

Southern Metropolitan Coastal Waters Study (1991-94)

by Dr Graham Chittleborough

DESPITE extensive marine studies and recommendations through the 70's, 80's and early 90's; cleanup by industry; the diversion of sewage wastewaters farther offshore; the construction of the Dawesville Cut; etc.; this latest study demonstrates very clearly that water quality problems continue to proliferate along our metropolitan coast. Isn't it time we asked ourselves why we are not gaining on the problem? Is it because we are simply not doing enough? Or perhaps our decision makers feel that the community will tolerate a bit more of a decline in our coastal water quality before demanding effective results from the many millions spent? Or worse still, is our approach fundamentally flawed? These are questions the EPA should now address - if their charter permits!

When all detailed reports from the 1991-94 studies are assembled, they will undoubtedly afford a very useful pool of information on coastal water quality. However, several serious deficiencies are already evident from the Summary Report:-

- Failure to consider trends within benthic ecosystems;
- Management reliance upon ineffective water quality criteria;
- Failure to focus upon the basic core of the problem.

Failure to consider trends within benthic ecosystems

Let me outline (briefly) time trends within the better known Cockburn Sound and Owen Anchorage basins.

Up to the end of the 50's, when nutrients (nitrates and phosphates) were low and the waters very clear, a diverse faunal community lived amongst the seagrass roots across the shallow sills (0-10 metres) around both basins. The sediments across these shallow rims were fairly clean calcareous sands, reasonably well oxygenated. Within the deeper (14-20 metres) basins, however, sediments were of a dark organic silt, the upper layers of which were worked by abundant detrital feeders turning over material so enabling moderate dissolved oxygen levels to be maintained. Microscopic examination of these organic silts showed them to consist of faecal pellets and seagrass debris raining down from the community living on the shallow rim. Thus there were two distinct faunal communities, rim and basin, both dependent upon seagrass for the bulk of the primary production.

From the early 60's, as urban and industrial wastes poured ever more phosphates and nitrates over these two basins, blooms of phytoplankton and epiphytic algae cut essential light penetration to the seagrass, which died, pouring more debris into the deep basins. Algal blooms

continued to increase, raising the level of primary production higher, and further increasing the rain of organic debris down on the benthic communities.

Within the deep basins, the accelerating arrival of organic material resulted in bacterial decomposition which in turn consumed dissolved oxygen so the dark silts became anoxic, favouring proliferation of anaerobic bacteria at the expense of the previous detrital feeding fauna. Thus this benthic community began changing.

Anoxic conditions favouring anaerobic bacteria has not been confined to the deep basins, but in time extended up slopes to the sills and ledges, further altering the faunal community which once lived amongst the seagrass roots.

Not only does this result in a loss of biodiversity, but also it raises the potential for anaerobic digestion to produce methane - a potent greenhouse gas as well as having the capability of catalysing the breakdown of the ozone shield in the lower stratosphere.

The prospect of Cockburn Sound and Owen Anchorage contributing to greenhouse enhancement and destruction of the ozone shield might be scoffed at by some as unproved — but the reality is that we don't know,

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Natural Heritage Trust Won't Deliver

THE Conservation Council is extremely concerned that the much heralded Natural Heritage Trust of \$1 billion will not deliver the outcomes for the environment that the community is so keenly expecting. It is looking more and more like the Government has not learnt the lessons from past experience with the National Landcare Program. It appears that arrangements won't be transparent, will lack accountability, funds won't be delivered on the ground particularly for biodiversity and it will provide yet another mechanism for States to transfer funding obligations to the Commonwealth.

One of the most troubling aspects is that the community have been specifically excluded from negotiations over the Trust. The community's role is apparently to wait until decisions have been made by Government on where the money will be spent, which programs will be funded and what they will look like. Oh yes, we will get a say on the regional assessment panels and State assessment panels where individual projects are considered, but only after the whole framework and approach has been developed by Government without consultation.

\$1 billion sounds like a lot of money but it is a drop in the ocean when it is spread across all these programs throughout Australia. Unfortunately much of the \$1 billion can not be called 'new' environment money. Trust money is now being used to fund what were once programs funded out of consolidated revenue or core funding. At the recent launch of the Trust the Minister for the Environment announced the funding of a series of endangered species projects - all those announced for Western Australia were continuing projects previously supported through core funding.

Reviewing this year's budget figures shows that the Federal environment department, Environment Australia's, core funding is \$163 million once the \$92 million from Trust has been taken from their budget allocation of \$255 million. Under the last ALP budget in 94/95 core funding was \$220 million. Clearly there has been a transfer of Trust funds to routine funding of this Department. The bottom line is that there is not as much money as promised going to new programs.

The Federal Government is also missing a vital opportunity to deliver real nature conservation outcomes and ensure natural resource management reform by State Governments. 'Partnership agreements' are required to be developed between State and Federal Governments outlining the terms and conditions under which financial assistance will be provided to the States. For example the Federal Government has refused to put conditions on grants so that recipients of money from the Trust are prevented from clearing native vegetation. The Trust aims to replant 250,000 hectares of land in five years while 600,00 hectares of land are cleared in Australia each year and woodchipping of native forests has expanded by 40

percent.

Not only is the Commonwealth not pursuing reforms at the State level they are actively promoting policies themselves that will negate any progress the Trust may achieve.

For example the Howard Government's proposal to upgrade pastoral leases under the 10 point plan on native title will increase the environmental threats to more than 40 percent of Australia's rangelands which are already damaged by sheep and cattle grazing.

The federal government pleads for special treatment so that Australia does not need to agree to a legally binding target for greenhouse gas emissions, while funding for renewable energy and energy efficiency programs has been cut in the Budget with Australia's greenhouse gas emissions set to increase by 40 percent over 25 years.

The Federal Government is failing to take decisive action on proposals that damage endangered species habitat and World Heritage areas, such as oil and gas exploration in Shark Bay.

The WA State Government recently clearly demonstrated its lack of commitment to natural resource management reform when it axed the Nature Resource Management Taskforce. Unless these commitments are sought by the Federal Government the money spent by the Trust will be wasted. Given the stated aim of the NHT is to address the crisis in land and water degradation, it is vital that the arrangements stipulate the fundamental requirements for the use of the money.

Also very worrying is the WA State Government's handling of the Trust. The WA Government is asking for \$30 million per year from the Trust for the Salinity Action Plan and a further allocation of \$25 million for waterways, rangelands and biodiversity. There is significant doubt that the Salinity Action Plan will in fact combat salinity. The Plan is basically a recipe for farm forestry with biodiversity poorly addressed, nor does it address the urgent need for a new systems approach. The requested \$30 million for the Salinity Action Plan will be used primarily for farm forestry. It must also be remembered that the salinity plan has not gone out for public comment.

The programs for waterways, biodiversity and rangelands are not finalised. Again these are not being discussed with the community. It is understood that the recently formed Salinity Council will be responsible for finalising and approving the submissions — but it is a Salinity Council, not a natural resource management council, and we are told we don't need reform to natural resource management!

The \$1 billion over 5 years for the whole country from the Natural Heritage Trust looks pathetic when compared to the military budget of \$11 billion per year. It would take at least \$1 billion to halt the salinity problem in WA alone. ■

because no one thought to look. The conditions necessary for the production of methane certainly now occur there.

Management reliance upon ineffective water quality criteria.

Having spent months agonising over water quality criteria during the Cockburn Sound Study of 1976-79, and as an active member of EPA Water Quality Advisory Committee from 1980-83, I am only too aware of the limitations of this approach.

Within coastal marine waters, ecosystems are not separated by distinct boundaries but bathed by the same water flow. Hence zoning areas for different uses, each with separate water quality criteria, may appear convenient for management purposes but are not always practical ecologically. Also, the criteria selected (eg. faecal bacterial exposure to species harvested for human consumption) may appear quite stringent, yet overlook other vital ecological changes (such as those outlined in the previous section).

Defining zones with different water quality criteria might well give the public a warm sense of security that firm management rules are in place; yet in practice these may be found to be unenforceable - particularly if pollutant inflow is diffuse (eg. through groundwater), rather than by individual point sources.

In other localities, management of marine ecosystems solely by strict water quality criteria, though providing abundant work for a diligent enforcement team, has not halted ecosystem decline.

Failure to focus upon the core of the problem

As is usual in environmental management, the major effort is through the reductionist approach of tinkering with the symptoms, rather than attacking the basic cause. Have we forgotten — or discarded — our firm commitment in the National Conservation Strategy for Australia (1983) to “Focus on causes as well as symptoms”?

The first paragraph of the Summary Report makes a great start by putting the finger straight on one of the basic causes of our problems - the continued rapid increase of our population, steadily increasing pressures upon our coast and coastal waters. No matter how we tidy up, those pressures keep on rising.

Yet despite this flash of hope in starting so well, the Department of Environmental Protection immediately turned its back on this basic cause of the problem, reverting to the politically acceptable - and ineffective - picking away at selected symptoms.

Is the Department merely concerned to present a fine looking facade of scientific studies, superficially convincing objectives and strong sounding (but unenforceable) measures? That may once have lulled the community into a pleasant expectation for our coastal waters to soon return to that wonderful sparkling clarity that some of us remember; but in reality the algal blooms

continue to intensify and spread, and the organic sludge accumulating out of sight on the sea floor festers away in anaerobic digestion.

However, scientists are not supposed to show emotion (though I'm not sure why), so let's return to the core of the problem.

There is abundant evidence that Australia's terrestrial systems generally have a very low carrying capacity - and that capacity is now falling at an alarming rate. Linked with the depauperate condition of our soils, our coastal waters also evolved communities very efficient in recycling sparse nutrients. That is the basis of the water clarity which is (or was) so attractive to tourists.

If we are serious about containing our worsening environmental problems, we must quickly halt our population growth while at the same time each of us changes to less greedy, less wasteful, less consuming lifestyles - accenting quality of life rather than quantity. Then pollution control systems such as water quality criteria have real prospects of succeeding.

More and more in the community now realise that society must change direction smartly, before it's too late. Ignoring our convictions will change nothing. Surely it would be wiser to apply the Precautionary Principle which Australia so gladly signed at Rio in 1992?

Our leaders make a great show of signing international agreements and committing Australia to UN declarations, but then continuing defunct policies and practices, making it evident that the brave posturing is no more than lip service to a sustainable future. ■

The 1970 Conservation Bill of Rights

Conservation and Agriculture

A Review by Graeme Rundle

ENVIRONMENTAL protection of farmed land is probably the area where the conservation movement has had the least success. But the worst records of government environmental management are in Agricultural areas also. The basic reason for this is that the land involved is not public land, but privately owned - and the farm lobby is also politically the strongest of all.

A quarter of a century ago, when the infant Conservation Council launched its 'Conservation Campaign', the Council's objectives in relations to agriculture were fairly basic:

- ◆ The Conservation Council's 1970 'Bill of Rights' advocated that the government structure involved with allocating land use also considered nature conservation needs (a Land Utilisation Commission

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within the Ministry of Conservation was proposed).

- ◆ A government policy requiring 5% of a farm's area be retained under tree cover, or allowed to return to natural vegetation was also advocated and that any clearing of virgin land be strictly supervised.
- ◆ Ensuring increased aid was available for farmers for reforestation, conserving water, and meeting soil erosion problems.
- ◆ Having residual pesticide use in agriculture prohibited, and replaced with more suitable alternatives.

Of interest, the mining component of the 'Conservation Bill of Rights' also advocated that mining interests be subservient to farming on all agricultural lands. That was more or less implemented when State mining law was changed in the early seventies, enabling the owner of private land to veto mining access.

Prior to 1970, the interests of the then small conservation movement in Western Australia had been to try to persuade the State Government to set aside representative conservation reserves as areas were being opened up for farming, and to ensure that roadside flora was protected in new farmland districts. By 1970, however, most of the land in Western Australia's agricultural region had been allocated, and in the Wheatbelt more than 90% of this was privately owned. Conservation reserves then made up only about 1% of the region, and largely comprised land rejected for farming (such as salt lakes and granite outcrops), and much of the remainder comprised reserves for other purposes, such as community and railway water supply, townsites (often undeveloped), and roads and railways.

Mainly through the EPA's Conservation Through Reserves project, and the interest of the former WA Wildlife Authority and wildlife officers of the then Department of Fisheries and Wildlife, the area of Wheatbelt conservation reserves has since been increased to about 2% of the region. The 'new' reserves have only partly come from previously unallocated Crown land, and the bulk comprised the re-allocation of redundant timber reserves, water reserves and some undeveloped townsite areas. The conservation value of roadside and railside vegetation was also acknowledged by the State Government initially through general community interest, especially through National Trust lobbying in 1969 and 1970, and subsequently through action taken by the Conservation Council in 1983.

The conservation movement and other community and government interests were unsuccessful, however, in preventing the over-clearing of farmland. Not only was it essential to retain significant portions of farms under natural vegetation to supplement the meagre conservation reserve system, but as events unfolded it was also essential to maintain groundwater stability. Agricultural over-clearing has now destabilised groundwater levels and subsequent rising groundwater is causing widespread soil salinity and has already poisoned most of the Wheatbelt river systems, former freshwater lakes and other wetlands.

Greater success has been achieved in changing

pesticide use on farms, and residual chemicals have progressively been phased out. However, much of the pressure was exerted by more enlightened importing countries which threatened to reject Australian products. The use of chemical fertilisers, however has posed equally environmentally damaging threats as have pesticides. The classic Western Australia situations are the high nutrient levels of our rivers and estuaries in agricultural catchments, causing eutrophication. The solution for the Peel-Harvey estuary system has been a multi-million dollar technological fix to artificially improve marine water exchange and estuary flushing. However, on farms themselves, the heavy use of fertilizers has often led to increasing soil acidity, and agricultural authorities consider this to be a greater menace to agricultural productivity than increasing salinity.

The most significant success to date by the conservation movement (and wider community) in agricultural areas has been to persuade the former Labor Government to adopt a moratorium on releasing further marginal land for Wheatbelt farming. This moratorium has continued in force since the early 1980's and it would now be politically "courageous" for any Government to move to overturn this policy.

In conclusion, clearing of agricultural land this century in Western Australia has been comparable in scale to current rainforest clearing in the Amazon basin and to the expansion of the Sahara desert at the moment. Agricultural clearing in WA has been swift and dramatic - in something like only 100 years an area the size of England and Scotland has been cleared. As a consequence, we have lost 50% of the freshwater resources of the State's South West, and much of the biota they sustained, due to salinity. Farmland salinity has severely affected agricultural production on over 9% of farmland so far, and this is expected to increase to 17% within 20 years. However, increasing soil acidity on Wheatbelt farms is now considered to pose an even greater threat to the future of agricultural production.

All of these agriculturally-caused problems have had major and continuing impacts on nature conservation and pose further new problems for the future. The consequences of massive habitat destruction through clearing and the lack of conservation reserves and other Wheatbelt remnants are obvious. The effects of salt-poisoning of Wheatbelt river systems on wildlife is also obvious, as are the algal blooms in estuaries. However, many of the existing Wheatbelt nature reserves and other remnants of vegetation on farms are now also threatened by rising groundwater and salinity. The short-term solution to soil acidity and some other agricultural soil problems are treatments using lime sand and gypsum - and coastal and salt lake conservation reserves are being targeted to mine for these commodities for more technological fixes.

Accordingly, the conservation movement and the wider community cannot complacently sit back and allow current funding programs (such as the Salinity Action Plan), now being embarked upon to address such issues, to fail due to political and bureaucratic mismanagement. ■