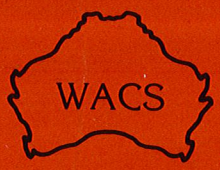
TOWARDS A CONSERVATION STRATEGY FOR WESTERN AUSTRALIA

A Report on a Meeting held at
Yanchep National Park, W.A.
July 9 -11, 1982



Conservation and Environment Council
and
Department of Conservation and Environment

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PREFACE

The World Conservation Strategy, with its immense scope, is essentially concerned with physical survival on earth. It is also one of the few conservation statements to have achieved international recognition and acceptance. For many countries around the world, the implications have been timely, particularly the recognition that development must be bonded with conservation in order to sustain itself. The ultimate value of the Strategy, however, will only be as great as its realised effect - when its intentions are converted into action.

Western Australia is a large area by any standards. It has several climates, a coastline of 12 500 kilometres, a large number of endemic plants and animals, a vast arid area, great mineral wealth, a small population - a combination of assets and problems unlike any other. To impose a conservation strategy upon a region like this is difficult. It could not be done by the World Conservation Strategy - its message is for us, but its scope is too broad. Nor can it be done by a National Strategy which cannot be specific enough for our needs. The answer apparently is that Western Australia should produce a Western Australian Strategy, not merely a document, but a sufficiently relevant one, with the intention to put into action what Western Australians themselves decide.

To carry out this intention, a programme has been planned of which the Yanchep meeting is an integral part. In developing a Western Australian Strategy from the beginning, we are breaking new ground in a number of ways. We will be establishing our own priorities, determining our own values, ascertaining

the effectiveness of our own management of resources, identifying our own problems.

In the informal environment of a managed or search-type meeting taking place over a period of three days at Yanchep, a very diverse group of people were encouraged to explore the resource-based realities of their State. In the following report of the meeting, it will be seen that the viewpoints were those of the delegates as individuals; they were spontaneous, sometimes biased, sometimes inaccurate in details, but generally having a wide-ranging knowledge of, and a concern for their State and its way of life.

OPENING ADDRESS TO THE YANCHEP MEETING BY COLIN PORTER

Director, Department of Conservation and Environment

It is my pleasure to welcome you here this evening at the start of this Conference and to wish you an enjoyable and productive weekend. Many of you may be wondering what the Conference is aiming to achieve, others may have only a hazy idea of what the Conservation Strategy is about. The former, I will leave to the organisers of the Conference. I do however, want to talk a little about the Conservation Strategy which springs from a blueprint for reconciling development with the conservation of renewable resources.

The World Conservation Strategy was launched in March 1980 and its message is clear and inarguable: if mankind is to grow in number and prosper, it needs to manage its renewable resources - productive soils, forests, water, wildlife, etc., on the basis of sustainable yield. It does not argue for no growth, but for managed growth. It draws some alarming conclusions from worldwide statistics on the processes of soil erosion leading to desertification, the over-cutting of natural forests and the pollution of both water resources and the oceans. It says quite forcefully that mankind cannot continue its profligate ways for many more years without a dramatic fall in the standard of living.

Some of the examples quoted in the World Conservation Strategy do not apply to Australia. We are the lucky country. We have all the advantages of a productive land combined with a tiny population. Moreover, we have an advanced technology which enables us to harness our resources and increase the productivity of our soils. Not for us the subsistence farming and gross over-cutting of native

forest to achieve survival which is not uncommon in third world countries.

Does the World Conservation Strategy then hold no message for us? We believe that it does. Our privileged position does not win for us exoneration from critical self-examination. Australia is far from accepting the zero population growth goals of countries like India and China. On the contrary, we are wedded to the concept of unending economic growth and development. The WCS has as strong a message for us as it does for the rest of Asia: 'long-term conservation of our natural resources are essential for long-term economic growth'.

It is my impression that the trend has been towards short-term goals. 'Live for today, and let tomorrow take care of itself' seems to be our philosophy. Governments are more preoccupied with survival and getting re-elected than in planning for future generations. Politicians abound, but statesmen are few and far between. Particularly in these days of recession and rising unemployment, the community finds it hard to give much thought to the generations to come.

What then can we do about it? Whether we are complacent about our natural resource policies or not, we can lift our horizons, at least during this weekend, to the renewable resource future of Western Australia. The Government has agreed that we will produce our own conservation strategy and has committed finance and manpower to that end. The object is not to produce a tub-thumping document that proclaims to the rest of the world how clever we are. The object is to take a realistic look at where

our resource management policies are taking us using the philosophy of the World Conservation Strategy as a guide.

To do this, we need factual information on the effects of our existing policies. For example: What is the long-term impact of current grazing practice on vegetation? Are current land-use policies aggravating soil erosion? Are current restrictions on land clearing adequate to control salinity in our rivers? Do current forestry practices lead to a long-term decline in the nutrient status of our forests? I do not wish to pre-judge the range of questions which we need to ask, let along the answers to them. There are people assisting in the Strategy and here today who can provide much better answers than I to those questions.

How far then should we lift our horizons for natural resource conservation? Treasurers produce annual budgets, governments are limited by three yearly elections, town planners tend to think of 20 to 30 year horizons, foresters have to plan perhaps a century ahead. If we think in terms of sustainable yield, we should be thinking even further ahead than that for natural resources. The matter of minerals and basic raw materials cannot be ignored at least in Western Australia. Strictly speaking, the conservation of non-renewable resources is outside the scope of the Strategy. However, the impact of the mining can have an effect on renewable resources and cannot therefore be ignored in the context of the State Strategy.

On the national scene, a decision was made last year to prepare an Australian National Conservation Strategy. Lead writers were engaged to prepare

review papers on the various resources and these have been subjected to discussion and criticism by a steering committee, on which Western Australia is represented by Maurice Mulcahy, and at a Conference held in Canberra last Christmas. The difficulty with preparing a national strategy lies in the inadequacy of the data. To my mind, policies for the future in natural resource management should arise from a survey of the factual results of former policies. Nevertheless, we are responding to successive drafts of the National Conservation Strategy in an effort to ensure that it recognises the problems and solutions that are unique to us. The preparation of national and sub-national strategies was recognised and recommended by the World Conservation Strategy. The essential difference between the National Strategy and our own State Strategy is that the former is working from the top downwards, whereas the latter is hoping to work up from the bottom. We hope that the State Strategy will be completed before the end of this year in time to make a substantial contribution to the National Strategy.

The Strategy and this Conference are both about planet earth and its survival not merely into, but beyond the 21st century. I urge you to leave your barrows or axes related to current pressures outside the doors. You can collect them again after the Conference. In any case, the world in 1982 with its problems will be on you all too soon. The next two days will call for far-sighted and dispassionate deliberation. I wish you well in it.

INTRODUCTORY REMARKS BY : THANE RINEY

My plan is to link in with Colin's remarks by briefly re-capping the relation of the Western Australian Strategy to the World Conservation Strategy, then to describe the plan we have adopted for developing the Western Australian Conservation Strategy, then the process you will be going through here at Yanchep will be reviewed. We will then commence the first plenary session by giving you the opportunity to say something about your expectations from this meeting.

To re-cap and put into perspective these various strategies, the overall umbrella strategy is, of course, the international or World Conservation Strategy. Various countries all over the world have shown some enthusiasm for developing national strategies and Australia is one of these. The Commonwealth Government has committed itself to developing a national Australian Conservation Strategy. The Premiers of each State and Territory have also committed their Governments to following through and assisting the team in Canberra in developing a national strategy statement, hopefully acceptable to all States and Territories. As Colin mentioned, the Western Australian government has set up a committee to respond to initiatives flowing from Canberra. We are thus responding normally as are all the other States in the effort to develop a national strategy statement.

In addition, Western Australia has decided to take the initiative of following the suggestion made in the World Conservation Strategy whereby the first priority suggested for National or State action programmes involves the preparation and implementation of national and/or sub-national conservation strategies.

In other words, we as a State have regarded the World Strategy as a good thing. The National Strategy efforts may be even better in the sense that they may be more relevant. However, no matter how fine these statements prove

to be in future, it was recognised that before real improvement could happen within the State a strategy would have to be generated, as Colin has said, from the ground up, within the particular context of Western Australia. This meeting is a part of this exercise.

The aim of the strategy team is to help in producing an essentially Western Australian Conservation Strategy Report and, insofar as possible and at the same time, to assist in initiating trends toward more effective means of dealing with present and future conservation problems.

Up to this point, we are exactly in line with both national and international approaches to the strategy. However, neither of these umbrella strategies give much guidance, as to how to proceed in developing local strategies. With this in mind, we have looked at a basic common-sense principle; have adopted an approach and struck out on our own. We hope that our efforts may be of interest to organisers of both the national and world-wide strategies.

We have described the principle and consequent approach in this way : to be effective in accelerating change, rather than just producing a report, emphasis has been placed on getting relevant decision makers involved at as early a stage as possible, including an early involvement in the preparation of the strategy itself. This meeting forms part of this involvement and brings together a very wide mix of people and interests within Western Australia.

A process has already started which has four distinct elements or phases, although some of these naturally overlap.

First, we have already made direct contact with many organisations directly or indirectly responsible for

particular resources or groups of resources relevant to a Western Australian Strategy for conservation and development. And from each of these organisations we are getting information on what constitutes the basic resources, what sorts of policies are in existence for dealing with these resources, what are the problems involved in putting these policies into practice, what are the mechanisms for dealing with overlapping or conflicting interests, what kinds of improvements or changes do they visualise in future years in dealing with these resources.

The second phase is, in fact this meeting, which is designed as a carefully managed conference where a selected group of about 35 people from the widest possible spectrum could be assembled here to consider some of these same issues. You include decision makers, knowledgeable or specially interested individuals from both public and private sectors. The criteria for your selection, in case you are looking around and wondering, was very loose. We had three criteria in mind. We looked at suggested participants in relation to their ability to respond technically or with a particular background that would not be present in other individuals. Hopefully, we wanted people who would at least listen to other points of view. And we were particularly interested in getting people with a proven, genuine interest and concern for the long term future of Western Australia.

This meeting has three main purposes, first to develop a broad perspective of conservation and development in Western Australia with an eye to the future. Secondly, to stimulate interest in an ongoing process of improved capacity to deal effectively with both development and conservation in harness as it were. Finally, this meeting's deliberations should assist with the design and

emphasis of the Western Australian Conservation Strategy. It is hoped that this will develop as a by-product of your deliberations, although it may not be overtly stated in these terms.

The third phase is seen as a series of separate meetings, each dealing with a problem identified at this meeting. Such meetings will be based on existing committees wherever possible. It is anticipated that these meetings will, at least on a one-off basis, get as broad a representation of interested parties as possible around a table and examine matters of mutual interest in dealing with their particular concerns. Useful in terms of an input to the Strategy would be the results of such deliberations insofar as they may deal with such questions as, for example, the extent to which communication and co-ordination is satisfactory, examples of successful actions already taken in achieving development goals in harmony with conservation requirements, main problems and suggestions for improvement. These follow-up meetings will have two main purposes, to further the process of improving co-ordination in areas where conservation concepts are or should be an integral part of development and management practices, and each meeting should make an important contribution to the writing of the Strategy.

All these meetings will be within the context of the World Strategy. Even after this Yanchep meeting, most elements in the World Strategy should have been discussed, although not necessarily in World Conservation Strategy terms. This is an important divergence, for local action must not only be done by local people, but described in local terms - even with local cliches, if you like. As mentioned before, the Western Australian Conservation Strategy will examine where we stand at the moment and where we seem to be going, but with the basic ideas and approaches coming from within the context of the realities in Western Australia.

The final phase is to put a report together based essentially on the evolving Western Australian view of conservation and development, linking it, insofar as possible, with the World Conservation Strategy. It will naturally include not only a few lessons from our own past experience, but examples of successes already achieved along various relevant lines. Processes will be described which have already started to maintain a continuing vigilance in respect to maintaining a renewable resource base in harness with development; both adequate to cope with a future.

Now, back to the present meeting.

While at Yanchep, you will be guided through a process where we can consider various issues related to conservation and development and in terms of the future in which this State will hold many more people than at present. Without very careful planning, this will imply an increase in various environmental stresses in terms of air, water, soil, land uses of various sorts.

Our plan in general is to start very broadly in plenary sessions and gradually work toward the real meat of the meeting as we progress. If one could diagram a plan of such a conference, it would look very much like a funnel, with the first plenary session at the top rim. The titles of the various levels (sessions) as we proceed toward the neck of the funnel are at first infinitely flexible, but become more and more fixed and acquire ever greater purpose as we proceed into the neck of the funnel where we will then concentrate on the main business of the Conference.

Shortly, in our first plenary, we will go through an exercise where you will have a chance to say what your expectations are from this meeting. Then overnight we will have a close look at your suggestions and will incorporate them into the structure of the following two days deliberations.

Tomorrow we will start very broadly by looking at the external influences which affect conservation and development in Western Australia. These may be either national or international influences of various sorts. We will then proceed through several general but increasingly specific considerations until we arrive at a stage, near the neck of the funnel, when we will have a look at the major problems and priorities in conservation and development with which we are faced today.

Following this, we will then split into specific working parties and work on these major problems to which you yourselves will by that time have identified and assigned some kind of priorities.

The Conference will finish with a summary of where we have reached by Sunday morning.

PLENARY SESSIONS

The structure of the meeting was planned with a number of purposes in mind. A certain amount of time was allowed for some preliminary sessions on a series of topics which were fairly general in nature at first, but gradually became increasingly specific to the tasks of the working groups at a later stage of the meeting. The following agenda contains the subjects discussed in the open forum:

1. Expectations from the meeting. What do you hope to get out of the meeting?
2. External events influencing conservation and development in Western Australia.
3. Probable conservation and development futures for Western Australia in the 1980's and 1990's.
4. Desirable conservation and development futures for Western Australia in the 1980's and 1990's.
5. Opportunities available to Western Australia in resource management and development, including major resources.
6. Constraints to management and development of Western Australia's natural resources.
7. Major conservation and development problems and priorities.

Delegates clearly saw future trends as being "predictably" unstable. Continuing increase in world populations seemed a certainty and a subsequent increase in demand for agricultural products as a result. Immigration on an unknown scale into Western Australia would continue, probably intensifying changes which were already taking place, such as increasing the proportion of foreign ownership of land and other resources. It was considered that conservation priorities might change as a result of this and other unknown events and economic pressures outside Western Australia in the future.

Similarly, climatic changes or events, such as cyclones could have a cumulative "multiplier" effect on downgrading land. World energy production and requirements were seen as certain to change and world politics would also have some effect in determining the future.

Reflecting external changes, would be a number of changes in the Western Australian way of life. With increases in population, mostly from outside the State, would come alterations in living standards and increasing pressures on such resources as land and water. Generally the postulations for the future were gloomy or doubtful - increasing loss of habitats, continuing degradation of agricultural land and soils, decreasing amount of available farmland, a reluctance on the part of politicians to spend money on long-term measures for conservation, were all mentioned as concerns. Unknown factors were the effect aboriginals would have on land as they entered a new land management phase; other unknowns were the effect of changing trends in technology on farms and in the increase of absentee landlords on the land. Linked with the problem of absentee landlordism was that of land becoming valuable as an investment commodity and it was clearly felt that this could have undesirable implications in the future. As the cost of land increases, not only does it become a trading commodity, but other implications emerge, among them the increased cost of food. A search for new types of food or new food sources seems part of the future. Pressures on recreational resources would increase with increasing population, leisure time and fuel prices - people will be forced to find recreation close to home. On a more positive note, delegates believed that an increase in environmental awareness would take place.

Directed to look at desirable futures, delegates mentioned a number of things which could counter-balance the results of the previous exercise. Among them, a reduction in the deterioration of agricultural and pastoral land, increased agricultural production per unit of land using new technologies, new policies to encourage these two factors, maximising benefits of multiple use particularly in Crown land within a proper framework of policies for intensive, sustainable production. Gaps in present knowledge were frequently mentioned as desirable to fill before further development took place, in areas such as an inventory of land resources, and an understanding of the desirable numbers of people an area could hold. A desirable future would also hold politicians who were more environmentally aware.

Opportunities available to Western Australia were seen as numerous, the resources of the land including climate and the energy possibilities from wind, tide and waves as well as sunlight were mentioned along with the more obvious resources of land and minerals. Extensive areas of land still under public ownership was seen as an unrivalled opportunity in options available. Extensive marine environments, large numbers of animals and plants able to survive arid climates, areas set aside as reserves, an educated population with a highly centralised educational system which made good propaganda easy, were all seen as advantages. The relative isolation of Western Australia was also seen as advantageous enabling the State to progress without pressure from outside.

Constraints to progress were seen to be mainly in three areas - environmental limitations, planning and funding. The fragility of the environment, climatic factors, tyranny of distance, soils, etc. were seen as constraints to development, lack of

relevant information and appropriate organisation in a great number of fields obstructed proper planning and funding for research and management, cost of improvements and rehabilitation effectively limits progress. However, upon review, it was seen that the majority of constraints were caused directly or indirectly by people rather than other factors, and could therefore be seen as something it was possible to change.

The final exercise which concluded the general plenary sessions, was the listing of major conservation and development problems in Western Australia. Over thirty problems were cited, reflecting the diversity of backgrounds of the delegates. Each participant was then asked to nominate three problems as being in his or her opinion, the three major problems. In this way the following problems were given priority. They were -

1. Environmental problems in agricultural and pastoral areas, e.g. soil degradation, salinization, over-grazing, etc.
2. Land allocation, including new land releases for agriculture and management for parks and reserves, including marine and freshwater reserves.
3. Water supplies, including both quality and quantity.
4. Degradation of coastal zones and estuaries.

Working parties were then formed for each of the above problems and a fifth group was formed to explore the issues of some of the remaining problems, which were -

a. Conservation on all areas other than reserves for protection of fauna, flora and vista.

b. National pride as a means of emphasising conservation attitudes through education.
c. Waste disposal.
d. Urbanisation
e. Siting of industry
f. Distribution of the tax dollar/political priority for conservation.

The five groups were asked to consider the problems in some detail and to determine:

- What are the problems?
- Existing mechanisms for identifying and for dealing with them. Are they satisfactory?
- Existing mechanisms for resolving overlapping or conflicting interests. Are they adequate?
- Specific suggestions for improvement, problem by problem.

The results of the deliberations of the working groups, including some comment and discussion by all delegates during a reviewing session, are as follows.

Group 1 - ENVIRONMENTAL PROBLEMS IN AGRICULTURAL AND PASTORAL AREAS

Problems :

Land salinity appeared to be increasing in terms of the number of hectares involved, but at present was probably no more than about 3% of the area cleared for agriculture. The proportion of land affected varies widely according to catchment. Problems of salinity and erosion affect the quality of pastoral areas also.

Salinity in irrigated areas is also a problem which is leading to loss of productivity in dairying and horticulture, though hard to demonstrate.

Stream salinity may occur away from farm areas but agriculture is usually involved since it is often a consequence of clearing the land for agriculture which causes the salinity.

Wind erosion is of seasonal occurrence and is related to cultural practices and overgrazed pastures. For instance, 64,000 hectares of crop on the South Coast was sandblasted in 1981.

Water erosion may be affected by the placement of banks on farms or pastoral properties, by firebreaks, drains, etc. It can be associated with salt affected land.

Degraded vegetation. With regard to degraded vegetation in pastoral areas, it seems necessary to review stocking attitudes and attitudes towards feral animals.

Introduced plant species. Whether some grass species introduced to pastoral areas are beneficial or not is a debatable point. Where the problem occurs on agricultural land we consider these to be 'weeds', and consequently there is the need to use expensive chemicals or 'maximum' cultivation.

Maintaining soil fertility and structure, and pH levels. Soil acidity is a problem, especially on some wheatbelt soils.

Evaluating new technology particularly the effect of cultivating, harvesting and seeding machinery on soils. While there is a considerable amount of new technology available in agriculture which promises beneficial effects as far as soil degradation is concerned, there are also many machines available which have the reverse effect.

Loss of residual vegetation or lack of regeneration of existing vegetation. Trees seem to be disappearing from the agricultural areas.

Chemicals. The question of residual effects of chemicals (herbicides, insecticides and fertilisers) on the ecology and the quality of the pastures. It is recognised that there are differences between chemicals on both those scores. Some fertilisers aggravate the soil acidity problem.

Potential damage by fire, cyclone, etc. may be thought of as being related to some of the previous problems since they may aggravate basic problems which we have created.

Existing Mechanisms for Identifying Problems. Are they Satisfactory?

Existing mechanisms are identified in three ways - as feedback from land users which is largely qualitative, from research and from monitoring (usually surveys).

Feedback from pastoral areas comes from general enquiries, Department of Agriculture's advisory committees, Executive Officer of the Pastoral Board, Commissioner for Soil Conservation, Advisory Committee of the Pastoralists and Graziers' Association. Judging from insufficient and unco-ordinated action it appears that ways of identifying pastoral problems are at present unsatisfactory.

Problems in agricultural areas are identified in a number of ways - through the Primary Industry Association, Pastoralists and Graziers' Association, Commissioner for Soil Conservation, Soil Conservation Advisory Committee and District Committees (where there is scope for future improvements as they have been inactive in the past), Country Shire Councils' Association and Regional Committees, Zone Councils of the Agriculture Protection Board, politicians and political interest groups, the Department of Agriculture and the Rural and Allied Industries Council. However, there is scope for more action.

Research. C.S.I.R.O. and the Department of Agriculture have adequately documented vegetation in pastoral areas. For agriculture the Department of Agriculture, chemical companies such as C.S.B.P. and I.C.I., consultants and C.S.I.R.O. have all made contributions to research, but it is felt that there has not been enough work done on long-term viable crop/grazing systems, and not enough on consequences of chemicals. Since there has been a recent boost in resources for research on salinity and erosion, including wind tunnel work, it remains to be seen whether the work is sufficiently relevant for it to be usefully applied. The Research Co-ordinating and Research Steering Committees appear to lack co-ordination with agriculture as a form of land use, but this will undoubtedly be due to the fact that these are relatively new committees and should improve their performance in the future. The Main Roads Department and Forests Department were considered to be doing good work in the research field.

All kinds of bodies were discussed, including government and private enterprise, subcommittees of various kinds and the general conclusion was reached that although there is an enormous amount known as a result of research and more is on the way for agricultural areas in particular, the real problem is applying what we already know to the best advantage.

Monitoring of pastoral lands is improving. There have been recent changes in the Pastoral Board, but it is too early to tell if these will result in increased effectiveness in preventing or rehabilitating degraded land. Some additional funds might have been available at one stage resulting from the Commonwealth Soil Conservation study, but (due to the inadequacy of the funding and a general lack of resolve) very little was actually provided from Federal sources. In new land release for agriculture the initial development plans for conditional purchase of blocks have been inadequate in the past and are not enforced. Surveys are usually made only after major events such as large scale erosion, have taken place. Ad hoc salinity surveys are undertaken, but more predictive work is needed. Monitoring work on stream salinity by the Public Works Department, Metropolitan Water Board, Department of Conservation and Environment, mining companies and the Forests Department is providing adequate data.

What are the Existing Mechanisms for Resolving Problems? Are they Satisfactory?

Problem	Mechanism	Evaluation
Land Salinity	Farmer initiative including experimenting with new methods of cultivation, banks, drains and chisel plough D. of A. research and extension - moisture use, drainage, salt tolerant plants, and catchment studies.	Both inadequate - research needs to increase scope; extension has been constrained by an approach of minimising costs (e.g. banks) rather than what is technically feasible (e.g. drains).
Stream Salinity	Clearing legislation for specified catchments Research into agro-forestry by D. of A., C.S.I.R.O., Forests and D.C.E. Catchment studies by Alcoa and P.W.D. Reafforestation in the water catchments by P.W.D. and Forests. Replanting on farms through extension from Forests, D. of A. and private consultants.	All moves in the right direction but scratching the surface, very late start.
Wind erosion	D. of A. extension and research into cultural control (agricultural areas) and grazing control (agricultural and pastoral areas). C.S.I.R.O. and D. of A. research into ripping and regeneration (pastoral areas). Local Govt., D. of A. dust abatement programmes.	Much is known but its application through advice and controls where necessary has been inadequate. Research into new farming systems is needed and is starting.
	New land release strategy - consideration must be given in any new release regarding the potential for erosion.	The surveying of blocks and paddocks has been inappropriate in the past.

Problem	Mechanism	Evaluation
Water Erosion	Govt. programmes of engineering and earthworks. Farm earthworks, contouring and cultural practices.	Lack of co-ordination between regulation and extension, inadequate training and too few soil conservation staff, low priorities of D. of A., limited acceptance of contouring.
	Pastoral grazing control	Also lack of co-ordination between regulation and extension.
	Local Govt., M.R.D. - roads, drains. Legislation - Soil Conservation Act.	Hasn't been used.
	Whole catchment projects	Too few projects and lack of Federal funding; Wellington catchment work provides a good model.
	C.S.I.R.O., D. of A., Alcoa research.	Adequate.
Degraded Vegetation	A.P.B. Feral Animal control. Govt. kangaroo programme. Pastoral stocking control.	Adequate. Limited by shooters available. See water erosion above.
Introduced species	Weeds - chemical companies and D. of A. research.	Improvement, but still deficient with regard to ryegrass.
	Chemical, biological control and pasture species - Pastoral A.P.B. regulatory programmes.	Good, limited by finance; none in the north.

Problem	Mechanism	Evaluation
Vegetation loss	Forests, D. of A., research and extension.	Not enough for reliable planting and regeneration.
	Farmers initiative in planting of trees and minimising effects of chemical application.	Initiatives have been taken, but results are disappointing.
	M.R.D., Local Govt., and Westrail - verge management.	M.R.D. has the knowledge, communication needed. Westrail overuses chemicals and heavy machinery.
	Local Govt. nurseries, voluntary groups.	Not enough encouragement.
	Govt. acquisition for reserves, existing reserves, farmer reserves.	Lack of incentive for individuals to take initiative, Govt. could do better in this respect.

Specific Suggestions for Improvements, Problem by Problem

1. Land salinity

A. Tax concessions. Special loans for work to be done on farms. These should not encourage overclearing.

B. Development of long-term strategies by government, at the Cabinet subcommittee level, to reverse the trends. Some good, general lateral thinking is needed to arrive at what is feasible regardless of economics.

C. Reforestation - on a catchment basis, as a pilot demonstration.

D. Funding for local governments - to purchase or provide equipment for drainage works, or other earthworks, as required.

E. Government support for initiatives by farmers in catchment groups.

F. New farming systems, including agroforestry.

2.	Stream salinity	A. The example of the Wellington scheme should be used as a basis for better understanding. We should consider the whole south-west, stream by stream, catchment by catchment and decide which ones should be allowed to go salt and which ones we should try and keep pure.
		B. There should be education directed towards farmers, water authorities and politicians (at the Cabinet sub-committee level) concerning the size of the problem.
3.	Wind erosion (most serious long-term threat)	A. We must develop and demonstrate whole new management systems - perennials, agroforestry, nil-grazing, new cropping systems, - and this applies to water erosion also.
		B. Tax concessions for windbreaks - extensive tree and shrub planting needed.
		C. More extension of known techniques - and this applies to other kinds of erosion.
		D. Government acquisition and rehabilitation of problem pastoral areas (South African approach), compensation to landholders.

4.	Water erosion	A. Same as 3A - to suit bigger machines and new crop technologies. B. Same as 3C - greater commitment, promotion, and campaigns by the Department of Agriculture extension service. C. Government identification and rehabilitation of problem pastoral areas. D. Increase size of emergency loan amounts.
5.	Degraded vegetation	A. Restriction in pulling of sandalwood. B. Development of regeneration techniques for blocks of bush on farms.
6.	Land degradation generally	A. Urgent action is required. There is need to act before the problem develops too far. This requires coordination at every level including joint ministers, at the cabinet sub-committee level. Define, predict and communicate magnitude of the problem - public included. Review for adequacy. B. Federal funding of action programs (not research) requires Federal/ State coordination. Differences between action and research should be clearly defined. C. Soil Conservation Act should be used. The advisory Committee should form State strategies. The District committees will be formed

		soon. Local government and groups should be involved. These committees should take a major role in coordination of action programmes.
		D. The South African rehabilitation system for pastoral lands should be evaluated.
7.	Loss of vegetation	A. Recognition that aesthetics are important in the rural landscape - preservation and beautification should be an integral part of any planning programme.

It is important to realise that action is urgently required now, rather than waiting until these problems start affecting the production of food. There have been some encouraging signs, such as the joint ministerial Support for Trees in the Rural Landscape seminar, but coordination is required at all levels when acting on land degradation.

With regard to the funding of programmes of action, it has seemed in the past that more money has been spent on research than on implementing research. We feel that most money should go on action programmes at this stage. The Soil Conservation Act has recently been revised. It should be used.

Group 2. - LAND ALLOCATION INCLUDING NEW LAND RELEASES FOR AGRICULTURE, AND MANAGEMENT FOR PARKS AND RESERVES, INCLUDING MARINE AND FRESH WATER RESERVES

A. What Are The Problems?

Parks and Reserves

1. Incomplete coverage of range of ecosystems by reserves.
2. Lack of means for evaluation of competing forms of land use.
3. Lack of complete inventories of flora, fauna, land types, marine ecosystems, plant communities, soils, mineral resources.
4. Inadequate management facilities for existing reserves.
5. Lack of adequate taxonomic research and research into biology, particularly reproductive biology of plant and animal species.

5a. Lack of public participation in decisions relating to change in public use.

6. Sources of revenue to fund the above.

New Land Release

7. Inadequate land use planning.
8. Lack of climatic and soil data and suitable management practices for marginal land.
9. Lack of regeneration of the original vegetation if development fails.

B. Existing Mechanisms For Identifying Problems

Parks and Reserves

1. Departments and community may recommend creation of reserves.
2. Lands Department is the State's land authority; Cabinet ultimately resolves competing claims.
3. State Herbarium conducts flora surveys etc although under-staffed for the purpose.

W.A. Museum and Department of Fisheries and Wildlife are responsible for fauna surveys. Forests Department conducts limited surveys on own areas. Inventory of plant communities - not official, done privately.

Marine ecosystems - nothing known, some isolated studies such as identifying oil sensitive ecosystems.

Land forms and soils - C.S.I.R.O. very little; Lands and Surveys is responsible for new land being surveyed before release.

Mineral resources - Geological Survey, mining companies, prospectors, B.M.R.

(Note: No agency is responsible for overall biological surveys. Priorities reflect agency biases. Thus there are no adequate faunal surveys of Darling Range, although there is one of System 11.)

4. Management of reserves:

Conservation reserves -	under National Parks, Fisheries and Wildlife, Local authorities, Lands Department
Aboriginal reserves -	Aboriginal Lands Trust
Commonwealth reserves -	Commonwealth departments

5. State government provides finance except for some recreational reserves such as Rottnest which is self-financing.

New Land Releases

Lands Department and E.P.A. deal with problems 7, 8 and 9 listed above.

C. Existing Mechanisms for Resolving Problems

Same agencies as listed in B. with cabinet as ultimate authority. Adequacy rated 1 - 5, (highest rating 5).

Parks and Reserves

1. System would be adequate if data from the reserves was available. (3)
2. Mechanism is there but mode of operation needs improvement (3).
3. Both the State Herbarium and Fisheries and Wildlife Department are understaffed and lack funds for purposes of determining species distribution, and for assessing rare and endangered species respectively. (2)
   Similar difficulty is encountered by the Museum and Fisheries and Wildlife Department in animal surveys. (2).
   System 11 Survey, in progress, has shown little official interest in vegetation mapping and biological surveys and this lack applies generally in Western Australia (2).
   Marine ecosystems (0)
   Land forms and soils - very little being done (1)
   Mineral resources - active coverage, good published reports from Geological Survey. (4)
4. All organisations suffer from chronic shortages of funds and staff for supervision and research. State government would be source. (1)
5. State Herbarium understaffed for purposes relating to conservation, backlog of naming new species, in curation, and in field surveys. Biological work hopelessly understaffed, lack of basic knowledge such as pollinators of rare species, lack of knowledge of fire ecology of most species, highlighted by increasing pressure for burning-off in reserves. (1)
6. See 4.

New Land Releases

The present system lacks vital data on biological resources, and soils in dealing with problems 7, 8 and 9 listed above.

D. Mechanisms for Resolving Conflicts or Overlapping Interests

1. Conflicts may arise with biological and recreational reserves from:

mining
agricultural and pastoral use
tourism and recreation
industry
waste disposal
quarrying
public utilities
local authorities

These are resolved in various ways by negotiation, compromise, adjustment of boundaries and co-ordinated planning. Adequacy 3 - 4.

E. Suggestions for Improvement *** immediate urgency

1. Staff of herbarium should be strengthened to cope with the deficiencies previously outlined.
2. Staff of King's Park, Museum, Fisheries and Wildlife Department also should be strengthened.
3. Botanic Gardens and the zoo should be strengthened for cultivation and breeding of rare and endangered native species.
4. Wildflower farming should be encouraged to take pressure off wild populations.
5. Biological stock in reserves should be made available for use in scientific research and horticultural purposes under suitable control.

*** 6. State should develop a system for identifying and developing marine parks.

*** 7. State should establish a permanent ecological survey organisation to evaluate and re-evaluate the landscapes, soils, flora, fauna and hydrology (as is now done in Canada); and expand the land information system accordingly.

*** 8. There should be an immediate review of the representation of identified vegetation types in reserves in W.A. with a view to remedying any

deficiencies.

9. A privately sponsored foundation should be set up to assist in funding conservation work of all kinds (as has been done successfully in New South Wales).
10. Participation of the public should be encouraged in voluntarily assisting the work of conservation departments, the Botanic Garden and museum.
11. Research is urgently required into the dynamics of ecosystems, especially in relation to fire in the south-west.

*** 12. Additional funds and staff are required by all authorities managing reserves, if these are to be adequately treated.

13. Increased environmental education is needed, including interpretation in conservation reserves (i.e. having people on the spot to explain things), and to explain conservation issues among the rural population.
14. Establish a central contact advisory point for land managers.
15. Recognition by land managers that recreation is a legitimate form of land use, more camping reserves are required, and nature trails and wilderness areas for trekking.
16. Some mechanism should be found to ensure proper conservation management in the future in aboriginal reserves.
17. The need for planning, design and management of regional parks (e.g. Whiteman Park) should be recognised and administrative provision made.
18. Areas proposed for agricultural land release should be subject to flora and fauna surveys as well as conventional land survey.

Group 3 - WATER SUPPLIES, INCLUDING QUALITY AND QUANTITY

What Are The Problems?

1. Release of salts from soil profile, due to:
   - agricultural clearing, (e.g. Collie catchment, Murray, Swan/Avon, Franklin, Blackwood etc.)
   - other clearing, especially in rainfall less than 1100 mm, possibly combined with the effects of bauxite mining, (e.g. bauxite mining, State Energy Commission works, forestry trials)
   - disease, (possible effects of dieback reducing evapotranspiration potential of forest in susceptible areas).

The effectiveness of reafforestation to control or reduce salinity has been demonstrated in the history of the Helena catchment. Whatever solution is implemented, the salinity problem represents an additional cost in providing potable water for the south-west. Who should bear this cost?

2. Short-term human activities in catchments reduce bacteriological quality and increase turbidity. Causes are:

- recreational use of forested lands, pressure for activities will increase in future
- logging, woodchipping
- mining, (acid leachate from coal mining in catchment rather than in non-catchment areas)

3. Long-term human activities (bacteriological quality, fertilisers, pesticides, turbidity)

- urban areas, (Collie townsite in Wellington, Kalamunda in lower Helena, also others in future)
- farming, (Collie, Murray, Dirk Brook)
- waste disposal, (industrial wastes dumped into streams e.g. Gnangara Mound, Kwinana)

A. Problems - impacts on other systems:

1. Water is considered as essential for development - consider alternatives for southern irrigation. Essential supplies for metropolitan area and in Pilbara are only a fraction of demand.
2. Water development requires large reserves of land and restricts other uses. This is beneficial for conservation but may be seen as detrimental for other uses e.g. recreation or mining. Reserves are set over surface water catchments and groundwater resources.
3. Development of a water supply results in major diversion from natural systems (affecting both quality and quantity) - dams reduce downstream flows, bores lower water table. Examples are reduction of fresh water inflow to Peel Inlet, Gnangara Mound or Millstream aquifer.
4. Inundation of particular land forms and ecotypes by reservoirs occurs (e.g. high proportion of valleys in Darling Range are dammed), and land forms and particular ecosystems are destroyed.
5. New water bodies bring new environments such as the Ord, and planned reservoirs for Pilbara. These may be beneficial such as providing staging places for migratory waterbirds, or become problems when large bodies of water appear in the desert which weren't there previously, increasing the possibility of transmission of diseases etc.
6. Impacts of works such as dams, pipelines and access roads in usually difficult country can be disruptive to existing conditions, but can also have positive aspects.

B. Problems - impacts of other systems on water. Major concern here is water quality.

C. Problems - managerial

1. Setting standards and conservation targets. Are World Health Organisation criteria applicable to Western Australia? Should economic tradeoffs be considered?
2. Assessing risks - risk of failure, risk of pollution. What risks are acceptable? Who should decide acceptability?
3. Setting priorities - should water be number one all the time? Sources which are good quality and quantity but remote from demand resulting in high cost of development may be given lower priority. Other areas being developed are so far from a water source that alternatives to transportation of water should be considered, such as de-salinisation of sea water.
4. Imperfect knowledge exists for prediction of
   - behaviour of natural systems
   - costs of socio-economic impacts
5. Legislation administering water supply
   - powers may not always provide for other conservation objectives
   - conflicts occur with legislation of other statutory bodies
6. Lack of civil law - for example - to improve the standing of public interest groups with courts to enable such groups to act legally against unwise or unjust administration.
7. No legal provision exists for public participation.
8. Selecting tradeoffs to minimise adverse effects of impacts listed in Sections A and B above.

<u>Mechanisms for Identifying Problems</u>

- two departments are involved with water supply, the Metropolitan Water Board and the Public Works Department
- Forests Department
- Australian Water Resources Council

- Western Australian Water Resources Council
- Research Co-ordinating Committee
- D.P.S.G.
- E.R.M.P.'s for major projects
- C.S.I.R.O.
- Universities
- Western Australian Institute of Technology
- Domestic Water Use Study in Perth (where users are questioned about their use of water)
- Voluntary Conservation Groups
- media

E.R.M.P. procedures are supposedly the main conflict resolution mechanism. As water supply is a public function there is usually opportunity for conservation interests to be involved early in project planning eg: extension of Pilbara Water Supply, but an E.R.M.P. is only prepared in relation to the finally selected project. Involvement as late as this is likely to be either too late, or to promote conflict. As soon as a source is identified as being viable for development, information on other values should be sought from D.C.E. and all interested parties.

Having two departments operating in the same field poses some problems of co-ordination, duplication etc., which is on a minor scale at present. Each is very specific as to the geographic areas they are working in and this seems to be working well at the moment. But by this system we have a potential for different standards to evolve and operate to solve similar problems within the State, e.g. spillway design standards. It is not a highly desirable situation when different standards of design and practice are operating. We suggest five-yearly reviews of standards and practices to overcome this difficulty, to be carried out by independent consultants. This is but one example of the type of conflict which may arise, there might be others.

On the positive side both departments do a lot of practical resolution of problems early in the planning process and also by informal liaison between other departments. Thus, many potential problems don't become problems because they have been thrashed out first.

Conflicts may arise between local government and State government in the planning areas, e.g. density plans in town planning may conflict with Metropolitan Water Board sewerage standards; there could be a need to improve liaison between the two organisations. There is sometimes an overlap in public and private considerations - the Pilbara water supply is an example. Provision of the water supply was shared by the Public Works Department and the mining companies. The companies give the water free of charge to their employees so that it is used without regard to water conservation. Public Works Department are considering this matter.

Concerning problems of overlapping State legislation, for example between forests and water supply, informal arrangements seem to be working satisfactorily at present. Still there is the danger that they might not always be adequate. More careful drafting of legislation is needed to ensure State-wide integration.

We note that the Department of Agriculture has no formal commitment to improve or maintain stream water quality. There is thus a potential for long-term planning to incorporate practices which favour water quality and water conservation objectives. For example, if they have a choice of alternatives about the way they go about a particular piece of planning where water quality is an element, water quality should be given preference in the selection process.

Mechanisms for Resolving Problems

Cabinet - The ultimate authority

E.P.A. - has a reactive rather than a preventative/ contributory role

Mining and Management Planning Liaison Group - confined to a specific problem

Liaison occurs within and between departments. However different policies can apply to similar problems.

Committee on Catchment Clearing Controls - while this appears to operate satisfactorily at present, with more general pressure it might prove necessary to consider judicial forms for such committees.

Group 4 - DEGRADATION OF COASTAL ZONES AND ESTUARIES

Problems

Wetlands (Including Lakes) - fresh water

1.1 Loss of wetlands to agriculture and urbanization (i.e., loss of habitats (birds), vegetation, recreation, opportunity), for example, Lake Claremont.

1.2 Change in water tables
Water table drawdown by bores (e.g. Spearwood, Gnangara, Millstream).
Water table rise after clearing (e.g. Joondalup, Claremont)

1.3 Salinity increases through clear felling of forests in agricultural lands, and some urban areas, e.g. the wheatbelt and, for urban areas, Karratha

1.4 Increased nutrients from agriculture and urban development e.g. Joondalup and Monger

1.5 Other pollutants: heavy metals (Herdsman's), pesticides (Ord), mico-organisms

Estuaries

2.1 Increased nutrients in the form of macroalgae and phytoplankton (e.g. Peel Inlet, Harvey Estuary, Wilson Inlet)

2.2 Loss of fish nursery areas etc.

2.3 Recreational pressure in the form of demands for:
power and sail boats, fishing, - stirring, turbidity, litter, bank erosion, (e.g. Swan River, Peel Inlet, Harvey Estuary

2.4 Destruction of shoreline by reclamation, e.g. industry (Leschenault), canals (Peel Inlet), urban areas (Swan River)

2.5 Dredging: sand bars (Peel Inlet, Wilson Inlet), channels (Peel Inlet).

2.6 Siltation (Wilson Inlet).

2.7 Micro-organisms (Wilson Inlet)

Coastal Zone - On-shore

3.1 People pressure in the form of recreation, car parks and permanent housing (Mandurah), including islands (Carnac, Rottnest). Off-road vehicles, involving people, stock (north shore of Leschenault Inlet) and dune degradation (Warnbro dune system).

3.2 Industry established near foreshores.

3.3 Harbour developments including navigation requirements (Secret Harbour).

3.4 Destruction of mangroves affecting shore stabilization, nutrient cycling and fish (Northwest shelf, Bunbury).

Coastal Zone - Off-shore

3.5 Inadequate marine parks

3.6 Coastal erosion affecting development (Mandurah, Busselton).

3.7 Increased nutrients in areas of restricted exchange of water to the ocean (Cockburn Sound). This results in loss of seagrasses and increased phytoplankton.

3.8 Wastewater disposal (Cockburn Sound), micro-organisms (Princess Royal Harbour).

3.9 Cooling water discharge (Burrup Penninsula, Mermaid Sound).

3.10 Heavy metal problems (Cockburn Sound), not only presence, but accumulation.

3.11 Reef destruction due to recreation activities or defence activities (Ningaloo Reef).

3.12 Oil, gas developments, seismic surveys, dredging, oil spills, (Northwest Shelf, Ningaloo Reef, Geraldton).

Fisheries

3.13 Loss of nursery areas - mangroves (Dampier), seagrass (Cockburn Sound).

3.14 Over fishing, e.g. abalone (Whitfords).

Existing Mechanisms for Identifying Problems

Wetlands (Including Lakes) - Fresh water

1.1 Town Planning procedures

Fisheries and Wildlife Department

Conservation and Environment (ERMP)

No formal contact with farmers exists

1.2 Long term monitoring

Metropolitan Water Board

Public Works Department

Local government authorities

Fisheries and Wildlife Department

1.3 Surveys

Fisheries and Wildlife Department

1.4 Surveys and Research after notification of the problem

Department Conservation and Environment sponsored

Government Chemical Laboratories, Public Health Department

Universities

No obvious mechanism is apparent before the problem arises.

1.5 Surveys and Research after notification of the problem

Department Conservation and Environment sponsored ERMP's. Government Chemical Laboratories, Public Health Department (both routine analyses).

Universities

No obvious mechanism operates before the problem arises.

Estuaries

2.1 Long term monitoring (Government Health Laboratories).

Waterways Commission in certain estuaries (often DCE funded).

Accumulates of local complaints and of general observations.

Research to check problem

2.2 Fisheries and Wildlife Department
Universities
2.3 Waterways Commission
2.4 Local Government
2.5 Local Government
2.6 Public Works Department
ERMP's
Marine and Harbours Department
2.7 Public Health Department Surveys

Coastal Zone - On shore

3.1 Town planning procedures
Coastal development committee (Agriculture Department, DCE, PWD)
Local Government
Off-road vehicles committee
For islands ... Fisheries and Wildlife and National Parks departments
3.2 ERMP via DCE
Town Planning
3.3 Marine and Harbours Department
3.4 DCE
Private companies
Fisheries and Wildlife Department
Landsat
3.5 For systems studies
DCE
Fisheries and Wildlife Department
National Parks Authority
Home Affairs and Environment (Federal)
3.6 Public Works Department
Local authorities (e.g. Fremantle Port Authority)
General observations
3.7 Research by DCE assisted by other funding bodies
3.8 Metropolitan Water Board
PWD
DCE
Public Health

3.9 ERMP

3.10 Monitoring

3.11 None, except private individuals

3.12 ERMP/DCE
Fisheries and Wildlife Department
Marine and Harbours - coastal surveillance

3.13 Aerial photography
Landsat for mangroves
Fisheries and Wildlife Department
General reports

Existing Mechanisms for Resolving Problems

Are they Adequate? Are Conflicts Present?

Existing Mechanisms	Are they adequate	Conflicts Present	Conflicts Adequate mechanisms to resolve
Wetlands (including Lakes) - Fresh water			
1.1 Town Planning for urban areas	OK	Yes	OK
1.2 Nil (discussion about bore licensing for private use)	No	Yes	No
1.3 Local government interest? Soil Conservation Act?	No	Yes	No
1.4 Town Planning/PWD drainage control	OK with more research	No	
1.5 Agriculture Department, Public Health Department?	?	Yes	?
Estuaries			
2.1 Various, cost effectiveness not resolved	OK	Yes	?
2.2 Various, cost effectiveness not resolved, incl. Waterways Commission, Mgt. Authorities and Fisheries & Wildlife	OK	Yes	?
2.3 Waterways Commission & Mgt. authorities, Fisheries and Wildlife	OK	Yes	OK
2.4 Town Planning/ERMP	OK	Yes	OK
2.5 PWD, Harbours & Marine	OK	Yes	OK
2.6 PWD, Harbours & Marine	OK	Yes	OK
Coastal Zone			
3.1 Town planning, Lands & Survey (Crown land)	OK	Yes	?
Dunes, Agriculture Department, DCE	OK	Yes (more resources needed)	(Mgt. resources needed)

Existing Mechanisms		Are they adequate	Conflicts Present	Adequate mechanisms to resolve
Coastal Zone (contd)				
	Islands, Fisheries & Wildlife	OK	Yes	
3.2 & 3.3	ERMP, Planning Controls	OK	Yes	OK
3.4	Problem avoidance	-	Yes	No
3.5	Who is in control: Federal or State?	No	Yes	No
3.6	PWD	OK	Yes	No
3.7				
3.8	Redirect or upgrade	OK	Yes	OK
3.9	discharge			
3.10	PWD & Public Health Department	OK	Yes	OK
3.11	Restrict access	No	Yes	No
3.12	Seismic Surveys	OK	Yes	OK
	Dredging	OK	Yes	OK
	Cleaning up	OK	Yes	-
3.13	ERMP, Planning controls, problem avoidance, redirect or upgrade discharge	OK	Yes	OK
3.14	Closed seasons or areas, size limits, gear restrictions licence limitations	OK	Yes	OK

In overview, there are in most cases existing mechanisms for resolving conflicts; they are relatively untried so their adequacy is unknown. In some cases, as for example, the protection of wetlands during urbanisation, there appears to be adequate consideration given to these lands. But for wetlands in agriculture, especially on privately owned farms, there are no adequate mechanisms for protection.

Suggested Improvements

1. Long-term monitoring is valuable for identifying degradation, and should be encouraged. Publication of the results of such monitoring should be available to the public, who would be made aware of these changes.

2. Set up mechanism for public reporting, there are at present no means whereby the public can draw attention to the effects of degradation in various areas.

3. Clarify the pathway for dealing with proposals and for resolving problems (e.g. refer to establishment of COMAC).

4. Management and monitoring should continue after development and it would be useful to have clear management objectives to facilitate monitoring and managing an area.

5. Improve catchment management for water quality, regardless of priority use of the catchment.

Group 5 - CONSERVATION ON ALL AREAS OTHER THAN RESERVES FOR PROTECTION OF FLORA, FAUNA AND VISTA

Conservation is not confined to reserves. There are for example, protected roadside verges, bans on woodchipping near public roads, restrictions on picking wildflowers and so on. The Forestry Department has regard to conservation values outside M.P.A.'s - i.e. reserves occur in the forest, even though conservation would not have first priority inside the M.P.A.'s.

There are mechanisms to protect vista which operate in Perth (Majestic Hotel site, view from Parliament House). In the country there is need to protect vista in certain situations such as having a clearing line (similar to conforming to a building line in the city). Outside the metropolitan area there is no control over the management of private land. Also in the metropolitan area land is purchased and managed for open space, at considerable cost. Zoning is an alternative.

Management is ultimately by Cabinet. We think there is a need for organisations with responsibility for advice to Cabinet on the use of specific land areas under pressure. There are several examples of this within State government such as the Darling Range Study Group, the Mining and Management Planning Group which examines the bauxite mining plans, and the Forests Department. Such organisations are preferably non-statutory and formed to meet problems as they arise. The use of these sorts of working groups could be extended and improved to meet other sorts of problems.

NATIONAL PRIDE AS A MEANS OF EMPHASISING CONSERVATION ATTITUDES THROUGH EDUCATION

Problems arising from a lack of national pride may affect understanding and establishment of conservation values. Lack of pride in one's country could arise from a number of causes:

- oversell on ethnic absorbtion, maybe leading to a lack of or delay in the process of developing interest in one's own country leading to
- disregard for the desecration of one's own country and loss of shame in desecration leading to
- the need for some form of tyrannous regulations and penalties rather than achieving conservation from the generation of national pride.

Pride in one's country is infectious, should be promoted, and when expressed in positive ways, may influence the behaviour of tourists, immigrants and un-caring people. It may not necessarily precede environmental consciousness, but would aid it enormously. (Ed. note: This may not be specific to Western Australia but the subject produced some considerable discussion.)

WASTE DISPOSAL

Problems: A tendency exists towards polarisation and a conservative attitude on the part of local government in managing waste disposal. Changes and improvements in the methods of waste disposal and new technology have been rejected and there has been a reluctance in examining the effects of waste disposal on the environment, for example, the sub-base of the land fill areas.

Solutions: Need for a complete economic evaluation of the cost and consequence of all methods of disposal, including the costs of combating possible pollution from these methods. This should be equated with the costs of new technologies to improve methods of waste disposal or recycling.

URBANISATION

1. Problem
   (a) Siting of industry in relation to housing (pollution and travel)
      - Western Australia does not yet experience severe problems
      - Typically in Western Australia an industry has been established in a remote metropolitan area but urban development has resulted in it being surrounded by housing, the residents of which complain about the industry - smoke, smell, noise, etc.
      - Similar problems can arise when a new industry is placed near housing.

. With respect to travel, the dilemma is closeness to an industry for ease of travel with its attendant problems, or remoteness with consequent increases in time and cost of travel.

(b) Sterilisation of earth resources

. There are examples in the Perth metropolitan area - limestone has been built upon, good grape growing areas in the Swan Valley are being urbanised and wetlands have been filled in (e.g. the Swan River near the city).

(c) Environmental changes from urbanisation

. Although the area of a city may be relatively small, it can have drastic and permanent effects on the natural environment on the area on which it is sited and on surrounding land, e.g. by air and water pollution.

(d) Lack of contact with the natural environment

. The city dweller can easily go through life without experiencing the "joys of nature", his nearest contact being a local park.

(e) The megalopolis compounds its own growth and inhibits the development of medium sized cities and towns. This is because of the very large market created by the large centre which attracts industry and people in seeming perpetuity. This has become a major problem in the developing world where cities of around 15 million are becoming commonplace. But it is also a problem in Western Australia, not so much because Perth is too big (it is not, yet), but because other centres are unable to provide the work opportunities

to compete with Perth (e.g. Bunbury, Albany, Geraldton) while smaller centres are declining.

2. Mechanisms for identifying and resolving problems

The implementation is by town and country planning, but this is after decisions have been made by Government or industry as to where urban expansion is to occur. In making such decisions it needs to be remembered that people "vote with their feet". It is pointless to establish a new centre if people do not want to live there, or are unable to live there because of absence of job opportunities.

3. Solutions

(a) & (b) The problems relating to siting of industry and sterilisation of required resources can be overcome by good planning well ahead of development pressures and by implementation of such planning. Thus industry and housing can be connected by appropriate roads/ transport services, limestone can be mined and the land rehabilitated before urban or other development occurs, housing can be located away from wetlands to avoid mosquito problems etc.

(c) The sequence: research-planning-policy-management for desired ends appears appropriate but often decisions need to be made before all information is available, or insufficient effort is put into research/ planning.

(d) Self explanatory

(e) Some work was done on actual costs of city and small town development 10-15 years ago. They showed that adding to the population of a large city was more expensive than similar additions to a small town in

terms of roads and other services required (e.g. the need for expensive freeways, duplication of sewer mains, etc.). If the cost of city expansion is greater than that of regional centres, then there should be scope for implementation of fiscal and other policies to encourage growth of such centres. Such policies would be aimed at both industry and people.

However, forced growth of non-metropolitan centres has not worked well in Australia. Regional centre development based on its resources, and with efforts to ensure that the benefit of the development accrues to the regional centre, may be the way forward.

DISTRIBUTION OF THE TAX DOLLAR - Political Priority for Conservation

1. Problem

(a) Ensuring adequate funding of national parks and conservation reserves. How much is enough when providing funds for such needs? What proportion of the g.n.p. should be devoted to such purposes? How are priorities established?

(b) Lack of identifiable return on funds invested. Conservation reserves and national parks may be seen as a luxury.

(c) It is traditional for pressure groups within a community to compare funds provided to them by government with the situation in other States or countries. Sometimes it is very difficult to make convincing comparisons.

Inevitably, the squeakiest wheel has the

best chance of getting more grease. It is likely that parks and reserves have less political appeal than education or health and welfare.

(d) Departments are penalised by Treasury if any part becomes self-funding.

2. Mechanisms for Identifying and Resolving Problems

In Western Australia, the National Parks Authority and the Western Australian Wildlife Authority make submission on needs to Government and these are considered along with other needs in a budget framework.

The amount and location of land for parks and reserves is considered by E.P.A. in Western Australia through Conservation Through Reserves Committee, and the System 6 Committee.

3. Solutions

Foundations appear to have been a significant source of funds in the USA, but are not so yet in Australia.

Departments should be encouraged to manage popular parks on a self funding basis where possible, without penalty.

A comparison was made between Rottnest Island and Yanchep. The cost of access by boat or car is substantial, particularly to Rottnest, but cost of entry is virtually or actually zero. Rottnest is funded by rents for housing and commercial facilities, the latter being let by tender. The overall effect is that Rottnest is self-funding.

Certain other national parks could be developed on a self funding basis, and the more popular of them could help subsidise the less popular areas.

Consideration such as the above could be given to the idea of developing techniques to manage recreational traffic not only in parks and reserves but also State forest. Market research would need to be part of such techniques, as well as some form of public participation in the decision making process.

SITING OF MAJOR INDUSTRY

1. Current Mechanism

In Western Australia major resource based industries are established usually via an Agreement with the Western Australian Government. Such Agreements are entered into after negotiations relating to the conditions of establishment of the proposed industry and are subsequently presented to the Western Australian Parliament for ratification.

In these Agreements the developer is required to present proposals to Government regarding such matters as arrangements for water, power, housing, other infrastructure, processing, etc., and to undertake an Environmental Review and Management Programme. Such proposals are predicated on a selected site which may have been selected and secured after informal private discussions with Government. They need to be private if speculation on land acquisition cost is to be prevented.

2. The Problem

The problem is thus a lack of full analysis of siting options and a lack of public participation. Small industries can normally be accommodated in existing zoned industrial areas. For large industries, this option may be available (e.g. at Kwinana) but the trend is towards acquisition of rural land (e.g. Pinjarra and Wagerup alumina refineries). Such developments have an impact on the community in which they are established but there is a lack of real participation by the public in the new use for the land.

3. Solutions

Several options were examined:

- Normal planning procedures are appropriate for small industry but are inappropriate for large industries particularly when their size and type cannot be predicted and this is the case in Western Australia.

  It would be possible to zone certain areas within the State for establishment of such industries but they may not be in the correct place so far as the proposed industry is concerned. The situation could then arise that there would be attempts to force the industry to conform, i.e. such systems may be inflexible.

- Purchase of land by Government agencies suffers from the same problem, finance is limited.

  It was felt that the formal procedures via Agreement and ERMP could be modified by a prior document - Notice of Intent? - which

would examine locational options. Such a document would be confidential within Government until agreement was reached. This would provide Government but not the public with a formal input into the location of the industry.

Therefore this would need to be supplemented by -

- Periodic land use planning (as is done by Forests Department under General Working Plans) which would be public documents (either subject to public input as the System 6 Study or subject to review by Parliament as the General Working Plan) revised every 6-7 years.
- Where departures from such planning were made by Government in the interim to accommodate the requirements of a major project, the basis of the planning decision would subsequently be published. For example, Government would publish the basis for selection of an industrial site and why it was favoured over other sites and the above-mentioned "Notice of Intent", after its acceptance, would provide the basis for such publication. Governments would thus retain decision-making power, but would also be publicly accountable for their actions.

In Western Australia, there are examples of concentrated industry (e.g. Kwinana) and of dispersed industry (e.g. Pinjarra, Wagerup, etc.). The pros and cons of selection between the two types of development were not examined in the time available.

SUMMARY

As part of a process to involve individuals in an early stage of the formation of a Western Australian Conservation Strategy, a managed meeting held at Yanchep National Park was attended by people associated with public and private interests and government organisations. Participants were encouraged to examine the resource based realities of life in Western Australia to see how we measure up to the goals set by the World Conservation Strategy.

Initially considered were external influences which may affect conservation and development in the State. Among these were increases in world populations and immigration, climatic changes, changes in world energy requirements and world politics. The impact of such influences on Western Australia may result in changes in our way of life, such as alterations in living standards and increasing pressures on resources of land and water. Although some predictions were gloomy, participants forecast an increase in environmental awareness and suggested several positive actions which could contribute to reversing downward trends.

Opportunities for development were explored and it was recognised that opportunities were still considerable as are the number of constraints to development. However, in discussing the latter it was noted that most constraints were caused directly or indirectly by people rather than other factors and could therefore be seen as something it was possible to change.

A considerable number of problems were identified and shortlisted as follows:

environmental problems in agricultural and pastoral areas (soil degradation, salinization, over-grazing etc.); land allocation, including new land releases

for agriculture; management of parks and reserves; water supplies, including both quality and quantity; and degradation of coastal zones and estuaries. Other problems considered were: conservation on all areas other than reserves for protection of flora and fauna; the development of national pride as a means of emphasising conservation attitudes through education; waste disposal; siting of industry; urbanization; and distribution of the tax dollar/political priority for conservation.

For each of these issues problems were more specifically defined, existing mechanisms for identifying and dealing with them were examined and evaluated, and specific suggestions were made for improvement.

APPENDIX 1

GLOSSARY

A.P.B.	Agriculture Protection Board
B.M.R.	Bureau of Mineral Resources (Commonwealth)
COMAC	Coastal and Marine Advisory Committee
C.S.B.P.	Cuming Smith-British Petroleum
C.S.C.	Commission for Soil Conservation
C.S.I.R.O.	Commonwealth Scientific & Industrial Research Organisation
D.C.E.	Department of Conservation and Environment
D. of A.	Department of Agriculture
D.R.S.G.	Darling Range Study Group
E.P.A.	Environmental Protection Authority
E.R.M.P.	Environmental Review and Management Programme
M.P.A.	Management Priority Areas
M.R.D.	Main Roads Department
P.G.A.	Pastoralists & Graziers' Association
P.I.A.	Primary Industry Association
R.A.I.C.	Rural and Allied Industries Council
R.C.C.	Research Co-Ordinating Committee
R.S.C.	Research Steering Committee
S.C.A.C.	Soil Conservation Advisory Committee
S.C. Staff	Soil Conservation Staff
Z.A.C.	Zone Advisory Councils

APPENDIX 2

LIST OF PARTICIPANTS

Dr. John Beard,
6 Frazer Road,
APPLECROSS, W.A. 6153

Mrs. Marian Blackwell,
Blackwell & Cala,
Landscape Architects,
5 Lord Street,
WEST PERTH W.A.

Mr. Frank Broad,
6 Hammad Street,
PALMYRA W.A. 6157

Dr. Andrew Burbidge,
C/o Department of Fisheries & Wildlife,
Mullaloo Drive,
WANNEROO W.A. 6065

Mr. Joe Burdass,
Officer-in-Charge,
Department of Agriculture,
KATANNING W.A. 6317

Mr. Frank Campbell,
C/o Forests Department,
50 Hayman Road,
COMO W.A. 6152

Mr. Adrian Chegwidden,
C/o Chamber of Mines,
231 Adelaide Terrace,
PERTH W.A. 6000

Mr. Ken Colbung, (not present)
Nyoongah Community Incorporated,
Aboriginal Cultural Complex,
139 Sydney Road,
GNANGARA W.A. 6165

Mrs. Shirley de la Hunty,
C/o Claremont Teachers' College,
Goldsworthy Road,
CLAREMONT W.A. 6010

Mr. Damien Dolin,
Assistant Executive Director,
Pastoralists' & Graziers' Association,
789 Wellington Street,
PERTH W.A. 6000

Mr. Kevin Goss,
C/o Department of Agriculture,
Jarrah Road,
COMO W.A. 6152

Dr. Bruce Hamilton,
C/o Department of Conservation and Environment,
1 Mount Street,
PERTH W.A. 6000

Mr. Roy Hiller,
C/o Town Planning Department,
22 St. George's Terrace,
PERTH W.A. 6000

Mr. Geoff Mauger,
Major Projects Branch,
Metropolitan Water Authority,
629 Newcastle Street,
LEEDERVILLE W.A. 6007

Prof. Arthur McComb,
C/o Botany Department,
University of Western Australia,
NEDLANDS W.A. 6009

Dr. Maurice Mulcahy,
C/o Department of Conservation and Environment,
1 Mount Street,
PERTH W.A. 6000

Mr. Ken Newbey,
P.O. Box 42,
ONGERUP W.A. 6336

Mr. Eugene O'Callaghan,
C/o Confederation of W.A. Industry,
190 Hay Street,
EAST PERTH W.A. 6000

Mr. Brian O'Leary,
C/o Department of Resources Development,
44 St. George's Terrace,
PERTH W.A. 6000

Mr. David Seiber,
C/o Education Department,
151 Royal Street,
EAST PERTH W.A. 6000

Mr. Peter Sharpe,
C/o Department for Youth, Sport & Recreation,
Perry Lakes Stadium,
WEMBLEY W.A. 6014

Mr. Alan Skinner,
C/o Lands & Surveys Department,
Cathedral Avenue,
PERTH W.A. 6000

Mr. Tony Smurthwaite,
C/o Geological Survey Department,
66 Adelaide Terrace,
PERTH W.A. 6000

Mr. Graeme Stewart,
C/o Australian Fishing Industry Council,
24 Norfolk Street,
FREMANTLE W.A. 6160

Mr. Geoff Syme,
CSIRO,
Underwood Avenue,
FLOREAT PARK W.A. 6014

Mr. John Thomas,
CSIRO,
Underwood Avenue,
FLOREAT PARK, W.A. 6014

Dr. Alan Tingay (not present)
Conservation Council of W.A.,
The Environment Centre,
537 Wellington Street,
PERTH W.A. 6000

Mr. John Tonkin,
"Ginalbie Station,"
Kalgoorlie, W.A. 6430

Mr. George White,
Alcoa of Australia (Ltd.).,
P.O. Box 161,
KWINANA W.A. 6167.

Mr. Bruce White,
20 St. Albans Avenue,
HIGHGATE W.A. 6000

Mr. Ron Wilkie,
Environmental Officer,
CSBP KWINANA, Engineering Department,

Mr. Robert Winroe (not present),
C/o Aboriginal Development Commission,
Suite 28,
Piccadilly Suites,
Nash Street,
EAST PERTH W.A. 6000