

**QUEENSLAND SUBMISSION
TO
SENATE INQUIRY
into
RURAL WATER RESOURCE USAGE**

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1.0 Summary

This Submission has been prepared to address two primary issues which are somewhat linked. The issues are rural water resource usage and sustainability of our waterways. The first is addressed in response to the Terms of Reference for the Inquiry and the second is addressed because of the verbal advice from the Inquiry Secretariat that this was a subject of interest to the Inquiry.

This Submission recognises that there is some degree of overlap with the earlier House of Representatives Inquiry into *Future water Supplies for Australia's Rural Industries and Communities*. However, for the sake of completeness, input relevant to both Inquiries has been included in this Submission, in particular the sections on the *Water Act 2000 and Associated Reforms* and *Applications of Climate Forecasting*.

The Submission provides a snapshot of a wide range of relevant activities undertaken by Queensland State agencies, and in some cases provides pointers to possible future priorities.

Section 2 addresses the water reform process, highlights the significant progress made by Queensland in implementing water reforms and points to the continuing commitment of the Queensland Government to water reform. A key element in Queensland's approach is the newly introduced metering policy. Sections 3, 4 and 5 provide detail on other important elements of the Queensland Government's strategy to address water reform.

Section 6 provides information on progress and expected outcomes of Queensland's Rural Water Use Efficiency Initiative, a program aimed at improving the water use efficiency of four major rural industries. This program is clearly a direct link to and influence on the levels of rural water resource usage. Section 6.2 provides information on a possible program to which the Rural Water Use Efficiency Initiative may evolve as the Initiative draws nearer to its conclusion. This is being considered at officer level only, and is not Government policy. But it does provide a pointer to at least one possibility for the future.

Effluent re-use has long been identified as a source of rural irrigation water. Section 7 provides some of the proposed or existing applications in Queensland. The Lockyer and Darling Downs Proposal/s is still being assessed and no decision on the proposal/s has been made by local, State or Commonwealth Governments.

Section 8 provides information on the Great Artesian Basin and progress with the rehabilitation of bores and piping of bore drains. The Basin is an extremely important source of water to Queensland's grazing industry and western communities. An understanding of the Basin and its sustainability is seen as critical to any assessment of rural water resource usage in Queensland.

Section 9 on Applications of Climate Forecasting provides a snapshot of the current status of this work, the problems and issues which have been identified to date, and some suggestions on where this work should be taken in the future. A role is suggested for the Commonwealth in bringing together the studies and work being undertaken by Commonwealth, State and local government agencies.

Section 10 describes the current status of the water licensing regime in Queensland as well as information on other data collected annually. One of the key issues is identified in Section 10.2. There is clearly a need for the collection of water use data, by crop and region. Queensland is similar to all other States in that the means of measuring and collecting this data does not currently exist in any holistic sense. It is believed that the Australian Bureau of Statistics has an important role in collecting this data in a comprehensive and cost effective manner.

It is recognised that urban water use falls outside the Terms of Reference of this Inquiry. However, urban water use, and urban water use efficiency in particular, is often linked by members of the general community and other stakeholders to rural water resource availability and use. This is certainly the case at times of drought as evidenced in recent times. For this reason, a brief summary of the Queensland's efforts in relation improving urban water use efficiency is included at Section 11.

Whilst drought-breaking rains have recently been received in some areas of Queensland, drought remains an issue that clearly affects rural water resource usage, now and in the future. The drought relief arrangements in Queensland are detailed in Section 12.

Section 13 is included because the development of water infrastructure remains an important factor when considering strategies for meeting rural water usage requirements. Queensland has a full and proper framework in place for undertaking assessments and possible development of proposed water infrastructure.

Finally, Section 14 has been included in response to advice provided by the Inquiry Secretariat that the sustainability of watercourses was a subject of interest to the Inquiry.

2.0 *Water Act 2000 and Associated Reforms*

The following information was provided in the Queensland Submission to the *House of Representatives Inquiry into Future water Supplies for Australia's Rural Industries and Communities*.

The Council of Australian Governments (CoAG) Water Resource Policy has possibly been the most significant influence on policies and programs relating to water use. Key elements of the policy are:

- Water pricing based on recovery of costs and removal or reduction of subsidies, with transparency of any cross-subsidies;
- Separate institutional roles of service provider and regulator;
- A comprehensive system of water allocations or entitlements backed by separation of water entitlements from land title and clear specification of entitlements in terms of ownership, volume, reliability, transferability and if appropriate, quality;
- Formal determination of water allocations or entitlements including, allocations for the environment as a legitimate user of water;

- An integrated catchment management approach to water resource management; and
- Ecological sustainability of new water schemes.

The framework recognises the importance of a consistent approach to water reform throughout Australia while allowing each state and territory the flexibility to adopt an individual approach to implementation that suits the specific circumstances within each jurisdiction. The National Competition Policy (NCP) agreements signed in April 1995 incorporated the CoAG Water Reform Framework.

The Queensland Government has made significant progress in implementing these reforms, notably:

- *Water Act 2000* provides a process to establish tradable water allocations separate to land and provide security of entitlements and water for the environment;
- Institutional reform, i.e. the establishment of SunWater as a water business, separate to the Department of Natural Resources and Mines;
- Institutional separation of the State's regulatory, environmental and service delivery functions.
- Water Resource Plans provide the water allocation and management framework for individual catchments;
- The establishment of the Water Allocation Registry; and
- Rural water pricing.

In summary, the Council of Australian Governments (CoAG) Water Resource Policy has been the most significant influence on policies and programs relating to water use and in promoting sustainable allocation and best use of water. Queensland is implementing these water reforms through a number of initiatives including tradability of water entitlements to the highest and best value use, pricing reforms to ensure that a more appropriate value is attached to water, and water resource plans that ensures a greater security of entitlement than in previous licensing regimes.

2.1 Interim Water Extractions Metering Policy

As part of the Water Reform process, the Queensland Government has recently introduced the Interim Water Extractions Metering Policy.

While all domestic customers in large towns and irrigators who take water in SunWater schemes are currently metered, most who draw water straight from rivers and from underground (unsupplemented users) are not.

Meters are needed for a number of reasons, including:

- equitable water use - metering ensures that a valuable resource is taken according to people's entitlements, and this is a policy supported by farmers' groups
- compliance monitoring - to ensure water users are complying with the conditions of their entitlements and to allow for 'ticketable' offences for unauthorised use when appropriate
- water planning activities - to determine whether water resource plans are achieving the water allocation security objectives through monitoring the performance of individual's entitlements

- management activities - to properly manage the resource, we need to be able to monitor how much water people take, and where and when it is taken
- on farm management - as water becomes more valuable and tradeable, the amount of water being used is important information for the management of a farm.

Currently, there are a total of approximately 57,000 licences which involve the taking of water. Metering arrangements for these licences include the following:

- about 8000 are metered by SunWater for the supply of supplemented water
- about 3000 are currently metered by the Department of Natural Resources and Mines (NR&M) for the supply of unsupplemented water
- if the metering policy is implemented, an additional 16,000 meters may be required over a period of seven years (this would affect an estimated 5000 water users)
- the remaining 30,000 licences will not be metered because about 22,500 are for stock and domestic use and will not require meters, and the other 7500 do not meet the requirements or triggers for metering as outlined in the policy.

In view of the increased need for water meters, this policy has been developed to articulate clearly the state government's position on a number of metering issues such as installation and maintenance, standards, responsibility for costs, when meters are required, and ownership.

This interim metering policy has been developed to provide a framework and process for metering in rural Queensland - from needs assessment through to implementation and ongoing maintenance and reading of meters. It is proposed that the interim policy will be reviewed following its implementation in two pilot areas, the Weir River and the Fitzroy River Basin area. Every effort will be made to ensure metering is done in the most cost-effective way while still meeting the key objectives of good data accuracy and a capacity to upgrade with advancing technologies.

More information on the interim metering can be obtained from the web site of the Department of Natural Resources and Mines at http://www.nrm.qld.gov.au/water/reform/pdf/water_extractions.pdf.

3.0 Water Resource Planning

The *Water Act 2000* requires the preparation of Water Resource Plans – and where necessary, Resource Operations Plans – which ensure that water is equitably managed to preserve our quality of life and our aquatic ecosystems. A Water Resource Plan details what the Government aims to achieve for a catchment's social, economic and environmental needs, while a Resource Operations Plan details how these objectives will be achieved.

3.1 Water Resource Plans (WRPs)

Water Resource Plans, one for each catchment, provide a blueprint for future sustainability by establishing a framework to share water between human and environmental needs. They are developed through detailed technical and scientific

assessment as well as extensive community consultation to determine the right balance between competing requirements for water.

Generally, a Water Resource Plan will apply to a catchment's rivers, lakes, dams and springs and, if necessary, underground water and overland flow. A plan is developed by assessing the size and nature of the resource so we can ensure that water allocation occurs within sustainable limits.

A Water Resource Plan may also provide for a water trading system to be established. Trading is expected to be an incentive to improve the efficiency of water use, as irrigators will be able to sell and profit from any water they save.

A Water Resource Plan may provide for new water allocation for future water needs following consideration of the extent to which water is being taken under current entitlements, the efficiency of present and expected future water use, alternative water sources, including water savings from improvements in water use efficiency, and the likely timeframe in which additional water will be required. Following finalisation of the plan, further assessment is required to determine the best way to make the new water allocation available, which may include consideration of water supply infrastructure.

3.2 Resource Operations Plans (ROPs)

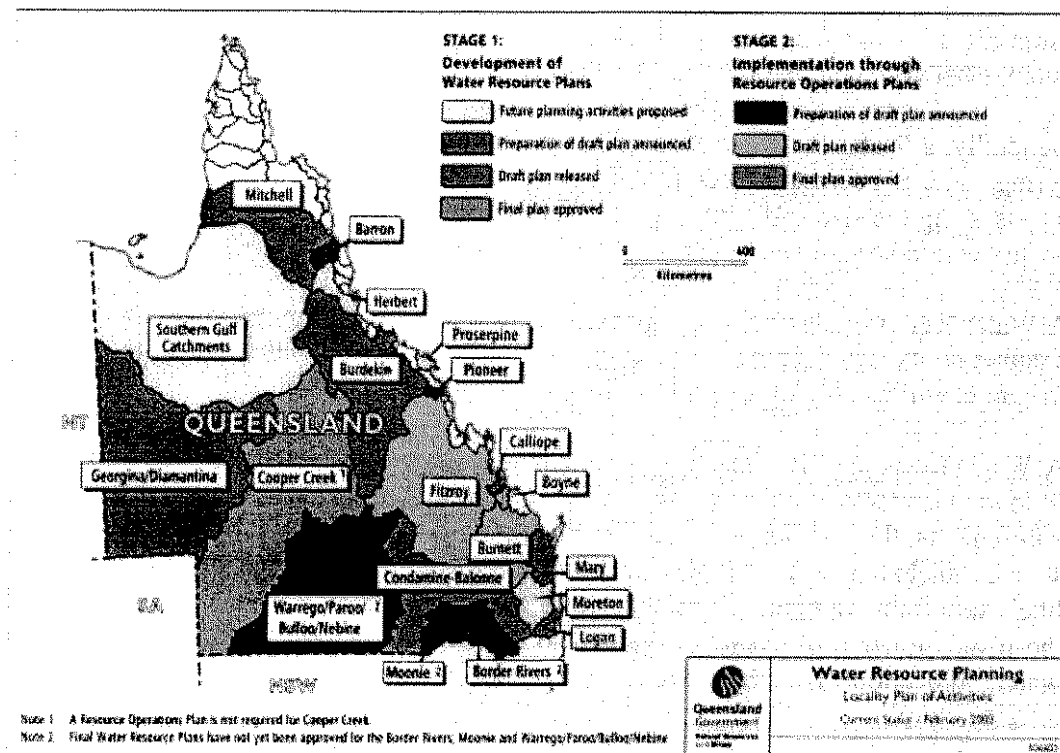
ROPs state how the chief executive will sustainably manage water to which the plan applies. Where necessary, Resource Operations Plans will be developed to establish rules for water trading and to specify how water use will be managed in parallel with environmental needs.

Resource Operations Plans will initially focus on areas where water use is greatest before expanding to cover entire catchments. Issues addressed include water releases from dams, distribution to users, environmental flows and water trading rules.

Together the WRPs and ROPs will:

- Allow transparent sharing of water to protect environmental and human interests
- Make sure water users' allocations are secure for the life of the WRP
- Ensure that new allocations will be issued only if they can be sustained without undue environmental harm
- Establish a basis for water allocations in nominated areas to be traded (transferred to another site or use), subject to important safeguards
- Protect the health of rivers and underground water reserves.

The attached map shows the progress of WRPs and ROPs throughout Queensland as of 11 February 2003.



4.0 Land and Water Management Planning & Water Use Planning

The *Water Act 2000* allows for the regulation of water use through two mechanisms – Land and Water Management Plans (LWMPs) and Water Use Plans (WUPs). A LWMP is a property level plan prepared by, or on behalf of, an individual landholder, whilst a WUP is a district or catchment level plan that is prepared by the Department of Natural Resource and Mines at the direction of the Minister. A LWMP relates to the use of water for irrigation purposes whilst a WUP covers water use generally.

A LWMP identifies natural resources, risks from water use and sets out proposed sustainable land and water management practices at the property level. Its primary purpose is to document on-farm resources and strategies that prevent or avoid degradation of land and water resources. To be approved the plan must address certain performance requirements set out in guidelines prepared under the Act.

The current legislative triggers for the requirement of a LWMP are the purchase of either traded water or new allocations made available for irrigation purposes. The recipient of the allocation is required to have a plan approved by the Department of Natural Resources and Mines before the purchased water is used.

Additionally, where water is being used for irrigation purposes on land identified in a WUP as land requiring a LWMP, all irrigators within the WUP area are required to prepare a LWMP.

The requirement for LWMPs is not retrospective. Existing entitlement holders (of licences and interim water allocations) and those who purchase land with an existing entitlement attached with no requirement for a LWMP, are not required to prepare a

LWMP. Those who acquire water through a temporary trade arrangement are currently not required to prepare a LWMP.

LWMPs have been a requirement for new water allocations in Emerald and Mareeba-Dimbulah irrigation schemes. There are currently 142 LWMPs in Mareeba covering a total area of 5,751 ha with the total volume of water covered by the plans being 22,454 ML. In Emerald there are 65 LWMPs covering a total area of 4068 ha and a total volume of 13,565 ML. Water trading in these areas and finalisation of water resource plans and operations plans throughout the state will increase the areas and volumes of water covered by LWMPs.

The LWMP requirement has also led to the preparation of 'voluntary' LWMPs by landholders in a number of areas. Other means of promoting sustainable practices in irrigation water use include industry-led best management practice programs and codes of practice. Sugar cane, cotton and fruit and vegetable growers' organisations have each developed materials and processes to encourage their members to critically examine their enterprises for sustainability and to adopt planning approaches based on continuous improvement.

5.0 Riverine Management Planning

Recognising that each river system has unique characteristics making it virtually impossible to provide sufficient management guidance via State-wide policies and practices, the Department of Natural Resources and Mines has initiated a program to develop individual riverine management plans. Through a consultative process, these plans clarify and quantify in each catchment the department's policy on certain issues, such as riverine quarry material allocations, constraints on disturbing the riverine environment, and rehabilitation requirements. The plans are used by the Department to guide its decisions on applications to disturb riverine environments and to allocate riverine quarry material. The plans do not address flow-related issues, which are covered in statutory water resource plans, although there are advantages in undertaking the two planning processes in parallel to maximise the use of information and community input. This approach is being partially trialled in the Mary River basin at present.

Riverine quarry material-based plans have been completed for the Logan, Mary, Proserpine, Black and Upper Brisbane River systems. A broader-based plan is presently being developed for the Logan-Albert basin, incorporating the existing interim quarry-based plan. The riverine management planning process is undergoing a review under the Australian Business Excellence Framework model and is piloting an improved process in the Logan-Albert project. The relative priorities for developing such plans in catchments across the State has been established through a risk assessment that identified the need and urgency for policy direction in each catchment based on current stream condition, threatening processes and external drivers such as the Reef Protection Plan, NAP plans, Murray Darling Basin programs, etc.

6.0 Improved On-farm Water Use and Productivity

6.1 Rural Water Use Efficiency Initiative

The Rural Water Use Efficiency Initiative is a Queensland Government program delivered in full partnership with industry to improve use and management of available irrigation water. Significant funding over four years to June 2003 through the Department of Natural Resources and Mines has assisted Queensland's irrigation industries achieve high competitiveness, profitability and environmental sustainability.

The Initiative is presently targeting four major agricultural industries – Sugarcane, Cotton and Grains, Dairy and Lucerne, and Fruit and Vegetables – and is being delivered primarily through their grower organisations. Any improvements in water use efficiency are available for increasing agricultural production by the irrigator. The aim of the initiative is to increase agricultural production by \$280 million which is equivalent to an additional 180,000 megalitres of irrigation water improvements annually. General farm and irrigation industry profitability is expected to improve along with environmental benefits including reductions in run-off of pesticides and nutrients. It is estimated that the Initiative will create 1600 jobs in regional Queensland. An evaluation of how well the Initiative has met these targets will be completed after the Initiative finishes in June this year.

The Initiative is also helping to fund a number of industry-specific research and development projects selected to provide vital information on improved irrigation water management techniques. Research is being carried out on methods of reducing evaporation losses from farm water storages and a range of ways of reducing water losses from irrigation water supply and distribution systems.

Another part of the Initiative is the Financial Incentives Scheme (FIS), a \$12 million program launched in January 2001. This also assists farmers to achieve best practice irrigation water management by facilitating the adoption of water efficient approaches, such as the use of soil moisture monitoring equipment and upgrading to more efficient irrigation systems. At present, every dollar invested by government under the FIS has been matched by irrigators with \$3 of their own.

Updates on the progress of Rural Water Use Efficiency Initiative, in particular the final evaluation, will be available at <http://www.nrm.qld.gov.au/rwue>

6.2 Possible Future Development of Program

The Departments of Primary Industries and Natural Resources & Mines are currently developing a new, broader program to capitalise on the achievements, skills and social capital developed under the Rural Water Use Efficiency Initiative. This new program is still being formulated and the Queensland Government has not yet had the opportunity to consider its merits. **It is not Government policy at this stage.** But industry associations and relevant government departments are keen to ensure that the work done in the Initiative and the staff resources, skills and relationships built over the life of the RWUEI are carried into the future. The RWUEI has been seen as a highly effective model for achieving change. The current widespread pressure to improve impacts from agriculture evident in the Reef Plan and in the NAP and NHT

also prompt the need to expand the program to natural resource management issues other than water use, particularly water quality. Government commitments to improving outcomes in sustainable management of natural resources (including the regulatory framework for allocation of natural resources provided by the *Water Act 2000* and the *Vegetation Management Act 1999*, the Reef Water Quality Protection Plan, and the National Action Plan for Salinity and Water Quality (NAP)) are dependent on the uptake of sustainable agricultural practices.

The aim of the Sustainable Agriculture Production Systems Initiative is to accelerate the adoption of sustainable agricultural practices to achieve:

- more profitable agricultural and associated industries;
- sustainable natural resource use and protection of the quality of those resources; and
- sustainable rural communities that can adapt to changing markets, technologies and demands for advanced natural resource management outcomes.

While the Initiative is still in its early design phases, it is envisaged it will be a program of awareness, development and extension activities (supported potentially by incentives) and characterised by:

- a focus on **on-ground action**, ie. improving uptake of sustainable practices, as distinct from either a focus on research or planning instruments such as Property Management Planning or Environmental Management Systems (although linked to these approaches). Essentially this entails a focus on awareness and education, extension, demonstration, peer group work, economic analysis etc
- Government agencies working together and in partnership with **industry associations** to maximise implementation and to help build their capacity, with the ultimate aim of greater industry self-sufficiency in natural resource management.
- **innovative and flexible program design** adapted to the needs of particular industries and/or regions, including the regional priorities set by the Regional NRM planning groups established under NAP and NHT. Innovative, contemporary and cost-effective approaches to extension will be explored.
- **an integrated and whole-farm approach** to natural resource management issues. This will include better aligning existing government and industry programs which focus on single issues.
- improving the **application** of the Government's **research** activities on the farm and improved links between the Government's research agenda in sustainable production systems and implementation on-ground.

7.0 Effluent Re-Use

7.1 Strategy

The Queensland Water Recycling Strategy is a whole of Government initiative aimed at maximising water recycling in an efficient, economic and environmentally sustainable manner without adverse health effects.

Each year over 300,000 megalitres of effluent are produced in Queensland. Most of this effluent is disposed of into the waterways of the State. More than 11% is currently recycled, mainly on golf courses, sporting fields and agricultural land. There are increasing social, economic and legislative demands to improve on current

methods of managing this effluent. Treated sewage, industrial and rural effluents and stormwater are increasingly seen as an untapped source of water. Greater use of this resource has the potential to relieve pressure on our natural environment and support opportunities for economic development.

However, progression toward this was being hindered by a lack of coordination to prevent costly and unproductive overlaps, initial acceptance by the community of many recycling practices, guidance on best management practice procedures and knowledge of recycling possibilities and problems specific to Queensland conditions. This motivated the Department of Natural Resources to lead development of a Government wide Queensland Water Recycling Strategy. The Strategy, now administered by the Environmental protection Agency, is a broad overall State Strategy. It does not address specific local or regional issues. Rather, it provides a framework to guide and support implementation of recycling programs that are efficient, economic, environmentally sustainable and without adverse health impacts.

While the Strategy rests on a multi- faceted approach it is recognised that a consideration of health implications associated with water recycling and the need to ensure community involvement and input underlies all strategy investigations and activities.

The Strategy, released in December 2001, is driven by an examination of recycling issues associated with four main technical areas. Specific Technical Advisory Groups (TAGs) were established to address each area. These were:

- Re-use Applications;
- Demonstration & Research;
- Consultation & Awareness;
- Stormwater Reuse.

Membership of the TAGs was drawn from experts across Community, Industry, Universities, State and Local Governments.

The TAGs were managed by an interdepartmental Steering Committee. To ensure the Strategy reflected whole of government needs, the Steering Committee comprised representatives from key Government Departments namely, Natural Resources and Mines, Environmental Protection Agency, Health, Education, Primary Industries, State Development, and Local Government and Planning.

Finally an Independent Reference Panel, chosen through a public call for nominees and Minister appointed representatives ensured community and industry were also involved in the Strategy's development. This Panel examined all documentation from the Strategy and provided independent advice to the Minister on the direction and output of the Strategy.

The outputs of the Queensland Water Recycling Strategy consist of policy statements, possible changes to legislation where considered necessary, guidelines for local Governments, implementation strategies, public and industry education, ongoing monitoring programs, discussion papers and initiation of demonstration and research proposals.

More information on the Strategy can be obtained from
www.epa.qld.gov.au/sustainable_water/

7.2 Lockyer & Darling Downs Proposal/s

The South East Queensland Recycled Water Project (SEQRWP) is a proposal to recycle effluent from selected Brisbane, Ipswich and Logan City Councils' Waste Water Treatment Plants (WWTPs) by initially further treating this effluent to appropriate industry standards and then reticulating it to industrial and agricultural water users in the Warrill, Bremer and Lockyer Valleys and the Darling Downs.

Several studies have been conducted to assist in assessing the economic and environmental sustainability of the proposal. These include:

- Socio-economic impact analysis
- Hydrogeological and salt transfer modelling
- Sustainability of irrigation practices using effluent
- Evaluation of impacts of removing effluent from Moreton Bay
- Review of project's capital and operating costs

As the project is still in the feasibility stage, no decision on involvement has been made by local, State or Commonwealth Governments.

7.3 Eli Creek & Maryborough Projects

7.3.1 Eli Creek Effluent Irrigation Re Use Scheme

For many years the sewage treatment plant at Eli Creek in Hervey Bay discharged treated wastewater (effluent) to Eli Creek from where the creek enters Hervey Bay. Concerns had been expressed about the impact of this wastewater on water quality in Eli Creek and Hervey Bay because the wastewater contains nutrients that can cause algal blooms.

The Hervey Bay City Council, as part of its obligations to meet environmental obligations of the World Heritage listing of Fraser Island, thus elected to minimise discharges of treated wastewater to Eli Creek and thence Hervey Bay, by redirecting treated effluent to inland areas for irrigation by constructing the Eli Creek Effluent Irrigation Project.

The project, a joint initiative between the Council and the Maryborough sugar industry, utilises sewage effluent from the Hervey Bay City Council's sewage treatment plant at Eli Creek to irrigate 455 hectares of caneland, two golf courses, turf farm and an area of improved pastures. The project includes a balancing storage, pumping station, an 800 ML effluent storage dam and 9.2 kilometres of pipeline and pressurised pipeline system.

The Dundowran Nikenbah Water Board administers the irrigation component of the scheme.

The Eli Creek Effluent Irrigation Scheme has been operating for successfully for over 5 years, and has proven to very beneficial economically as well as environmentally, with excellent yields achieved over the years.

From the commencement of the Scheme on 1 August 1997, approximately 70% of the treated sewage effluent has been reused and this is has resulted in a significant reduction in nutrients levels discharging to the marine environment, with an annual reduction of approximately 40 tonnes of Nitrogen and 9 tonnes of Phosphorus.

Typical Production Improvement in Sugarcane Wastewater Irrigation-Eli Creek July 2001

Farm Type	Tonne Cane/Hectare	Tonne Sugar/Hectare	Income/Hectare (\$)
Dry Farm	60	8	2,800
Irrigated Farm	85	11.5	40253
Improvement with Wastewater Irrigation	40%	45%	45%

Cane Farms which benefit from the scheme have recorded up to a 60% yield increase and improved CCS.

Effluent Reuse

Period 1/1/02 to 31/12/02	Flow (ML)	Flow (ML)	Total Flow (ML)	Area (Ha)	Area (Ha)	Total Area (Ha)
	Eli	Pulgul		Eli	Pulgul	
Total Flow to STP	1813	1245	3058			
Reuse						
○ Cane	941	118	1059	400	74	474
○ Turf	57	50	107	14	18	32
○ Golf	180	0	180	50	0	50
○ Backup Irrigation	85	708	793	20	120	1403
Total Reuse			2139			696 Ha
Water use (ML/ha)						3.07

The multiple use of wastewater in the irrigation scheme will provide significant commercial and environmental benefits to the region, including:

- significant reduction in wastewater discharges to Eli Creek. Only in extreme rare wet weather events will discharges occur to Eli Creek;
- reduced nutrient loadings to Eli Creek and Hervey Bay, reducing the potential for algal blooms;

- increased sugar cane production through availability of wastewater for irrigation. No water was available for irrigation prior to the scheme other than limited volumes from farm dams;
- increased water availability for irrigation to two golf courses and a turf farm;
- reduced fertiliser use as nutrients from the wastewater provide beneficial gains in production;
- efficient removal of nutrients in the wastewater through re-use on the cane farms and turf farms which have regular harvesting operations.

A major feature of the wastewater irrigation scheme is its multiple uses and benefits. Another feature is the close interaction that has occurred between Council and the users of the scheme to ensure that individual requirements and competing interests have been taken into account in assessing the scheme's final components.

Notable technical aspects of the scheme are as follows:

- By providing a storage at the treatment plant to attenuate peak flows that occur during wet weather, it has been possible to minimise the size of the pipeline to the sugar cane farms, which are located some distance from the plant, and hence the cost of the pipeline. The wastewater that is stored can be re-used later instead of ending up in Eli Creek.
- Another storage of 800 ML capacity (16 months storage) has been provided in the vicinity of the sugar cane farms to enable water to be used at peak rates during irrigation periods, which only occur for a portion of the year. During the remainder of the year the storage will gradually fill. The 800 ML storage will also provide improved water quality.
- Council's farm will be used to manage irrigation water use and availability. If there is excess water available, irrigation will be increased on Council's farm; if there is a shortage of water, irrigation will be reduced. The optimum area of Council's farm was determined by computer analysis so that there will be the minimum risk of overflow to Eli Creek but also a minimum risk of no water being available when required.
- The scheme is fully automated and simple to operate. When canefarmers require water they will need only to switch on their irrigator. Each farmer, however, will have a set allocation of water.

7.3.2 Maryborough Sewerage Effluent Reuse Scheme

Treated effluent has been pumped into the Maryborough's major waterway, the Mary River, since 1930.

Based on the success of the Eli Creek Effluent Irrigation project the Maryborough City Council in 1999 proceeded to undertake planning for the construction of an effluent reuse irrigation scheme in the historic Saltwater Creek/ Island Plantation area of the Maryborough district.

The project is nearing completion and will supply 11 cane farms in the area with irrigation water for the first time by the end of February 2003, boosting productivity by an estimated 25 tonnes per hectare and producing immediate and ongoing benefits for the environment.

An 11ha detention dam with a capacity of 700 ML is the centre piece of the effluent irrigation project. It is capable of storing 100 days of discharge. The scheme has also involved the construction of a pipeline from the treatment plant to the detention dam.

An additional 600 hectares of additional cane land will come under irrigation this year from the Maryborough Effluent Reuse Scheme. The scheme will have a major impact on production in the Island Plantation Area and bring an end to uncertainty of water supply.

7.4 Wastewater for Hardwood Plantations

The Queensland Government has initiated a program for utilisation of sewage effluent for hardwood plantations. A series of trials undertaken since 1999 by the Queensland Forest Research Institute (QFRI) indicate that such use has capacity to provide substantial economic, environmental and sustainable use benefits including:

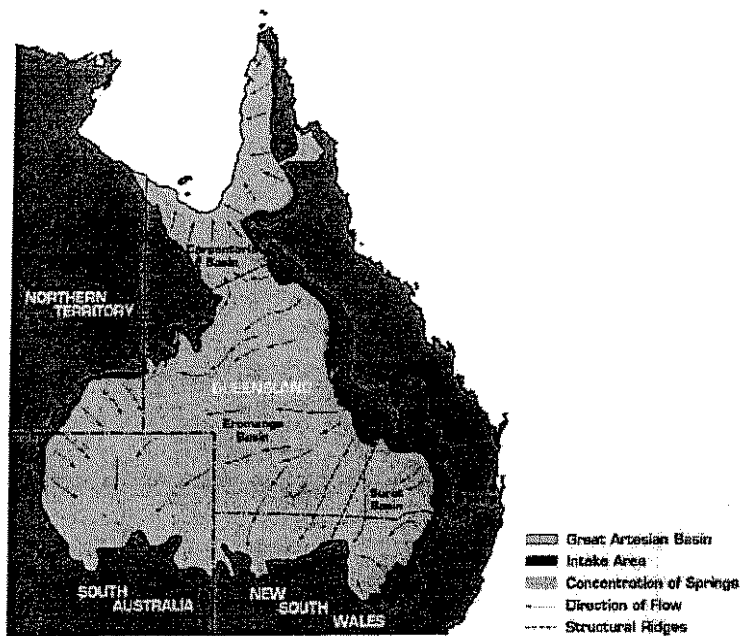
- satisfying the need for efficient, effective and ecological disposal of municipal wastewater
- avoids the need for expensive upgrades of existing treatment plants in the increasing move towards zero discharge limits
- capital costs and operating costs for irrigated plantations of this type are less than those to establish new secondary sewage treatment plants
- assists in fulfilling the Queensland Government's commitment to the phase-out of supply of hardwoods from State native forests by 2025, and gives capacity to meet consequent future demand for hardwood sawlogs through a plantation resource
- trees will provide an income and employment and business opportunities when processing the timbers at times of clear fall.

8.0 Great Artesian Basin Sustainability Initiative

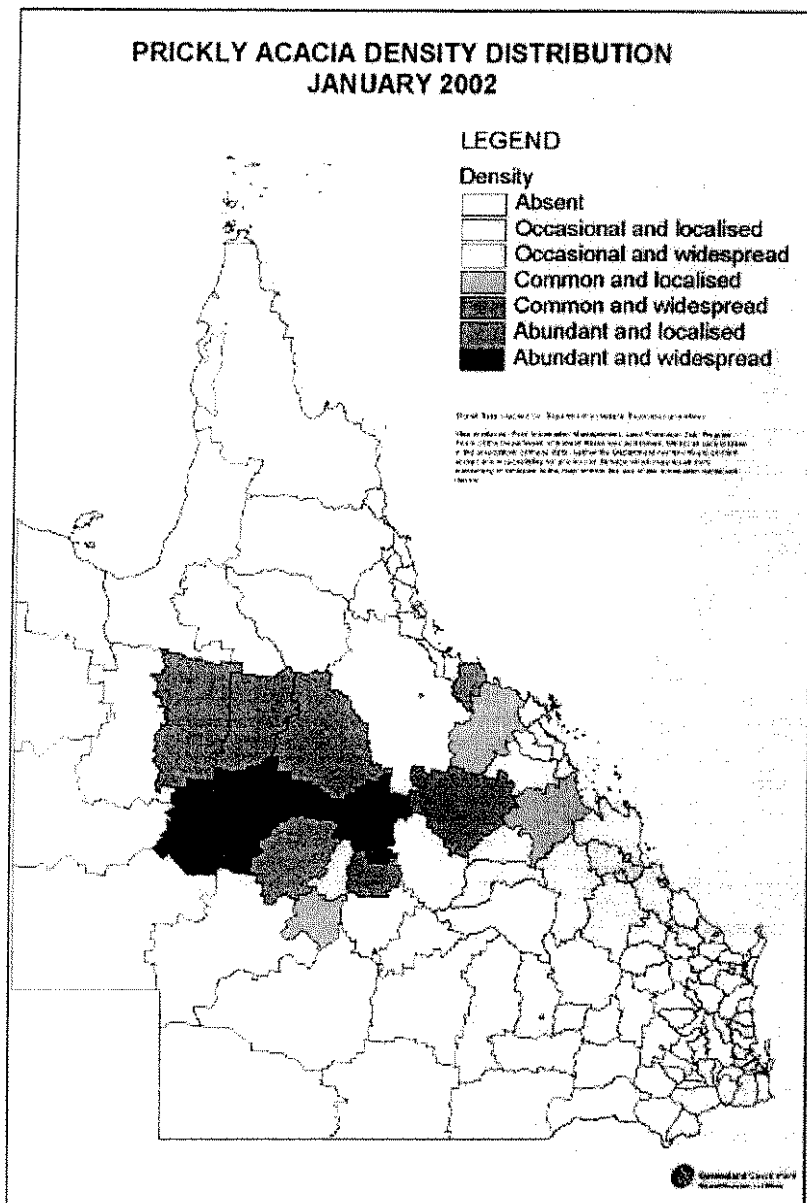
In 1989, the Commonwealth and State Governments initiated the Great Artesian Basin Rehabilitation Program to repair, or plug and replace bores flowing uncontrollably. At the start of the program the number of bores flowing uncontrollably was estimated to be more than 1380 basin-wide. The Bore Drain Replacement Program began in southwest Queensland in 1993 to provide assistance to bore owners to replace bore drains with piped systems. For the first three years of the project the Queensland and Commonwealth Governments shared 80% of the cost of the systems. Subsequently for two years, National Heritage Trust funding was made available to match contributions by the State. Collectively these earlier funding programs resulted in 347 bores being rehabilitated and 1892 km of bore drains being replaced with piping.

Since July 1999 under the Great Artesian Basin Sustainability Initiative (GABSI), an additional 80 bores have been rehabilitated and 1631km of bore drains have been replaced. The works undertaken between 1989 and 2002 have resulted in annual water savings now reaching 79,500 ML/year. The Initiative provides financial and technical assistance to landholders to rehabilitate bores and replace bore drains with piped systems. The Initiative aims to encourage the sustainable use of Basin groundwater, and consequently to maintain and enhance dependent social, economic and environmental values of the Basin.

The Great Artesian Basin (GAB), one of the world's largest source of artesian water underlies 1,750,000 sq km of Australia including most of Queensland. The GAB provides the bulk of water to many inland areas and is often the only source of water. Uncontrolled bores and excessive water extractions from the GAB have reduced Basin' pressures by over 80 metres in some locations and have reduced flows to its springs significantly since the bores were first drilled. About three-quarters of the 240 spring groups recorded are now no longer flowing. The remaining active springs have substantially reduced flows placing their biodiversity under significant threat.



The number of remaining uncontrolled artesian bores in Queensland numbered 533 in July 2002 whilst the length of remaining bore drains totalled 15,700km. The water wastage from the bores and bore drains is a major problem. Only 5% of water flowing into bore drains ends up being used for consumptive purposes. Up to 95% of water is lost from bore drains through leakage and evaporation. This waste not only results in declining aquifer pressure but also significant environmental degradation through the spread of prickly acacia and the provision of feral pig habitat.

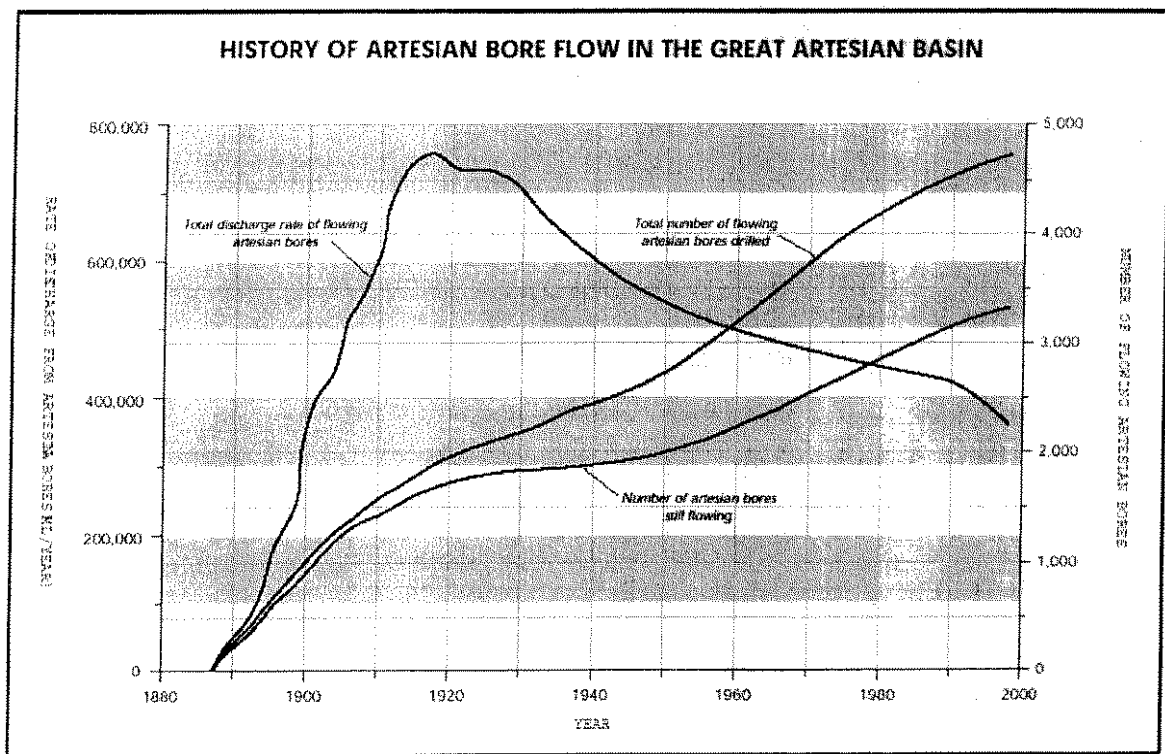


Recharge of the GAB aquifers results from direct infiltration of rainfall and watercourses into the outcropping sandstone aquifers and by leakage through unconsolidated sediments overlying the aquifers. This recharge occurs mainly in the outcrop areas of the aquifers along the elevated, eastern margins of the Basin. These are mainly located on the western slopes of the Great Dividing Range. Recharge along the western margins of the Basin, in the arid centre of the continent, takes place where aquifers are exposed or overlain by sandy sediments. Recharge water moves very slowly through the Basin at 1 – 5 m/annum, hence the rate of replenishment is very low. In large groundwater systems such as the GAB, water extracted today could have entered the aquifer many thousands of years ago. Studies have indicated that water near the centre of the Basin is more than one million years old. Hence the Department has identified the need to identify the Maximum Acceptable Extraction Rate from all of the aquifer units that make up the Basin.

The Great Artesian Basin is the most extensive groundwater resource in Queensland. Some early bores drilled into the GAB produced discharges of more than 10 ML/day. Initial high flows and pressures decreased rapidly as numerous bores were drilled. In 1914 the total flow from bores in the GAB peaked at 750,000 ML/annum. However, this rapidly declined in the 100 years since development began together with a pressure drop of over 80 metres of head.

Water pressure is a key attribute of an artesian water resource providing a relatively low cost supply in remote areas. Wasteful flow of water through uncontrolled discharge from artesian bores, both above and below ground level, is resulting in the continuing decline in artesian pressures in parts of the Basin and consequent loss of access to artesian water by an increasing number of water users. Reduced natural discharge in response to declining artesian pressure is also causing detrimental impact on groundwater dependent ecosystems and associated biodiversity values.

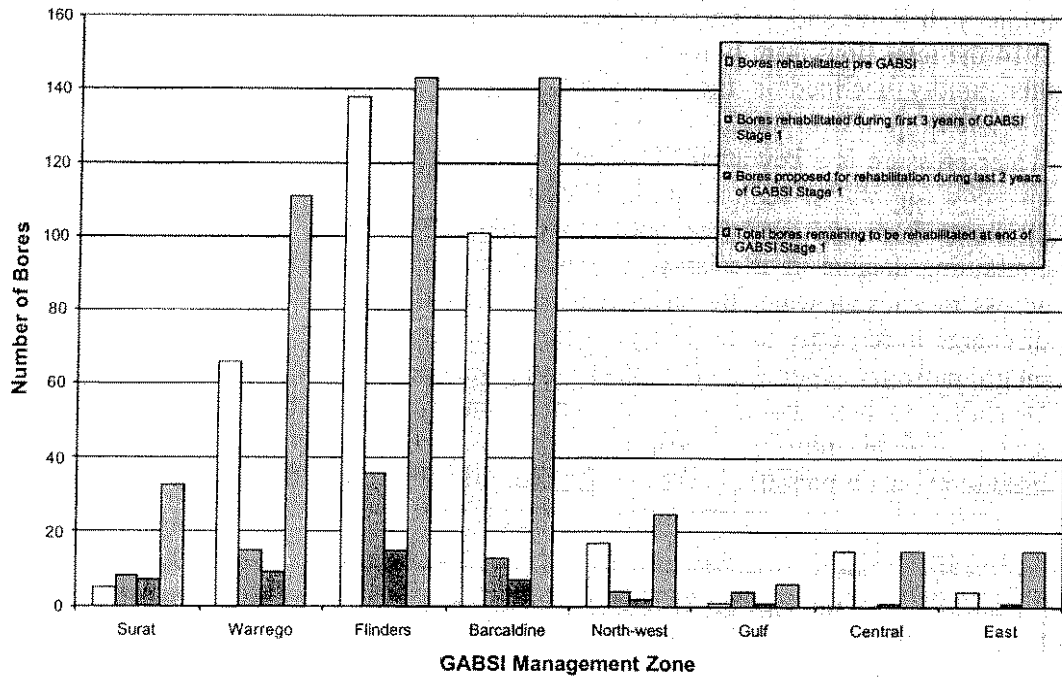
Discharge to bore drains is causing environmental degradation, contributing to the spread of feral animals, weeds and pests, wasting water which could otherwise be used to maintain pressure in the aquifer and provide for beneficial uses.



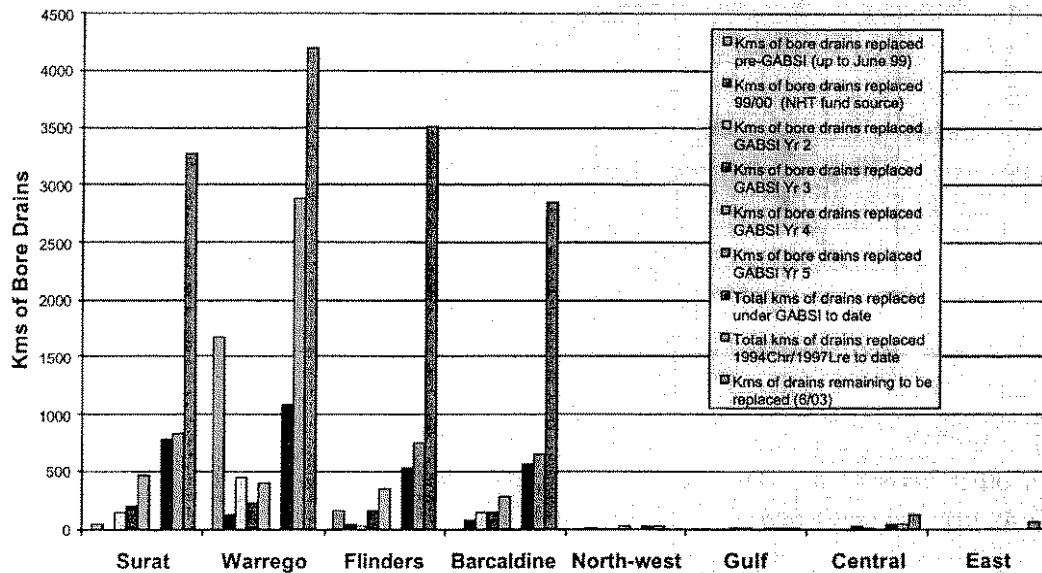
The Initiative has reduced the rate of pressure decline in many parts of the Basin and in other parts of the Basin a modelled long-term pressure recovery of 5m resulting from the first two years of GABSI is expected.

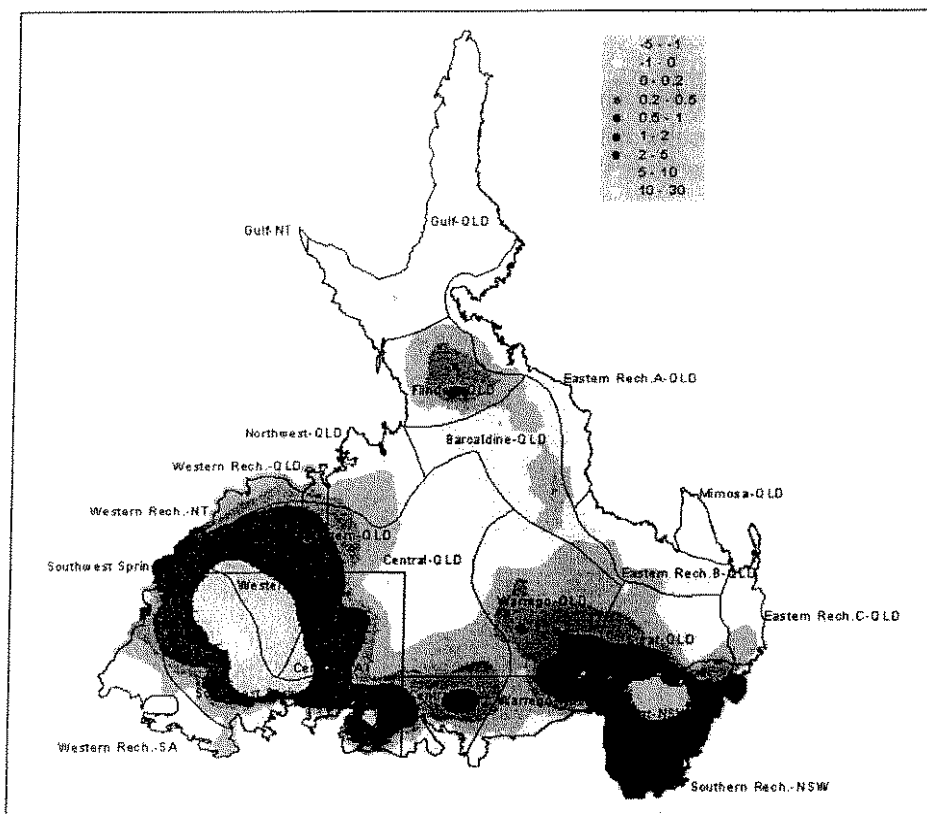
Subsequent programs are envisaged to enable the completion of all bore rehabilitation and bore drain replacement works by June 2014.

Great Artesian Basin Bore Rehabilitation Progress



Great Artesian Basin Bore Drain Replacement Progress





Typical recovery pressure contours resulting from the first 2 years of GABSI works.

9.0 Applications of Climate Forecasting

The following information was provided in the Queensland Submission to the *House of Representatives Inquiry into Future Water Supplies for Australia's Rural Industries and Communities*. In the interests of brevity, the relevant appendices that formed part of that submission have not been attached to this submission.

9.1 Overview of Scientific Research

The few modelling studies that have been conducted demonstrate the complexity of scientific research on linking climate change with current water management. Nevertheless they suggest that use of climate forecasting information would be beneficial. These findings are further supported by the increasing industry adoption as experience with climate forecasts increases and improved access develops.

These studies indicate that, despite the recent progress in climate science, much more scientific research will be required to adequately address the future issues of current and future climate change. The application of recent research findings to water management suggests that further improvements in reliability and targeting of climate forecasts can be achieved.

The following key points summarise findings that are most relevant to sustainable water use in rural and regional Australia.

9.2 Current Situation

- Australian water authorities at present take a very conservative approach to managing water resources systems. Most authorities assume that the water resources available for the coming months consist only of the present stored water, less evaporative and distribution losses, plus the minimum historically observed inflows
- Human (anthropogenic) effects over the last hundred years on the climate system include land cover change, pollution, increasing greenhouse gas concentrations and stratospheric ozone depletion and hence future (and current) climate changes are expected..
- Abawi *et al* (2001) conducted surveys of irrigators of upper Condamine, Border Rivers, Namoi & Gwydir catchments to assess climate knowledge and information needs. From 174 responses, the key findings were:
 - a) two-thirds of irrigators had access to computers;
 - b) growers had good knowledge relating to climate forecasts with about 30% using SOI in farm decisions;
 - c) the mass media, the Bureau of Meteorology and QDPI's FaxBack were important sources of seasonal climate outlook information;
 - d) there was demand for an information system which provides forecasts on water supply ahead of the irrigation season.
- Current types of climate forecasting systems may not necessarily provide sufficient lead-time (months, years) in forecasting for certain decision to be made effectively (e.g. especially through early to mid-autumn) or have the capacity to forecast climate change impacts.

9.3 Problems and Issues

- A major limitation of studies, in terms of the future management, is the lack of understanding of recent trends and in particular the inability of current science to untangle the effects of inter-decadal variability, climate change, global warming, other anthropogenic effects, and background variability.
- Building on the success of governments' previous R&D funding, further investment will be required to:
 - a) identify those key decision-points in rural and other industry where climate forecasting would have impact. Provision of climate forecasting per se is not enough.
 - b) link climate forecasting R&D with rural industries and communities.
 - c) address key issues at the catchment scale or which address issues to do with water quality.
- NR&M and QDPI, and the National Climate Variability Program have made considerable investments in the application of climate science in Queensland over the last twenty years. Bolstering of any further funding of climate science activities is likely to have a synergistic effect on efforts already made in agriculture and pastoralism.

9.4 Where to in the Future

Surveys indicate that a reasonable proportion of growers are already receptive to the use of climate information, including climate forecast information, giving a base to further support extension and communication of this information. The needs for the future include developing Decision Support Systems that enable water users and water managers to better manage water resources given improved information on

supply and risk; and developing extension programs to improve the adoption of better risk management strategies.

The issue of the impact of climate change on rural industries and, especially the linking of climate change models with seasonal climate forecasting systems, needs to be addressed. There is also a need for an integrated system that links climate forecasting systems to those key decision points in rural industry or policy.

9.5 Conclusions

The above key points and details in the appendices attached to the original submission to the House of Representatives Inquiry indicate high climate variability continues to occur on annual and inter-decadal time scales. Global warming and other anthropogenic changes are likely to contribute to increased climate variability placing even greater pressure on rural industries to better estimate available water resources and their utilisation. Climate science has provided some understanding and forecasting capability. It is also clear that rural industries are now more receptive than ever to receive and use sophisticated climate data in their operations. Further investment in climate research and its application will improve existing skill and provide the basis for adaptation to a future uncertain climate.

As outlined in this submission, there is a role for the Commonwealth to facilitate in this area to bring together the studies and work of Commonwealth, State and local agencies so that the best knowledge can be utilised by all.

10.0 Annual Water Statistics

Each year, the Department of Natural Resources and Mines publishes the *Annual Water Statistics*. It lists various water-related activities carried out by the State Government including waterworks licences and permits development approvals for both surface water and groundwater licences and water supply schemes, allocations, and metered use. There is a list of infrastructure, an overview of drought and rainfall levels, and brief summaries of the Department of Natural Resources and Mines activities such as drilling, the Great Artesian Basin Sustainability Initiative and the Regional Flood Mitigation Program.

The report can be downloaded from the Department of Natural Resources and Mines website at www.nrm.qld.gov.au/water/statistics/ or a copy obtained from Upali Jayasinghe on (07) 323 93226.

10.1 Water Licensing

Whilst the *Annual Water Statistics* does not contain much information on water usage directly, some of the wide range of water-related activities that it does cover provide at least an indication of the trends in water usage. In particular, the tables on water licences and other authorities issued might be interpreted as giving an indication of the level of usage of the State's water resources.

As background, all rights to the use, flow and control of water in Queensland are vested in the State. This means that the Government has the responsibility for the sustainable management of water resources. This is done through an entitlement process that includes water licences, water permits (for short-term use), interim water

allocations and water allocations. Under the *Water Act 2000* a water licence is required for the proposed taking or interfering with water in a watercourse, lake or spring for purposes such as:

- stock use on non-riparian properties
- irrigation
- industrial use
- the storage of water behind a weir
- the storage of water excavations that are within or connected to a watercourse.

A water licence is not required when taking water from a watercourse, lake or spring for emergency public purposes or for fighting a fire threatening to destroy a house or dwelling. The taking of water for domestic purposes and stock watering on the land adjacent to a watercourse, lake or spring without a water licence is also authorised under the *Water Act 2000*. A water licence is also required for taking artesian water anywhere in the State. Artesian water is defined as underground water that once tapped by a bore, would flow naturally to the surface. Taking subartesian water (water that has to be pumped to the surface) also requires a water licence for some purposes and in some areas. These areas and uses are defined by a regulation or by a water resource plan. Generally, water can be taken for non-intensive stock and domestic purposes without a licence.

In some areas of the State, a water licence may also be required for the taking or interfering with overland flow water. Overland flow is that water that runs off the land from rainfall or has broken outside the bed and banks of a watercourse during a flood. The areas where a licence is required for overland flow water are designated in water resource plans. To date, no areas have been designated, but it is expected that this will occur as more water resource plans are finalised.

Assessment of an application for a water licence involves consideration of the following:

- information provided by the applicant and submitters
- existing water entitlements
- relevant WRPs and ROPs
- information on the effect on natural ecosystems
- physical integrity of the water source
- policies developed with the local community
- sustainable resource management strategies
- may include any convictions the applicant has for offences to water-related legislation in Queensland or interstate.

When a water licence is issued, it will contain conditions that must be met by the licensee. Such conditions could include:

- requirements to monitor how much water is taken
- threshold flow conditions that must be met before water can be taken
- the maximum rate of take
- the maximum volume of water that can be taken.

The *Water Act 2000* deals solely with the taking of water, or the interference with the flow of water and the authority is given by the different instruments outlined above. The approval of new works (such as the drilling of a subartesian bore, the installation

of a pumping unit, or the construction of a weir) also is required, and this is provided under the *Integrated Planning Act 1997*. This allows for concurrent assessment of applications by government agencies and local authorities. The processes are separate but the legislation is symbiotic in nature. It is necessary to have prior resource manager's consent to take or interfere with water, usually in the form of a current water entitlement given under the *Water Act 2000*, before an approval to develop any associated works can be sought.

Most of the authorities in existence today were originally issued under the repealed *Water Resources Act 1989*. The repealed authorities provided for the authorisation of the works, as well as setting out conditions concerning the allocation and management of the water. This Act was repealed in its entirety by April 2002 and transitional arrangements deemed existing authorities as being both an authority to take or interfere with water, and an approved development under the planning legislation.

Many authorities issued under the repealed legislation dealt with low resource impact matters, or only with matters of significance relating to the construction of works. Consequently the Department of Natural Resources and Mines is removing the need to hold authorities to take or interfere with water in many areas, especially with relation to the taking of water solely for stock watering or domestic use. However, an authorisation for the development of new works (such as the drilling of a subartesian bore) under the *Integrated Planning Act* is still required in many of these deregulated areas.

(i) Number, type and purpose of Authorisations current under *Water Act 2000*

These instruments are mostly managed in a system known as the Water Entitlements Registration Database (WERD). This system administers all authorities given to consumers who take supplemented water (water taken that is supplied by a water service provider) and also those who take or interfere with unsupplemented water. At the start of 2003, the number of current entitlements and permits administered by the Department is approximately 61,000. These consist of:

- 8,900 – unsupplemented water licences which take underground water and are used for mainly for irrigation

- 2,100 – unsupplemented water licences which take underground water and are used for other high usage purposes (urban, industrial, mining, stock intensive...etc)

- 22,100 - unsupplemented water licences issued which take underground water for stockwatering and/or domestic uses, gardens.. etc (including users within the Great Artesian Basin)

- 12,800 - unsupplemented water licences which take water from watercourses and are used mainly for irrigation. This includes users who conserve high flows by harvesting into a storage

- 1,700 – unsupplemented water licences which take water from watercourses and are used for other purposes (non-riparian stock and/or domestic, urban, industrial, aquaculture....etc)

- 4,400 - water licences which interfere with the flow of water in a watercourse (storages, weir, dams, stream diversions .etc)

- 6,600 – supplemented interim water allocations held by SunWater (a Qld Government Owned Corporation) customers and used mainly for agricultural enterprises

1,400 – supplemented interim water allocations held by SunWater customers and used mainly for other purposes (urban, domestic, distribution losses, industrial, mining)

900 – water or riverine permits etc (riverine protection permits, temporary water permits, riverine quarry material allocation notices)

(ii) Number of water related development approvals under *Integrated Planning Act 1997*

Water related development authorities are also managed within the Water Entitlements Registration Database (WERD). Currently the system administers about 66,000 authorised developments, consisting of:

36,300 – bores as works which take subartesian or artesian underground water within declared areas

23,900 – pumping units taking water from watercourses, self assessable riparian stock/domestic pumps

4500 – storages, weirs and dams on watercourses, referrable dams not on watercourses

1700 – other types of assessable works, eg levees, diversion channels, excavations, bank protection works.

10.2 Conclusion

The key issue to emerge from a review of the *Annual Water Statistics* is the lack of direct information on rural water usage, particularly by crop and region. In an attempt to at least begin to address this gap, the Department of Natural Resources and Mines provided detailed input to Australian Bureau of Statistics' client/ stakeholder consultation during 2002, identifying the need for specific questions relating to water use to be included in the relevant survey/ census instruments. This input included the ABS Agricultural Statistics Program User consultation in July 2002 and that for the revised ABS *Water Account* survey instrument in the period October - November 2002.

Final advice from ABS as to what survey vehicle is going to be used to administer questions relating to water use etc. has not yet been received. It is anticipated that ABS will make an announcement in this regard in the near future, but it is hoped that ABS will agree that the collection of water use information is a priority for the Bureau.

11.0 Urban Water Use

It is recognised that urban water use falls outside the Terms of Reference of this Inquiry. However, urban water use, and urban water use efficiency in particular, is often linked by members of the general community and other stakeholders to rural water resource availability and use. This is certainly the case at times of drought as evidenced in recent times. For this reason, a brief summary of the Queensland's efforts in relation improving urban water use efficiency is included.

To address urban water conservation issues, the Government established the WaterWise program eight years ago. This highly successful program has a range of initiatives designed to assist local governments and community groups throughout

Queensland reduce per capita water consumption, promote urban water use efficiency and promote urban water conservation.

Over the past eight years, the WaterWise program has provided educational activities to more than 500,000 primary school children; assisted more than 70 local governments and aboriginal communities undertake water efficiency initiatives and water conservation programs; developed plumbing industry training and accreditation programs; targeted Council's system losses; developed a sustainability program with Commerce Queensland that targets water, waste and energy reduction in Queensland industries; facilitated more than 20 water audits of local councils and some 160 audits of commercial establishments; undertaken in excess of 12 shower rose rebate programs with shires throughout Queensland; and participated in the national program *5A Water Conservation Rating and Labelling Scheme*, which provides consumers with information on the water consumption characteristics of domestic products such as, showers, toilet suites, dish washing machines, clothes washing machines, tap ware, flow control devices and urinal flushing mechanisms.

12.0 Drought Relief Initiatives

The current drought is the worst on record in terms of land area affected across Australia. In Queensland, approximately 25% of the land area of the State is either the subject of an Exceptional Circumstances (EC) declaration; or is pending decision on an EC application.

Widespread rain in more recent weeks has not significantly altered this situation across Queensland (except in some coastal areas). Many water storages and sources remain severely impacted and the consequential impact on the agricultural sector, secondary users, the urban sector and communities has been, and will continue to be, considerable. Moreover, new understanding of the drivers of climate variability and change in Eastern Australia suggest that droughts such as we are experiencing at present are likely to be a more regular occurrence in the future.

Since 1992, Queensland's approach to drought assistance has been based on self-reliance principles, including facilitating an attitude and capacity for drought preparedness and management in a highly variable climate. Such a self-reliance policy complements other initiatives such as sustainable agriculture, improved climate forecasting, and the pursuit of alternative and more efficient water use options.

Within this policy, there is also a recognition that producers may face exceptional drought events (as with the current event), beyond normal risk management practices. In such circumstances, Government assistance may be required, both in the immediate term and also for the drought recovery phase. In Queensland, this assistance takes the form of financial assistance, social and community services, and advisory services, including:

Drought Relief Assistance Scheme (DRAS)	Freight subsidy assistance for the transport of fodder, stock drinking water, livestock returning from agistment and restocking post drought
Electricity tariff relief	For pumping irrigation water, waiving of fixed charge components and deferral of payment
Queensland Transport	Waiver of farm vehicle inspection fees, temporary cancellation of vehicle registration, drought road train permits and increased vehicle height limit when transporting hay. Families that drive their children to school or connect with a school bus run may be eligible for an increase in the school transport allowance
Land rent deferrals	For lessees seeking hardship relief because of drought
Stock route fee variation	For producers grazing stock routes
Apiarists	Capacity for annual instalments for permits on DPI Forestry Land in drought declared shires rather than up front payments
DPI Farm Financial Counsellors	Help producer clients manage risk by preparing financial analyses to identify and assess the economic impact of their options, and to develop strategies and plans for adjustment. They also help farmers to negotiate arrangements with banks and other organisations
Drought Recovery Loans	To assist primary producers recover from and return to business post-drought
Business Support Scheme	Once an exceptional event is declared, the State contributes 10% to the scheme
Queensland Health	Provides information about public health services (including mental health, rural health and women's health)
Department of Families	Telephone Service providers referrals to a range of local support services including, but not limited to, regional Domestic Violence Services and family support services
Feedlink	Electronic trading site established to help facilitate trade of stockfeed
Queensland Centre for Climate Applications	Weekly information published and telecast

Rainmain-Analysis Software	To assist in producer forecasting for climate variation
DroughtPlan	Property planning software to assist producer planning and drought preparedness
Whopper Cropper	Crop planting software
Managing for Climate and Weather Workshops	Advisory workshops for producers
FutureProfit	Whole farm planning training
Building Rural Leaders Workshop	Program designed for individuals who are seeking skills to enable them to work with others and advance themselves and their business, industry or community
DPI Call Centre	General advisory and referral service

In February 2003, in recognition of the severity of the drought, its widespread impact across the agricultural sector and the need for equity in provision of drought assistance, the existing drought measures were reviewed and expanded. Three new measures were introduced incorporating:

- *Drought Carry-on Finance* - subject to eligibility criteria, producers from all primary industry sectors (except retail nurseries) can access low interest loans of up to \$100,000 through the Queensland Rural Adjustment Authority (QRAA). Loans carry no fees or charges and can be used for purposes such as fodder, freight, fencing, machinery repairs, rates or de-silting farm dams. This is in addition to the current DRAS, however producers eligible to access DRAS must choose between the two schemes i.e. they cannot access both.
- *Drought Recovery Scheme* - extends the subsidised loans for drought crop and restocking available through QRAA to all sectors (except retail nurseries), up to maximum aggregate of \$200,000, with a limit of \$200,000 for purchasing breeding stock, \$100,000 for other stock purchases, and \$60,000 for cropping. This is subject to eligibility criteria.
- *Mortgage Duty Relief* - for primary producers eligible for Exceptional Circumstances Assistance, the Government will provide relief to those eligible producers refinancing their existing loans

In more recent weeks, there has been renewed calls from the Commonwealth level for review of national drought policy when the drought event ends, including Exceptional Circumstances funding, with a view to ensuring its equity and effectiveness.

While the Queensland Government would welcome such a review, it would also need to be recognised that drought impacts in Queensland are likely to persist longer than in southern States due to the predominant summer rainfall pattern. A review would need to be undertaken in full and direct consultation with States and industry, to ensure the impacts of any change on State drought initiatives and resources can be appropriately considered. Moreover, any change would need to take into account the differences in regional circumstances between Queensland and the southern States.

13.0 Water Infrastructure Development

The Department of State Development (DSD) is the lead agency for water infrastructure development and for the facilitation of major water infrastructure projects in Queensland.

As explained in the *Guidelines for Financial and Economic Evaluation of New Water Infrastructure in Queensland (2000)*, water infrastructure projects follow a four stage process, involving:

- Resource Management Planning;
- Project Identification and Preliminary Assessment;
- Detailed Project Assessment;
- Development and Reporting

DSD plays a role in the first three stages as follows:

Planning

DSD actively participates in the water resource planning activities led by the Department of Natural Resources and Mines (DNRM). These DNRM-planning activities relate to Water Resource Plans (WRP), Resource Operations Plans (ROP) and associated regional water supply strategy planning requirements. DSD primarily assists DNRM to gather and analyse information about business and industry needs.

Project Identification and Preliminary Assessment

The State Government has established an indicative set of water infrastructure development priority areas as part of the State Infrastructure Plan – Strategic Directions Paper.

The analysis contained in Part C of the State Infrastructure Plan – Strategic Directions paper would suggest that consideration of water infrastructure needs in Gladstone, Rockhampton, Cairns, Bundaberg, Bowen-Collinsville and the Dawson Valley, as well as parts of the South East and North West regions, should be given priority.

DSD will progressively review, update and expand assessments of water infrastructure development priorities to support future State Infrastructure Plan – annual implementation plans. These assessments necessarily draw heavily on information developed in water planning activities led by DNRM as mentioned above.

As indicated on page 14 of the *Guidelines for Financial and Economic Evaluation of New Water Infrastructure in Queensland (2000)*, all new water infrastructure proposals will be carefully considered for competitive delivery, unless there are valid reasons to the contrary. Any unsolicited project proposals relating to large amounts of unallocated water in a WRP would be considered in accordance with the principles and procedures detailed in appendix 1 (Exclusive Mandates) of the *Public Private Partnerships Guidance Material – Value for Money Framework (2002)*.

Detailed Project Assessment

Project proposals that reach this advanced stage are initiated and led by private sector or commercialised public sector proponents. In some limited circumstances, the Government may choose to initiate the development assessment process for a particular water infrastructure project to address an emergency situation or an urgent regional development constraint. However, in most cases, an existing water service provider (eg. SunWater, SEQWater) will initiate pre-feasibility work in response to an identified or emerging water supply shortfall.

DSD provides tailored project facilitation assistance to project proponents based on the needs of the proponents and any relevant Government priorities being addressed by the project proposal. This assistance can involve, for example, advice on statutory approval requirements and the coordination of Government agencies involved in statutory approval processes such as those associated with the *Water Act*, *State Development and Public Works Organisation Act*, *Integrated Planning Act*, *Nature Conservation Act*, *Environmental Protection and Biodiversity Conservation Act (Cth)* etc.

DSD also assists proponents to meet relevant policy requirements such as those detailed in the *Guidelines for Financial and Economic Evaluation of New Water Infrastructure in Queensland (2000)* and *Public Private Partnerships Guidance Material – Value for Money Framework (2002)*.

The extent of assistance that can be provided is dependent on factors such as a particular project proposal's consistency with WRPs/ROPs and the priorities identified in the State Infrastructure Plan. A project proposal in an area where there is no completed WRP would only be considered for facilitation in exceptional circumstances.

The Burnett River Dam and associated weirs are recent examples of projects that have successfully progressed through the pre-development process explained in the attachment.

Land purchasing, design and other pre-development activities for the Burnett River Dam and associated weirs are well advanced and the late 2003 target for the commencement of construction is expected to be achieved. These projects have been through a comprehensive assessment process, particularly in relation to economic and ecological viability, and the projects will generate substantial benefits for a region with urgent water supply needs and a recent history of underperformance in key social and economic indicators.

14.0 Waterways Sustainability through the National Water Quality Management Strategy

This Section details Queensland's compliance with the CoAG water reform framework in regard to implementation of the National Water Quality Management Strategy (NWQMS) as at February 2003.

Applying the NWQMS to ensure protection of its waterways, the Queensland Government has developed or is developing four key instruments:

1. A methodology to establish the Environmental Values of Waterways, using the methodology proposed in the NWQMS, as the basis on which water quality management can be progressed. The development of EVs are mandated in the Environmental Protection (Water) Policy 1997 and to date EVs have been developed for the river systems flowing to Moreton Bay through the *South East Queensland Regional Water Quality Management Strategy*, in Trinity Inlet (Cairns) and in the Condamine-Balonne. This methodology is being further refined in the Mary River catchment to ensure complementarity with the Water Resource Planning process, and has potential application to Regional Natural Resources Management planning process being undertaken through the NAP and NHT2.
2. Ongoing development of Queensland Water Quality Guidelines which will provide regionally appropriate environmental objectives in place of the national trigger values. Ongoing data collection—particularly in near pristine waterways—is needed in order to set meaningful and robust environmental objectives.
3. Application of the principles and frameworks advocated in NQWMS to the evaluation of licensed discharges to waterways. Queensland is working cooperatively with NSW and Victoria to develop guidelines for Industry and Assessment officers, and developing decision support tools to ensure consistent and transparent decision-making.
4. Review of the adequacy of water quality monitoring arrangements to meet current and future information and assessment needs for Queensland's waterways. Under current arrangements, EPA has primary responsibility for monitoring and assessing the water quality of estuarine and near-coastal waters, while the DNRM has primary responsibility for freshwaters. Based on the information needs defined, the government is seeking where appropriate, to develop regional, issues-based, partnership arrangements for monitoring with stakeholders that might include local government, regional NRM groups, industry, universities and local governments.

Consistent with the direction provided by the *Australian Water Quality Guidelines* to extend traditional 'water quality assessment' to 'river condition assessment', ongoing development of indicators and indices of aquatic ecosystem health is a core activity, albeit normally pursued in partnership with other research organisations. The Moreton Bay Ecological Health Monitoring Program is perhaps the best example of such a monitoring program in Queensland, encompassing marine, estuarine and freshwaters from Noosa to the NSW border, and using a range of novel monitoring and reporting techniques that more comprehensively report aquatic ecosystem health and link clearly to management outcomes and community engagement.

The Sustainable Rivers Audit of the Murray Darling Basin Commission is another such initiative in which the State has actively participated. This audit has been established to overcome the lack of consistent and detailed information on the health of the rivers of the basin. It recognises that biota (fish and macroinvertebrates) and biological processes are the fundamental measures of river health and has developed indices for these. The Audit is being designed to be an annual and comprehensive five-yearly review of the condition of waterways, to inform debate among the Basin community.

A major initiative in water quality management in Queensland has been the development of the *'The South East Queensland Regional Water Quality Management Strategy'*. This is a comprehensive, integrated water quality plan for South East Queensland waterways and catchments. It provides the framework for future management actions that are workable, practical and affordable. The strategy has been developed in light of the findings from detailed baseline monitoring and modelling of water quality indicators. It has established draft environmental values for waterways.

In August 2002 the State and Commonwealth Governments signed a Memorandum of Understanding on a joint approach to protecting the Great Barrier Reef from land-based pollution. The Great Barrier Reef Protection Plan (in development) has as its goal to halt and reverse the decline in quality of water entering the Reef, within 10 years. The Plan will identify practical actions to improve water quality and reduce impacts on the Reef's marine environment. Many of the actions identified in the Plan will be implemented through the Regional Natural Resources Management Plans developed as part of the NAP on Salinity and Water Quality and the NHT2. In particular, water quality targets developed in these regional plans will be consistent with the approach of the Australian Water Quality Guidelines of the NWQMS. The Trinity Inlet Waterways initiative, April 2002, is a strategy to integrate the core business activities of the key Agencies in the region - such as managing the Fish Habitat Area, the Marine Park, and managing Environmentally Relevant Activities. It is providing direction to local government planning.

The State's existing long-term water quality monitoring program is currently under review to ensure the scope of indicators together with the spatial and temporal coverage enable Queensland to adequately describe the condition of its water resources. Under the current timetable, a preliminary review and scoping is anticipated to be completed by June 2003.