were inadequate to ensure the success of mitigation projects.

2.4 Complexity and lack of knowledge

The complexity of implementing and monitoring schemes requires large amounts of resources, information and scientific knowledge, much of which is not yet available (Chapman and Underwood 2000, Committee on Mitigating Wetlands Losses 2001). The PENGOs believe that such resources would be better used for direct conservation and rehabilitation purposes.

Under the Precautionary Principle we are advised to prevent activities which degrade the environment when there is a lack of scientific knowledge or understanding. There is a particular lack of understanding regarding the full range of intrinsic and other values of ecosystems.

2.5 Inadequacy of constructed habitats

Man-made systems do not provide the levels of habitat function, stability and diversity of natural ecosystems (Ambrose 2000, NSW State Wetlands Advisory Committee 2002), and some wetland types cannot be effectively restored with present knowledge (Committee on Mitigating Wetland Losses 2001). It is almost impossible to recreate the geological and hydrological structural conditions of the original site, and existing projects have often not attempted to do so.

Wetland offsetting projects in the USA have shown very poor results in the quantity and quality of mitigation (Environmental Defense 1999, Ambrose 2000, Committee on Mitigating Wetland Losses 2001). Cuperus et al (2001) also state that international compensation projects seldom meet the set objectives. DLWC (2000) state that revegetation projects 'could only be considered to lead to low quality vegetation'.

2.6 High failure rate reported

Reports on overseas schemes show a high failure rate. Follow-up studies on wetland mitigation schemes in the United States of America found that implementation and compliance with conditions fell well short of the requirements (Ambrose 2000). Environmental Defense (1999) found that many of the projects did not carry out the required mitigation, that the overall areas of wetlands to be created fell well short of that required for the projects, the majority of projects had very poor maintenance and monitoring levels, and that very few had long-term management plans. In addition, it was found that 'most towns are not systematically tracking the progress of replication projects and determining if they are in compliance with the regulations' (ibid, p7).

2.7 Inaccuracy

There are inherent inaccuracies in comparing predicted pollution rates over the lifetime of a project with the long-term effects of mitigating actions. In some cases it may be possible to predict the long-term rates of production of specific pollutants.

2.8 Potential for misuse

There is great potential for the misuse of trading or banking schemes. This has been demonstrated in the Wollongong 'fair trading' scheme for sensitive lands in the Illawarra Escarpment (Office of the Commissioners of Inquiry 1999).

3. MITIGATION OF THE EFFECTS OF OFFSET SCHEMES

If the NSW government is intent on pursuing the introduction of offset schemes, the Peak Environment Non-Government Organisations ask that the following be incorporated into any scheme. The ESD principle justifying each item follows in brackets.

3.1 Offsetting as a last resort

The US National Environmental Policy Act regulations defines mitigation as: 'a - avoiding the impact, b - minimising the impact, c - rectifying the impact, d - reducing or eliminating the impact, e - compensating for the impact' (Ambrose 2000). We believe that, should offset schemes be introduced, they should be seen only as a last resort. The proponent must provide a statement of justification for the environmental damage or pollution which includes a full costing of environmental, social and economic factors of impacts and of the comparative offsets. [principle a]

'Social or economic imperatives' (NSW Government 1996) are used as parameters for allowable damage to wetlands in the NSW Wetlands Management Policy. Where social or economic imperatives are used as a threshold for allowable environmental damage, the imperatives must be defined to provide consistency and to avoid changes due to political processes.

3.2 Offsetting to be additional to duty of care

The protection or enhancement of natural areas, through fencing or including in a conservation agreement or conservation reserve, should not be used as an offset for land clearing, but be undertaken separately from damaging activities, otherwise there is a net loss of natural areas. [principle c]

Positive vegetation management, or best practice, is an integral part of a landowner's duty of care (Natural Resource Management Ministerial Council 2001) rather than something to be traded for further land degradation. The Queensland Government (2002) describes a landowner's duty of care as including 'sustainable natural resource use' and 'conservation of biological diversity'.

The Peak Environment Non-Government Organisations believe that public assistance may be provided in implementing duty of care, but not as a trade-off for damaging activities. The concept of providing trading benefits for good land management assumes that presently accepted, normal land management practices will result in a net loss of natural resource value; that is, that the practices and land use are unsustainable and therefore, unsuitable. Market incentives should apply only to land-holders who carry out management practices above and beyond the duty of care, and disincentives should apply for practices which do not meet the duty of care.

The use of public funds and voluntary community labour, such as in Natural Heritage Bushcare projects, should not be used as an offset against land clearing for private gain.

3.3 Full costing of the development impact

All environmental effects of the activity must be accounted for, including those of all ecosystem values to be lost, biodiversity, habitat isolation and including offsite impacts such as on ground-water, catchment hydrology, salinity, resource use, waste generation and air quality. The period of the impact includes the length of time of the polluting activity, and the permanent effect of habitat destruction.

DLWC (2000) and others advise that the measurement of the full range of biodiversity values is difficult and that we have as yet a poor understanding of complex ecological relationships. Areas of high conservation value must never be damaged, because of the high risk of incorrect valuation, and their increasing value over time due to the present state of decline of natural areas. [principles a & d]

3.4 Full costing of the offset

Offsets for the loss of ecosystems must take into account the full, long-term environmental costs of re-creating a similar ecosystem - including propagation of locally-sourced plants, use of locally-sourced materials and long-term maintenance until the system has reached the levels of biodiversity and stability of the original ecosystem. [principle d]

3.5 Precautionary ratio

The risk of failure of compensatory actions is high (2.6), therefore a ratio must be used which reflects the degree of risk (NSW State Wetland Advisory Committee 2002). 'The occurrence of impacts that cannot yet be quantified implies a strong need to apply compensation ratios greater than 1' (Cuperus et al 2001). The salinity offset pilot scheme recommended by the Salinity Experts Group (2000) emphasises the need to 'more than offset' the adverse actions.

The default ratio of offset activity to polluting/degrading activity should be set at a minimum, of 10:1, as suggested in DUAP (2000), in order to ensure that '...real and enduring improvements to water quality are made, and the neutral or beneficial effect requirement of the Sydney Water Catchment Management Act is satisfied' and that the aim of '...net catchment improvement...' is met. In addition, the minimum 10:1 ratio adds a multiplier to provide security for unknown and unvalued impacts. [principles a, b and c]

3.6 Offsets for maximum predicted impact

Where there is to be an expected variation in the production of pollutants over time, any offset should compensate for the maximum predicted rate of pollution. [principle a]

3.7 Scientific basis for compensation activity

Many mitigation projects have been found to be poorly designed and implemented and lacking in sound expert advice (Chapman and Underwood 2000, Committee on Mitigating Wetland Losses 2001). Where ecosystem construction or other environmental mitigation measure is to be undertaken, there must be a strong, scientifically-based justification for the design, construction and maintenance components. [principle a and c] A suitably qualified, independent expert panel is necessary to assess and approve the scientific case for the offset.

3.8 Sufficient monitoring and compliance capability

The administering body must be provided with sufficient staffing, skills and resources to carry out ongoing, long-term monitoring of the scheme and each individual offset project. [principles a & d] The Salinity Experts Group (2000) states that 'inadequate enforcement could undermine the achievability of targets'. Gibbons et al (2002) also emphasise the importance of including a compulsory monitoring component in any offset scheme. The monitoring process must be shown to be independent and transparent.

It is essential that data obtained from monitoring is used, not only to ensure compliance, but also to ensure that the offset scheme is meeting the desired environmental objectives.

3.9 Like-for-like

Any offset must be of the same nature as the pollutant or environmental degradation produced by the development, in order to ensure quantifiable and comparable mitigation of effects. [principle a] Where existing pollution licences come up for review, suitable offsets should be incorporated into future licence conditions.

3.10 Damage/offset proximity

Any offset must be within the same locality as the pollution or environmental degradation, to ensure that mitigation effects are expressed in the same sub-catchment and localised habitat. "A green offset is action taken outside a development site (but near to it)." (EPA 2002, p3). This also provides a precautionary restraint on damage, based on the limits of the particular sub-catchment or locality, rather than the identified limits within the broader landscape or region. [principles a & b]

3.11 Offset completed prior to development

Any offset activity must be completed, and audited as complying, before the polluting or degrading activity begins, in order to ensure that there is no period of reduced environmental value. Where the pollution occurs before the offset the result is a net loss of environmental value. [principle c]

3.12 RAP actions required

Any offsets must not be traded against Sydney drinking water catchment needs as identified within Rectification Action Plans. These RAPs should be prioritised and implemented separately in order to mitigate existing environmental damage (2.2). [principle b & c]

3.13 Bottom line restrictions on development

Any offsets must not be used to approve developments which are otherwise restricted through state or local planning instruments. This would result in a net loss of environmental integrity. [principles b & c]

4. SECONDARY OFFSET SCHEMES

These include schemes such as pollution credit banking, mitigation banking, conservation banking, contribution funds and third party mitigation banking. High rates of failure of these schemes have been identified in international studies (Environmental Defense 1999).

Monetary compensation alone for environmental damage should not be accepted as it may not reflect the merit of a development but only the ability of a proponent to pay (NSW State Wetland Advisory Committee 2002).

4.1 Justification required

If secondary schemes are to be accepted, guidelines must be developed for the thresholds of social and economic benefit which will apply before they are considered to be justified (Cuperus et al 2001). The proponent must supply full justification for reaching the thresholds.

4.2 Regulation required

Any mitigation banking scheme must be controlled by state-wide policy and legislation, to ensure security and consistency in implementation. An overarching federal policy on the use of these schemes is preferable. Where informal schemes are presently in use, these should be restricted, under the precautionary principle, until there is a formal, state-wide mechanism in place.

4.3 Treated as in-kind compensation schemes

Secondary offsets schemes must be managed under the same conditions as in 3, above.

4.4 Funds to be quarantined

Any funds accepted under a contributions scheme must be clearly targeted and quarantined. They must not be used for core governmental business, public responsibility for rectification actions or activities expected under a landowner's duty of care.

4.5 Bundling to be justified

Mitigation schemes which 'bundle' compensatory ecosystems together must have strong scientific justification for the possible loss of green corridors, site-specific habitats, loss of ecosystem diversity or representativeness of ecosystems.

4.6 No incentives for poor land management

Any such scheme must ensure that there is no incentive for landowners to allow degradation of the natural values of their land through poor management, in order to claim offset improvements through later protection or restoration.

There should be no incentives for landowners to devalue the environmental value of the land to allow for clearing.

4.7 No incentives for speculative land trading

There should be no incentive for landowners to purchase environmentally sensitive land for the purpose of trading for development approvals in otherwise restricted areas.

5. THE CONCEPT PAPER (EPA 2002)

5.1 Environmental objectives

The example of the Hunter River Salinity Trading Scheme (p2) is laudable, but does not directly relate to the present proposal, in that there is no pollution offsetting. This scheme does, however, indicate the positive results obtained from setting a maximum pollution capacity for the river catchment and then devising the fairest method of allocating tradeable pollution rights.

The Peak Environment Non-Government Organisations support whole-heartedly the setting of a carrying capacity for land and water as a starting point for future planning decisions. The effectiveness of any market-based methodology, such as offsets, can only be verified through the prior delineation of clear environmental objectives at the local and regional levels (Gibbons et al 2002).

5.2 'Cost-effectiveness'

Principles of offsets (p4), 1st point - The concept of cost-effectiveness is used throughout the document. It is a rubbery concept which needs definition to ensure that it includes the full measure of environmental, social and economic costs, and not just the costs incurred by the proponent. The definition needs to include an agreed threshold of effectiveness which is based on environmental need and which over-rides political expediency.

5.3 Principles of offsets (p4)

The PENGOS agree with the remaining principles provided, but would also add, from DLWC (2000), that an offset policy 'should be consistent with relevant government policies', should 'not lead to permanent environmental costs due to the delay before offset activities yield environmental benefits', and 'should only proceed when the offset site is making acceptable progress towards the predicted ecological state and management arrangements are legally secure.'

5.4 Enforceability of offsets

Offsets must be (p4) includes "enforceable - through development consent conditions". However, consent conditions are not easily enforceable under the present planning system. The PENGOS would hope to see a reliable system of enforcement available before the pollution offset scheme is introduced.

5.5 Why offsets can work better than stricter regulatory controls (p4)

The PENGOS disagree that there is a general rule that the costs will increase dramatically as the environmental impacts are reduced, as stated. This should not be used as a justification for the introduction of an offset scheme, nor for accepting a higher environmental impact. With the development of innovative processes it is possible to reduce impacts, either to zero, or in multiple areas, for example, the use of sewage for irrigation can reduce waterway and ocean pollution as well as water use and fertiliser requirements.

Incentives, including regulation, can work directly to ensure that industry and landowners make real efforts to reduce environmental impacts.

5.6 Detail of assurances required

Offsets as part of the bigger picture (p6) - there are a number of vague promises, such as that offsets will 'help us reduce the total impact on the NSW environment', the government will 'make sure that different offset programs fit together to achieve the greatest benefits', 'investigate using offsets .. to ensure development can take place in a way that enhances rather than degrades the environment' and 'ensure integration with other government programs'. Any offset proposal that is to be put forward for public comment would need to have greater levels of detail on how these outcomes are to be achieved.

5.7 Accountability and transparency

All offset schemes will be accountable and transparent (p6) - it is important for transparency that there be an opportunity for public input to any scheme at its initiation. It is not clear who will be the scheme manager - whether public or private individuals or organisations. There needs to be a contribution from the developer towards the management and monitoring costs of the scheme.

Sufficient checks and balances must be included to ensure the accountability and transparency promised.

There must be separation between the consent authority and the offset approval and administration process. Whether government or a private entity manages an offset scheme and related funds, there must be environmental NGO representation.

5.8 Environmental improvement on present condition

Using offsets to achieve net environmental improvement (p7) - the stated aim here is 'to improve the condition of the environment compared to what it would have been in their absence'. This contradicts and dilutes the aims of the National Framework for the Management and Monitoring of Australia's Native Vegetation (Natural Resource Management Ministerial Council 2001) which is to gain a net environmental improvement. Forward projections in the absence of the schemes would show a continual decline in environmental condition, so an improvement on the level of decline may still result in no net environmental improvement.

5.9 Distribution of benefits

Using offsets to achieve net environmental improvement (p7) - any opportunities for better means of avoiding impacts should benefit the environment, and not be diluted by sharing 'between developers and the environment', in recognition of the environmental debt inherited from past generations (2.2).

5.10 Offset proximity to impact

How will funds be managed? 3rd dot point (p9) – the trial scheme programs are to implemented ‘where they are most needed’. However, it is stated earlier that the offset action will take place near the development site, ‘in the same area’ (p4). There is a need for clarification about the use of secondary offset schemes, which must comply with the same rules as direct offsets.

5.11 Offsets not to replace core business

Cleaning a waterway offset pilot (p10) – suggests actions such as street sweeping as an offset. However, this is core business for local governments through their responsibilities for stormwater and road management. To ensure a net environmental improvement, offset funds must not be used to replace core government business, such as catchment improvement programs or rectification action plans. There must be a clear distinction between dedicated offset funds and activities, and existing or future government programs.

5.12 Targeted environmental improvement

Reducing air pollution offset pilot (p13) – does not address the larger picture of changes to the public/private transport ratio. Improved market incentives for public transport use would help address the pollution caused by private motor vehicles.

6. ECOSYSTEM DAMAGE

The concept paper (EPA 2002, p15) provides that our comments here will be used also in discussions regarding the Department of Land and Water Conservation’s development of land clearing controls and possible offset schemes (DLWC 2001).

The National Framework for the Management and Monitoring of Australia’s Native Vegetation (Natural Resource Management Ministerial Council 2001) aims to reverse the long-term decline in the quality and extent of Australia’s native vegetation, conserve and restore native vegetation at local, regional and national levels and improve the condition of existing native vegetation. It is recognised that native vegetation has intrinsic values in addition to ecological and utilitarian values, and that there is an inextricable link between the conservation of biodiversity and sustainable agriculture.

Economist Ross Gittins (2002) has stated that halting land clearing ‘would have only a small opportunity cost’. The National Framework recognises that ‘protecting existing vegetation is the most efficient way of conserving biodiversity’. The PENGOS agree that there must be no incentives for further clearing of native vegetation or destruction of ecosystems.

Negative impacts to native vegetation systems, wetlands or threatened species are particularly difficult to offset. The clearing of native vegetation or wetlands involves the destruction of complex biological systems and interactions which have developed over long periods of time. The PENGOS make the following comments specifically in relation to damage to native vegetation and wetlands:

6.1 Habitat quality and quantity to be valued

The Natural Resource Management Ministerial Council (2001) states that offset programs should require a ‘net environmental improvement’ from proposals that impact on native vegetation. This goal must be met through more stringent means than simply offsetting area for area (see 2.4, 2.5, 2.6). In order to compensate for loss of habitat, the quality and quantity of the habitat values must be fully costed. This includes accounting for the intrinsic, ecological and utilitarian values.

Areas of high conservation value must be valued to reflect their irreplaceable nature, and to ensure that offsets for their damage are never economically viable.

6.2 Time factor for habitat development

To fully offset the destruction of these systems requires long-term, careful regeneration of the full range of locally derived species, followed by long-term maintenance, to allow for the replacement of the original habitat and environmental values (Committee on Mitigating Wetland Losses 2001). Any short-term or incomplete regeneration, or regeneration which takes place after the clearing activity, does not take full account of the environmental values and costs (DLWC 2001). The environmental impact of clearing is immediate, whereas the offset effects may take many decades to develop to a comparable level. The impact of clearing is permanent so the offset must be maintained in perpetuity.

6.3 Habitat compensation

The actions listed for offsetting native vegetation clearing (p3) are not quantifiable and comparable. The PENGOS are disappointed that the NSW government does not demonstrate an appreciation of the complexity and time-dependant nature of natural systems.

7. IN BRIEF

- 7.1 The Peak Environment Non-Government Organisations remain strongly opposed to the use of offset, trading or banking schemes for damage to natural ecosystems, including land clearing and wetland destruction.
- 7.2 There may be limited opportunities to offset quantifiable pollution, on a single-pollutant basis.
- 7.3 The principles of Ecologically Sustainable Development should be used to benchmark any proposed pollution offset scheme.
- 7.4 Offsets must not replace the core business or duty of care of government, landholder or developer.
- 7.5 Environmental objectives must be set at the local and regional levels prior to the implementation of any offset scheme. Ongoing monitoring and adaptation of the scheme is needed to ensure that the objectives are met.
- 7.6 All environmental values and costs, including off-site impacts and time factors, must be included in any offset or trading scheme.
- 7.7 Any offset must be completed and audited prior to the polluting or degrading activity taking place.
- 7.8 Any offset scheme must be designed with sufficient precautions built in to allow for failure and to ensure a net environmental gain, including:
 - minimum 10:1 ratio;
 - pollutant-for-pollutant only;
 - damage/offset proximity.
- 7.9 If ecosystem offsets are to be instituted, that at least double the ratio of offset to debit be used (20:1), to build in further precautionary measures to account for the unknown and irreplaceable environmental values of any natural ecosystem.

8. REFERENCES

- Ambrose 2000, Wetland Mitigation in the United States: assessing the success of mitigation policies. *Wetlands (Australia)* 19(1): 1-27.
- Chapman, M.G. and Underwood, A.J. 2000, The need for a practical scientific protocol to measure successful restoration. *Wetlands (Australia)* 19(1): 28-
- Commissioner William Simpson, Chairman 1999 The Long-Term Planning and Management of the Illawarra Escarpment. Office of the Commissioners of Inquiry for Environment and Planning, Sydney.
- Committee on Mitigating Wetland Losses 2001, Compensating for Wetland Losses under the Clean Water Act, National Academy Press, Washington.
- Commonwealth of Australia 1997, Partnership Agreement between the Commonwealth of Australia and the state of New South Wales under the Natural Heritage Trust of Australia Act 1997.
- Cuperus, R., Bakermans, M.M.G.J., de Haes, H.A.U. and Canters, K.J. 2001, Ecological compensation in Dutch highway planning, *Environmental Management* 27(1): 75-89.
- Department of Land and Water Conservation (DLWC) 2001, Offsets, Salinity and Native Vegetation – discussion paper.
- Department of Land and Water Conservation (DLWC) 2001, Discussion Paper #9, Offsets and Native Vegetation Clearing in NSW (draft).
- Department of Urban Affairs and Planning (DUAP) 2000, Sustaining the Catchments – Regional Plan for the Sydney Drinking Water Catchments (first draft).
- Environmental Defense 1999, Mitigation banking as an endangered species conservation tool. A report by Environmental Defense in cooperation with Sustainable Conservation.
- Environment Protection Authority (EPA) 2002, Green Offsets for Sustainable Development concept paper.
- Gibbons, P., Briggs, S.V. and Shields, J.M. 2002, An ecologists view of some economic instruments intended for terrestrial biodiversity conservation in Australia, unpub.
- Gittins R 2002, We can keep growing – and keep Australia green. Sydney Morning Herald, 22-23 June 2002.
- Natural Resource Management Ministerial Council 2001, National framework for the management and monitoring of Australia's native vegetation. Department of Environment and Heritage, Canberra.
- Nature Conservation Council 2001, NCC Submission on the "Offsets, Salinity and Native Vegetation" discussion paper (unpub.)
- New South Wales Government 1996 NSW Wetlands Management Policy.
- New South Wales State Wetlands Advisory Committee 2002, Compensatory Wetlands – a discussion paper under the NSW Wetlands Management Policy (draft).
- Queensland Government web-site 2002, Duty of Care, Codes of Practice and Environmental Management Systems: http://www.nrm.qld.gov.au/land/management/duty_of_care.html
- Salinity Experts Group 2000, Report to the NSW Government on market-based instruments, Treasury Office: <http://www.treasury.nsw.gov.au/salinity/experts.htm>