Queensland

Regulatory Impact Statement for SL 1997 No. 136

Environmental Protection Act 1994

ENVIRONMENTAL PROTECTION (WATER) POLICY 1997

Executive Summary

Formerly, Queensland waters were regulated under the *Clean Waters Act 1971*. That Act and several other Acts have been replaced by the *Environmental Protection Act 1994* (EP Act). Subordinate legislation, as detailed in the EP Act, is to include environmental protection policies.

The *Statutory Instruments Act 1992*, now requires that Regulatory Impact Statements (RISs) be prepared for all new significant subordinate legislation. While extensive consultation has been conducted for the Environmental Protection (Water) Policy (EPP (Water)), the RIS itself has not been previously released, due to the fact that this requirement of the Statutory Instruments Act did not come into force until 1 July 1995, after the EPP (Water) consultation had been finalised.

The objective of the proposed EPP (Water) is to protect Queensland's water environment according to the principles of ecologically sustainable development established in the EP Act. The risk to be controlled is the degradation of the quality of the State's waters with consequent economic, social (including public health) and environmental impacts.

The EPP (Water) recognises five environmental values to be protected in waters: aquatic ecosystems; recreational water quality and aesthetics; raw water for drinking water supply; agricultural water use; and industrial water use. These environmental values are explained fully in the 1992 *Australian Water Quality Guidelines for Fresh and Marine Waters*. These guidelines are part of the National Water Quality Management Strategy and a revised

version of these Guidelines is expected to be adopted in 1996.

Without the EPP (Water) there could be environmental degradation resulting in damage or loss of tourist attractions, commercial and recreational fisheries, water supplies, beaches, and marine parks including the Great Barrier Reef Marine Park.

The EPP (Water) is consistent with the EP Act and supports its overall object.

The EPP (Water) will provide a statutory basis for decision-making for approvals, licensing of wastewater discharges, non-point source pollution management, and regional and catchment water quality management (in accordance with the stated principles, objectives, attainment programs and regulatory provisions).

The objectives and guiding principles are consistent with objectives and strategies of the EP Act, the National Strategy for Ecologically Sustainable Development and the Intergovernmental Agreement on the Environment.

In order to achieve the objectives, the EPP (Water) will—

- provide a framework to protect Queensland's water environment while allowing development that improves the total quality of life, both now and in the future, in a way that maintains the ecological processes on which life depends;
- promote effective, consistent and equitable environmental management decisions that consider efficient use of resources and best practice environmental management;
- ensure compliance with relevant international and national environmental agreements and standards;
- identify environmental values and the water quality guidelines needed to protect these values;
- provide ways of achieving the water quality guidelines;
- promote environmental responsibility and involvement within the community;
- promote community education and research;
- achieve, by the year 2000, a tertiary treatment standard approved by the Chief Executive for all sewage treatment plants that release

wastewater to the sea from islands within the Great Barrier Reef region;

- achieve, by the year 2010, a tertiary treatment standard approved by the Chief Executive for all sewage treatment plants that release wastewater to coastal waters; and
- guarantee water quality at all Queensland beaches is safe for swimming.

Preparing this RIS entailed comparing the EPP (Water) with two alternatives to demonstrate its superior effectiveness. The alternatives considered in this RIS are—

1. conomic mechanisms (such as emission charges and tradeable emission permits); and
2. Self-regulation (which could be supplemented by education and subsidy program to encourage industry to do the right thing—or which could be the 'do nothing' option).

While it is recognised that implementing the EPP (Water) involves costs and consequences for both the public and private sectors, costs should never be considered in isolation from benefits which, in this case, are mostly derived from environmental values. Most of the benefits cannot be given a monetary value but they are valued by the existing population and will be valued by generations still to come.

Title

Draft Environmental Protection (Water) Policy 1995 (EPP (Water)).

Authorising law

(S44(a) of Statutory Instruments Act)

Environmental Protection Act 1994, Chapter 2.

Policy Objectives

(S44(b) of Statutory Instruments Act)

What is the problem which needs to be solved?

The protection of the quality of waters in Queensland.

The EPP (Water) is one of several environmental protection policies that are being developed to implement the following principles—

- *Ecologically sustainable development*

  Development that improves the total quality of life, both now and in the future, in a way that maintains the ecological processes on which life depends.

- *Integrated waste management*

  A comprehensive, planned approach to managing waste which includes waste prevention, reduction at the source, waste re-use and recycling, waste treatment and appropriate disposal.

- *Best-practice environmental management*

  Management of an activity to continually minimise environmental harm caused by the activity, assessed against other processes currently used in Australia and overseas.

- *Cost recovery*

  Annual licence fees for those undertaking activities with a potential to pollute will cover the costs involved in licensing the activities.

What is the risk which needs to be controlled?

Degradation of the quality of the State's waters with consequent economic, social (including public health) and environmental impacts.

The many possible environmental attributes that could be recognised in a body of water have been grouped into five environmental values which are explained fully in the 1992 *Australian Water Quality Guidelines for Fresh and Marine Waters*. These guidelines are part of the National Water Quality Management Strategy and a revised version of these Guidelines is expected to be adopted in 1996.

The environmental values to be protected in waters under the EPP (Water) are—

- aquatic ecosystems;
- recreational water quality and aesthetics;
- raw water for drinking water supply;
- agricultural water use; and
- industrial water use.

The valued environmental attributes summarised by these environmental values include—

- *Aquatic ecosystems*
  - the biological integrity of pristine aquatic ecosystems; or
  - the biological integrity of modified aquatic ecosystems; and/or
  - water associated wildlife; and/or
  - human consumption of produce from the ecosystem.
- *Water quality and aesthetics*
  - primary contact recreation (such as swimming); and/or
  - secondary contact recreation (such as boating and fishing); and/or
  - visual recreation.
- *Raw water for drinking water supply*
  - water which is suitable for drinking water supply after undergoing only minimal treatment, such as coarse screening and/or disinfection.
- *Agricultural water use*
  - domestic supply (other than drinking water); and/or
  - irrigation of crops; and/or
  - stock watering.
- *Industrial water use*
  - water that is suitable for use by industry.

The EPP (Water) emphasises conserving water, reducing the quantity of

wastewater discharged to the environment, and improving the quality of that wastewater. Sewage and contaminated stormwater from industry and urban areas are targeted. (Contaminated stormwater and wastewater from most rural activities are to be managed by a Code of Practice under the Act).

Have the key stakeholders done everything in their power to control the risk?

While there are some who recognise the social, economic and environmental benefits of operating their activities at the forefront of environmental management, there are a significant number of stakeholders who do no more than is legally required of them, and some who are not even aware of these requirements or the risks to the State's waters arising from illegal activities.

Is there a compelling case for Government involvement on the grounds of public health, safety, prosperity, heritage or amenity?

Yes.

The EPP (Water) provides a framework to protect Queensland's water environment in a way that allows for development that improves the total quality of life, both now and in the future, while maintaining the ecological processes on which life depends.

The EPP (Water) addresses a number of issues in relation to public health and safety; prosperity; and amenity. These include—

- *public health and safety*

  swimming; raw water for drinking water supplies; oyster gathering; fishing; eating fish; aesthetics; waste water reuse; and monitoring certain contaminant releases.

- *prosperity*

  ecologically sustainable development (ESD); aesthetics and inter-generational equity.

- *amenity*

  swimming; rowing; boating; aesthetics; tourism and protection of visual amenity.

What would happen if Government does nothing—what is the worst possible consequence of Government inaction?

The consequences of Government inaction include the following—

- There would be no regulatory framework for consistent decision-making on water quality. This would result in inconsistent and possibly inappropriate conditions being set for licences, environmental management programs (EMPs) and environmental protection orders (EPOs) for activities which have the potential to affect the State's water quality. Decision-making would be inconsistent with national guidelines, resulting in market distortion.
- There would be no statutory penalties against relatively minor offences which can have cumulative impact on the State's water but individually do not constitute environmentally relevant activities. Regulation would depend on an EMP or EPO, or would be pursued by prosecution for environmental nuisance or environmental harm.
- There would be uncertainty in the community regarding the standards required to protect the quality of the State's waters.
- There would be no means to determine acceptable levels of exposure to harmful contaminants for which no national guidelines currently exist. This could result in exposure of humans and other life forms to unacceptable health risks, or conversely, the imposition of unnecessarily tight licence conditions on industry to address a perceived environmental health risk.
- For areas where water quality is already degraded, there would be no mechanism for restoring the environmental values of the water environment.
- There would be reduced incentive to implement practices which reduce environmental impacts through waste prevention and recycling.

If Government did nothing, there would also be degradation or loss of—

- tourist attractions;
- commercial and recreational fisheries;

- oyster leases;
- the Great Barrier Reef Marine Park;
- beaches;
- native wildlife (such as platypus, fish) and their habitats;
- aesthetic beauty of waterways;
- wetlands, mangroves, seagrass;
- agricultural water supply;
- industrial water supply;
- possible drinking water supplies;
- native food gathering and fishing capacity of coastal waters; and
- National Parks and State Marine Parks.

Legislative Intent

What does this legislation do—what rights, obligations or circumstances does it change or establish?

The legislation—

- sets the long-term management goals for the State's waters;
- describes matters which must be taken into consideration when the EPP (Water) is an applicable Standard Criterion under the Environmental Protection Act (EP Act) for decisions on environmental authorities, EMPs or EPOs because the activity has the potential to impact on the State's waters;
- ensures a consistent approach to environmental management across the State;
- clarifies obligations to prevent contamination of waters through activities such as release of common contaminants and releases from ships in non-coastal waters;
- requires government entities to establish programs on sewage and trade waste management, water conservation, environmental flows, groundwater protection and urban stormwater quality

management which will protect the State's waters; and

- involves the community in environmental management of the State's waters.

How will that work in practice—what is the overall effect expected to be?

The EPP (Water) aims to regulate human impacts on the environment and manage them according to specific objectives.

The EPP (Water) will apply to all Queensland waters. The Policy will provide a statutory basis for decision-making for approvals, licensing of wastewater discharges, non-point-source pollution management, and regional and catchment water quality management (in accordance with the principles, objectives, attainment programs and regulatory provisions of the EPP.

The EPP (Water) details management requirements, environmental values and objectives, and related penalties. The legislation will increase the range of options for dealing with environmental degradation, and will allow the integration of economic and social considerations into environmental management.

The EPP (Water) will be subject to review and possible amendment every seven years. This is intended to allow business to undertake future planning with confidence while providing the Government with regular opportunities to adjust the policy in line with changing community attitudes and scientific data.

The EPP (Water) gives a process for determining water quality objectives and adopting attainment programs to achieve those objectives. These objectives are to be determined through public participation in which government, stakeholders and the community decide to what extent each of the five environmental values are to be protected for a particular body of water and then to decide the appropriateness of individual guidelines contained in the Australian Water Quality Guidelines for Fresh and Marine Waters.

In order to achieve its policy objective, the EPP (Water) will promote strategies to restore and maintain regional water quality in Queensland while improving community awareness, education and understanding of water

quality management issues. Non-statutory environmental guidelines will support the policy.

These guidelines will provide information on environmental management and will help industry carry out its responsibilities in relation to—

- determining potential sources of pollution;
- the aims of environmental management strategies; and
- a range of practical control measures that will achieve these aims.

The process will also assess whether the social, economic and environmental impacts of the decision are acceptable. Should the process decide that the cost of achieving the water quality objectives is prohibitive, it may settle for a lesser water quality. The attainment programs used to achieve water quality objectives of the EPP (Water) include State, interstate, national and international obligations, waste minimisation plans, wastewater reuse and controls for point source pollution and non-point-source pollution.

Standards, licensing, and monitoring requirements are set out under the regulatory provisions of the EP Act and the EPPs. When the EPP (Water) establishes the appropriate standards and goals, all current licences, including those previously issued under the *Clean Waters Act 1971*, could be recalled for review, and if necessary replaced by single or integrated licences. The integrated system of licensing will simplify the relationship between industry and the administering authority. An integrated approach to legislation encourages consistency in matters such as penalties and enforcement procedures, and will give administering authorities the freedom to make more effective decisions to protect the environment, without imposing an unnecessary burden on those who carry out activities in ways which have minimal impact on the environment. Licences will last the life of the activity.

The Government is continuing to investigate ‘polluter pays’ (emission charges) and graded licensing under which good performance, such as reduced impact of the activity on the environment, would be rewarded. These would further encourage industry to implement waste minimisation by reduced fees, monitoring and regulatory requirements.

DEH has identified other agencies/bodies with a role in administering the proposed legislation. Consultation has occurred and is continuing with the

agencies/bodies about their proposed involvement and possible delegation of administration of the EP Act and Policies in their areas of responsibility.

The effect of such delegations would provide an operational authority (such as the Department of Primary Industries (DPI) with such powers as to create, in effect, a one-stop-shop. For example, it may be decided that only DPI officers will need to be involved with management of pollution and waste issues arising from fisheries, agriculture or forestry. Other resource managers such as the Department of Minerals and Energy, the Department of Health, and the Department of Transport may similarly be delegated environmental management functions.

The devolution to Local Government of environmental management control, for some industries with localised pollution potential and simple technology, will lead to more accountability and better decision-making. It will also allow for a simplified decision- making process under the Integrated Development Approval System in proposed planning legislation. The devolved activities are identified in a Schedule to the *Environmental Protection (Interim) Regulation (1995)*.

How does this contribute to the achievement of the overall objective of the legislation proposed?

The overall objective of the EPP (Water) is to protect the water environment, in accordance with the values and principles established in the EP Act.

The objectives and guiding principles in the EPP are to be consistent with the objectives and strategies of the EP Act, the National Strategy for Ecologically Sustainable Development (NSESD) and the Intergovernmental Agreement on the Environment. This signals a shift away from the narrow objective of minimising pollution from the industrial sector to a recognition of universal responsibility to conduct all our activities in a way that does not disturb the integrity of ecological processes upon which future generations will depend.

In order to achieve the objectives as outlined in the previous section, the EPP (Water) will—

- provide a framework to protect Queensland's water environment that allows for development that improves the total quality of life, both now and in the future, in a way that maintains the ecological

processes on which life depends;

- promote effective, consistent and equitable environmental management decisions that consider efficient use of resources and best practice environmental management;
- ensure compliance with relevant international and national environmental agreements and standards;
- identify environmental values and the water quality guidelines needed to protect these values;
- provide ways of achieving the water quality guidelines;
- promote environmental responsibility and involvement within the community;
- promote community education and research;
- achieve, by the year 2000, a tertiary treatment standard approved by the Chief Executive for all sewage treatment plants that release wastewater to the sea from islands within the Great Barrier Reef region;
- achieve, by the year 2010, a tertiary treatment standard approved by the Chief Executive for all sewage treatment plants that release wastewater to coastal waters; and
- guarantee water quality at all Queensland beaches is safe for swimming.

Why is the legislative approach reasonable and appropriate? (S44(c) of Statutory Instruments Act)

The legislative approach is reasonable and appropriate because—

- it is based on extensive consultation, both at a national level (for example, in the development of the National Water Quality Management Strategy) and within Queensland (for example, during the preparation of the EP Act and the draft EPP (Water));
- it provides criteria for decision-making and the processes to assist communities to set and progressively implement goals in a fair, reliable and consistent manner;
- it gives ownership of the solution to a particular problem to those

causing it;

- it avoids applying the EP Act without the necessary EPPs which would continue to place State and Local Governments in a difficult position, both in their role of overseeing devolved activities and as operators of environmentally relevant activities themselves;
- it is an integrated approach to legislation which encourages consistency in matters such as penalties and enforcement procedures;
- the integrated system of licensing will simplify the relationship between industry and the administering authority, and will give authorities the freedom to make more effective decisions;
- it opens opportunities for good performance to be rewarded by reduced fees and monitoring and regulatory requirements; and
- it is consistent with the NSESD, the National Waste Strategy and clean production principles.

Consultation on water quality standards has occurred at a national level for more than 10 years through the National Health and Medical Research Council (NHMRC), the Australian and New Zealand Environment and Conservation Council (ANZECC) and the Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ) and their predecessors. In recent years, this has included extensive consultation on a National Water Quality Management Strategy. The EPP (Water) calls up the Australian Water Quality Guidelines for Fresh and Marine Waters which form part of the National Strategy.

Other national consultation has resulted in a National Strategy on Ecologically Sustainable Development and the Intergovernmental Agreement on the Environment. The Queensland Government endorsed both of these documents in 1992.

The public consultation paper on the Environmental Protection Legislation released in late 1991 contained a detailed proposal for the legislation to contain environmental protection policies. This was supported strongly in the submissions received in response to the proposal. A scoping document for the EPP (Water) and three other EPPs was released for public comment in November 1993 and the draft EPP (Water) was released in March 1995. An extensive consultation program involving public

meetings and the distribution of 9500 copies of the draft EPP resulted in 172 submissions (see Appendix A for details). These have been assessed and appropriate modifications have been incorporated in the final draft of the EPP (Water).

Consistency with the Authorising Law

How would the proposed legislation contribute to the achievement of the overall objectives of the authorising legislation? (S44(d) of Statutory Instruments Act)

The overall objective of the EP Act is to protect Queensland's environment while allowing for development that improves the total quality of life, both now and in the future, in a way that maintains the ecological processes on which life depends (ecologically sustainable development). This is to be achieved by an integrated management program involving the following phases—

- Phase 1—Establishing the state of the environment and defining environmental objectives.
- Phase 2—Developing effective environmental strategies.
- Phase 3—Implementing environmental strategies and integrating them into efficient resource management.
- Phase 4—Ensuring accountability of environmental strategies.

Phase 2 of this process is achieved by developing environmental protection policies that can—

- state the objectives to be achieved and maintained under the policy;
- state indicators, parameters, factors or criteria to be used in measuring or deciding any quality or condition of the environment;
- establish a program by which the stated objectives are to be achieved and maintained, including, for example, the following—
  - quantifying ambient conditions;
  - establishing the qualities and maximum quantities of any

contaminant permitted to be released into the environment;

- setting the minimum standards to be complied with in the installation or operation of vehicles, plant or equipment for the control of contaminants or waste from stated sources or places;
- devising measures designed to protect the environment or minimise the possibility of environmental harm; and

• provide for a program performance assessment procedure.

The EPP (Water) achieves the above for the water environment.

Consistency with Other Legislation

(S44(e) of Statutory Instruments Act)

If the proposed legislation is not consistent with the policy objectives of other legislation what is its relationship with the legislation?

This section is not applicable as the EPP (Water) is consistent with the policy objectives of other legislation.

If the proposed legislation is not consistent with the policy objectives of other legislation what are the reasons for the inconsistency?

Not applicable.

Options

What are the alternative ways of achieving the policy objectives of the subordinate legislation and why were they rejected? (S44(f) of Statutory Instruments Act)

Two alternative strategies that may be able to achieve the policy goals of the proposed Regulatory Mechanism previously described are—

• Economic mechanisms (such as emission charges and tradeable emission permits); and

- Self-regulation (which could be supplemented by education and subsidy programs to encourage industry to do the right thing - or which could be the do nothing option).

Economic mechanisms (including emission charges and tradeable emission permits)

For the purposes of this discussion, economic mechanisms will be limited to emission charges and tradeable emission permits.

Emission charges are payments for use of the environment based on each unit of pollution produced or on each unit produced above a certain limit. This creates an incentive to reduce the total amount of pollution in the most cost-effective manner.

Tradeable emission permits attempt to create a market by establishing and enforcing pollution property rights through a permit quota system.

Quota systems have worked successfully in other markets which lack property rights, for example—

- individual transferable quotas used in the southern bluefin tuna industry, involving Australia, Japan and New Zealand;
- a major national program in U.S.A for sulphur dioxide; and
- chlorofluorocarbons in Australia under the Ozone Protection Act 1989.

With tradeable emission permits, a regulating body determines the aggregate emission levels and issues permits to achieve the desired ambient emission standards. Ownership of a permit allows a firm to release contaminants up to a set amount. If the firm wishes to expand, then it must purchase more permits or develop better pollution control strategies. If a firm is not using its quota it can then sell its surplus permits.

The *advantages* of the economic mechanisms include—

- The strategy is self regulatory to a degree, allowing the company to determine the type and extent of pollution control.
- The strategy allows the regulator to manipulate the level of pollution by changing the emission charges or the total amount of permits.

- There is a strong incentive for polluters to take advantage of the latest available abatement technology or to develop their own.

The *disadvantages* of economic mechanisms include—

- If the emission charges are set too low, polluters will prefer to pay the charge, rather than control the pollution.
- If the emission charges are too high, polluters would be forced to reduce production because of the high marginal cost of production. This could result in reduced competitive capacity and, in extreme cases, business closures.
- Such strategies are very complex.
- There is concern by some about the uncertainty of revenue and costs in such a system.
- Point-source emissions are concentrated among a few sources such as major smelters and refineries, causing localised pollution problems. This could result in a series of localised permit schemes with varying prices in different locations.
- A high degree of detailed information on pollution sources and ambient pollution levels would be required. This information is costly and difficult to obtain due to high monitoring costs and varying abatement costs to different industries.

The use of this system is dependent on a much greater level of data than is currently available. The system would need to recognise the different types of pollution sources: point and non-point, stationary or mobile and the distribution of those sources. The information base on which the decisions are to be made as to what is appropriate regulation for a particular region is lacking. A more extensive information base is essential before economic mechanisms, such as tradeable emission permits, could be implemented.

However, the Department is currently investigating the possibility of introducing emission charges as an adjunct to the proposed system rather than a replacement. Their application would probably be restricted to a relatively small number of large point-source polluters to minimise transaction cost and the impact on competitiveness.

Self-regulation (which could be supplemented by education and subsidy programs to encourage the industry to do the right thing - or which could be the do nothing option)

The self-regulatory approach might involve the establishment of water quality standards with increased penalties for breaches and expanded third-party rights. DEH would significantly reduce its inspections and limit the number and scope of licence conditions (if any are issued). This reduction in activity could reduce licence fees and redirect resources into investigating and prosecuting anyone who causes adverse environmental impacts.

Expanded third-party rights and increased penalties would increase the incentive for industry to internalise costs of environmental assessment and monitoring. Such an approach would ensure that those firms which presented the greatest potential threats to the environment faced the highest costs.

To ensure that environmental quality is protected, firms could be required to acquire certification to ISO 9000 or equivalent quality assurance standards for environmental management systems. Certification of such systems could be undertaken by private sector environmental consultants under a system similar to that currently operating in Victoria. As an alternative or supplement to requiring certification as a condition of licensing, environmental management could be incorporated into the existing quality assurance system which applies to tenders for Government contracts to adopt quality assurance, especially since the Queensland Government purchases goods and services worth approximately $3.6 billion annually.

The *advantages* of the self-regulatory approach include—

- Greater freedom of action by industry.
- Greater internalisation of costs to particular firms (supporting the polluter pays principle).
- Potential reductions in Government costs, benefiting both licensees and taxpayers (through reduced demand on the Consolidated Fund).
- Transferring some current Departmental tasks (such as determining discharge and monitoring requirements and safe operating conditions) to the private sector could result in cost savings while increasing the resources available for the

investigation and prosecution of major environmental offences.

The *disadvantages* of the self-regulatory approach include—

- Industry would face greater uncertainty due to the increased potential for litigation.
- Formal quality assurance certification is likely to be prohibitively expensive for many small businesses.
- The Department's role in such a system would be essentially reactive rather than pro-active. Irreversible harm to the environment or human health could occur as a result of negligence or cost-cutting by industry.
- The cost of initiating private legal action would deter many individuals and communities. A socially inequitable situation could occur where disadvantaged groups were obliged to accept a lower level of environmental quality than applied more generally.
- The system would be ineffective in dealing with non-point source pollution.

In a "do nothing" option, the Government would make a further saving of several million dollars each year, but the increased risk of environmental harm and industry uncertainty would not be tolerated by the community or industry.

Whilst the EPP (Water) is currently based on regulatory mechanisms, it is likely that components of the economic mechanism and self-regulation will be included in future years as a result of on-going consultation and periodic reviews of the EP Act and its subordinate legislation.

Cost-benefit Analysis

What are the benefits and costs of implementing the proposed legislation as compared with any reasonable alternative? ((S44g) of Statutory Instruments Act)

A cost-benefit analysis (C-BA) is the core element of a Regulatory Impact Statement (RIS). The Business Regulatory Review Unit (BRRU) of the Department of Business, Industry and Regional Development has commissioned the preparation of a model C-BA to ensure systematic

assessment of the costs and benefits associated with the various options that can achieve the objectives of a piece of legislation.

The authors of the BRRU model recognised that there are weaknesses in C-BA including—

- false accuracy (eg. when money values are given to environmental impacts);
- manipulation of assumptions;
- quality of life issues which defy quantification; and
- the complexity of preparing a systematic and balanced assessment for legislation that impacts on many sectors of society.

To overcome some of these weaknesses the BRRU model is based on a four stage process. The first two stages - a preliminary impact assessment and a qualitative assessment - can be completed without allocating monetary values to the costs and benefits. The last two stages - a quantitative assessment and an impact assessment - can only be relevant where a significant proportion of both costs and benefits can be quantified with some level of confidence. As this is not possible for the EPP (Water), no detailed qualitative assessment is attempted.

The approach adopted in this RIS is to list qualitative costs and benefits of the preferred regulatory mechanism that is contained in the draft EPP Water. Qualitative comparisons are made with the costs and benefits that might be expected under two alternative regulatory options where there are significant differences. The Summary consolidates these comparisons.

Costs to Government, Business and the Community of the regulatory mechanism

Government

The Australian Bureau of Statistics publication, *Cost of Environmental Protection for selected industries in Australia in 1990–91*, (ABS, 1994) indicated that the net total Government outlays on environmental protection in Queensland was $341 million comprising $3 million by the Commonwealth, $26 million by the State and $213 million by Local Government. The major expenditure items relating to water quality

protection were sewage treatment (net current surplus of $6 million and capital expenditure of $98 million) and urban storm water management ($12 million current and $28 million capital). Water treatment outlays were $21 million on current expenditure and $122 million on capital expenditure.

State Government

The development of the EPP (Water) to the current stage is estimated at $220,000. This expenditure can be treated as a sunk cost (a decision not to proceed with the EPP (Water) would not result in the recovery of this amount). Costs of developing the economic mechanisms alternative are likely to be significantly higher.

It is difficult to apportion precisely the costs of the EPP (Water) as the budget expenditure figures are structured for the management of the entire environmental protection program, not individual EPPs. Given that past expenditure on the *Clean Waters Act 1971* has significantly exceeded that on the *Clean Air Act 1963*, it is estimated that 60% of the current total expenditure on licensing-related activities in DEH (ie. $5.7 million out of $9.5 million) is spent on water quality issues. Very little change to this amount will occur when the EPP (Water) commences. Expenditure might rise if an economic mechanism was introduced because of the increase in information required in the licensing process; and it might fall if self regulation was introduced, although this might be balanced by an increase in investigations and prosecutions.

There will be some additional costs associated with the preparation and implementation of the various programs and plans that are required by the few agencies responsible for water management. In general, these requirements are consistent with quality assured management and would be similar under any regulatory option that is seeking to achieve the nationally agreed water quality objectives. Even under self-regulation there would be an obligation to implement improved environmental management practices.

Offsetting any potential increase in costs, the enforcement of water quality standards is likely to result in improved public health. This saving, which it is not proposed to attempt to quantify, is distinct from the savings referred to below in the community benefits section which refer to the subjective value to the individuals affected of a reduction in ill-health.

Local Government

Local Government costs will include the following—

- training costs,
- enforcement costs,
- monitoring,
- administration costs,
- licence fees,
- implementation costs, and
- upgrading infrastructure.

All of these costs, except licence fees for their own environmentally relevant activities and implementation costs, are intended to be covered by licence fees from devolved activities, although there is some continuing assistance from DEH. The licence fees contained in the Environmental Protection (Interim) Regulation are intended to allow full cost-recovery for licence administration, monitoring and compliance enforcement. Approximately one third of the fee revenue (i.e. $0.9 million out of $2.7 million in 1995-96) is expected to be spent on local government actions relating to water quality. DEH is providing training and guidelines, model licence conditions and a computer database at a minimal cost to Local Governments. On this basis, the net cost of devolution to Local Government should be nil.

However, additional costs may be incurred if licence fees were to increase or compliance costs for Local Government's own environmentally relevant activities were to increase because of the commencement of the EPP (Water). The majority of any additional costs will result from more stringent compliance costs for water and waste treatment plants and the preparation of urban stormwater, sewage minimisation, water conservation and trade waste programs over a period of four years.

The State Government has independently announced the Queensland Nutrient Infrastructure Program that will provide $150 million in assistance to Local Governments that are upgrading their sewage treatment plants. Many of the larger councils have commenced various water management programs and would continue to do so irrespective of whether an EPP (Water) was introduced or not. DEH will assist in the development of

model programs that will be applicable to smaller councils.

Business

The Australian Bureau of Statistics publication, *Cost of Environmental Protection for selected industries in Australia in 1990–91*, (ABS, 1994) provided data on expenditure on environmental protection in the manufacturing industries and mining industry. No data were collected for agriculture, construction, retailing, wholesaling or households.

For the manufacturing industry the current expenditure of 691 Queensland enterprises on pollution abatement and control amounted to $22.8 million (cf. $243.5 million for 4670 enterprises across Australia). The capital expenditure of 157 Queensland firms was $29.7 million (cf. $256.7 million for 1265 firms across Australia). The Australian total of $256.7 million represented capital expenditure by approximately 12% of the 10 367 enterprises surveyed. Only 4.9% of these enterprises indicated capital expenditure on protecting water during that year and this totalled $79.7 million. Approximately 60% of this expenditure was for "end-of-pipe" procedures. The remainder was classified as "change-in-production". These totals do not include expenditure on workplace protection, production process improvements or changes in product quality which may have associated environmental benefits. It should also be noted that the survey was restricted to establishments with four or more employees. For these several reasons the totals underestimate total expenditure on environmental protection.

For the mining industry, the data were collected with the annual Census of Mining Operations. This appears to have covered approximately 300 enterprises across Australia including 75 in Queensland. The current expenditure on pollution abatement and control by 28 Queensland establishments was $16 million (cf. $91.8 million by 152 establishments across Australia). The capital expenditure for 21 Queensland establishments totalled $30.2 million (cf. $170.2 million by 114 establishments across Australia). Although no data were presented on how much of this expenditure was related to the protection of water quality, the percentage is likely to be high. Three quarters of the Australian current expenditure was on waste management which for mining is closely associated with water quality. One third of the enterprises were planning to undertake activities to protect water within the next four years. Complying with the EPP (Water)

will impose a range of additional costs on industry. Costs will vary in relation to the nature of the pollutant and the quantity produced. The costs involved are—

- implementation costs,
- licence fees,
- monitoring costs,
- environmental audits,
- plant costs (control measures),
- management costs,
- legal and professional advice,
- cost of reduced competitive ability, and
- opportunity cost of compliance.

Implementation costs

Implementation costs relate to the time and expense applied to understanding the effect of the EPP (Water) legislation. The costs include review of the new legislation and an analysis of how the new legislation will effect operational activities.

Licence fees

There will be no increase in licence fees caused by the introduction of the EPP (Water).

Monitoring costs

Monitoring costs will vary, depending upon the scale and nature of the activity undertaken and the individual licensee's enforcement history and environmental management system. It is expected that monitoring will be more regular and detailed under the EPP (Water) than currently carried out, but considerably less than under a economic mechanism.

It should be noted that while monitoring costs may increase for some industries, other industries will already have monitoring programs in place

as part of the previous licensing regime; an internationally recognised environmental management system; or self-regulatory systems such as "responsible care". The impact of monitoring will of course vary depending on the scale of activity.

Environmental audits

Environmental audits may need to be undertaken prior to the development of an EMP or to satisfy internal management procedures of the company. An environmental audit is a series of environmental investigations of a business checking compliance against external (regulatory) and internal requirements. One aim could be to assess the impact of the business on the environment. Environmental audits could be used as a key tool in developing waste minimisation strategies, identifying sources of waste, promoting awareness and encouraging more effective monitoring. Costs of audits will vary with the size and complexity of the business in question. Audits will be encouraged as a part of overall total quality management process in industry. Self-auditing is already undertaken by large enterprises, but is noticeably absent from small and medium businesses. Although environmental audits could be an additional cost to some small businesses, they are not mandatory unless requested by an administrative authority which is reasonably satisfied that conditions of a licence, an EPP or EMP are not being complied with. As the environmental guidelines in the EPP (Water) are similar to those in the Environmental Protection (Interim) Regulation there is not likely to be a significant change in the frequency that environmental audits will be required.

Plant costs (control measures)

Plant costs involve increases in capital, labour and design costs for pollution control measures. The costs will depend on the present environmental protection practices, the type and size of each activity and any new abatement strategies selected by the individual business. Once the EPP (Water) is in place, those businesses which cannot comply will be expected to develop EMPs with the aim of achieving compliance as soon as practicable. If it is anticipated that compliance cannot be achieved in three years, community consultation will be required as part of the development of an EMP.

In the long term, industry will have to continue to upgrade its abatement strategies, resulting in continuing plant costs. The magnitude of the costs and frequency of the upgrades cannot be determined as they depend on development of new technology and future reviews of the EPP (Water).

A shift in emphasis from "command and control" and "end of pipe" regulation to "self- determined source reduction" will encourage innovative pollution management strategies and may lead to reduced plant costs in some instances.

The control measure costs for environmentally relevant activities should be the same for all three options considered, provided that the nationally agreed water quality guidelines are the objectives of each option. The economic mechanisms option has the advantage that the amount spent on implementation can, in some cases, be partially offset by a saving in pollution charges but this must be discounted by the added costs of information collection. The economic mechanisms may in fact have higher net implementation costs than either other option, especially for smaller operations.

Management costs

Management costs involve reviewing legislative changes, developing environmental management systems, developing EMPs, and implementing cleaner production. These costs relate to technology change and improved management to reduce pollution and the risk of environmental harm. Management costs will vary depending on the scale and nature of activity undertaken and existing environmental management systems. Some additional management costs would exist under the proposed regulatory mechanism or either alternative.

Legal and professional advice

Legal and professional advice on the EPP (Water) influences the content of Industry Guidelines which are supplied by DEH at no cost. It is assumed that the costs of legal and professional advice is likely to be no higher than the cost to industry of the other regulatory options discussed and may be considerably lower given the possible need for radical changes under either of the proposed alternatives.

Costs of reduced competitive ability

The competitive position of Queensland industries is affected by the costs imposed upon it. Increasing regulatory costs has the potential to reduce the competitive ability of industry in interstate and international markets. However, costs under the EP Act, while higher than those previously imposed in Queensland, will be comparable with or lower than those already in place in other Australian states. Additionally, compliance costs represent an extremely small component of the total cost structure of Queensland industry and the impact on that cost structure of the proposed increases is likely to be correspondingly small.

Opportunity cost of compliance

The opportunity cost of compliance can be summarised in terms of loss of investment capital or operating capital. The impact of this cost will depend on the type of industry, the size of the firm and its current competitive position. Queensland industry is mainly composed of small businesses, which are likely to be more vulnerable to additional costs than larger industries. Because small business employs a larger proportion of people than larger industries, the extent of the losses may have long-term implications in terms of job losses and economic growth.

The cost of industrial pollution controls varies between industries and between plants within an industry. The Australian Bureau of Statistics has collected limited data on expenditures aimed at the prevention, reduction and elimination of pollution arising from production processes. The broad nature of this data prevent detailed analysis of the impact of the EPP (Water). The major reasons for this difficulty are—

- varying extent of the use of particular types of pollution control;
- inclusion or exclusion of costs which are designed to aid production as well as environmental management;
- difference in treatment units selected to accomplish similar objectives;
- amount of design or construction which is actually done "in house" and not considered on a uniform basis as part of the cost; and
- size of the treatment facility.

The manufacturing sector spent just under 25 per cent of its total capital expenditure for environmental protection on water pollution abatement. This represents about 1 per cent of its total capital expenditure for plant and equipment and less than 0.1 per cent of total turnover. Certain industries, notably chemicals, pulp and paper, primary metal products, and agricultural industries carry the major responsibility for water pollution.

However, as a percentage of total production costs, the additional burden imposed on industry by the EPP (Water) appears relatively minor. This conclusion remains equally valid when the burden is compared with that borne by industry as a result of annual changes in the level of wages and raw material prices.

In considering the effects of environmental management costs on future economic growth, two points should be considered. Firstly, the current system of pollution control contains a large amount of "catching up" to implement modern and effective environmental management. This element is mostly reflected in the initial investment effort. Thus any cost there may be in terms of economic growth is also likely to decrease in future.

Secondly, any reduction in economic growth should be measured not in terms of historic growth rates but in terms of what it might be in the absence of environmental management programs. The economic costs of pollution tend to increase more rapidly than pollution emissions themselves once a certain threshold has been reached. At that stage, Gross National Product (GNP) growth might actually be lowered in the absence of environmental management expenditure.

Finally, the new demands on industry will stimulate a fresh consideration of available and possible technologies from the widened efficiency point of view. Therefore, future production methods may be rather less polluting at no higher cost than they would have been had research not taken environmental aspects into consideration from the start.

Community

There are no direct costs to society in the implementation of the new EPP (Water). However it is anticipated that costs will be passed on to consumers through higher retail prices. The extent of passing on costs is difficult to determine, owing to the increasing competitiveness of many product markets due to falling tariffs, harmonisation of national standards and the

removal of other barriers to interstate trade.

The community will continue to be educated to care for the environment, such as by saving power and reducing stormwater contamination. The costs are generally in terms of lifestyle changes. It could be argued that the cost of such changes could be offset by savings resulting from reductions in resource consumption.

Benefits to government, business and the community of the regulatory mechanism

Quantifying the benefits of environmental policy is particularly difficult because there are few monetary transactions involved and great reliance must be placed on indirect valuation-techniques which are highly dependent on assumptions and estimated probabilities. The possibility of very long term effects on the environment adds to the difficulty of determining present day value of such policies.

While the concept of benefit as damage avoided is one of the primary concepts in evaluating the benefits of environmental policies, it does not encompass the full set of advantages provided by environmental policies (Freeman:1982). For instance, the EPP (Water) will not only reduce pollution but also provide new amenities accruing from, for example, nature protection or the improvement of waterways. Illustrations of benefits resulting from such a program which enhances water quality would include: improvements in human health (swimming related health issues and mental well-being); reductions in the costs of water treatment for domestic, industrial and agricultural water uses; increases in sport; increases in recreational fishing and commercial fishery yields (for given levels of labour and capital); improvements in water recreation opportunities; falls in household costs which are associated with water hardness; as well as increases in those aesthetic values of water which are based on appearance, taste and odour.

The process of producing environmental management benefits has three distinctive stages—

1. The EPP (Water) leads to improvements in environmental quality through reduction of pollutant discharges. A reduction in the quantities of waste products being discharged into a water body will lead to an improvement in various measures of water quality.

The attainment programs of the EPP (Water), will induce polluters to reduce their discharges and thus decrease the level of biochemical oxygen demand, suspended and floating solids, nutrients, heat and toxic and miscellaneous chemicals in water bodies. This discharge reduction will, in turn, lead to an improvement in physical, chemical, and biological indicators of water quality, such as dissolved oxygen, temperature, turbidity, odour, nutrients, pH, algae levels, bacteria and fish populations.

2. The resulting better water quality will in turn lead to changes in the way individuals make use of water; that is, changes in the level and composition of the stream of environmental services yielded by the water bodies. These include withdrawal uses (industrial or municipal water supply and irrigation) and in-stream uses (fisheries, recreation and aesthetics).

3. Changes in uses affect utility or welfare of consumers and producers (including the value placed by the community on such things as improved recreation opportunities, increase in fish production, and availability of particular species of fish).

Current knowledge does not allow quantification of benefits, and even a positive description of the nature and extent of outcomes to be achieved by the EPP (Water) will inevitably be incomplete. However, such descriptions are inherently useful and are used in the following assessment of the impacts which result from introduction of the EPP (Water).

In the future, better data will become available as part of the Queensland Government's State of the Environment Reporting. Common socio-economic and physical data sets will be maintained over time relating to sites where water quality changes are occurring. The rationale is that substantially more knowledge of behavioural response with respect to water quality changes must be established before the efficiency of water quality enhancement can be assessed with precision.

Government

Once in place, the EPP (Water) would provide clear information specific to water pollution, providing greater certainty and understanding of the legislation and regulations, saving time in litigation and appeals.

The licence base has been increased by the Environmental Protection

(Interim) Regulation which identifies environmentally relevant activities and sets the fees at levels which will provide substantial cost recovery for State and Local Governments and improve the effectiveness of the EPP (Water). The wider revenue base would reduce revenue fluctuations. The anticipated income from licences under the EP Act is—

- $ 5.1 million for the Department of Environment and Heritage.
- $ 2.7 million for Local Government (this is currently being subsidised by the State Government for the first year).

The integrated legislation should provide a more efficient administration of licences, as generally only one licence will be required per activity. Licence applications, renewals and revenue collection should therefore be more cost-effective.

More effective enforcement will be provided under the framework of the EP Act and the EPP (Water). The stronger enforcement package should ensure that pollution standards are not breached by polluters.

The policy of waste minimisation aims to reduce future clean-up costs and prevent pollutant transfer (For example, a reduction in air pollution by redirecting the pollutant to water). Implementation of pollution policies will therefore be more cost-effective.

The breadth and flexibility of this legislation enables policy decisions to encompass both current and future pollution problems.

The EPP (Water) is based on co-regulation, which places more responsibility on the operator and less on the Government than previous licensing policies. Businesses and government agencies will be encouraged to self-regulate their pollution and develop EMPs where necessary. This should result in a reduction in government management costs and a more effective control of pollution by the business and government operation.

At least every seven years, the EPP (Water) will be reviewed, eliminating obsolete policies and regulations, and giving rise to more efficient environmental management.

Pollutants present in intake water force suppliers to incur higher treatment costs for reasons other than, or in addition to, the protection of health. In achieving water quality objectives, the net result will be that local governments will need to spend less money pre-treating water withdrawn for municipal water supply systems.

Business

Industry will benefit from the proposed EPP (Water) in four major areas—

1. market environment;
2. industry development;
3. tourism and recreation; and
4. costs avoided.

1. Market environment

The EPP (Water) will set new and more easily understood environmental standards across the State. These standards will be able to be enforced more effectively.

Explanatory guidelines will provide direction and advice in implementing the EPP (Water). For those who cannot achieve standards immediately, EMPs provide a mechanism for a gradual achievement of compliance. The combination of these attributes should encourage fair competition in the market place and allow for a smooth transition to the new legislation. The result should be to develop a stable market environment enabling long-term decision-making and efficient industry growth.

2. Industry development

Commercial fisheries

Ecological systems (natural and cultivated) are of direct economic significance because they are used to produce goods that are sold in markets. Changes in environmental quality can affect the biological productivity of these systems and, therefore, the cost and supply of products.

A detailed study of the economic characteristics and significance of the Queensland commercial fishing industry was conducted by Griffith University (Bishop:1988). The total value to the fish landings to the fishing industry was estimated to be about $290 million. An additional 88 per cent of flow-on effects accrue to the regional economy. For every job within the catching sector 1.58 jobs are created elsewhere in the State: an additional

9 000 jobs. Thus any reductions in commercial landings, would have a significant impact on the processing industry and consequently employment.

Lowered water quality can affect commercial fishery production adversely by reducing or eliminating spawning runs of commercially valuable species, or rendering surviving species unfit for human consumption. Where pollution has reduced the biological productivity of fisheries or resulted in the closure of shellfish beds and other fisheries, EPP (Water) abatement strategies should result in increased producer rents and/or lower prices of fisheries products to consumers.

Shipping

The presence of corrosive substances can shorten the lives of and otherwise damage hulls and equipment on vessels and such structures as wharves and pilings. Also navigation can be made more hazardous and be otherwise impeded by the presence of floating materials. Waterborne sediments may settle in navigation channels and anchorages. This can reduce their effectiveness or necessitate more frequent and costly dredging. The benefits accruing as a consequence of attaining EPP (Water) objectives should be reflected in the reduction of navigation costs of accelerated corrosion and maintenance of bridges, piers and ships and less siltation resulting in lower dredging costs.

Agricultural industry

Agricultural industries represented 5.4 % of Queensland's GDP in 1990–91. The EPP (Water), by reducing pollution levels, has the potential to improve the quality and quantity of Queenslands agricultural produce. The size of the benefits cannot be determined because of inadequate knowledge of the relationships between water pollution levels and crop prices.

However, damage is done to crops, stock and to agricultural irrigation systems by pollutants in the ambient water. For example—

- salts and alkalinity interfere with crop growth;
- runoff and return flows from irrigated fields carry dissolved salts leached from the soil;

- the consequence of irrigation in upstream areas can be degraded water quality downstream;
- wasteful use of water can reduce water availability for others;
- repeated rediversion of river flow for irrigation purposes increases concentrations of total dissolved solids, which can reduce the productivity of the irrigation water for agriculture; and
- nutrients and agricultural chemicals can indirectly increase the production costs of other rural producers by making water supplies unusable (e.g. because of blue-green algae).

The strategies developed in the EP Act, Environmental Protection (Interim) Regulation and the EPP (Water) will reduce the above effects, as well as improve water conservation practices. The increased productivity of agricultural lands should be reflected in higher incomes to farm owners as well as in greater quantities and lower prices of agricultural products to consumers.

Clean production

The current world trend is towards cleaner and ‘greener’ methods of production. This is illustrated by an international premium which exists for food produced under clean environmental conditions. The Department of Primary Industries defines clean food as, food which meets international standards for—

- additives;
- environmental contaminants and pesticides;
- minimisation of food contamination; and
- use of a sustainable approach to primary production and processing.

The Agri Food Council is promoting Australia as a producer of clean, premium quality food for the Asian market. The Asian import market (excluding China) for processed foods was worth about US$47.3 billion in 1990. The Council's aim is to triple the value of Australian food exports, potentially generating $9 billion per annum in additional exports. The EP Act and the EPP's are expected to contribute to the maintenance of Queensland's international reputation as a supplier of premium quality food.

To secure a market and keep a competitive edge, high standards need to be maintained. State wide water quality standards cannot be achieved by individual organisations, hence the need for Government-imposed regulations. The EPP (Water) will work to maintain desirable water quality standards.

Environmental management technology

The Queensland environmental management industry will have opportunities to expand as a result of implementation of the EPP (Water). Abatement equipment, monitoring services and environmental auditing services, will need to be supplied. The incentive to develop better technology is also a part of the EPP (Water), through policies of best practice environmental management and integrated waste management. The shift away from prescribing specific equipment to prescribing environmental outcomes which must be achieved as a condition of licence, by whatever means the firm can devise, is expected to encourage technical innovation. Once the EPP (Water) is implemented, practical experience in environmental management will be a marketing tool for international sales. Industry would then have the potential to export its technology and services world wide.

Where industrial activities withdraw water for in-plant use, pollution may either degrade the productivity of that water, or impose higher treatment costs. With the implementation of the EPP (Water) there will be anticipated reduction in costs of treating industrial process and cooling water. Industries treat about 25% of the water withdrawn before use. In meeting EPP water quality objectives, less treatment for industry will be required and in addition, industrial water supply equipment will last longer or be cheaper. Productivity will increase when the EPP (Water) stimulates technological development, or facilitates the recovery of particular resources from the production process. A further positive element arises from the fact that firms which are victims of pollution may find that their costs are reduced as a result of other firms being obliged to reduce pollution. Therefore they will require less, not more, of the conventional factors of production of capital and labour to produce a given output. In other words, they will be able either to release resources for use elsewhere in the

economy or to expand their output for a given use of resources.

Profits and employment will increase in industries which produce

abatement equipment and services. In an economic situation in which there is less than full employment, the development of these new markets will lead to net job creation, and the output from otherwise unemployed workers is an economic benefit. In addition, industry is stimulated to find innovative ways to reduce the cost of compliance with the EPP (Water). In so far as the technological advances are the result of this innovative activity, the ensuing benefit to society must also be counted.

Increased profits may also be available for industries which produce relatively low polluting goods. Positive public relations and an improved industrial image after installation of pollution abatement devices will be additional spinoffs.

3. Tourism and recreation

Tourism is of considerable importance to the Queensland economy. The Bureau of Tourism Research has estimated that during 1991–92, international and domestic tourism generated an income of $5000 million and 123 000 jobs. A major part of the attraction for international and domestic tourists to Queensland is its near pristine, natural environment. Preservation of the environment from episodes of blue-green algal bloom for example, can be achieved by reducing pollution levels. This reduction would sustain or improve the attractiveness and competitiveness of Queensland as a tourist destination. Consequently, the EPP (Water) in the long term, will assist in sustaining the growth of the tourism industry, increasing GDP and job growth.

Recreation for the purposes of this document and the EPP (Water) refers to sightseeing, sports fishing, boating, swimming and other water based recreation. Recreational water quality is a matter of growing public concern. There is, however, no uniform international policy in this area. If higher water quality improves the species composition of the aquatic environment, then the utility derived from associated recreation activities may be increased (such as coral viewing) and individuals may utilise these natural areas more frequently.

Most of the recreational benefits will be in the fishing and swimming categories. This is because these are the most popular water-based activities and are more dependent on water quality. The Australian Bureau of Statistics estimates that 30 per cent of the population aged over 15 years in Queensland participates in recreational fishing activities, while the number

of registered boats has increased by nearly 230 per cent from 30 778 in 1970 to 101 212 in 1992.

Leisure activities along water bodies generally constitute the largest economic gains. But recreation, while experiencing phenomenal growth in popularity, eludes precise evaluation. The Queensland Sport and Recreational Fishing Council (QSRFC) at a December 1990 seminar valued recreational fishing at $500 million per year in Queensland. It has been estimated that $131 million is expended annually on fishing in the Moreton Region where nearly one-third of Queensland's total recreational fishing takes place (Neumann et al:1986) (Quinn:1992). These figures, substantial as they appear, are not a net economic benefit. This is because there are costs associated with undertaking these activities such as willingness-to-pay and travel costs, and costs associated with damage to the resource exploited (recreational catches for fish species are generally equal or greater than commercial catches), and damage to the environment (such as motor boat pollution, garbage dumping, and erosion) (Quinn:1992).

4. Costs avoided

The EPP (Water) aims to reduce pollution levels to prevent degradation of human health. Poor health results in lower production due to lower employee productivity at work and increased absenteeism.

Other more general benefits to industry in Queensland would be the savings from waste minimisation and re-use by reclaiming raw materials, water supply costs, and water consumption costs. A reduction in pollution levels through recovered resources, wastewater reuse and water conservation would reduce the degradation of these materials, reduce cleaning costs and maintain asset values in industry. These costs are difficult to assess, due to the wide scale of impact and difficulty in assessing dollar values. However they are assumed to be significant.

Community

Health

Improvement in community health.

Biological diversity

There is ecological benefit in preserving the mix of plant and animal life found naturally in or adjacent to water bodies. This benefit has perceived value to many people. It is apparent that few policies can fully guarantee the long-term conservation of a given biological resource, but sound policies increase the probability that conservation will be successful.

Many people attach value to the existence of a species or habitat that they have no intention of ever visiting or using. An accurate cost-benefit analysis of such values is impossible but the magnitude of these values is suggested by the sizeable voluntary contributions to private conservation agencies by people who do not expect to visit or use the resource they are helping to conserve. A particularly important variant of this is the vicarious benefit received now because someone who may not yet exist may benefit in some unidentified way in time to come. This rationale is often considered to provide much of the economic justification for preserving natural systems, (Krutilla & Fisher:1975) and is thought to dominate all other benefits of wilderness by some people.

Aesthetics

Water pollution can cause debris, slicks, odours, discolouration and tastes that affect individuals' utility and welfare without adversely affecting physiological health. Aesthetic effects such as these are often not associated with the direct use of environmental resources. However improvements in amenities yield utility gains that are reflected in changes in property values that reflect households' willingness to pay to live near high quality water bodies. Thus there are perceived benefits reflected in improved well-being of local citizens who will be confident of having adequate waste treatment and clean waters, and elimination of relocation costs (of persons, groups, and establishments) because of impure waters. The maintenance or increase of land development potential associated with the presence of clean waters would be a direct consequence of the EPP (Water).

While economic factors are major determinants of people's decision to move, lifestyle and environmental conditions tend to be strong influences on the actual locations chosen (Skinner et al:1983). Thus, the prevailing movement of people to areas of environmental advantage is an important factor in planning. Given a favourable economic setting, regions with high environmental aesthetics and amenities are likely to exhibit better economic performance than regions with environmental problems.

Summary of cost/benefit considerations—what is the economic argument for proceeding as proposed?

While it is recognised that implementing the Policy involves significant costs and consequences for both the public and private sectors, costs should never be considered in isolation from benefits which, in this case, are mostly derived from environmental values. Most of the benefits cannot be given a monetary value but they are valued by the existing population and will be valued by generations still to come.

In developing the EPP (Water), special attention has been given to defining the importance that the various groups which comprise the community attach to goals for protection of the environment. Similarly, effort was devoted to identifying the impact that pursuit of the objectives would have on individual groups. It is believed that the Policy provides a fair balance between protecting important goals and minimising the impact.

Total quantifiable annual administration costs of the State Government's involvement in water quality issues were approximately $5.7 million and the cost to Local Government is less than $0.9 million prior to the EPP (Water) commencing. These are not expected to change significantly when the EPP (Water) commences. These administrative costs are probably less than for either the Economic Mechanisms option (because of the increased need for detailed information) or for the Self Regulatory option (because of the cost of enforcement and clean up).

The benefit of the EPP (Water) will be in the increased effectiveness and efficiency of the proposed EPP (Water) strategy. The effectiveness of the EPP (Water) will be dependent on the degree of support for the enforcement of the EP Act.

One quantifiable cost to industry related to regulation of water quality is a component of licence fees. Prior to the EPP (Water) this was estimated at $4 million per year (60% of the state licence fees and 33% of Local Government licence fees). However, no change to this total will occur on commencement of the EPP (Water).

Although all identified benefits to industry were intangible, long-term benefits could be expected to accrue from a diverse range of market advantages. These advantages include an improved competitive base, industry development, improving the environment for tourism and savings from reduced degradation of materials by pollution.

Potential long-term benefits to industry from the adoption of consistent environmental standards will be gained by development of stable market influences enabling long-term decision-making and efficient industry growth. Demand for waste minimisation, recycling and treatment technology and management skills will expand, allowing for expansion of the environmental management industry in Queensland.

The Australian Bureau of Statistics estimated that in 1990—91, environmental protection costs of manufacturing and mining industries in Queensland amounted to $52.5 million. It is realistic to assume that at least one third of this related to water issues. No realistic estimate of how the EPP (Water) will affect this can be given as industry's response will be influenced by licence conditions and use of EMPs. The net result is unlikely to be greatly different from that under the alternative options.

By protecting the environmental values of water, Queensland will be minimising water quality degradation. This means avoiding water pollution-related costs of health care, lost workplace and agricultural productivity.

The lack of data on the effect of water pollution on society, especially the health effects, prevented a complete dollar evaluation of the benefits. It has been estimated however, that the cost of current pollution levels would be in the hundreds of millions of dollars per annum.

National Competition Policy

What is the impact of the proposed legislation on competition—to what extent does it impose or encourage any restrictions?

The EPP (Water)—

- will be fairer for all affected, in that it provides for consistent environmental management standards across the State, reducing the inherent subsidy to polluters;
- ensures the standard of Queensland's management of the water environment is consistent with that in other States, avoiding the creation of a 'pollution haven'; and
- provides clear, long-term water quality management goals, giving the private sector, government and the community certainty in planning activities.

A modification to the competitive position of a firm resulting from the EPP (Water) could occur when the EPP is an applicable Standard Criterion under the EP Act. In some cases, in order to achieve the object of the EP Act, more stringent conditions could be placed on a firm to protect a more sensitive environment or a particular environmental value.

The Standard Criteria which must be considered before establishing licence conditions require the administering authority to consider the financial impact of the proposed conditions on the type of activity in question. Stricter limits on emissions would not be imposed unless justified by site-specific factors (such as proximity to sensitive areas). Nor will conditions be relaxed because of potential adverse economic impacts on the firm in question if such a change is likely to adversely affect competing firms.

Do the associated benefits outweigh the costs from an economy-wide perspective?

Yes.

If there are restrictions, how and why are they in the public interest?

Restrictions in the EPP (Water) are aimed at preventing contamination of waters, which can impose an enormous cost on the community, affecting the community's ability to support a competitive business environment either now or in the future.

How do the competitive impacts of the proposed legislation compare with any reasonable alternative?

The EP Act has built on recent legislation in other States. It provides an equitable market for business and avoids the creation of havens for polluters.

The previous legislation dealt separately with air, noise and water pollution. That made it difficult to integrate the control of a site as each issue—air, water and noise—was subject to different regulatory schemes and separate licences. This is inefficient for business and the Government.

The previous legislation was also based partly on a 'Government knows best' philosophy which reduced technical innovation in industry and created a dependency in industry, reducing its sense of responsibility. Some businesses developed the view that there was not a problem unless the Government said there was a problem. This was compounded by the difficulty of enforcement under those old Acts. The lack of enforcement effectively punished responsible operators and discouraged them from continuing to spend money to meet their responsibilities when their competitors did not.

The shift in the legislation towards flexibility and self-regulation is balanced by greatly increased accountability. The commitments made and subsequent performance will be open to public scrutiny. Where self-regulation is not sufficient, a range of enforcement responses is available, from administrative orders to severe penalties, including jail for wilful criminals and corporate fines of up to $1.25 million for the worst offenders.

While there is a unique mechanism to make a legally-binding and public commitment to compliance, those who do break the law can expect prosecution. Business has made it perfectly clear that the previous Government's policy of non-enforcement only penalised responsible industries by giving polluters a cost advantage, and stifled economic expansion by reducing the ecological sustainability of use of the environment.

The EP Act is about ESD, which requires economically efficient and publicly accountable environmental protection. Many of our leading businesses have found that improvements to environmental performance are saving money. The policy is going to help that change and expand it throughout the public and private sectors.

Fundamental Legislative Principles

(S44(h) of Statutory Instruments Act)

To what extent is the proposed legislation consistent with fundamental legislative principles?

The policy is consistent with the fundamental legislative principles

relating to the *Legislative Standards Act 1992*.

If it is not consistent with fundamental legislative principles, what are the reasons for the inconsistency

Not applicable.

Conclusion

The proposed EPP (Water) or Regulatory Mechanism is recommended to be adopted.

The advantages of the Regulatory Mechanisms approach include—

- Clear identification of the environmental values of water that are to be protected and the appropriate water quality standards.
- Guidance on adequate separation of pollution sources from incompatible land uses.
- A framework for monitoring and site inspections.
- Improved enforcement through the increased range of options and penalties and clearer procedures for prosecution.
- Increased public participation in development and implementation of environmental standards and policies.

The advantages to Government of the Regulatory Mechanisms will be flexibility in enforcement and administration of the EPP (Water), providing a more effective and efficient pollution control strategy.

Long-term benefits could be expected to result from the EPP (Water), due to an improved market environment. These benefits to industry include an improved competitive base, development of new industry, reduced risk in the downturn in the tourism industry resulting from environmental degradation and costs saved from material damage from pollution.

Benefits to community include significant saving in health costs, better use of water, more aesthetic waterways, improved visibility, and continuing improvement of the general quality of life.

The disadvantages of the Regulatory Mechanisms approach include—

- Annual implementation and compliance costs for the State Government should not be great if appropriate technology is currently being used and should not differ from that under other options.
- Local Governments are required to prepare several programs and policies over a four year period. Although required by the EPP (Water) this type of planning will be essential for Local Governments to meet obligations under the Planning, Environment, and Development Assessment legislation.
- Industry costs involve significant intangible costs and possible offsetting intangible benefits (such as increased competition arising from more consistent regulation). Consequently, it is not possible to quantify the likely net impact of the EPP (Water) on business. The licence fees are determined by the Environmental Protection (Interim) Regulation and not the EPP (Water).

Community costs were assumed to be negligible compared to the community benefits and probably less than under the other options.

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APPENDIX A

Consultation Program

Two rounds of public consultation have been completed for the EPP (Water).

First Round of Community Consultation

The first round of community consultation on the Environmental Protection Policies for Air, Noise, Water and Waste was done in November 1993 in conjunction with the second round of consultation on the Environmental Protection Bill.

Advertisements

Twenty-seven advertisements about the development of the Policies were placed in The Courier-Mail, Sunday Mail and 23 Queensland regional and local papers on five days in early November 1993. Interested persons were asked to contact the Department for further information.

Direct Mail

Copies of the *Environmental Protection Policy Outlines* document and details of public meeting venues were distributed to 1867 persons and groups including—

- individuals
- community groups
- environment and conservation groups
- industrial or commercial companies or associations
- farmers or agricultural associations
- law firms or associations
- consultants or associations

- financial organisations or associations
- other professional associations
- Aboriginal and Torres Strait Islander groups or councils
- educational institutions (primary, secondary and tertiary)
- Queensland local government and associations
- Queensland State Government Departments and agencies
- non-Queensland state and local governments authorities
- non-Queensland non-government agencies and associations
- Federal Government Departments and agencies
- Members of the Legislative Assembly
- licensees.

Public Meetings

Later in November 1993, 26 public meetings were held in 11 locations across the State. Both the Bill and the Policies were discussed at these meetings. Most of the above groups were represented at the public meetings. Submissions on the Policy Outline document were requested by 31 January 1994.

Department officers also held meetings at the request of individual organisations, including Brisbane City Council, Mt Isa Mines, AMPOL, Clean Air Society and Urban Development Association.

Second Round of Community Consultation

10 000 copies of the Draft Environmental Protection (Water) Policy were printed and approximately 9500 have been distributed to the public and regional offices since March 1995.

In addition to paid advertising in newspapers; radio, television and newspaper journalists were alerted to the consultation prior to meetings in each centre visited, and interviews were conducted in most centres.

Liaison officers also telephoned hundreds of stakeholders a few days prior to each meeting to encourage participation.

Direct Mail

Some 5000 draft Policies were direct mailed to stakeholders and other interested persons in the weeks leading up to the consultation period.

A further 1500 groups received letters advising of the consultation process and encouraging their participation in the policy process. These groups consisted of those who had been under-represented in previous consultations, such as women, youth, Aborigines, Torres Strait Islanders and people from a non-English speaking background.

Advertising

Prior to arranging interviews, officers from consultation teams worked with the Minister's Media Adviser, local media and regional Department of Environment and Heritage offices.

The consultation meetings were advertised in the newspapers circulating in the areas to be visited, as well as in free local papers. For example: in Brisbane, advertising was placed in The Courier-Mail and also the Quest papers—North West News and Westside News.

As communications within organisations have proven to be problematical, several days prior to arriving in a location, Liaison Officers telephoned stakeholders who had received water policies or written notification. This included local governments, community groups, the Department of Primary Industries Water Resources regional personnel and significant industries in each area.

Media

A general media alert was sent by fax and post to all print, radio and television media to the areas where consultation meetings were being held. A number of interviews were given by staff to local television, radio and newspapers concerning time and locations of meetings and need for community input.

Stakeholder Meetings

The following stakeholder meetings were held—

- Two key stakeholder meetings in Brisbane, the first of which was a preliminary overview of the EPP (Water) and the second was to provide a summary of responses later in the consultation period.
- Local Government Association of Queensland - Reference Group (two meetings in Brisbane).
- Local Government special meetings (Brisbane, Toowoomba, Noosa, Hervey Bay, Bowen, Eacham).
- Meetings with Department of Primary Industries in Toowoomba and Roma.

Public Meetings

Refer to Table 1 for the groups represented at the public meetings and the numbers of attendees.

Submissions received

Refer to Table 2 for the sources of submissions from the second round of community consultation received up to May 1995.

Table 1

Summary of attendees at meetings in second round of community consultation

	Local Government	State Government	Industry	Community groups	Interested persons	Total
Beenleigh	6	1	13	5	6	31
Bribie Island	0	0	0	2	7	9
Brisbane	0	0	2	0	1	3
Brisbane	0	2	7	2	0	11
Cairns	13	6	12	9	2	42
Emerald	3	1	12	1	4	21
Gladstone	7	4	28	0	2	41
Gold Coast	0	0	8	0	3	11
Ipswich	4	2	8	2	8	24
Longreach	4	3	1	1	2	11
Mackay	11	5	12	12	5	45
Maryborough	12	0	22	0	7	41
Mount Isa	8	3	2	3	0	16
Nambour	4	4	2	8	4	22
Rockhampton	9	5	11	7	2	34
Roma	7	0	11	6	2	26
Strathpine	7	0	0	2	39	48
Toowoomba	6	11	4	2	9	32
Townsville	12	7	6	5	1	31
Wellington Pt	3	0	2	3	8	16
Total	116	54	163	70	112	515

Table 2

Summary of attendees at meetings in second round of community consultation

Group	Number of Submissions
Individuals	21
Environment and conservation groups	36
Community groups	7
Aboriginal and Torres Strait Islander groups	2
Industrial and commercial companies or associations	23
Farmers or agricultural associations	11
Law firms or associations	1
Other professional associations	4
Consultants	2
Queensland local authorities and associations	21
Queensland State Government Departments and agencies	23
TOTAL	151

ENDNOTES

1. Laid before the Legislative Assembly on . . .
2. The administering agency is the Department of Environment.