MDL
McKinlay Douglas Ltd

Government Funding of Rotorua Lakes Restoration

A report prepared for Environment Bay of Plenty

by
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Contents

Page

1. Introduction

This report was commissioned by Environment Bay of Plenty (EBOP) from McKinlay Douglas Limited (MDL) with the twofold purpose of:

- Providing EBOP with a consistent framework within which to consider the optimal means of allocating current and future costs of restoring water quality as between different stakeholders including current land owners (private; public; Maori), and the district, regional and national communities.
- Identifying and making the case for a contribution from central government funds (which may well come from more than one central government agency, and be justified against different criteria – for example part may come through the process of negotiating Te Arawa's Treaty settlement; other parts may come, as the terms of reference acknowledge, from central government agencies responsible for agricultural/rural affairs, public health, the environment, and economic development).

The report is part of a wide ranging body of work being undertaken or commissioned by EBOP in association with the Rotorua District Council and in consultation with Tangata Whenua and the Rotorua community with the objectives of:

- Determining optimal means for improving the water quality in the Rotorua lakes, especially those five lakes whose three year moving average Trophic Level Index has exceeded its designated TLI by 0.2 for at least two years (and with the primary emphasis, in respect of those five lakes, being placed on lakes Rotoiti and Rotorua).
- Reaching agreement on how the costs associated with improving water quality (both direct financial costs, and the opportunity costs individual land owners will face as a consequence of restriction on land use) should be allocated both over time and amongst different contributors.

Essentially, the focus of this report is on developing a public policy framework to guide a set of decisions that are virtually without precedent in New Zealand's public sector experience (apart from the Lake Taupo situation discussed in this report). Extensive searching of overseas material suggests that there is little precedent, internationally, either.[1]

The work for this report suggests that decision makers, both in central government and in local government, will need to confront two issues that are critical for the future of the Rotorua lakes, neither of which has had to be dealt with in quite the same way previously.

The first is the consequences for the remediation of the lakes of the application of what appears to be the current government policy stance; that its decision in respect of Lake Taupo should not be seen as setting a precedent with the implication that, generally, the

[1] One exception we have found is substantial funding for restoration of Lake Tahoe in Nevada. However, rather than resulting from a considered development and application of the principles that should govern environmental remediation, the Lake Tahoe initiatives appear to result principally from the political leverage exercised by the two senators from Nevada. For more background see, for example, the senators' press statement on the 2002 Interior Appropriations Bill: http://reid.senate.gov/record2.cfm?id=184190

remediation of environmental damage should be primarily the responsibility either of those responsible for the damage (where direct causality can be established) or of the local and/or regional community. The second is the complexity of remediation for the Rotorua lakes.

The first issue reflects the present government's apparent principle, in the management of fiscal risk, of resisting new claims on taxpayer funding. Whilst this may be prudent policy from a fiscal management perspective, there is a very real risk that absence of government support will mean that remediation of the Rotorua lakes will not proceed for reasons including:

- Inability of the local and regional communities to afford remediation (at the local level, the Rotorua community is relatively deprived as compared with the rest of New Zealand whilst the three Eastern Bay of Plenty districts, which would need to carry part of the cost of any regional contribution, are amongst the most deprived areas within New Zealand).
- The very real possibility that the wording of section 101 of the Local Government Act 2002 could effectively prevent Environment Bay of Plenty from making a significant regional contribution if the government took the view that there was no case for a taxpayer contribution (see the discussion at page 32 below).

The second issue results from the fact that the Rotorua lakes are very different from Lake Taupo. The former are shallow lakes so that lake bottom sediments are a very significant influence on water quality. Lake Taupo is a deep lake so that the principal influence on water quality is the nutrient content of inflows into the lake.

The implications of this, for the Rotorua lakes, include:

- Knowledge gained from research into processes affecting Lake Taupo deals with only part of the processes affecting water quality in the Rotorua lakes – separate research is required to gain a better understanding of the processes affecting shallow lakes where bottom sediments are a major influence. This is urgent but financial support from government for proposals for such research have been unsuccessful, apparently at least in part in the belief that research on Lake Taupo will be sufficient to fill the knowledge gap.
- In contrast to Lake Taupo, where a long term land management strategy may be sufficient to achieve the desired remediation, the Rotorua lakes require both significant short term measures, which are urgently needed to reduce the impacts resulting from bottom sediments, and long term measures to deal with nutrient exports from within the catchment.

Accordingly, any effective remediation strategy for the Rotorua lakes needs to have both an immediate short-term focus and a longer-term focus, each supported by research specific to the nature of shallow, sediment–rich, lakes.

This report is divided into the following sections:

- Methodology.
- Background – an overview of the current situation of the Rotorua lakes, especially lakes Rotorua and Rotoiti, and of the options being considered for addressing water quality issues.
- The Lake Taupo precedent – a discussion of the government decision and its implications for Rotorua.
- Considerations for developing a policy framework.

- Applying the general principles to the Rotorua lakes.
- A policy framework – setting out a policy framework within which to consider the nature of the government's contribution.

2. Methodology

The methodology applied in preparing this report followed that set out in MDL's proposal to EBOP which described our intended approach:

- Interviewing key stakeholders identified with input from EBOP (e.g., councils, government agencies, Maori, Federated Farmers, residents, recreational and tourism interests) to identify the concerns that individual stakeholders have regarding the state of the lakes and options for meeting the costs of remediation.
- Reviewing the contribution significant government or local government policy initiatives may have made to the current state of the lakes. Obvious ones include central government encouragement for agricultural production and the conditions that applied to disposal of sewage from residential and urban development.
- Undertaking a more in-depth review of New Zealand and international literature dealing with costs of remediation for environmental damage. We proposed analysing the literature using a combination of a property rights and public economics approach. The principal elements of this framework include:
  - Generally, property rights should not be forfeited or significantly restricted without compensation. This can be seen as a political as well as an economic principle, concerned with ensuring acceptance of the intervention concerned.
  - The funding mechanisms chosen should reflect the benefit derived and, in particular, be designed to encourage conduct that will lead to the desired outcome.

In keeping with the proposal, we:

- Interviewed some twelve representatives of different stakeholders within the Rotorua district including representatives of farming interests, Tangata Whenua, tourism, residents groups, the Lakes Water Quality Society, and recreational users (fishing, recreational boating, kayaking).
- Held discussions with central government officials from departments identified as having a particular interest in the project (selected primarily on the basis of those departments that had been contributors to the Lake Taupo cabinet paper).
- Held discussions with representatives of both Rotorua District Council and EBOP designed to share our thinking on how the project might develop, and to provide a "reality test" on feedback that we received from various stakeholders.
- Undertook quite extensive research on the history of land development within the Rotorua district and of government agricultural policy more generally. The purpose of this work was to provide an assessment of the extent to which government policy had contributed to the development of pastoral agriculture in the Rotorua district and thus, indirectly, to creating the circumstances for agricultural runoff.
- Undertook an extensive review of New Zealand, Australia, US and European literature dealing with remediation of environmental damage. A principal purpose of this research was to identify how other jurisdictions had defined and approached the policy issues involved.

After our proposal had been accepted, but before our substantive work began, we agreed a variation with EBOP that required us to consider policy issues in relation to research

funding. For this purpose, we undertook discussions with scientists who had been involved in undertaking research on the Rotorua lakes (including seeking funding), held discussions with the Foundation for Research, Science and Technology and the Ministry of Research, Science and Technology, and sought information from scientists on the broad areas for further research that they considered necessary.

3. Background

The material we have considered, outlining the history of water quality problems in the Rotorua lakes, identifies a number of different contributing factors. This is in marked contrast to the Lake Taupo situation where the current consensus is that nutrient export from pastoral agriculture is by far the most significant contributor to deteriorating lake water quality.

In the two principal Rotorua lakes (Rotorua and Rotoiti) and to a lesser extent in the other Rotorua lakes, there have been and are three different principal categories of sources of nutrients that have been responsible for reductions in lake water quality. These are:

- Discharge of treated sewage (for many years, until the early 1980s, Rotorua's sewage was pumped into the lake with treatment to meet public health rather than environmental benchmarks) and seepage from septic tanks (a number of lakeside settlements are still dependent on septic tanks).
- Nutrient export from pastoral agriculture, primarily carried from farm properties to the lake via ground water.
- Natural "point" sources such as Tikitere and the Hamurana Springs.

The waters of lakes Rotoiti and Rotorua are affected not just by ongoing "imports" from the three principal sources outlined. Both lakes also have a very significant internal source of nutrients; sediment at the bottom of the lakes which has built up over many years. For Lake Rotoiti, the internal source is not just nutrient release from its own lake bottom sediments, but nutrients in sediments carried through from Lake Rotorua via the Ohau channel.

This combination of external and internal sources means that restoring lake water quality in lakes Rotorua and Rotoiti is a more complex matter than restoring lake water quality in Lake Taupo.

As well as addressing land management[2] issues (the sole solution being pursued for Lake Taupo), it is necessary also to:

- Minimise or, ideally, eliminate the discharge of any nutrients sourced from sewage.
- Minimise the contribution from natural "point" sources such as Tikitere and Hamurana.
- Address the problem of sediment flow from Lake Rotorua into Lake Rotoiti.

It is also necessary for lakes Rotorua and Rotoiti to deal with the impact from lake bottom sediments. For large parts of the year, the lake bottom waters are anoxic, a condition that triggers the release of significant amounts of nutrient (nitrogen and phosphorous) in proportions that favour the growth of blue-green algae.

[2] Which includes both changes in land use and in how the land is managed.

The fact that there are a number of different sources of nutrients gives rise to a further complexity, that of assigning causality. With Lake Taupo, there is room for debate over how long it will take nutrients to move, via groundwater, from the on-farm source to the lake but there is very little room for debate about what the source actually is. Very clearly, the principal contributor is pastoral agriculture so that any solution needs to address that source.

For the Rotorua lakes, the situation is different. Not only are there multiple causes but MDL also found in interviews with stakeholders that there were differing views about causality. There were clearly some who took the view that the real culprit was Rotorua City because of years of discharge of sewage. Another view expressed (and probably reflecting a misunderstanding of the science involved) was that if nutrient rich groundwater flowing into the lakes was approximately 80 years old, then the source had to be something other than pastoral agriculture because there was no pastoral agriculture 80 years ago. People expressing this view clearly believed that a combination of natural sources and Rotorua's sewage disposal were the principal contributors.

These are matters that will need to be addressed in developing and implementing an appropriate policy framework. Good public policy is not just technically robust, and evidence based; it is also legitimate in the sense that those adversely affected by it nonetheless accept that it has been fairly and appropriately put in place. Often this will include understanding at least the basics of the arguments for the policy. This is important not just for preserving the legitimacy of the organisation in developing and implementing the policy; it is also important for enforcement. People who accept that a policy intervention is legitimate in the sense just outlined will be much more likely to comply than people who believe that it is illegitimate.

This will clearly be a factor in implementing the short and long term measures that EBOP and the Rotorua District Council have been developing, including rule 11[3] and the different engineering initiatives currently under consideration (such as the proposed groynes, reoxygenation of the bed of Lake Rotoiti, the possible diversion of the Ohau channel so that it flows directly into the Kaituna, and enhancement of the city's waste water treatment plant.

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[3] Rule 11 is a rule being promulgated by EBOP for inclusion in the Regional Water and Land Plan. The rule is intended to regulate the discharge of nitrogen or phosphorus to water, or on to land, where:

- That nitrogen or phosphorus may enter surface water or ground water.
- The discharge is from certain defined activities.
- It would result in a net increase in the export of nitrogen or phosphorus from a property.

Where those conditions apply, the discharge will be a discretionary (restricted) activity from the date the plan becomes operative. Essentially the activities are, within the catchments of lakes Rotoiti, Rotoehu, Okaro, Rotorua and Okareka conversion to or intensification of agricultural activities including dairying and change in land use to unsewered residential resulting in a net increase in the export of nitrogen or phosphorus from the property. The rule is intended to be prospective, not retroactive, so that existing levels of discharge will remain lawful. The rule is also designed to be flexible by targeting the level of discharge rather than the activity itself. Thus, for example, if a farmer is able to intensify agricultural production without increasing the level of discharge of nitrogen or phosphorous, then that intensification will be permitted.

A final, and very significant, component of the background for this project is the interest of Tangata Whenua. Negotiations are currently taking place between the Te Arawa Trust Board and the Office of Treaty Settlements on the terms and conditions under which ownership of the beds of the Rotorua lakes will be revested in the Trust Board. Tangata Whenua regard the lakes as a taonga and clearly have quite strong views about the obligations of the Crown. Specifically, it seems likely Tangata Whenua will argue the Crown has an obligation to return the lakes in the state they were when the Crown took ownership. Taken to its logical conclusion, that principle would see the Crown faced with the full cost of remediation, an outcome which is unlikely to appeal to the present, or for that matter, any future government.

The Te Arawa Trust Board, EBOP and the Rotorua District Council work together as the lakes strategy committee. One of the factors that the government set out as justifying a contribution to the remediation of Lake Taupo was the treaty relationship with Tuwharetoa.

Against that background, a question for EBOP, the Rotorua District Council and the Te Arawa Trust Board to consider is whether the Crown's treaty obligations should simply be seen as one matter to weigh in the balance when considering the case for a government contribution, or whether it should be seen as an entirely separate matter.

This report takes the view that the issue of the Crown's obligations to Te Arawa arising from the treaty is an issue that belongs to Te Arawa rather than to EBOP or the Rotorua District Council. It will be very appropriate for EBOP and the Rotorua District Council to provide what support they are able for the Te Arawa Trust Board in its negotiations with the Crown (including co-operation both on lakes research and on making the case for government funding for lakes research) but the treaty right belongs to the Trust Board not to EBOP or the Rotorua District Council.

4. The Lake Taupo Precedent

On 16 December 2003 the Minister for the Environment released a press statement announcing a significant commitment to preserving Lake Taupo, stating "the government is committing up to $36.7 million to a joint fund to reduce nitrogen inputs to the lake, with the aim of protecting water quality and clarity"[4]. The statement is worded in terms that suggest a final commitment has been made and carries with it the implication that, in similar circumstances, similar funding will be available.

The government and its advisors are clearly very nervous that the decision to make a financial contribution to protecting Lake Taupo water quality could set a precedent that might become extremely costly. As one official commented to MDL, it is concerned the Lake Taupo decision will result in "every council turning up with its lakes for assistance."

From reading the cabinet paper that preceded the decision, it is clear this nervousness has been somewhat heightened by the perceived need to increase the amount of the government contribution from the figure that had originally been discussed. When government first considered offering assistance, it was on the basis that government, the Regional Council, and the District Council would each contribute one third of the cost. Following that initial decision, the estimate of cost increased to such a level that the Taupo District Council indicated it could no longer meet a full one third. The Minister for the Environment, in her paper to cabinet, commented in this respect that:

> "I acknowledge that increasing the government share from 33% to 45% will increase consequent fiscal risk as there will be other local communities with limited ability to pay for comparable environmental protection initiatives. However, this needs to be weighed against the higher risk of failing to protect Lake Taupo if we cannot reach a mutually acceptable funding formula.[5]"

In a bid to contain the fiscal risk, she then went on to state a set of conditions governing the decision to make a contribution. These were clearly intended to limit the opportunity for other councils to use Lake Taupo as a precedent. The clause setting out the conditions reads:

> "I propose that the fiscal risk be managed through a clear statement that confirms the discretionary nature of the government's contribution which is based on the particular circumstances of Lake Taupo, taking into account the following factors:
>
> - The nationally important status of the lake.
> - The scale and urgency of the problem and feasibility of the proposed solutions.
> - The cost burden on ratepayers.

[4] Hobbs, Hon Marian (2003)

[5] Office for the Minister for the Environment (2003) p6

- Past national and local policies relating to catchment development and impacts.
- Crown land holdings.
- The Treaty relationship with Tuwharetoa.
- Relevant national policies.[6]"

One of these conditions is particularly important for the Rotorua situation given the complexity, and the potential, as a consequence, for different stakeholders to take different views both on causality, and on appropriate solutions (note, in recording these different views, MDL is not endorsing them but merely noting that they exist and dealing with them must be factored into the development of any policy framework).

The crucial condition, in this respect, is the second one "the scale and urgency of the problem **and feasibility of the proposed solutions**".

It is clear from discussion with officials that feasibility has at least two components to it:

- The proposed solutions are technically and legally feasible and capable of implementation (whether they involve engineering works or regulatory interventions).
- They are also feasible in the sense that there is a community consensus in support so that there will be minimal delay or difficulty in the implementation.

Government has not yet finally committed to the Lake Taupo solution. Amongst other things, it is still working with the parties to determine that the various conditions precedent can be satisfied. As one example, MDL understands that the Crown will be seeking undertakings from farming interests (specifically Taupo Lake Care) and from Tuwharetoa binding on its various landholding entities, that they will not object to whatever regulatory rule Environment Waikato seeks to put in place to control land use (the Cabinet paper refers to Environment Waikato's nitrogen regulation being in place by July 2004 with no Tuwharetoa appeal).

A further indication of the approach which the Crown has been taking in respect of Lake Taupo comes from an address which Barry Harris, until recently Chief Executive of Environment Waikato, gave to a recent Wellington meeting of the New Zealand Planning Institute. As reported to MDL, he stated that Environment Waikato believed it had been successful in obtaining government support because it:

- Quantified the problem by source – where were the nutrients coming from and in what quantities?
- Identified possible solutions and established their feasibility (this included developing a partnership approach amongst key stakeholders).
- Was able to estimate the likely costs of implementing the solutions and make acceptable suggestions on how those costs should be met.

MDL suggests that EBOP accept the government stance that the Lake Taupo decision should not be regarded as a precedent, at least if the term "precedent" is meant to imply a guide to how government will make decisions on similar instances. Rather, it makes

[6] Office for the Minister for the Environment (2003) p6

better sense to consider the Lake Taupo decision as being somewhat ad hoc in character but signalling preparedness by government in appropriate circumstances to accept some responsibility for contributing to the costs of environmental remediation.

In essence, the point that we are making is that a precedent implies that the decision in principle for government to assist has already been taken so that the main matter for decision is whether the case relying on the precedent satisfies the required conditions.

That is not the case in this instance; there is not yet a government policy for assistance with environmental remediation. Accordingly, the appropriate stance for EBOP to take is that it must make afresh the case for assistance rather than simply expect it to be forthcoming because of the decision that government has already taken in respect of Lake Taupo.

Nonetheless, the Lake Taupo decision provides a very useful guide in the sense that it does set out the criteria that government took into account and is likely to apply in any similar case.

5. Considerations for Developing a Policy Framework

In broad terms, a policy framework for dealing with the water quality of the Rotorua lakes is concerned with two separate objectives:

- Implementing least cost means of achieving those changes required to achieve the desired reduction in nutrient levels.
- Allocating the costs of change in a manner that best supports the achievement of a long-term solution. This requires developing funding mechanisms (including, as a funding mechanism, foregoing economic opportunities that would produce unacceptable levels of nutrient export) that are:
  - Accepted as legitimate.
  - Have the minimum possible impact on freedom of choice in the exercise of private or collective property rights.
  - Encourage flexibility and innovation rather than prescribe a "one right way".

Most aspects of a least cost approach to implementing desired changes lie outside the policy framework itself. Rather, any policy framework should take as a given that the chosen means represent the least cost approach, both in actual financial terms, in terms of externalities (environmental impacts etc) and in terms of any restrictions on property rights (which carry with them both a social and a private economic cost in terms of opportunity foregone).

The principal area of cost that comes directly within the design of a policy framework is the cost associated with regulatory intervention as it is concerned directly with the relationship between incentives, actions, and property rights.

An inflexible regulatory intervention can significantly increase cost by denying the opportunity for people to choose, from their experience, knowledge and innovative capability, the least cost means of achieving the desired outcomes. A more flexible regulatory approach, focussed on outcomes, and providing an incentive based approach rather than a "command and control" approach provides greater scope for realising desired outcomes in a least cost manner.[7]

So far as the costs of other aspects of remediation – scientific research, engineering works etc – is concerned, the main focus on those within a policy framework is that there are means in place to ensure that recommendations for expenditure are soundly based and, where appropriate, the cost of developing and implementing the solutions has been derived through a competitive process.

This report will not deal extensively with determining what means are least cost. It assumes that EBOP and the other parties involved have in place robust means for ensuring that, especially on major projects, proposals for research or for capital works

[7] This is the approach that EBOP has taken in developing rule 11, its proposed land use management rule.

are well grounded, have been subject to appropriate cost benefit analysis, and are finally adopted, where appropriate, through the use of competitive mechanisms.

Instead, the focus of the report is on the second of the two separate objectives, allocating the costs of change in a manner that best supports the achievement of a long-term solution. This is concerned not just with the physical consequences that might flow from any physical works or regulatory interventions. It is also concerned with ensuring that the chosen means for allocating costs are selected and designed so as to put in place incentives for people (organisations) to act in ways that will contribute to achieving a long term solution.

In this section we first set out the general principles that underpin developing policy in the area of environmental remediation and then consider the specific circumstances of the Rotorua lakes, in order to develop a policy framework for EBOP.

GENERAL PRINCIPLES

The general principles that apply in considering who should meet the cost of remediating, mitigating, or avoiding environmental damage can be seen either as a set of legal principles, imposing liability, or as a set of economic principles, designed to allocate cost in a manner most likely to incentivise the conduct required to achieve the desired result. In an ideal world, legal liability will be consistent with the economic analysis on how best to allocate costs.

Two general principles are involved.

- ***The Polluter pays principle.*** Under this principle, the person whose conduct gives rise to environmental damage should meet the full costs of avoiding or making good that damage. This principle is seen as having a number of benefits including:
  - It focuses attention on undertaking the proposed activity in a way that avoids or mitigates environmental damage.
  - It ensures that the activity bears its full costs, thus promoting efficient resource use as the individual is unable to "cost shed" onto others by forcing them to bear part of the costs of the activity (a typical example is an activity that discharges pollutants into the environment). Unless the full costs associated with the discharge are borne by the polluter, then the polluter is able to "free ride" on the rest of the community by cost shedding the cost of dealing with pollution onto it.
- ***The beneficiary pays principle.*** Under this principle, if an activity generates benefits for persons other than those undertaking the activity itself, then those persons should pay the cost of producing that benefit. Advantages of this approach include:
  - The person undertaking the activity is able to receive the market value for all the benefits it generates and thus will carry it out to a socially optimal level.
  - Beneficiaries themselves have the opportunity of choosing (usually collectively through an instrument of government, be it local or central) the level of that activity they wish to purchase.

Typically, the situations in which issues of polluter pays or beneficiary pays arise involve what economists refer to as externalities – benefits or dis-benefits that are incidental to an activity rather than part of its intended outcome and which impact on people other than those undertaking the activity. Typically, also, they are what can be described as "public goods" or "public bads" rather than private goods or bads which can be dealt with, between individuals, by way of contract or legal action in response to damage to private rights.

In respect of the polluter pays principle, what this typically means is that some form of government (central or local) intervention is required to ensure that the polluter bears the associated costs.

Similarly, the beneficiary pays principle typically arises in public policy only when the benefits are public goods. If the benefits are substantially private, then the private beneficiaries can contract with the person whose activity is giving rise to the benefits. A familiar example of this is the contracting arrangements that commonly exist between orchardists and beekeepers for pollination services.

A particular difficulty for policy makers is the asymmetry between the way in which these two principles are applied. The incentives facing policy makers (governments both central and regional) tend to favour intervention when polluter pays is the issue. Fiscally, there is usually a net gain to the regulator. It is able to cover the costs of regulation, perhaps through fees, perhaps through other means, and regulation can typically be seen as avoiding costs that the government or council might otherwise have to bear.

Intervention on the basis of the beneficiary pays principle is rather more difficult. By definition, this involves a government or a council making a decision to pay for a benefit that many people will see as relatively diffuse. It may be difficult to move from the general proposition that a particular course of action will give rise to benefits, to the next stage of determining just who will receive those benefits, what value they might attach to them and how and by whom payment for those benefits should be made.

THE GENERAL PRINCIPLES IN APPLICATION

The commonest application of these two sets of principles has been in regulating and/or allocating the costs of future activity.

It has long been accepted that it is entirely appropriate for governments to regulate, without compensation, to restrict private property rights in order to protect public interests. The argument is well put in a recent Australian Treasury article *Public Good Conservation and The Impact of Environmental Measures Imposed on LandHolders.* The paper notes:

> "Private land holders may object in the belief that their private property rights are being infringed through the application of this principle.
>
> "However, there are many other analogous measures that restrict private behaviour in order to protect public goods. For example, pollution control for factories, urban

planning laws, and speed limits on roads all restrict private action in order to protect the public interest.[8]"

Non-Point Source (Diffuse) Pollution

The polluter pays and beneficiary pays principles have been easiest to apply when dealing with specific activity linked to known and identifiable impacts. It is this, for example, that underpins much of environmental regulation in New Zealand with an emphasis on regulating or prohibiting activity in order to control environmental impacts.

It is more difficult to apply the principles when one or both of two other conditions apply:

- The focus of concern is non point source pollution, that is, the pollution cannot be linked back directly to a specific property/activity but, instead, comes from a variety of sources, activities and/or properties.
- The focus of concern is pollution resulting from activities that have already been undertaken, perhaps years ago, and which may have been legal, even encouraged by government, at the time.

The principal issue with non point source pollution is one of demonstrating causality in terms both of:

- The link between a specific activity and the environmental outcome; and
- Where more than one activity may be a contributor, the proportionate contribution each activity has made or is expected to make.

These concerns emphasise the importance of understanding the processes giving rise to the environmental impact. They put an emphasis on investment in research and on communicating research findings as the basis for any regulatory or other interventions to mitigate or avoid the expected impact.

This is important not just for the legitimacy of any measures that may be implemented. It also, critically, goes to the question of effectiveness. If causal relationships are not well understood, then regulatory interventions may be ineffective.

Generally, it is now accepted that environmental regulation to control future activity contributing to non point source pollution is a legitimate exercise of regulatory power. It does, though, raise one important question which will be discussed below; how the costs of that regulation should be borne if it results in a significant impact on the value of existing property rights.

Retroactivity

Responsibility for remediating or mitigating the environmental impact of past activities raises more difficult questions, especially, if as is usually the case, those activities were lawful at the time they were undertaken.

This issue needs to be considered in two separate contexts;

[8] Commonwealth Treasury of Australia (2001) p100

- Environmental damage which is the consequence of defined activities that took place on the site which is now degraded.
- Environmental degradation that has resulted from activity which took place elsewhere, especially degradation that has resulted from non point source pollution.

The World Bank Group, on its website, provides a useful overview of domestic and environmental law; concepts and issues at http://www4.worldbank.org/legal/legen/legen_domestic.html.

> "Retroactive liability is the hallmark of modern soil statutes and constitutes an exception to general principles of law. Under these principles no one should be held liable for the acts of another or for actions that were lawful when they were taken. Many governments have invoked this exception as a solution to the contamination of land by hazardous wastes. In urban areas land contamination often results from decades of intensive industrialisation that has occurred without any meaningful pre-existing environmental standards. Under some soil statutes current and past owners of contaminated land may be held liable for clean-up costs, even if they have not personally contributed to the contamination. Under certain circumstances operators, transporters, and, to a limited extent, lenders can also be held liable. Retroactive liability is still controversial and has raised some problems. It has important economic consequences, as the value of such land may drop precipitously in cases where clean-up costs exceed the property's value. In the long run, retroactive liability can also result in new investments going only to pristine "greenfield" sites, to avoid contaminated areas that are often situated in disadvantaged communities. Despite these difficulties the harshness of the liability provision has, in some countries, coerced industries into better environmental behaviour and substantially minimised major health risks.[9]"

In New Zealand, it is now accepted that property owners are liable for any contaminants on sites that they own, regardless of whether they were responsible for that contamination or even whether they had any knowledge of it.

Remediating contaminated sites can be extremely expensive. As an, admittedly extreme, example the budget for cleaning up New Zealand's most notorious contaminated site, the former Fruitgrowers pesticide factory site at Mapua, near Nelson, is estimated at $6.5 million[10].

Retroactive liability, for site specific contamination, can be seen as consistent with the economic principles that liability should lie with the party or parties who have the greatest incentive to find a solution. In the case of contaminated sites, liability rules place a strong incentive on potential purchasers, lenders and site owners to identify and deal with any existing problems. It also provides a mechanism for meeting the costs; an adjustment in the market value of a contaminated site to reflect the expected costs of the cleanup.

[9] The World Bank Group

[10] Tasman District Council

It does, however, encounter one difficulty; the greater the potential cost of remediation, the more difficult it may be for those immediately involved to afford the cost. In the Mapua case already referred to, the bulk of the cost is being met by government and the district council. The firm that originally owned the site no longer exists. The property and some cash were acquired by the district council from the company as part of a remediation strategy that recognised the inability of the owner to meet the full costs.

In recognition of the difficulties that some owners may face in remediating contaminated sites that are a high priority for reasons such as risk to human health, the government has recently established a fund for the cleanup of what are described as Orphan Contaminated Sites. These are defined as those sites where either no party can be fixed with legal liability, or where the liable party is unable to fully fund the remediation.

Criteria to assist with determining which sites will be cleaned up through assistance from the fund will be approved by Cabinet. Sites identified for cleanup will be on a case by case basis. All money to be used for scoping and site cleanup will be negotiated and specified in contracts approved by the Minister for the Environment.

From a policy perspective, what this strongly suggests is government seeking to manage the tension between its preferred (and the legal) position that remediation is the responsibility of current (and former) owners, the inability of some owners to meet the full costs, and the potential risks to public health if seriously contaminated sites are not dealt with.

Retroactive liability for non point source pollution has proved much more difficult to address. Part of the problem of doing so is causality – how to determine in what proportions different parties (properties/activities) should be held responsible for what consequences.

Another complication is cost. The costs of remediating lake water quality, in the sense of dealing with nutrients already in the lakes, or in ground water feeding the lakes, pro-rated to reflect the presumed contribution from pastoral agriculture, would represent a very significant proportion of the private wealth currently invested in pastoral agriculture within the catchments. Similarly, the cost of land use change required to reduce future nutrient exports to an acceptable level would also represent, in net present value terms, a significant proportion of that same private investment. The international literature clearly suggests that, although it is normal practice for the costs of environmental regulation, especially in terms of future conduct, to fall on the parties affected, it is also clear that this is a matter of degree. If the impact is relatively marginal, then imposing costs on the parties concerned is seen as perfectly legitimate. The same is the case if the principal effect is to discourage investors from entering a new activity – they can simply find an alternative investment. However, where the cost of regulation is significant in relation to the private wealth of the actors involved, there is a strong sense that considerations of equity and fairness argue against requiring those individuals to bear the cost.

A further difficulty, particularly in dealing with pollution that has resulted from agricultural activity, is that the activities concerned were not only legal but actively encouraged. In New Zealand, for example, maximising agricultural output was a primary focus of successive governments until the mid 1980s.

Land development schemes were a major feature of the mid 20th century, with government acting both as a major developer and as funder of other development which it did not, itself, carry out.

In 1963, the Agricultural Development Conference set a target for a major expansion of pastoral exports over the following decade. The government response included measures such as subsidies on the carriage and price of phosphatic fertiliser, favourable tax treatment for livestock, and subsidised lending through the State Advances Corporation.

In the mid 1970s, when production levels were falling short of the desired rate of growth, the government again responded with measures such as the Livestock Incentive Scheme and Land Development Encouragement Loan Scheme[11].

Internationally, for reasons such as those just outlined, there has been a considerable reluctance to impose retrospective liability for non point source pollution.

AUSTRALIA

The issue has been widely debated in Australia with the conclusion, generally, being that it is inappropriate to hold farmers responsible for making good the damage from past activity. Examples include:

- ***Economics of Cost Sharing for Agri-Environmental Conservation*** a paper delivered at the 1998 conference of the Australian Agricultural and Resource Economics Society, provided a detailed analysis of the economic efficiency arguments associated with achieving desired environmental outcomes. It noted the strong efficiency arguments associated with the polluter pays principle in terms of future activity. The author cites with approval both OECD and European Union statements that the polluter pays principle should apply to agriculture as it does to other economic activity – but those statements were concerned with future activity, that is, activity undertaken in the knowledge of the regulatory implications and costs. He quotes with apparent approval another authority noting "the key issue here is the perception of unfairness that arises from imposing liability for activities that, at the time they were carried out, were in conformity with the applicable law, and indeed may have been in accordance with the contemporary good, or at least acceptable, industry practice.[12]" He also notes that in the USA, under the Comprehensive Environmental Response, Compensation and Liability Act liability for pollution was made retroactive but notes that there is no economic efficiency justification for such an interpretation of the polluter pays principle. "Since it is simply not possible after the fact to change behaviour in an earlier period, past inefficiencies should be regarded as sunk costs.[13]"

[11] Birks, Stuart; Chatterjee, Srikanta (1992)

[12] Marshall, Graham R (1998) p7

[13] ibid

More significantly, he points to the risk associated with introducing a principle of retroactive liability. It "may create future inefficiencies by increasing the risks that firms and other parties face regarding their environmental responsibilities. In compensation, they will require a higher rate of return on invested capital, resulting in higher consumer prices. The risk premium they will demand is also likely to be higher than the public would be willing to pay to avoid the risk, since the public is in a much better position to spread such risks"[14].

- ***Water Reform: Who Pays for the Environment:*** This paper prepared for the National Competition Council discusses a possible framework for considering how to allocate the cost of mitigating the environmental damage resulting from water use. On the question of past environmental damage, it quotes from a staff research paper on biodiversity conservation prepared for the Productivity Commission which concluded:

  > "From an economic perspective, there is little rationale to charge retrospectively for biodiversity loss because it is not possible to change past behaviour and correct past inefficiencies. As a result, the efficiency gains from applying the "impacter pays" principle [the polluter pays principle] may not apply for the case of degradation caused by past activities. Further it may be considered inequitable to penalise impacters retrospectively for complying with the accepted legal frameworks and the policies of the past.[15]"

- In November 2002 a group of leading scientists, known as the Wentworth Group, produced ***Blueprint for a Living Continent***. That paper argued for a major investment of public capital in order to restore the degraded parts of the Australian landscape. Their stated rationale included "the reality is quite simple – we cannot fix our environmental problems by wishing them away and we can't expect our farmers to pay the full cost of repairing past mistakes. Our nation was built on the back of our rural industries and all Australians have benefited, not just farmers.[16]"
- In a paper, ***Land Degradation and Rehabilitation: A Policy Framework***, presented to the fourth annual symposium of the Australian Agricultural and Resource Economics Society, the authors, respectively a visiting researcher and a commissioner with the Productivity Commission, posed a number of questions. In respect of retroactive liability, they commented "realistically, there are limits to the income that landholders can be expected to forego for the benefit of others, and this limit is perhaps lower when it is clear that government policies have contributed to the problems being addressed. The public's recognition of the merits of addressing – preventing and reducing – land and water conservation, and that they will be ultimate beneficiaries, strengthens the political economy case for a significant contribution from taxpayers.[17]"

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[14] Marshall, Graham R (1998) p7

[15] Cope, Deborah (2002) p31

[16] The Wentworth Group of Concerned Scientists (2002) p16

[17] Edwards, Geoff; Byron, N (2001) p32

In November 2000 the Council of Australian Governments (COAG) launched the National Action Plan for Salinity and Water Quality.

This plan is intended to counter the growing problem of salinity which affects most of Australia. Agriculture has been a principal contributor.

The plan includes acceptance by COAG that meeting the cost of remediation is the responsibility of taxpayers (both federal and state) and that this may include providing compensation for the impacts of land use change, as much as anything in order to ensure community support.

In this respect, the section in the foreword for the plan dealing with improved governance for land and water management states:

> "Reform of pricing, property rights and regulatory instruments for land and water use is needed to protect the long term profitability and sustainability of the resource base.
>
> "Governments will need to evaluate the social impacts of such reforms on regional communities and recognise that compensation and adjustment assistance may be required. Without adjustment assistance, reform may be divisive, not supported by affected communities and possibly unachievable.[18]"

EUROPE

In Europe non point source pollution is referred to as diffuse pollution. The following definition, sourced from the Scottish Environment Protection Agency, is representative of what the term covers in European environmental policy:

> "Diffuse Pollution comprises true non point source contamination and pollution arising from a multiplicity of dispersed, often individually minor, point sources. Examples of true non point sources are sheet run off from fields or seepage of nutrients from soil into ground water. Examples of minor point sources are field drains or surface water drains in urban areas. Diffuse sources are often individually minor, but collectively significant.[19]"

The Commission of the European Communities has been developing a ***Proposal for a Directive of the European Parliament and of the council on environmental liability with regard to the prevention and remedying of environmental damage***.

The stated purpose of the proposal is to "establish a framework whereby environmental damage would be prevented or remedied.[20]" The proposal makes it clear that:

> "This directive shall not apply to environmental damage or to an imminent threat of such damage caused by pollution of a widespread, diffuse character, where it is

[18] Council of Australian Governments (2000) p9

[19] Scottish Environment Protection Agency (2004)

[20] Commission of the European Communities (2002) p2

impossible to establish a causal link between the damage and the activities of certain individual operators.[21]"

The Commission has put out a set of frequently asked questions providing background on the proposal. The FAQs dealing with farming are:

> **"Is farming covered by the proposal?**
> It is, in several ways. The proposal imposes fault liability on all occupational activities, i.e. including farming, for damage to bio-diversity.
>
> Farming is also covered by strict liability to the extent that it involves handling dangerous substances or wastes. The same defences as for all other activities covered by this proposal would apply to farming."
>
> **"Will all the farmers in the future be required to pay for all the nitrates pollution they cause?**
> Nitrates pollution is mainly diffuse and therefore mostly outside the scope of this proposal. It is inefficient to address the external costs caused by diffuse pollution with liability. Other, better suited, policy instruments are being used to tackle the problems caused by nitrates pollution.[22]"

New Zealanders, familiar with what appears to be the preferential treatment given to farmers within the European Union, might see the exemption for diffuse pollution as another example of agricultural protectionism. However, the proposal itself advances arguments that are more consistent with concerns about the ability to enforce legal liability, and related issues of economic incentive – the view that the way in which liability is imposed should incorporate incentives to encourage the type of conduct desired.

The proposal states:

> "Not all forms of environmental damage can be remedied by means of the liability mechanism. For the latter to be effective, there need to be one (or more) identifiable actors (polluters), the damage needs to be concrete and quantifiable, and a causal link needs to be established between the damage and the identified polluter(s). Liability is therefore not a suitable instrument for dealing with pollution of a widespread, diffuse character, where it is impossible to link the negative environmental effects with the activities of certain individual actors.[23]"

The European approach is to look at alternative means of dealing with the costs of remediation. A ***European Commission White Paper on Environmental Liability***, published in February 2000, notes:

> "In order to be able to deal with historical and other forms of pollution for which liability would not be a suitable instrument, for instance in the case of diffuse

[21] Ibid p40

[22] European Commission (2002)

[23] Commission of the European Communities (2002) p33,34

damage or in cases where the polluter cannot be identified, Member States could use – as some already do – other instruments, such as impact fees levied on polluting activities or funds established at national or regional level.[24]"

Here, the policy approach is one of treating the industry as a whole as the liable party. Water quality issues are addressed by a combination of levies and regulatory interventions. Superficially, the same approach, especially the use of levies on production, would seem worth considering in New Zealand.

However, it is critical to consider not just the nature of the instrument, but who ultimately bears the cost. Within the European Union, levies on farming tend to be passed onto consumers either directly through prices, or indirectly through farming subsidies.

There is no equivalent mechanism available for New Zealand producers. The vast bulk of our agricultural produce is exported. We lack any mechanism for passing on to overseas consumers the cost of regulatory or other environmental protection measures imposed on New Zealand farmers. Accordingly, following that approach in New Zealand would be the equivalent of a dedicated tax on farming.

The European practice, nonetheless, provides a useful analogy for the New Zealand situation. The rationale for using mechanisms that ultimately impose a cost on consumers reflects a belief that it is European consumers who are the beneficiaries of agricultural production. In other words, the underlying principle justifying the funding mechanisms is the beneficiary pays principle.

In New Zealand, it is taxpayers who are effectively the beneficiary group, as representing those who benefit from the economic growth that agricultural production has enabled. Accordingly, the New Zealand equivalent of European consumers meeting the costs of remediation is taxpayers doing so as the equivalent beneficiary group.

ENGLAND

In England the Department for Environment, Food and Rural Affairs and the associated Environment Agency have been developing policy and exploring means for responding to the directive on environmental liability. The Environment Agency, in conjunction with English Nature has recently concluded a research project ***Field Development of Grant Aid Proposals for the Control of Diffuse Agricultural Pollution***.

The Agency reports that farmers were generally very supportive of a two-tiered grant aid arrangement:

- **Basic Plan:** A grant aid package to finance a soil/nutrient management plan requiring the farmer to adopt basic good practice (tier one) and comply with existing regulations as a minimum standard. Farmers would be eligible for additional countrywide grant aid to adopt tier two measures.
- **Plan Plus:** A funding package to finance the proactive, advanced planning and farmer networking required to achieve rapid change in priority catchments. This

[24] European Commission (2000) p30

activity would be supported by a catchment appraisal of pollution risk and required management changes, with liaison with the farming community overseen by a project officer. More detailed farm planning would outline the combination of high cost tier three measures that need to be adopted within high-risk areas of the catchment. Adoption of the basic plan would be a pre-requirement for entry into plan plus[25].

The researchers made recommendations for scaling up the project to cover all of England and Wales and conclude that "their recommendations are compatible with the structure of the emerging agri-environment package being developed by DEFRA, but greater funding and more and better farm advice has to be available to implement the proposals. A number of proposals have been made to address this shortfall, including the use of CAP reform mechanisms and nutrient taxes/levies.[26]"

SUMMARY

The polluter pays and beneficiary pays principles provide useful general guidance when considering the allocation of the costs of mitigating, avoiding or remediating environmental damage. In brief, the principles lead to the conclusion that liability should be allocated so as to maximise economic efficiency, that is, return on investment, recognising that the return can include what would normally be thought of as environmental goods, as well as economic goods. Indeed, this is implicit in both principles. The costs of pollution, and the benefits of avoiding it are often environmental goods which may not necessarily have a direct economic value.

What the principles do not do is provide easy answers to questions such as who benefits? These are often judgmental. As an example, restoring water quality in the Rotorua lakes could be seen as producing at least the following types of benefit and beneficiaries:

- Economic benefits to commercial interests using the lake (tourism; fishing; commercial recreation).
- Aesthetic benefits to residents and visitors – the pleasure which comes from contemplating a beautiful lake.
- Cultural and spiritual benefits, especially for Maori for whom the lakes are a taonga.
- Reputational benefits for New Zealand's economy and society as a whole – as improving lake water quality underpins our international reputation (positioning) as a clean, green society.
- What economists' term "option benefits" which people enjoy from contemplating the possibility of enjoying lakes restored to a high standard.

Assessing benefits, by allocating some notional value or weighting to them as a means of underpinning an allocation of costs in accordance with the beneficiary pays principle, is at least as much an art as it is a science (although there are now available quite sophisticated models for determining the value that people will place on different options, applying these is extremely expensive and not yet totally reliable).

[25] Blackburn, Oliver (2003)

[26] Blackburn, Oliver (2003)

The most difficult area in which to apply these principles is that of retroactive liability. From an economist's perspective, the polluter pays principle has no application to dealing with the consequences of past actions. Those cannot be changed, so imposing costs with the intention of incentivising a different outcome is futile.

Instead, the literature and policy debate, internationally, suggests that decisions on allocating the costs of past damage are a combination of:

- Political expediency.
- Fairness and equity – for example, should someone be penalised because he or she (or some past user of the property he or she now occupies), acted in accordance with then good practice, possibly encouraged by government.
- The beneficiary pays principle.

On reflection, it is the beneficiary pays principle that is likeliest to provide guidance in situations such as that faced by the Rotorua lakes. The very fact that there is a concern to deal with the lakes water quality problem is an implicit argument that a value is placed on doing so which is at least the equivalent of the cost. Were it otherwise, the social judgement to intervene would be a waste of resources. If we do not place a value on the expected benefits from remediating lake water quality that is equal to or greater than the cost of doing so, then we ought not to undertake remediation. The resources involved would be better used elsewhere, invested in activities that generated a benefit at least the equivalent of their cost.

This view reflects the common view in the research on remediation which often defaults to the taxpayer (or ratepayer) as the logical party to pay for the costs of remediation on the grounds that:

- The principal purpose of remediation is to generate a stream of benefits (economic; environmental; spiritual and cultural).
- The majority of those benefits are typically public goods and accordingly, as with other public goods, best paid for from the public purse.

6. Applying the General Principles to the Rotorua Lakes

In this section of the report we begin the process of applying the general principles covered earlier to the specific situation of the Rotorua lake.

INTRODUCTORY COMMENTS

In doing so, we note the complexity of the Rotorua situation, already covered in the background section of this report, in particular that certain of the works that are desirable as short term remediation measures, would almost certainly proceed regardless of lake water quality issues. These include the sewerage developments around Lake Rotoiti and the further work on upgrading the city's effluent plant. The next factor is the different character and certainty of outcome of the various initiatives under consideration which we categorise as short term, research and long term.

SHORT TERM

Amongst the short term measures under consideration are additional sewerage schemes around Lake Rotoiti, as above improved influent treatment in the city plant, the construction of groynes at the entrance to the Ohau channel its possible diversion so that it flows directly into the upper Kaituna river and re-oxygenation of the bed of Lake Rotoiti.

We are advised that the current upgrades of the treatment plant are conventional projects and we assume that the sewerage schemes will be engineered to meet resource consent conditions on discharge of nutrients. Accordingly, these measures are already at a stage at which it can be asserted that:

- Expected costs are within known parameters.
- There is a high measure of confidence about the environmental outcomes.

From the advice we have been given, the proposed groynes, diversion and options for deoxygenation still have some question marks over their effectiveness. These are the subject of ongoing research which is expected to be completed in the course of this year. From what we have been told it seems that:

- There is a possibility that research will conclude that the impact of the groynes will be insufficient to merit their construction.
- There are some complex technical issues to be resolved in respect of reoxygenation, primarily ensuring that the chosen means is effective to ensure that virtually all of the oxygen released in the bottom waters of the lake is dissolved, rather than escaping to the surface. In practical terms, the main issue with reoxygenation options may be cost - both capital and operating as determined by the amount of oxygen required.
- The diversion conceptually appears a feasible option.

RESEARCH

- Research in support of the short-term solutions is already committed and underway. Research to underpin longer-term solutions is not underway but is currently being scoped. This will include keeping abreast of and drawing on work in respect of the Lake Taupo catchment as appropriate.

In 2003 two separate applications to the Foundation for Research, Science and Technology, which were seen as necessary in order to develop a better understanding of what was required for longer term solutions, were both declined. One was from the Institute of Geological and Nuclear Sciences (GNS) to gain a better understanding of ground water pathways. The other was from Professor David Hamilton, at the University of Waikato, to assist with environmental modelling.

GNS's lead researcher has advised us that "ground water pathways are the neglected part of the transport of nutrients into the Rotorua lakes. More research is essential to increase understanding of the time lags associated with them and how these will affect future nutrient loads to the lakes".

Professor David Hamilton argues the case for research to develop environmental modelling tools as "the major objective of the proposed research programme is to develop a suite of modelling tools and a protocol that can be used to assess the extent of change necessary to avert or reverse declining water quality in lakes. The tools that will be used for this purpose are lake ecosystem models that range from simple nutrient and water budget estimates through to one- and three-dimensional models that couple lake hydrodynamics and biogeochemistry. The coupled models specifically address one of the difficulties of past lake studies, which has been an inability to understand the way in which linkages occur within systems (e.g., biology-physics)."

In order to gain an understanding of why these projects had been declined, we spoke with the Foundation for Research, Science and Technology. The answer (which we had half expected from previous dealings with the Foundation) was that applications for available research funding in the relevant portfolios considerably exceeded the amount available. The fact that the proposals had been declined should not be seen as any criticism of their quality; it was simply that the Foundation did not have the resources to fund all of the good projects that it received.

The decision can be seen as symptomatic of an issue that government policy advisors are currently seeking to address; the disconnect between government's lead advisors in specific policy areas, and the objectives that the Foundation sets in its funding activities. In this case, there does seem to be a view that the Ministry for the Environment, as the government's lead policy advisor on environmental matters, should have greater input into the Foundation's funding decisions.

Scientists associated with the research being promoted by EBOP note two significant gaps in current lake water research; the absence of research on shallow lakes where bottom sediments are a major factor in contributing to poor water quality, and the lack of environmental modelling (standard in overseas jurisdictions) capable of predicting the interaction of complex interventions with one another and with the environment they are intended to influence.

There may be an opportunity for EBOP and others involved with the Rotorua lakes to influence this situation as the Minister for Research, Science and Technology is seeking to achieve a change of emphasis in the way in which the Foundation makes funding

decisions. The number of strategic portfolios is being reduced to 19 from 72. More importantly, the Minister has announced that the Foundation will trial a new mixed funding system in the coming year. This will see funding in some areas of research made over to the institutions best able to achieve the outcomes sought, rather than tied to specific research projects. The opportunity to put forward proposals to receive funds based on outcome performance will be open to all institutions. The eco systems portfolio has been selected as the one in which the new system will be trialed.

The Minister has made it clear that he wishes to see greater collaboration amongst institutions. As an example, MDL understands that he would expect to see (or require that the Foundation see) strong linkages between (say) NIWA and GNS in ground water modelling.

MDL's impression is that the government's policy advisors consider that this shift is in the right direction – with its focus on outcomes rather than outputs – but also see the process as one that involves some risk, especially as its focus is on seeking collaboration amongst institutions that, in the past, have sometimes acted in a very competitive manner.

There does appear to be an opportunity for an agency such as EBOP to capitalise on this policy shift. It would be well worth while holding discussions with the Foundation, the Ministry for Research, Science and Technology, and the Ministry for the Environment laying the ground for an EBOP led initiative to bring together a multi-year research proposal focused on lakes management and integrating the research needs identified by GNS, Professor David Hamilton and the Lakes Technical Advisory Group (TAG). To be successful this would need to include collaboration with other institutions such as NIWA.

There is one obstacle that EBOP would need to overcome; this is the way in which the outcomes for the eco-system portfolio have been specified in the draft portfolio investment strategy released by FRST for consultation. Six target outcomes are proposed, one on bio-diversity, one on defining New Zealand's biota, two on bio-security, one on the eco-systems of the southern ocean and Antarctica and one on the sustainable use of aquatic and terrestrial biota.

Discussions with an official of the Ministry of Research, Science and Technology, immediately before the release of FRST consultation draft, suggested that the new eco-systems portfolio could be a suitable vehicle for funding Rotorua lakes research. The definition of outcomes in the FRST draft makes it clear that this cannot be the case as there is no outcome that would support research into lakes water quality as such.

This suggests that EBOP should, as a matter of urgency, make representations to the Minister of Research, Science and Technology, to FRST, and to other interested parties highlighting what appears to be a significant gap and a disconnect between the government's stated objectives – for example the Prime Minister's reference to "priority for strategies for water quality improvements in the Lake Taupo and the Rotorua lakes" (cited at page 32 below) - and the objectives being set by FRST.

LONG TERM

Here, the focus is on setting parameters for land management with the purpose of capping and, ultimately, reducing the export of nutrients from, particularly, farming properties. The Council has promulgated a proposed rule which will make any land use change that would have the effect of increasing nutrient export a discretionary use.

The proposal is a restriction on property rights, especially the rights of land owners whose land is either under developed, or in low nutrient export activities (e.g. forestry) but with the potential of being converted into high nutrient export activities (e.g. dairying or sheep/beef/deer farming) in order to increase income from the land.

As well as introducing a rule for managing nutrient exports, it is clear that a significant proportion of land currently in pastoral agriculture will need to be converted to some other use generating much lower levels of nutrient export. Currently, EBOP estimates that, in order to achieve the desired outcomes for remediation of lakes Rotorua and Rotoiti, the minimum level of nutrient (nitrogenous) exports needs to reduce from 692 tonnes per annum to 435 tonnes. EBOP notes that the required reduction could be much greater as a result of increasing loads in the groundwater due to the age spectrum. Virtually all of this will need to come from a reduction in nutrients in stream flows, most of which is from ground water but some of which is from natural "point" sources. The implication is that the great bulk of the reduction will need to come from reducing nutrient exports from pastoral agriculture.

EBOP is in the process of developing a sophisticated modelling tool that will determine, for each pastoral property within the lakes' catchments, the level of nutrient export from each significant activity on that property. Amongst other things, it will be linked in to Overseer, a fertiliser management tool used to optimise the application of fertiliser. This will allow EBOP to model the expected effects of any land use change, recognising that whilst fertiliser management is important, the main source of nitrogen is animal waste.

EBOP's land management rule has been designed to provide maximum flexibility. Rather than directing land users on permitted activities, it simply sets a target for nutrient exports with the land user free to undertake whatever activity he or she pleases, so long as the target is not breached.

The major unknown, in developing long term land use management practices, is the transmission process from nutrients released on farm, to nutrients entering lake waters. GNS comments that "the full effect of today's land uses on receiving waters such as lakes won't be apparent until affected ground waters have passed through the ground water system. This will be decades. These long flow paths imply that the ultimate maximum effects of nutrient pollution on streams and lakes will not be reached until after many decades of gradual decline in quality. Likewise, remediation of ground water systems and downstream waters will take correspondingly long times. It is therefore vital for timely management that these time scales be understood and action to protect the system commence." EBOP is currently working on the groundwater age issue and the implications for future nutrient loads.

It also means that, until these processes are fully understood, it is difficult to estimate with a high level of confidence the true extent of the required reduction in nutrient exports, and the associated land use changes required to achieve this. This uncertainty emphasises both the urgency and the importance of investing in further research to provide a better understanding of the required reduction in nutrient exports, and the desirability of taking a precautionary approach recognising the risk that the reduction ultimately required may be greater than the current estimate.

APPLYING THE PRINCIPLES

Remediation of lake water quality will be dealing with both retroactive and prospective liability. Retroactive in meeting the cost of remediating the consequences of actions that

have already taken place. Prospective in managing (reducing) the impact of future actions.

Measures to deal with actions that have already taken place will, of necessity, involve actual cash expenditures – on research, engineering and other consultancy fees, and on capital and operating costs. In contrast, prospective measures may or may not involve actual cash expenditures, depending on how the costs are allocated. If the costs were allocated solely through regulatory measures – capping and then reducing permitted levels of nutrient exports – then the costs would be borne by current and potential producers as limitations on land use, and hence on the income they derive from and the value of their land assets. To the extent that prospective measures involve purchasing land use change and/or the retention of land in low nutrient export activities, then cash expenditures will be involved.

From an economic efficiency perspective, as has already been discussed, there is no rationale for applying the polluter pays principle to dealing with the consequences of past actions that were legal at the time they were undertaken (clearly the situation would be different in respect of illegal activity, as excusing an illegal actor from meeting the costs arising from that action would send a wrong signal to other persons who may be contemplating illegal action).

Instead, as one American writer has commented:

> "The assignment of retroactive liability is at its heart a financing issue. The retroactive application of liability yields no deterrence related benefit. The decisions that led to the retroactive liabilities were made years or decades earlier and were, by definition, legal at the time. Because the decisions which led to the pollution were made in the past, these environmental costs should be treated as given, or sunk. Therefore, the primary focus of this retrospective component of the problem should simply be on how remediation costs are best financed. The scale and retroactive nature of these costs has made the question of liability for historic contamination a contentious one in most countries that have undertaken environmental reforms.[27]"

For the Rotorua lakes, it may be difficult, if not impossible, to determine who (which categories of actors) were responsible for what proportion of current nutrient levels. Clearly, a substantial responsibility rests with the Rotorua district because of the impact of sewage discharges. A large proportion must rest with agricultural producers in the sense that their activities were and remain a significant nutrient source. Some proportion will also have derived from natural sources.

The question of liability for future activity is more complex. Given the required reduction in the level of nutrient exports, it is clear that the land use changes required are non-trivial. Collectively, they could result in a very significant loss in economic wealth (on the assumption that the next best use of land currently in pastoral activity is in forestry, an activity which currently has a per hectare capital value at least $5,000 per hectare less than pastoral agriculture).[28]

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[27] Boyd, James (1999) p6

[28] This is the current estimate, for the Lake Taupo catchment, of the cost of converting land in pastoral agriculture into forestry. It should be regarded as very much a "ball park" figure for reasons including the different characteristics of the two catchments, changing commodity prices (land values are a function of the net present value of productive

Superficially, limiting current land use so as to cap or reduce the level of nutrient exports may seem to be just another case of regulating to restrict future activities. However, there is a qualitative difference between imposing a regulatory restriction on a party who is not yet engaged in the activity, and imposing a restriction when a party is already committed. Existing farmers have committed significant wealth (theirs and their creditors) to their businesses. They are not in a situation akin to that of someone contemplating the establishment of a new venture and finding, on enquiry, that environmental regulation will restrict what can be done. If the effect of the regulation is to make the investment unattractive, that party simply looks elsewhere. Existing landowners, already engaged in pastoral production, are in a different situation. Generally, they have made their investment commitment in the belief that their current activities were lawful and could continue. Imposing restrictions on their current activities, part way through the game, is unquestionably an appropriation of their existing property rights. Restricting their ability to intensify production is a different issue as the focus is then primarily on the lost opportunity to undertake a different or increased activity, rather than a restriction on the activity which justified the original investment.

It is, of course, clear law that such rights can be appropriated without compensation, through means such as environmental regulation, when the purpose is to serve the public interest. In practice, what is involved is a question of degree. A regulatory impact whose effect on the wealth of individual land users is only marginal may be seen as perfectly legitimate. A regulatory impact which had the effect of appropriating a significant part of an individual's wealth might be seen very differently. In this case, the balance of international opinion seems to favour the view that dealing with the allocation of cost for significant land use change restructuring existing farming activity should be treated in the same way as dealing with the allocation of costs for what is unquestionably retroactive action.

Somewhat different considerations arise in respect of the contribution made to nutrient levels by sewage discharged from Rotorua's sewerage system. To argue that, because those discharges were lawful at the time[29], the Rotorua district should be excused from liability would be to make a very different argument from the one that supports excusing individual actors. The reason is simple. The default alternative to individuals being held liable on a retroactive basis for remediation, is that benefits of remediation are treated as a public good. In essence, this means that the costs are picked up either by the ratepayer and/or by the taxpayer. The reason for doing so is largely one of fairness and equity; that particular individuals should not suffer significant economic loss merely because of the unforeseen consequences of lawful activity. Instead, those losses should be borne by the community at large – both as the community was also a beneficiary from that activity and because the community is better placed to act as insurer for such losses (whether it is the local, the regional or the national community).

income) and the different mix of agriculture – with much of the Rotorua catchments being used for dairying rather than for sheep as is the case in Taupo.

[29] Since 1998, the discharge of sewage-derived nitrogen has exceeded permitted levels for significant periods of time. However, the total excess is only 2.5 tonnes over a period for which the total permitted discharge was 180 tonnes and, since the consent was first granted, the total discharge is some 17 tonnes beneath the total permitted level.

THE LAKE TAUPO FACTORS

As a next stage in the discussion of applying the general principles (polluter pays; beneficiary pays) in the context of the Rotorua lakes, we consider each of the factors that government saw as relevant, in the case of Lake Taupo, for assessing whether there should be a contribution from the taxpayer. These factors were:

- The nationally important status of the lake.
- The scale and urgency of the problem and feasibility of the proposed solutions.
- The cost burden on ratepayers.
- Past national and local policies relating to catchment development and impacts.
- Crown land holdings.
- The Treaty relationship with Tuwharetoa.
- Relevant national policies.

NATIONALLY IMPORTANT STATUS

This factor is clearly intended to focus on the question of who is the beneficiary. The implication is that, if the lake is nationally important, then the beneficiaries are national - taxpayers - rather than simply regional or local.

The Lake Taupo Cabinet paper did not set out any criteria for determining the status of the lake as nationally important. It simply asserted that "Lake Taupo is nationally important for its natural and cultural values"[30].

In order to get an understanding of how the government had arrived at that conclusion, MDL approached the Ministry for the Environment. The Ministry's response included:

> "There are no specific national criteria or characteristics that officials use as a benchmark for determining the national importance of lakes or any water bodies. However, an interdepartmental working group of officials are currently working on this policy issue as part of the Sustainable Development Programme of Action".
>
> "The Ministers' decisions around protecting Lake Taupo reflects their perception of how many New Zealanders see the lake. Lake Taupo is the largest fresh water lake in the North Island and is very accessible and visible – being on the main highway south. People view Lake Taupo as an important tourist and holiday destination, and an important recreational and fishing lake, and so on. Lake Taupo is mentioned as an example of an at-risk nationally significant water body in the Government's Sustainable Development Programme of Action."

The response suggests that Ministers were guided by a sense of what the public reaction might be, if government failed to accept responsibility. There is little in the stated reasons that would set Lake Taupo significantly apart from the Rotorua lakes. As examples:

- Collectively, the Rotorua lakes are a more significant resource for recreational fishing than is Lake Taupo (the Fish and Game Council notes that the main

[30] Office for the Minister for the Environment (2003) p2

attraction, in the Taupo area, for experienced recreational fishermen is the streams that feed the lake, not the lake itself).

- The Rotorua lakes are also a very significant recreational resource for small craft. The number of yachts, motor boats and other recreational craft using the Rotorua and Rotoiti lakes is probably much greater than the number using Lake Taupo.
- Lake Rotorua, in particular, is highly visible to a very significant number of airline passengers, many of whom have a very clear view of the lake as they fly in or out of the Rotorua airport. Significantly, this includes a much higher number of overseas visitors than would have an opportunity of viewing Lake Taupo.

There is a further issue, regarding status, that needs careful consideration. If government determines that the Rotorua lakes do not have nationally important status, then it is difficult to see how they could be held to have regionally important status either. Rotorua's tourism industry is largely separate from that of the coastal Bay of Plenty. As a recreational resource, the lakes are an attraction for people living in the coastal Bay of Plenty, but a minority attraction.

In MDL's view, EBOP would have to consider very carefully whether it could regard the lakes as being of regional significance, if government did not see them as nationally significant.

It could also find some difficulty in justifying the expenditure of ratepayer funds, raised from outside the Rotorua district, given the provisions of section 101 of the Local Government Act 2002 which provides that "the funding needs of the local authority must be met from those sources that the local authority determines to be appropriate, following consideration of, in relation to each activity to be funded:

- The community outcomes to which the activity primarily contributes.
- The distribution of benefits between the community as a whole, any identifiable part of the community, and individuals.
- Etc.

EBOP might find that, in the absence of nationally significant status, the community outcomes to which remediation contributed were essentially Rotorua outcomes and the benefits of remediation would arise primarily within the Rotorua district.

In practice, that would force the bulk of the cost of remediation back on the Rotorua community with the quite possible consequence that remediation would prove unaffordable.

In September 2003 the Chief Executive of the Ministry for the Environment forwarded a report to the Minister for the Environment on Lake Rotoiti and other Rotorua lakes. The report included the statement:

> "There are no quick, cheap and easy solutions to the problems with the Rotorua lakes, but they are nationally important for tourism and recreation. We believe that the issue is important enough for central government to be informed and consider possible responses.[31]"

The lakes were also referred to in the Prime Minister's statement to Parliament on 10 February 2004 in which she said:

[31] Ministry for the Environment (2003)

> "Our clean, green and beautiful image needs more than rhetoric to be sustained. That's why we are giving priority this year to strategies for water quality improvements in Lake Taupo and the Rotorua lakes, and to National Environment Standards on freshwater and on air quality.[32]"

SCALE AND URGENCY

The scale of the remediation work appears to be at least on a par with Lake Taupo, especially if remediation/preventive measures in respect of the remaining Rotorua lakes are taken into account.

Urgency is clearly also as least as great as is the case with Lake Taupo. In respect of lakes Rotorua and Rotoiti there is potential for "collapse" of the lakes as a consequence of deoxygenation of lake bottom waters. The state of most of the other lakes suggests that they are nearer to experiencing significant losses of water quality than is Lake Taupo.

FEASIBILITY OF THE PROPOSED SOLUTIONS

This factor covers both technical feasibility and community support.

So far as long term measures are concerned, there is no greater reason to believe that the land use management controls proposed for the Rotorua catchments are any less technically feasible than whatever might be proposed for Lake Taupo (recognising that Environment Waikato has yet to promulgate the necessary land use controls). From publicly available information, there does appear to be a greater level of uncertainty regarding the timing and quantum of nutrient flows into the Rotorua lakes from pastoral agriculture, partly because of the identified need for further research. However, MDL understands that there may also be some doubt about whether the proposed 20% reduction target for Lake Taupo will actually achieve the desired impact.

Superficially, it does seem that the Rotorua community has not yet achieved a level of community commitment and consensus equivalent to what has been achieved at Lake Taupo. In part, this results from complexity. Lake Taupo is being handled on the basis that there is a single cause and a single solution. For lakes Rotorua and Rotoiti in particular, there are multiple causes and multiple solutions. It should be noted that the present level of agreement in respect of Lake Taupo has taken some four years to reach whereas discussions between EBOP, the Rotorua District Council, the Te Arawa Maori Trust Board and other stakeholders designed to reach an agreement on the remediation of the Rotorua lakes have been underway for little more than a year. The fact that EBOP has already developed and promulgated its proposed land management rules illustrates the urgency attached to finding an agreed solution.

From input that MDL received in consultation with key stakeholders, it is clear that there are differing levels of understanding about the nature of the problem, the feasibility of different solutions, and the way that past interventions have worked in practice. This highlights the (difficult) task of trying to achieve a common understanding, between EBOP, the Rotorua District Council, Te Arawa Maori Trust Board and various stakeholders, of what the options are and of the nature of the science underpinning them.

[32] Clark, Rt Hon Helen (2004)

Another factor differentiating Rotorua from Taupo is EBOP's decision to promulgate its proposed land use management controls before agreement had been reached, across the community, and with government. That has highlighted the fact that there is "no free lunch" in terms of reducing future nutrient exports. Because the rule has been promulgated before agreement has been reached on how the costs, (including opportunity costs) of change should be allocated, it is comparatively easy for different interest groups to see themselves as expected to carry more than their share of the cost of change and other interest groups to be free-riding on that.

It is likely that, in contrast, interest groups in Taupo may not yet have fully thought through the potential impact on them as they have not yet seen what land use controls will need to be in place.

MDL understands that one government requirement, before it will finally commit to a contribution for Lake Taupo, is that an acceptable set of land use controls must be in place. We understand that this may include a requirement for farmers, and Tuwharetoa's various economic entities, to agree that they will not oppose whatever rule is finally proposed.

It is entirely possible that EBOP's strategy of putting the rule on the table at an earlier stage may prove to have been the better approach as people at least know what they are dealing with.

A further dimension of community acceptance is very clearly the attitude of Maori land owners who are not only substantial owners of productive land, but also hold considerable areas of under developed or undeveloped land (Ngati Whakaue Tribal Lands is a very significant holder of farming land; in addition there are 34 Maori trusts in the Rotorua district affiliated to the Federation of Maori Authorities many of whose lands are un- or under-developed).

MDL understands there is a distinct possibility Maori will regard a land use management control that caps nutrient export at existing levels as the equivalent of a taking without compensation. It will prevent owners from developing their land to its productive potential. In economic terms, it means that their wealth will be frozen at the value of undeveloped land, rather than at the value of land with potential for development.

There are options for addressing this issue. One is to establish a "nutrient export allowance" for each separate property within the catchments and to set those allowances so as to transfer some entitlements from existing productive properties to under or undeveloped land. Clearly this would raise the issue of compensation for properties whose allowance was being set at less than their current export levels. This approach has similarities with the nutrient trading scheme being considered by officials from the Ministry of Agriculture and Forestry and the Ministry for the Environment.

A second approach is to adopt the argument being put forward by the chief executive of the Ngati Whakaue Tribal Lands Trust that the issue should be treated as a matter of macro-economic policy, rather than as a water quality issue. Essentially, what he is saying is that the primary interest of Maori land owners is in using their assets to advance the economic wellbeing of their people. Currently, agriculture represents the best opportunity they have available. A macro-economic approach, focused on creating development opportunities that could be accessed by Maori, could shift the emphasis from agricultural production, with its water quality impacts, to other forms of economic activity.

There does seem to be merit in this approach. For existing land use, for example, it could see the question of cost (compensation) shifting from one of X thousand dollars per hectare to compensate for the lost value resulting from change of use to (say) forestry, to a payment of X thousand dollars per hectare for reducing nutrient export to a defined level. It is also an approach that would be consistent with EBOP's preference for setting rules that allow a flexible, market based approach, rather than dictating what the alternatives should be.

THE COST BURDEN ON RATEPAYERS

In respect of Lake Taupo, the government started with the proposition that a fair division of cost was one third each to be borne by government, Environment Waikato, and the Taupo District Council. It has subsequently been persuaded to pay a higher proportion of an increased cost, accepting that Taupo residents, generally, are less well off than New Zealanders as a whole.

In discussion with officials about the possibility of a government contribution to remediation costs, virtually the first point they made was that EBOP was a wealthy regional council, as the result of its majority shareholding in Port of Tauranga Limited. There is a clear perception that, with this wealth, EBOP can well afford to meet a substantial part of the remediation costs, thus lessening the case for government to do so.

There is a fundamental flaw in that argument. Whilst it is true that EBOP holds significant wealth, it does not follow that drawing on EBOP's wealth to fund remediation costs would be costless to district or regional ratepayers. The practical reality is that the cost of doing so would be met, not by EBOP the organisation, but by ratepayers. The reason is simple. EBOP currently applies the income it receives from its financial investments to offset regional rates. If it diverts part of that income to another purpose, it will need to increase regional rates by an equivalent amount.

The same applies if EBOP uses capital rather than income. Doing so would reduce EBOP's investments and accordingly the income stream it receives from them. EBOP would need to increase rates to make up for the loss of that income stream[33]. There are, in addition, very significant constraints on using EBOP's capital, especially that represented by its shareholding in Port of Tauranga Limited. It cannot unilaterally require the Port Company to return part of the capital as a special dividend (thus preserving EBOP's shareholding percentage) as Port of Tauranga Limited is a listed public company subject both to the requirements of the Companies Act and of the listing rules of the Stock Exchange. Effectively, these prevent EBOP from initiating such an action on a unilateral basis – the right to do so rests with the directors of the company who are required to act in the interests of the company as a whole, and not just in the interests of the majority shareholder.

The alternative of selling down EBOP's shareholding in Port of Tauranga Limited would amount to a further partial privatisation and put at risk EBOP's majority control. We assume that neither EBOP, nor the government, is an advocate for partial privatisation as a contribution to lake water quality remediation.

[33] In this discussion we are assuming that the alternative of reducing EBOP's expenditure elsewhere by the equivalent of the reduction in the income stream from investments is not a practical alternative. Effectively, we are assuming that EBOP's current expenditure is both needed and efficient.

We conclude, therefore, on the question of using EBOP's wealth that this proposition essentially collapses to an alternative means of regional ratepayers contributing to the cost of remediation. The question to consider, therefore, is those ratepayers' ability to pay.

The emphasis on EBOP's wealth in respect of Rotorua highlights the apparent failure of officials to consider the same issue in respect of Lake Taupo. As with EBOP, the Taupo District Council also holds substantial wealth as the result of infrastructure restructuring/corporatisation during the 1990s. It privatised the council-owned electricity undertakings, receiving approximately $73 million which is being managed as an investment fund by the council, with the income used primarily to offset rates.

That council's current draft LTCCP is seeking input from its community on the future use of the fund, with an emphasis on continuing the present policy of cross-subsidising rates.

According to the draft LTCCP, the capital in the fund now stands at $51 million rather than the original $73 million.

The amount of wealth which EBOP holds, per capita, based on the region's population at the 2001 census, is $1,740. Taupo District Council's per capita wealth, based on the 2001 census, would be $2,316 on the original fund of $73 million and on the present amount of $51 million, $1,618.

The Lake Taupo Cabinet paper noted that 36% of the Taupo population are in decile 1 or 2 for income[34], a statement we interpret as meaning that 36% of the Taupo population are in the bottom 20% of New Zealanders in terms of income.

A report prepared for EBOP, ***Profile 2001: A Socio-economic Profile of the People of the Bay of Plenty Region – Census 2001*** includes an analysis, for each district within the region, of the area's ranking on the index of deprivation, an integration of nine variables from the 2001 census, reflecting eight dimensions of deprivation.[35]

The analysis in the profile shows that both the Tauranga and Western Bay of Plenty districts, although they include areas that are among the most deprived on the NZDep measure, are generally not significantly deprived as compared with the remainder of New Zealand. Western Bay has fewer areas at either the high or lower end of NZDep scores as compared with the remainder of New Zealand. Tauranga is broadly on a par with the rest of New Zealand at the lower (more deprived) end of the NZDep scale, over represented in the middle ranges and under represented at the upper ranges.

Rotorua has relatively more areas with high deprivation scores and the Eastern Bay of Plenty is amongst the most deprived areas in New Zealand.

The percentages coming into the bottom two deciles, and the bottom decile, respectively, in each of those four districts are:

[34] Office for the Minister for the Environment (2003) p5

[35] Warren, Julie (2002)

District	Percentage in Bottom Two Deciles	Percentage in Bottom Decile
Rotorua	34%	18%
Kawerau	71%	46%
Whakatane	43%	25%
Opotiki	66%	59%

These figures show that deprivation in Taupo is not significantly different from deprivation in Rotorua (although it should be noted that the Taupo figure appears to be based on income alone). Of perhaps greater significance in considering the case for a ratepayer contribution, the analysis shows that the Eastern Bay of Plenty, as an area, is significantly more deprived than Taupo.

In considering ability to pay, this suggests that the Rotorua district is in broadly the same situation as the Taupo district. On this basis, Rotorua ratepayers' collective ability to contribute to remediation should not be seen as significantly different from that of Taupo ratepayers. What does stand out is the issue of ability to pay at the regional level. We have already noted that the suggestion of using EBOP's wealth to contribute to the cost of remediation collapses to an argument that regional ratepayers should pay. The evidence regarding deprivation in the Eastern Bay of Plenty suggests that this argument is at best weak. It is hard to escape the conclusion that, despite EBOP's apparent wealth, the ability of the Bay of Plenty Region to contribute to the remediation of Rotorua lakes water quality is significantly less than the ability of the Waikato region in respect of Lake Taupo.

PAST NATIONAL AND LOCAL POLICIES RELATING TO CATCHMENT DEVELOPMENT AND IMPACTS

National Policies

In this sub section we look at two separate issues; the role of central government in encouraging land development around the Rotorua lakes, and its separate role in the encouragement of agricultural production generally.

Land Development

The Rotorua and District Historical Society Inc 1980 publication ***"Rotorua 1880-1980"*** includes a section on farming settlement and development. It records early government initiatives in the late 1920s that were slowed significantly by the depression and then the commencement of the Second World War. The author then goes on to record:

> "In 1944, however, Lands and Survey appointed RL Innis to be Superintendent of Land Development, Auckland, and his district included Rotorua. So the organisation was ready in 1948 when government, due to the pressure to settle ex-servicemen on the land and the need for increased production, decided to commence more large-scale development of unimproved land.
>
> "This was the start of a period in which a dramatic transformation took place in the Rotorua district and surrounding region. Large areas of unimproved land were rapidly brought into pasture and production. Stock numbers multiplied almost over night, many miles of new roads were constructed, electric power reticulation

> extended, buildings erected, water supplies installed and in a few years new settlers moved in with their families to take over their own farms.[36]"

As an indication of scale, the author notes:

> "From 1944 to 1980 the Rotorua branch of Lands and Survey Department will have settled 10,578 hectares in 1,022 farms (691 dairy, 321 sheep) and will still be farming 69,839 hectares of grass in 50 blocks. These blocks in turn will be subdivided for settlement, as government policy is to make a number of farms available for ballot each year.[37]"

The same publication also provides a brief overview of Maori land development. It notes the initial success of Sir Apirana Ngata in securing 8,343 acres at Horohoro for development by the Board of Maori Affairs, followed by other development schemes which, around Rotorua, included Taheke, Okere, Tikitere, Wharenui, Peka, Parekarangi and Tihiotonga.

Government was a major influence on the development of pastoral agriculture in Rotorua not just as a land developer, but also through its general policies to encourage farm development.

Encouragement of Agricultural Production

A useful overview of government policy through the 1960s and 70s is provided in the following extract from ***The New Zealand Economy: Issues and Policies***, published in 1992:

> "The Government organised a major conference of all the interested parties in 1963 – the Agricultural Development Conference – and after scrutiny of the available technology and capital base, it was agreed that a major expansion of pastoral exports was possible over the next ten year. The total number of livestock required was estimated in terms of stock units and targets were set for livestock expansion through to 1971-72. The conference reviewed the constraints that might impede the achievement of these targets and recommended to Government that a number of suitable incentive schemes for farmers would be required. The understanding was that increased investment would be required in pasture development and associated facilities like fencing, water supplies, roads and buildings. It was assumed that farmers would raise investment levels if the necessary initiatives were provided.
>
> "The Government adopted most of the recommendations of the Agricultural Development Conference and introduced a range of incentives for pastoral farming. The State Advances Corporation was instructed to establish a development loan programme for pastoral farmers. Government subsidies were provided on the carriage and price of phosphatic fertiliser, and the Department of Inland Revenue established the nil standard value of livestock valuation system. The latter effectively operated to lower the value of output on which tax was assessed, and hence encouraged existing farmers to plough back more investment in their properties.

[36] Mulligan, GE (1980)

[37] Ibid

> "Livestock outputs did expand along the expected path in the late 1960s though the livestock targets set out for 1971-2 were never quite reached. Farmers reacted in a fairly rational way to the incentives that were provided for output expansion and many new areas were developed for pastoral production.
>
> "In 1978, the Government moved to institute more permanent arrangements to supplement farm incomes and introduced a government-financed floor price scheme for all the major pastoral products – beef, sheep meat, wool and dairy products. This was the Supplementary Minimum Price scheme – SMP's….. The prices were to set so as to provide farmers with a reasonable standard of living and thus encourage them to maintain and improve the output of their farms with the ultimate goal of increasing export revenue.
>
> "By the mid-1970s Government was again dissatisfied with the rate of growth of output and exports and further programmes for development finance were introduced for expanding farm production. The Livestock Incentive Scheme was introduced in 1976 and the Land Development Encouragement Loan Scheme was introduced in 1978…. Essentially the loan schemes offered a rebate of interest and some principal if certain targets for development were met. Many of these loans were taken up by pastoral farmers and considerable expansion of pastoral area and output resulted.
>
> "The 1960s and 1970s were thus a period of increasing intervention by Government in the agricultural sector.
>
> "The intervention took place in an attempt to guide farmer decision-making toward investment and production. The objective was clearly stated to be one of increasing export returns from pastoral production. As New Zealand entered the 1980s, the cost of maintaining this programme of support for agriculture became extremely high, and eventually it was discontinued.[38]"

The Ministry of Agriculture and Forestry, as the government's principal advisor on agricultural policy, acknowledges that the role of government encouraged significant misallocation of resources including farming beyond biological and physical limitations. In a 1996 publication ***The Environmental Effects of Removing Agricultural Subsidies: The New Zealand Experience***, the Ministry states:

> "The past mix of agricultural support and resource development policies encouraged farming systems and land use patterns that in some areas were not sustainable. For example, the livestock price supports, when combined with fertiliser and land development subsidies, diverted significant amounts of financial and scientific resources into pastoral farming systems. This package of subsidies encouraged clearance of native forest, followed by sowing and heavy fertilisation of pasture. The artificial profitability of livestock farming, especially sheep, encouraged farmers to run stock numbers that exceeded the long-term productive capacity of the land resource. Government's willingness to assist farmers after adverse climatic events further reduced risk exposure and the cost of farms exceeding biological and physical limitations.
>
> "In the past decade, New Zealand has implemented wide-ranging general economic and environmental reforms. Government intervention in the economy, including in agriculture, had led to severe misallocation of resources and high levels of

[38] Birks, Stuart et al (1992)

> assistance which could no longer be maintained. With general economic reforms in 1984 and succeeding years, government assistance to agriculture was virtually eliminated.[39]"

It would be going too far to say that the government should carry the full responsibility for the impact of pastoral agriculture on lake water quality, because of its combined roles in land development and in the encouragement of pastoral agriculture generally. However, it seems clear that it must carry a significant measure of responsibility for decades of a government led strategy for economic growth based on increasing pastoral production as the principal means of increasing New Zealand's export income and financing the imports that the economy required. MDL understands that the present government's preferred policy stance is that it is under no obligation to accept responsibility for policy mistakes of previous governments. That is an understandable attitude for a government concerned to minimise fiscal risk. However, it appears to overlook factors such as:

- New Zealand's present level of prosperity (such as it is) is substantially the result of the returns that pastoral agriculture has generated and continues to generate. It is inappropriate that government, as the representative of taxpayers (and the community generally) should in effect say that it is happy to accept the benefits that have accrued from agricultural development but wants no part of the responsibility for the associated negative impacts.
- The crucial issue for remediation is "if not the taxpayer, then who?" The practical reality is that few if any other groups have the ability to meet the costs of remediation, especially if the government as a major partner in contributing to the problem were to deny any responsibility.

Local Policies

The principal local policy, contributing to the current state of water quality in lakes Rotorua and Rotoiti, is the approach taken to treatment and disposal of the city's sewage.

Evidence is unequivocal that, over the years, the discharge of sewage (whether treated or not) into Lake Rotorua has been a significant contributing factor to nutrient levels in both lakes.

EBOP and the Rotorua District Council both recognise this. The district council has put in train further measures to mitigate the impact on lake water quality both of the discharge of treated sewage from its own sewerage system and of septic tank discharge through extending reticulated sewage to further settlements around Lake Rotoiti in particular.

It should also be recognised that the approach taken by successive Rotorua councils over the years to sewage treatment and disposal has been entirely consistent with government policy, to standards set by government for public health purposes, and consistent with resource consents.[40]

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[39] Ministry of Agriculture and Fisheries (1996)

[40] There is evidence that, on occasions since 1996, levels of nitrates entering Lake Rotorua via treated sewage have been in excess of consent levels. However, the accumulated excess since that date is minor, the issue is being addressed through an upgrade, and the cumulative total of nitrates discharged since the scheme was first put in place is less than the total permitted by the consents.

CROWN LAND HOLDINGS

The Lake Taupo cabinet paper includes discussion of how Crown land holdings, especially Land Corp farms, could play a role in government's contribution to the Lake Taupo arrangements. It also makes it clear that, as far as negotiations between the Crown and Land Corp are concerned, they will proceed on a commercial basis and be funded from the government's proposed financial contribution.

The cabinet paper contains an indirect suggestion of why government landholdings are seen as a significant factor in assessing the case for a government contribution with the statement that a negotiated Land Corp component of the government's contribution could "meet government's own obligations as a land owner within the catchment.[41]" The report does not state what those obligations are. The reference to any negotiation with Land Corp being on a commercial basis suggests that the obligations are no different from those that the government believes should attach to any other landowner, thus making it somewhat difficult to understand the significance attached to this factor.

From discussions with officials, MDL understands that government sees its extensive land holdings as giving it some kind of obligation as a continuing exacerbator. However, the overall approach being taken with the Lake Taupo arrangements (at least to date) is that farmers should not be penalised for past lawful activity as opposed to being subject to regulation governing future activity – and then only on the basis that they would not increase their nutrient export.

This factor can be seen as an endeavour by the Crown to limit its fiscal exposure on the argument that it only has an obligation arising from the impact of agriculture on lake water quality to the extent that it is actively engaged in farming operations itself.

This approach seems somewhat specious. By far the more significant Crown contribution to the impact of agricultural activity on lake water quality is the role that the Crown played in promoting agricultural activity, both as a developer, and through the many subsidy and other policies that drove pastoral farming through much of the 20th century.

For the Crown to argue that it can step aside from any responsibility for the impact of pastoral agriculture on lake water quality, simply because it has ceased to be an owner, effectively defies common sense. The Crown and its advisers will be well aware that, whenever the Crown withdrew from land ownership by settling farmers on developed properties, or returned developed properties to the control of Maori owners, the pattern of future activity was already set in place. Farmers taking over properties from the Crown were effectively compelled, for economic reasons, to continue pastoral agriculture including the use of fertiliser (unless they had the good fortune to be in areas where there were higher value uses for their land such as horticulture, lifestyle conversion or, when relative values favoured the change, forestry).

The same arguments apply in respect of farm properties that were never in government ownership. The impact of successive government policies has resulted in a series of financial commitments that, effectively, give farmers little option but to continue (unless it can be assumed that, for some reason, farmers should be more ready, than other New

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It should also be noted that it is only in comparatively recent times that the focus on the content of treated sewage has shifted from a purely public health focus to one of requiring the removal of nutrients as well.

[41] Office for the Minister for the Environment (2003)

Zealanders, to walk away from significant private wealth if maintaining its value gives rise to negative effects beyond the farm gate).

We are accordingly inclined to discount the argument, implicit in the Lake Taupo cabinet paper, that the Crown has a lesser obligation to contribute to remediation in areas where it is not currently a significant landowner.

THE TREATY RELATIONSHIP

The Lake Taupo cabinet paper records a number of matters underway to deal with Tuwharetoa's concerns. They include a recognition that Tuwharetoa is not only a very significant landowner around Lake Taupo, but that it is unable to sell its land. This places an emphasis on finding means of reducing nutrient export from Tuwharetoa owned lands, whilst they remain in the same ownership.

The Treaty related issues in respect of the Rotorua lakes appear to be more extensive than those affecting Lake Taupo. The Crown is in the midst of negotiations with the Te Arawa Trust Board for the return of the ownership of the bed of the lakes to Te Arawa. MDL expects that, as part of these negotiations, Te Arawa will argue that the Crown has a duty under the Treaty of Waitangi to restore lake water quality to the state it was in at the time when the Crown acquired ownership of the bed of the lakes. Although decisions have yet to be taken, it seems possible that Te Arawa may refuse to accept a return of the lakebeds unless the Crown makes a significant commitment on lake water quality.

Te Arawa, and MDL understands, Tuwharetoa, are also looking at another aspect of remediation from a Treaty perspective. EBOP's proposed rule 11, and the equivalent rule that Environment Waikato will be required to put in place for the Lake Taupo catchment, will cap nutrient exports at current levels. In Rotorua, as already discussed, that will effectively prevent Maori landowners from developing undeveloped or under-developed land for pastoral agriculture (and for any other use that would increase nutrient export). The same issue arises in respect of Maori owned land currently used for forestry. A nutrient cap will, in practice, remove the option of converting land, currently in forestry, to pastoral agriculture when the trees are harvested. MDL understands that both Tuwharetoa and Te Arawa regard the nutrient cap as potentially the equivalent of a second raupatu or confiscation without compensation.

The current government stance is that it will not compensate landowners for the opportunity cost they will incur because of restriction on future use. That stance is diametrically opposed to what currently appears to be the approach being taken by Tangata Whenua.

The Crown can be expected to argue that the impact on the property rights of Maori landowners is less significant than first appears for reasons such as:

- Any value loss will only occur over time – at the point where land would have been developed or converted from forestry to pastoral agriculture. In net present value terms, that would be significantly less than if the land were currently available for development.
- At least some Maori owned land is quite deliberately held in an undeveloped or underdeveloped state with the Maori owners placing significant cultural and spiritual rather than economic value on the ownership rights.
- There is a clear conflict between Maori economic and Maori cultural interests, especially if optimising the economic interest damages lake water quality and thus the value of the taonga.

This latter point could be picked up as an argument that Maori, knowing the consequences of development, would not want to develop their land beyond the point of sustainability. In turn, this can be expected to focus attention on the development of nutrient export budgets for individual catchments with the crucial property rights issue being how access to that budget is distributed. Such an approach could well lead to agreement between the Crown, regional councils, and Maori that any consideration of loss of property rights should not be based on the theoretical assumption that all land currently owned by Maori would be developed for pastoral agriculture. Rather the focus should be on the proportion of Maori owned land that would be available for development within an agreed nutrient export budget.

RELEVANT NATIONAL POLICIES

MDL assumes that the reference to relevant national policies is to policies such as the government's sustainable development strategy. It may also be intended to incorporate certain of the government's economic development policies such as its tourism strategy.

It can also be seen as a catch all phrase for "anything else that government thinks is significant".

7. A Policy Framework

In this section, we set out the elements of a policy framework within which to consider the nature of government's contribution to remediation of Rotorua lakes water quality.

International practice, especially from Europe and Australia, argues strongly that the governing principle in any such policy framework should be the beneficiary pays principle. Applying the polluter pays principle is seen as inappropriate for several reasons including:

- From an economic perspective, it cannot provide any incentive to change behaviour, as the actions concerned have already taken place.
- Imposing what amounts to retrospective liability on individuals for actions that were lawful at the time they were undertaken, and indeed actively encouraged by the governments of the day, is contrary both to general legal principles and to understandings of fairness and equity (we note the exception in respect of contaminated sites. This exception is both widely recognised as being an exception, arguing against any extension, and consistent with economic principles as it does deliver incentives for remediation to parties who, subject to their available resources, would be encouraged to deal with remediation).
- Especially in respect of pastoral agriculture, in an economy such as New Zealand, imposing costs on farmers alone is discriminatory, as the entire community has benefited from the economic growth associated with pastoral agriculture.

Accordingly, any policy framework should be based on the beneficiary pays principle. Three separate issues then arise:

- What are the benefits and who are the beneficiaries?
- In respect of any particular category of beneficiary, how realistic (how equitable) is it to expect them to pay?
- Are there efficient mechanisms available for obtaining payment?

Judgements on both the nature of benefits and who are the beneficiaries are partly objective and partly subjective. They also raise difficulties of measurement, especially in attempting to quantify them in economic or financial terms.

In respect of the Rotorua lakes, one example is provided by the potential tourism impact. We interviewed two individuals with significant experience in the tourism industry, one of whom had been involved in planning roles both for Taupo and for Rotorua and the other who is chief executive of one of Rotorua's largest tourist attractions.

What came through from those two interviews was that the lakes play quite different roles in the tourism industry in the two areas. In Taupo, tourism planning and activity is focused on the lake. In Rotorua, the lakes are proportionately less significant for tourism. Most international tourists who come to Rotorua do so on package tour arrangements which will typically see them spend between a day and a day and a half in the City. They will come for a mix of Maori culture and geothermal experiences. Most will have no direct contact with any of the lakes.

On that basis, it could be argued that the benefits for the tourism industry in Rotorua, associated with improving or preventing further deterioration in the quality of lake water, are relatively small. However, this analysis misses some significant points including a small but important percentage of tourists who come to Rotorua do so because of a strong interest in outdoor recreation including fishing, kayaking, white water rafting and other water based sports. The quality of the lake water is important to this group and also potentially important to New Zealand's tourism industry as a whole. As one informant expressed it, what would happen to New Zealand's reputation as a clean green destination if Lonely Planet dumped on us. This informant was closely involved with kayaking and very aware of how international networks quickly spread accounts of adverse environmental impacts – such as the current health warnings associated with rafting on the Kaituna.

We have considered whether it is feasible to try and break down benefits, and beneficiary categories, in some kind of micro-fashion such as:

- Fishermen; recreational boaties; residents (perhaps broken down into categories depending on exactly where they are within the district).
- Domestic tourists from within the region, within the upper half of the North Island, within the rest of the North Island, from the South Island, and thus different categories of domestic tourism.
- International tourists and therefore the internationally focused New Zealand tourism industry.

Whilst there may be some theoretical attraction in this approach, it carries with it a number of practical difficulties which suggest that it ought not to be adopted. First, justifying this type of approach requires quantifying, with a reasonable degree of accuracy, the value (or at least the proportion) of the benefits accruing to each sub-set of beneficiary. Quantification not only raises significant measurement problems, it also raises the issue of what is being quantified – in other words, it requires consensus on the nature of the benefits and who the beneficiaries are.

A second difficulty is the consequence of imposing realistic costs (in the sense that they will generate a worthwhile contribution to the costs of remediation), on different sub-groups. Doing so will raise the cost of those activities in comparison with alternatives. Accordingly, there is likely to be real economic loss in applying the beneficiary pays principle in this fashion, as higher costs drive people to use substitutes.

Fishing provides an example. Currently, the Fish and Game Council receives approximately $1 million a year from fishing licences for the Rotorua lakes. A season's licence costs $85. Seeking a contribution from fishermen, which would make a worthwhile contribution to remediation costs, could involve doubling the licence fee. Considerable resistance could be expected, based not just on the quantum of the additional cost, but on what we would term the psychological impact – outright resistance to the idea that what many people regard as a "right" should be exploited by government (which would have to be responsible for imposing the additional cost) in such a way.

It is considerations of this kind that have led other jurisdictions, in applying the beneficiary pays principle, to do so on the basis that the benefits should be regarded, essentially, as public goods – and thus funded out of taxation at the appropriate level (district, regional, national) rather than treating the benefits as a series of private or collective goods and seeking to impose fees on separate groups of users to reflect the presumed value of those private benefits.

Transaction Costs

Another significant factor which encourages the use of general taxation, rather than separate user fees or taxes targeted to particular beneficiary groups, or particular aspects of causality, is the transaction costs involved in establishing a series of funding mechanisms (especially if the process of doing so requires quantification of the contribution that different causes make, or of the benefits that different beneficiary groups are deemed to receive).

This point is highlighted in a discussion of the various funding instruments used for the American Superfund trust fund. The following extract, discussing transaction costs, is taken from a paper prepared for the Economic Analysis Unit of the European Commission's Environment Directorate, reviewing the American experience as part of the background to the development of the proposed Commission directive on environmental liability. The discussion of transaction costs follows:

> "However, the authors go on to note that there are transaction costs associated with paying taxes. Even as some transaction costs may be eliminated when cleanups are funded through taxation, other transaction costs will be generated if new taxes are created to provide such funding. The level of transaction costs will of course depend upon how the tax is designed. "It takes time and money to administer and comply with any tax. For each individual tax, each firm must fill out a full set of forms to calculate a separate tax base. Most of these administrative and compliance costs are fixed, however, and vary little with the tax rate or the amount of revenue raised. In some sense, then, the fewer taxes the better. The Superfund trust fund needs relatively little revenue, yet Superfund legislation has introduced three separate taxes – the chemical feedstocks tax, the petroleum excise tax, and the corporate environmental income tax. The corporate environmental income tax is particularly complicated. It is inefficient in the sense that the annual administrative and compliance costs to which it gives rise may be as large as the revenues it raises. This suggests that a better approach at the inception of the Superfund program in 1980 might have been to use general revenues to create the trust fund. It also suggests that the corporate environmental tax, created in 1986 under the Superfund Amendments and Reauthorization Act, should perhaps have been rethought.[42]"

Accordingly we see no great merit in this approach and consider that it also runs the risk of obscuring the larger benefit issues involved. These are matters such as:

- The potential impact on New Zealand's reputation internationally if we are seen to be neglecting some of our most significant lakes, both in scenic, in recreational, and in cultural terms.
- The implication for New Zealand's own sustainable development policy if it is not capable of finding a means of dealing with environmental degradation on such a significant scale.

[42] McGuigan, Janet Stone (2000) p19. The extract is quoted from a 1995 Brookings Institution and Resources for the Future study "Footing The Bill: Who Pays And How?"

Remediation as a Basket of Public Goods

We recommend, instead, that the better approach is the one already implicit in the government's emphasis on the status of the lake as nationally important (or not). That is treating the benefits as a basket of public goods - an amalgam of factors including the lakes' importance for tourism, for recreation, standing as an important cultural and spiritual icon, and symbol of New Zealand's commitment to sustainability.

European and, increasingly, Australian practice supports the proposition that for major projects of environmental remediation, responsibility appropriately lies with the taxpayer. The logic is that, when benefits from environmental remediation are considered, they are of such a diverse and diffuse nature, that it is the national community as a whole which best represents the collective of beneficiary interests. In New Zealand, with our more devolved approach towards environmental management, and the very real sense that there will be significant benefits, at least within the Rotorua district, from remediation, there is obviously a strong case that funding for remediation should come not just from the taxpayer but from others. The Rotorua District Council can clearly be seen as the representative of a group which, collectively, will gain significant benefits from remediation.

As has been argued earlier in this paper, it is less clear that the Bay of Plenty region, as a whole, will benefit from remediation in a manner significantly different from New Zealanders generally. Nonetheless, EBOP's significant role in environmental management, and the precedent set in Lake Taupo, will clearly be seen as justifying a regional contribution.

The trend in overseas experience also reflects an increasing environmental consciousness, especially in the European Union, with an emerging acceptance that it is a collective responsibility to address environmental concerns, and not something that can be left to groups who are less able to afford the cost – whether private sector interests, or individual communities within a larger political entity.

In New Zealand, that position has yet to be reached. In MDL's judgement, it may be at least in part because central government has not yet had to confront the stark choice between collaborating in the funding of major environmental remediation, or standing by whilst degradation continues because no other party or combination of parties can afford the costs of remediation.

Ability to Pay

The second factor in developing a policy framework on the beneficiary pays approach is the question of how realistic it is to expect different beneficiary groups to contribute. Here, the focus is primarily on sub-national groupings – at the district or regional level.

Analysis earlier in this paper highlights that the argument that EBOP should be the major contributor, because it holds substantial wealth, is inherently flawed. On close examination, it collapses to an argument that EBOP's ratepayers, many of whom live in some of New Zealand's most deprived areas, should meet the cost. Suggesting that somehow EBOP's wealth is a reason why the ratepayers of (say) Opotiki, Kawerau or Whakatane should bear a substantial load seems inappropriate.

The same arguments apply at the district level, given that significant areas of Rotorua are also in the bottom two deciles of the deprivation index. It should also be noted that

Rotorua ratepayers will be making quite significant contributions through, for example, additional sewerage investment.

The strong argument, based on relative rankings in the deprivation index, that both regional ratepayers and district ratepayers are relatively less well placed to meet the costs of remediation than New Zealanders generally (if the instrument to be used is local government rates) indirectly highlights another aspect of policy development internationally. This is the recognition that it is the taxpayer, rather than some subset of the national community, who is best placed to act as insurer in making good environmental damage to the extent it is agreed that it should be funded from a public purse rather than by private individuals or organisations. The taxpayer is seen as best placed, through government, to manage risk and spread the cost equitably (in a slightly different area, the government's response to the Manawatu flood event, including its willingness to assist people who were uninsured, illustrates the point).

Efficiency

The third issue to consider in looking at the beneficiary pays argument is the efficiency of the mechanisms available. Here two issues arise:

- Minimising transaction costs – choosing funding means that impose minimal cost in terms of collection and enforcement.
- Choosing means that have a minimal economic cost, in the sense of inhibiting otherwise desirable economic activity.

Funding through general taxation best meets both of these tests. Funding through rates at the regional or local level will generally prove to be as or nearly as efficient as funding through taxation in terms of the costs of collection (and enforcement). However, rates have significant disadvantages as compared with general taxation for reasons including:

- The fact that they are a wealth based, rather than an income based tax makes them particularly sensitive to political resistance on grounds of ability to pay and fairness. Specifically, there is a much greater risk of crowding out other needed expenditure because of political pressure to keep rates increases to a minimum.
- Increasingly, businesses make location decisions based on comparing the costs (as well as the benefits) of different locations, including what they assume might be the future path of those costs. For districts such as Rotorua (whose economy currently faces a number of structural weaknesses) any increase in location costs for business carries with it a risk of reduced business investment and hence employment.

Accordingly, we conclude that in terms of economic efficiency, general taxation is to be preferred to rates as a means of funding remediation.

SUMMARY

The key points in developing a policy framework within which to consider government funding of Rotorua lakes restoration are:

- Costs of remediation should be allocated on the basis of the beneficiary pays principle not the polluter pays principle.
- Applying the polluter pays principle would offend both against the general legal principle that people should not be held accountable for the costs of action which

was lawful, and indeed encouraged by government, at the time it took place and against considerations of fairness and equity.

- It is accepted practice that environmental regulation, imposing restrictions on property rights, may be put in place without compensation to the extent that it affects future activity.
- European and Australian policy leans in favour of the view that environmental regulation that would require substantial, and wealth reducing, changes in accepted farming practices, without providing compensation, is essentially retroactive, even though it appears to be affecting future conduct. The reasoning is that farmers are, in a sense, hostage to existing practices as their investments were based on the ability to continue then industry accepted practice.
- The beneficiary pays principle should be applied on the basis that the benefits are essentially public goods, rather than an aggregation of separate private goods. The reasons for this include technical and other difficulties in breaking down and assigning benefits to different groups in a way that enables accurate quantification of those benefits.
- Generally, the international view is that the appropriate beneficiary group, to meet the costs of remediation, is the taxpayer for reasons including the taxpayer's superior ability, as compared with any other group, to manage risk, the relatively low transaction costs of using taxation, and the relative absence of economic disincentives as compared with other instruments.
- There is an alternative for capturing the cost of environmental remediation as a consequence of agricultural activity. This is recovering the costs from consumers generally through a levy on agricultural products on the grounds that, collectively, they benefit from agricultural production and should therefore meet through the price they pay the full costs of that production. That approach can be applied in Europe where a significant part of agricultural production goes to domestic consumers. It could not be applied in New Zealand, as we have no instruments available which would allow us to recover additional costs, over and above the market price of commodities, from overseas consumers.
- By analogy from the European approach of holding consumers responsible, it is New Zealand taxpayers who should meet the cost of remediation. The basic reason is that they are the group within the reach of New Zealand regulatory and taxing powers who have drawn general benefits from agricultural production as the growth and prosperity of the New Zealand economy has been largely dependent on it.
- Despite the arguments that the taxpayer is the most appropriate funder of environmental remediation, it is clear that, in a New Zealand context, both regional councils and district councils will also be expected to make significant contributions.
- In the case of the district council this is a matter of endeavouring to estimate what are district level benefits as compared with regional or national benefits but offsetting that against ability to pay and the relative inefficiency of using rates as compared with taxes.
- At the regional level it is difficult to see how regional ratepayers, generally, would benefit in ways that are significantly different from the ways that New Zealanders generally would benefit. However, the Regional Council's environmental management role clearly provides an argument that its contribution should be significant.
- Offsetting this, it is clear that:
    - The practical reality is that any regional council contribution will be funded directly by ratepayers –the argument that EBOP can afford to contribute from the regional wealth it holds on analysis becomes an argument that ratepayers should contribute as rates increases would be needed to substitute for any payment from the region's wealth.

- High levels of deprivation, especially in the Eastern Bay, suggest that the ability of the region's ratepayers to contribute is significantly less than that of (say) regional ratepayers in the Waikato region in relation to Lake Taupo.

OTHER MATTERS

In this sub-section we summarise four other issues, not covered directly in summarising issues around the polluter pays and beneficiary pays principles. They are:

- The factors identified by government in its Lake Taupo decision.
- Feasibility.
- Scientific research.
- Treaty obligations.

GOVERNMENT'S FACTORS

- Nationally important status is essentially an issue of the beneficiary pays principle – are the beneficiaries national, regional or local?
- Scale and urgency – the state of the Rotorua lakes, especially Rotorua and Rotoiti, would certainly satisfy this criterion.
- Feasibility – discussed below.
- The cost burden on ratepayers. This is an ability to pay issue; as discussed above there are very real issues of ability to pay, especially in the Eastern Bay of Plenty, which would justify the government accepting a greater obligation to contribute in Rotorua than it would generally.
- Past national and local policies – there is substantial evidence that government was a major contributor to development of agriculture in the Rotorua catchments, both as a land developer, and through agricultural policies generally.
- Crown land holdings. There are no substantial Crown land holdings in the Rotorua catchments. The relevance of this criterion is difficult to determine, given that the Crown has decided, in respect of Lake Taupo, that any dealings with Land Corp should be on a purely commercial basis. To the extent that Crown land holdings are seen as positioning the Crown as an exacerbator, the far more significant exacerbator role is the one that government played as a land developer and promoter of pastoral agriculture.
- Treaty relationship – this is discussed below.
- Relevant national policies. As briefly discussed above, we conclude that this deals with issues such as the sustainable development strategy – which would support a government contribution.

FEASIBILITY

- This has two aspects. The first is technical feasibility – are proposed solutions well grounded in scientific research and engineering advice? Is there a high probability that they will be effective and can be implemented within known cost parameters? These are criteria that Environment Bay of Plenty is already taking into account in the work it is doing in respect of the Rotorua lakes.
- The second aspect to feasibility is whether there is the political/community support for implementation of the proposed solutions. There are areas of concern, such as the differing views among amongst key stakeholders about the nature of the problem, and the effectiveness of certain of the proposed solutions. Those are matters of information sharing and negotiation of which EBOP is already well aware. In addition, it seems likely that differences of view in Rotorua have been at least

partly a function of EBOP's decision that it should put its proposed land management rules on the table at an early stage, rather than, as with Environment Waikato, waiting until after there was apparent agreement amongst key stakeholders on the nature of the proposed solution.

A subset of both aspects of feasibility is the fact that there are both short and long term issues that need to be addressed. The short term issues are particularly critical, given the already degraded state of lakes Rotorua and Rotoiti and the potential for further and potentially serious decline. The urgency attached to introducing long term measures is of a different kind; here the immediate priority is the substantial research requirements for groundwater age and environmental modelling.

SCIENTIFIC RESEARCH

Scientists who have been working on Lake Rotorua issues have made it very clear that there is a need for further research. This is required both to:

- Obtain a better understanding of the transmission process so that the likely timing and quantity of nutrient imports into the lakes can be determined with a greater level of confidence; and
- To develop environmental modelling tools that will allow the assessment of complex proposed solutions and their interactions.

The cost of undertaking scientific research could probably be seen as part of the overall cost of developing solutions for the Rotorua lakes and shared amongst contributing parties on that basis (we note that the cost estimates for Lake Taupo remediation include $5 million each for "applied research and advisory services" and "monitoring and compliance"). There is also an opportunity, given current changes in science funding policy, for EBOP to take the lead in bringing together an institutional coalition to bid into the new eco-systems portfolio as discussed at page 25 above.

However, a first priority for EBOP should be representations on the outcome definitions in the new eco-system portfolio which, in the draft currently out for discussion, are written in a way that would exclude any research on lake water quality.

TREATY OBLIGATIONS

We have deliberately left Treaty obligations to one side in considering the general policy framework that EBOP should use in making a case for a government contribution, despite the fact that Treaty obligations were seen as an important factor in the Lake Taupo proposal.

We have done so as it appears to us that the issue of Treaty obligations is fundamentally different from the general beneficiary pays principles that should govern the allocation of remediation costs.

Tangata Whenua in Rotorua clearly have an interest in working closely with EBOP, the District Council and others in finding ways of remediating lake water quality (and vice versa). However, both their reasons for doing so, and their objectives, are likely to be significantly different from those of other stakeholders.

First, they are concerned at what they see as the equivalent of a second taking without compensation, if the further development, or alternative uses, of their land holdings are constrained by a cap on nutrient exports.

Second, they are concerned that the Crown has an obligation under the Treaty to restore lake water quality to the state it was in when the Crown acquired ownership of the beds of the Rotorua lakes.

MDL understands that Tuwharetoa, in respect of Lake Taupo and their land holdings around the lake, are likely to take a similar stance.

As we see it, EBOP and the Rotorua District Council will be discussing with government a three-way sharing of the cost of remediation as between themselves. Tangata Whenua will be discussing with government restoration of lake water quality to its original state as a Crown obligation.

We see merit in these two matters being kept separate. First, treating them both within the same process runs the risk that the government will seek to "load shed" onto the region and the district the costs of meeting its Treaty obligations. Secondly, EBOP should not overlook the possibility that separate negotiations between Tangata Whenua and the Crown could provide at least a part solution to the concern that the proposed land management rule amounts to a taking without compensation.

8. Conclusion

In New Zealand, the principles that should apply to meeting the cost of remediation of environmental damage resulting from non-point source (diffuse) pollution are still evolving. Experience from Europe provides some guidance but needs to be read with two caveats:

- The long established European practice of subsidising agricultural production, through the Common Agriculture Policy, and the political support that enjoys from European farming interests, suggests that imposing real liability on the agricultural sector would be difficult if not impossible (by real liability we mean liability that is imposed on the farming sector not just in form, but in actual substance in the sense that the cost remains with that sector and is not passed on to others).
- The emerging interest in taxes or levies on agricultural produce is clearly intended to pass the cost on to consumers, as the beneficiaries of agricultural production, rather than leave the cost with the farming sector.

Despite those caveats, the general argument stands that imposing retroactive liability on a sector for the largely unforeseen consequences of an activity which was both lawful and encouraged by the governments of the day is contrary both to general legal principles and to accepted understandings of fairness and equity.

Effectively, this leaves the choice of payment for remediation as lying between taxpayers, and ratepayers at either or both of the regional and district levels. The argument that the region should bear a greater part of the cost because of the wealth it holds is demonstrably flawed as, on analysis, it collapses to an argument that regional rates should be increased to meet the cost. There is clear evidence that significant areas of the Bay of Plenty region are amongst the deprived areas of New Zealand. The argument, if it is presented as a comparison with the Lake Taupo decision, also overlooks the fact that the Taupo District Council holds, per capita, approximately the same level of public wealth as EBOP.

The case that there should be a significant taxpayer liability is supported by considerations such as:

- The clear evidence that a significant part of the benefits from remediation are national public goods rather than simply regional or local.
- The possible statutory barrier that EBOP would face to making any significant contribution if the government decided that there was no case for a taxpayer contribution. Broadly, if an argument were put and made that there were no significant national benefits from remediation, then it would be difficult to make an argument that there were significant regional benefits. The relatively tight wording of section 101 of the Local Government Act 2002, requiring local authorities to link funding mechanisms to the benefits received by sections of the community, could require EBOP to using mechanisms that were a charge, primarily, on the Rotorua district.

A further aspect affecting the costs of remediation is the obligation that the Crown has to Tangata Whenua under the Treaty of Waitangi. The right to enforce that obligation belongs to the Te Arawa Trust Board. Although the Board, EBOP and the Rotorua District

Council should work closely together, they should not compromise the enforcement by Te Arawa of its treaty right.

Finally, it seems clear that if the government, on behalf of the taxpayer, is not prepared to make a significant contribution towards the costs of remediation of the Rotorua lakes, there is a very real risk that funding remediation will be beyond the legal, financial and political capability of any other combination of potential funders.

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