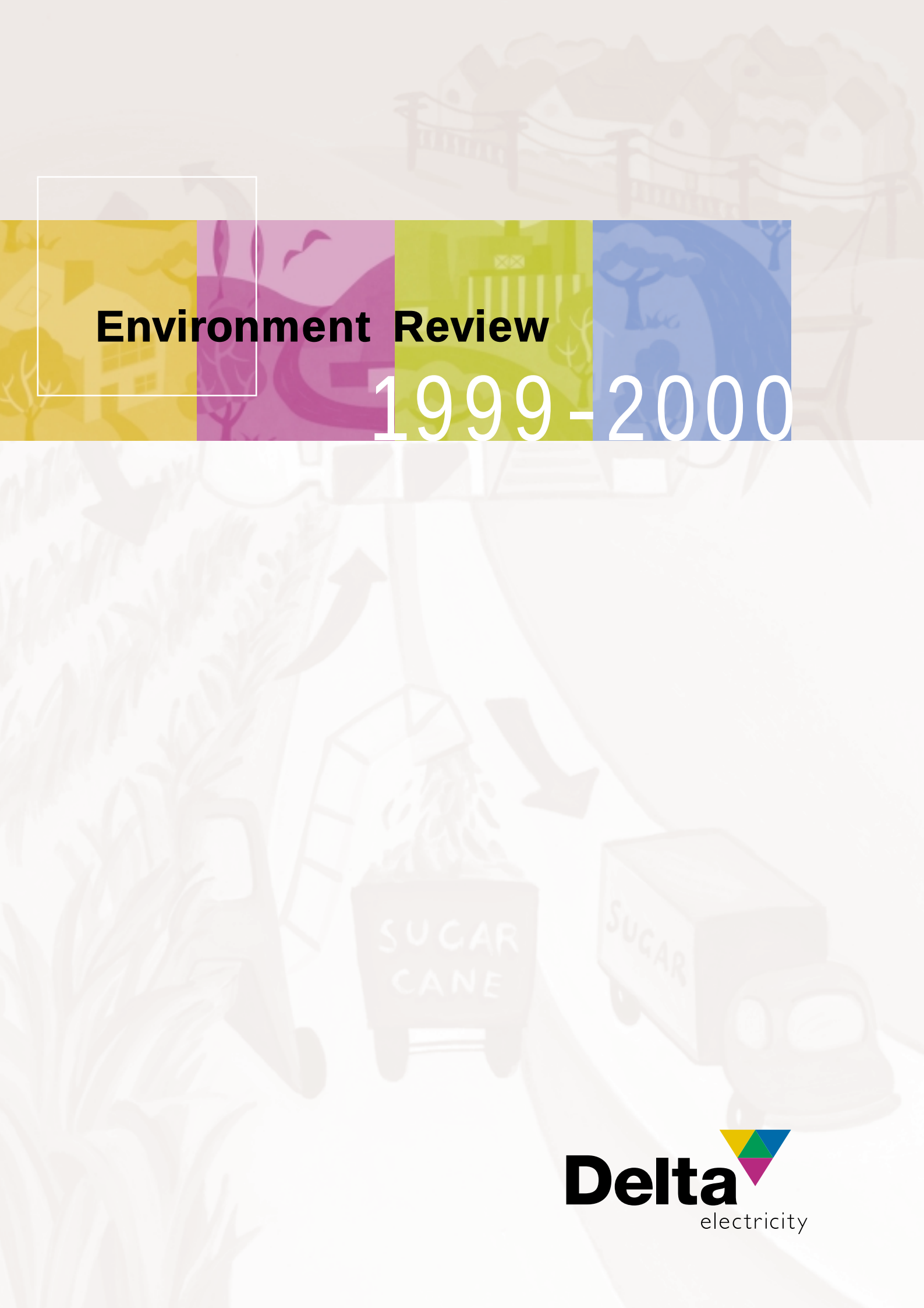
Environment Review

1999-2000



Delta
electricity

About this review

This review provides information about the environmental performance of Delta Electricity during the period commencing July 1999 to June 2000. The review aims to:

- provide an update of environmental performance against objectives and targets,
- inform Delta employees and local communities about initiatives for improving environmental performance, and
- demonstrate our commitment to continual environmental improvement.

We welcome your comments on this review and our progress towards meeting environmental policy objectives.

For further information please contact:

Suzanne Wheeler
Environment Officer
Delta Electricity
Munmorah Power Station
C/- Post Office
Mannering Park NSW 2259
Telephone: (02) 4390 1690
Facsimile: (02) 4390 1733
Email: suzanne.wheeler@de.com.au

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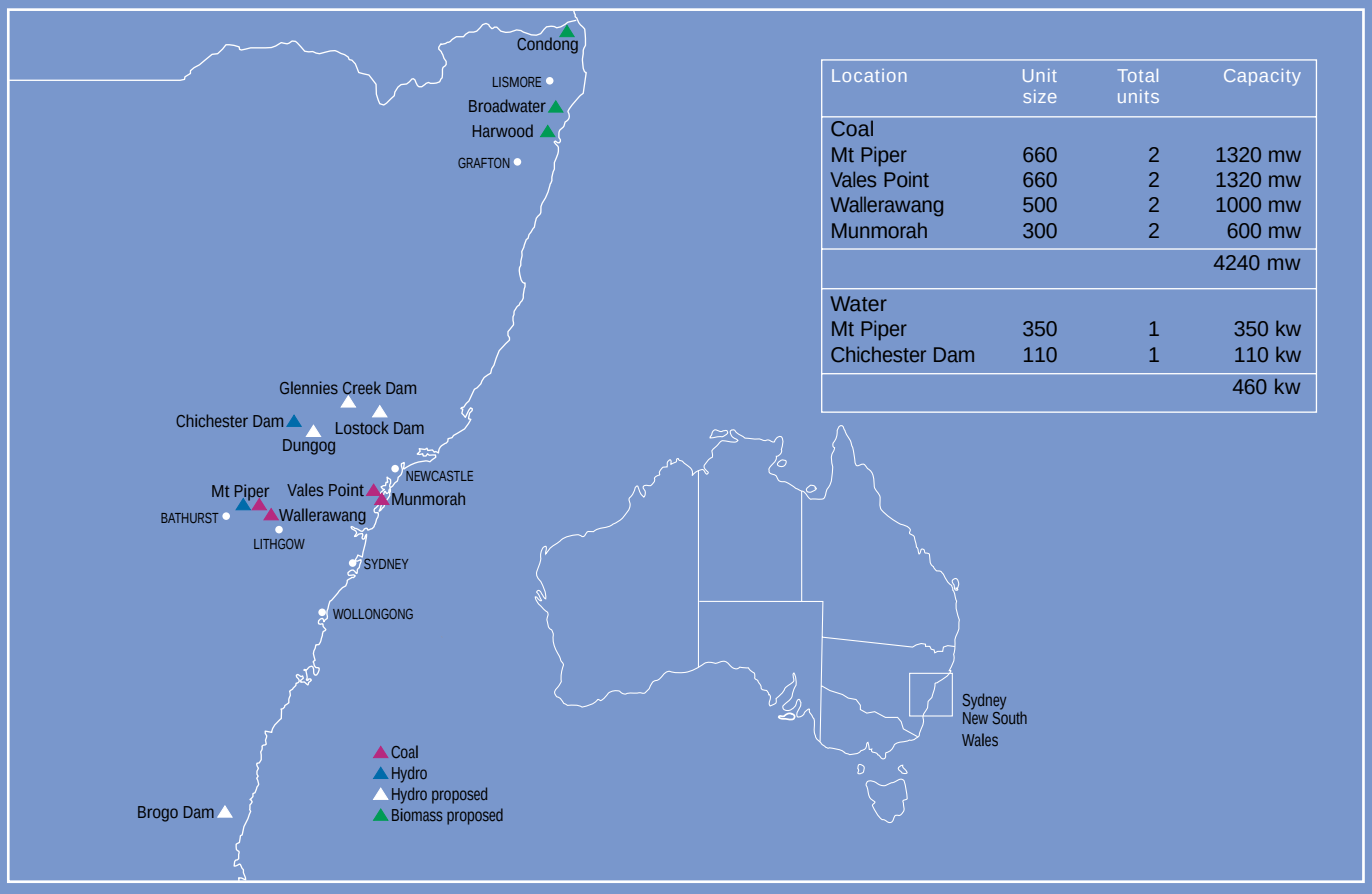


Location	Unit size	Total units	Capacity
Coal			
Mt Piper	660	2	1320 mw
Vales Point	660	2	1320 mw
Wallerawang	500	2	1000 mw
Munmorah	300	2	600 mw
			4240 mw
Water			
Mt Piper	350	1	350 kw
Chichester Dam	110	1	110 kw
			460 kw

Chief Executive's Report

In 1999, Delta Electricity produced its first Environment Report, covering the years since the Corporation's formation in 1996 through to mid 1999. This Review is produced as an update on the information in that Report, rather than as a stand-alone document. We decided on this form of reporting environmental performance because much of the information in the first Report will remain relevant.

Included in this Review is a summary of our performance against our environmental targets for 1999/00. It is pleasing to note that we have achieved the targets in several areas. We have set more ambitious targets for the next 12 months, which I believe to be both challenging and achievable. Our goal is continuous improvement in environmental performance in all areas. As part of this process Delta Electricity aims to achieve ISO14000 accreditation in 2001.

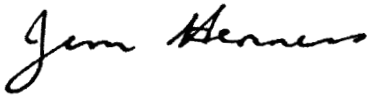
In our previous Report, we outlined several initiatives in the development of renewable generation. We have made considerable progress in the area over the past twelve months, with several mini-hydro installations either commissioned or being designed, trials of biomass co-firing, and further feasibility studies of the proposed joint venture bagasse-fired power stations in northern New South Wales. These, together with a number of efficiency improvements proposed for our existing coal-fired power stations, will be the basis of our contribution to reducing national greenhouse gas emissions.

For the first time, this report includes emissions reported to the National Pollutant Inventory (NPI). We first voluntarily reported a limited amount of data to the NPI in 1999 and this year we have expanded on the number of substances reported. To increase the validity of some of the emission factors used to estimate emissions, Delta Electricity is contributing to industry funded research to improve this process and provide more scientifically robust emission estimates.

I am particularly pleased to note a reduction in the number of community complaints and inquiries in 1999/00. Delta Electricity has made considerable efforts to improve its communication with local communities and to understand their issues of concern.

As a member of the Electricity Supply Association of Australia, we conducted an audit of our performance in a number of areas. Details of the audit findings have been included in this Review. Delta Electricity scored slightly below industry average in the areas of social responsibility and community participation, and we are determined to improve our performance in these areas.

In the latter part of this review we have introduced the concept of eco-efficiency reporting, as outlined by the World Business Council for Sustainable Development. The concept uses the inverse of the reporting methods used to date by most organisations, by expressing output as a function of environmental influence. This results in an "eco-efficiency index" that increases with improved environmental performance. We support the concept as a genuine attempt to bring uniformity, transparency and comparability to corporate environmental reporting.



Jim Henness

CHIEF EXECUTIVE
DELTA ELECTRICITY

Corporate Environment Policy

Through the commitment and skills of our people, Delta Electricity will be a leader in caring for our environment to ensure its preservation for future generations.

Delta's Objectives

To protect the environment by:

- Conducting operations in compliance with the principles of ecologically sustainable development;
- Operating the business in a safe, efficient and environmentally responsible manner;
- Understanding the potential for environmental impacts and avoiding pollution;
- Minimising the consumption of resources and the production of wastes;
- Minimising the impact of our operations on the environment and surrounding communities;
- Continually measuring, reviewing and improving our environmental performance.

To exhibit a sense of social responsibility by having regard to the interests of the communities in which we operate.

To comply with all statutory environmental regulations.

To promote environmental responsibility among our people.

This policy is supported by Standards and Procedures consistent with the principles of ISO 14001 Environmental Management Systems.

Environmental Targets

	objective	measure	target	outcome
1	Reduce or eliminate emissions or discharges	Average NOx emissions.	Less than 800 mg/M^3	Achieved at all sites except Mt Piper (822 mg/M^3)
		Particulate emission at precipitator stations.	Less than 100 mg/M^3	Vales Point 104 mg/M^3 average.
				Wallerawang 261 mg/M^3 prior to SO_3 injection installation.
2	Comply with statutory requirements	EPA licence breaches.	Zero	2 licence breaches at Wallerawang. Zero breaches at other sites.
3	Conduct operations in compliance with the principles of ecologically sustainable development	Sustainable water supplies to Mt Piper and Wallerawang.	Resolve Lake Lyell environmental flow.	New Water Licence issued with sustainable environmental flows for Coxs River.
4	Reduce greenhouse emissions	Carbon dioxide emissions sent out.	892 T/GWh	Actual 896 T/GWh sent out (899 T/GWh including N_2O and CH_4).
5	Use resources efficiently	Ash reuse.	100%	Increased usage from 21% in 1998/99 to 25% for year.
		Waste to landfill. Establish recycling programs.	Reduced.	Reduced by 80 tonnes on 1998/99 figure down to 355 tonnes for year.
		Reduction in energy usage.	5%	In-house energy use reduced by 5% on 1998/99 figure.
6	Improve environmental performance	Environmental audits at all Delta power station sites.	Audits completed. Recommendations addressed.	Facilities and Process, Environmental Management & Compliance audits completed. Action plans to address recommendations in place.
7	Implement effective land management	Number trees planted.	Plant 30,000 trees by 2000.	No planting this year. Major planting > 50,000 trees proposed for 2000/03.
8	Eliminate environmentally harmful materials	PCB contaminated oil removal.	Remove all PCB greater than 20 mg/kg by 2001.	High level transformers (>40 <50 mg/kg) drained and stored. Disposal being arranged.
9	Consider the interests of the community	Community consultation.	Consult with community on power station related issues.	Held 3 Community Access Regional Environment (CARE) Forums in Central Coast region. Numerous community meetings held on Coxs River Water Licence in Western Region.

Research & Development Initiatives

Development

An essential component for improving Delta's environmental performance is the development of energy alternatives that are both economically and environmentally sustainable. Delta's Development Group continues to investigate new initiatives ranging from co-firing biomass with coal, generating electricity from sugar mill bagasse, utilising coal mine ventilation as a fuel source and installation of mini hydro generators on existing rivers, dams, weirs or water supply pipelines.

COAL MINE METHANE

Methane gas is released in low concentrations from coal and surrounding rock strata during the process of coal mining. In higher concentrations it can form explosive mixtures with air. For safety reasons, it is diluted with large volumes of air and removed from mines by forced ventilation. Methane is also a potent greenhouse gas, around 21 times more greenhouse intensive than carbon dioxide.

Delta is working with the Powercoal mines on the Central Coast to explore the feasibility of directing low concentration methane gas (less than 0.5%) from nearby mines into power station boilers as a fuel source. This will convert the methane to carbon dioxide, thereby reducing the greenhouse impact by a factor of 20, whilst providing a valuable fuel source for the power station. The scheme is targeting a reduction of more than 0.5 million tonnes of CO_2 equivalent emissions.

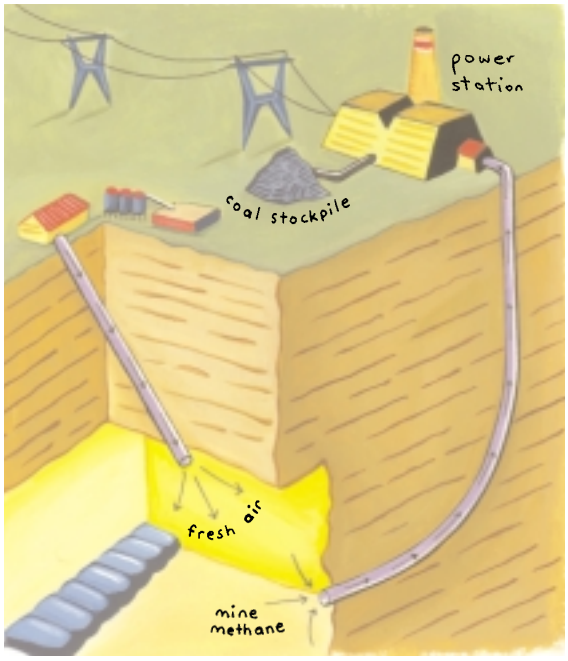
MINI HYDROS

Hydro generation is an extremely efficient and cost effective way of producing green energy as it does not require the construction of new dams.

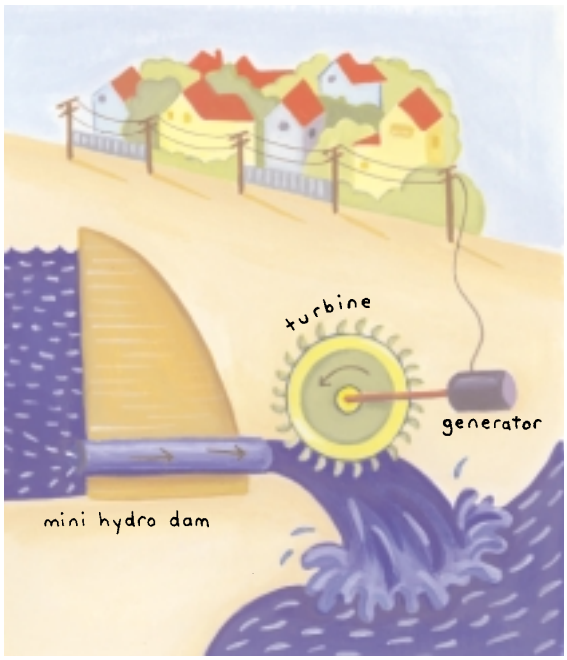
Delta currently operates a 350 kW mini hydro at Mt Piper Power Station and work has commenced on the installation of smaller units at Chichester Dam (110 kW) and Dungog Water Treatment Plant (130 kW).

Tenders have also been won with State Water to install mini hydros at Brogo, Glennies Creek and Lostock dams.

Coal Mine Methane



Mini Hydros



SUGAR MILLS

Delta Electricity, in a joint agreement with the NSW Sugar Milling Co-operative, is undertaking a feasibility study into the generation of renewable electricity using sugar cane fibre (bagasse) as the major fuel. New biomass power stations would be constructed at the Co-operative's three sugar mills at Condong (Tweed River), Broadwater (Richmond River) and Harwood (Clarence River). If fully developed, this project could produce up to about 700 GWh of renewable energy annually.

CO-FIRING WITH BIOMASS

The use of small quantities of renewable biomass fuels to supplement coal is currently being trialled at Wallerawang Power Station, using a blend of rough-sawn Radiata Pine sawdust from sustainable forestry sources. Other co-firing trials are due to commence in the near future for the remaining Delta power station sites.

Sugar Mills

Research

Delta's support for research activities mainly seeks to explore ways of improving the efficiency of power station operations. These and other projects assist Delta in reducing its greenhouse emissions. Internationally, Delta remains abreast of scientific and technical developments through associations with the International Energy Agency, the Electric Power Research Institute and CIGRE and nationally with the Electricity Supply Association of Australia and Bioenergy Australia.

COAL IN SUSTAINABLE DEVELOPMENT

Delta is a participant in the Co-operative Research Centre (CRC) for Coal in Sustainable Development, and was a key player in the Centre's development. Within the work of the CRC, results from life cycle assessments, scenario analyses and technology systems evaluations will guide technical research in coal utilisation towards the sustainability goals of high efficiency and low emissions. The outcomes are expected to assist with decisions regarding future directions for the Australian coal and power industries in a world moving toward sustainable development.

COMPUTATIONAL FLUID DYNAMICS

Delta has been working with CANCES (the Centre for Advanced Computational Engineering & Science) to develop in-house expertise in Computation Fluid Dynamics. Fluid flow computer models have been developed to diagnose and solve power plant problems. In particular one project has provided solutions which will improve the efficiency of Wallerawang condensers, resulting in reduced greenhouse emissions.

COOLING TOWERS

The University of Technology, University of NSW and Delta are working together to improve the efficiency of Delta's large natural draft cooling towers. Funding through the Commonwealth's SPIRT program has allowed the Universities to appoint two doctorate students to investigate methods of improving efficiency.

BIOENERGY

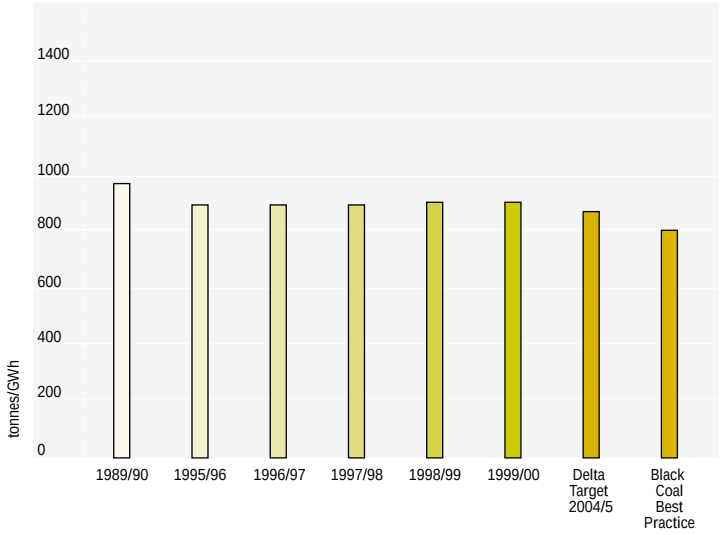
The University of Newcastle is assisting Delta with its efforts to develop renewable bioenergy. The University's Department of Chemical Engineering is investigating emissions associated with various forms of biofuels. It is also helping Delta look to future technical developments with a review of gasification technologies for electricity production.

Greenhouse

Carbon Dioxide (CO_2)

The current carbon emission rate for Delta is 7.1 per cent less than the emission rate of 1989/90. This was achieved by the commissioning of Mt Piper, one of Australia's most efficient coal fired power stations and reducing output of less efficient stations. The target emission rate for 2004/5 is 10.6 per cent below 1990 emission rate. This target will be achieved through the implementation of a number of initiatives detailed in the following table.

Carbon Dioxide Emissions



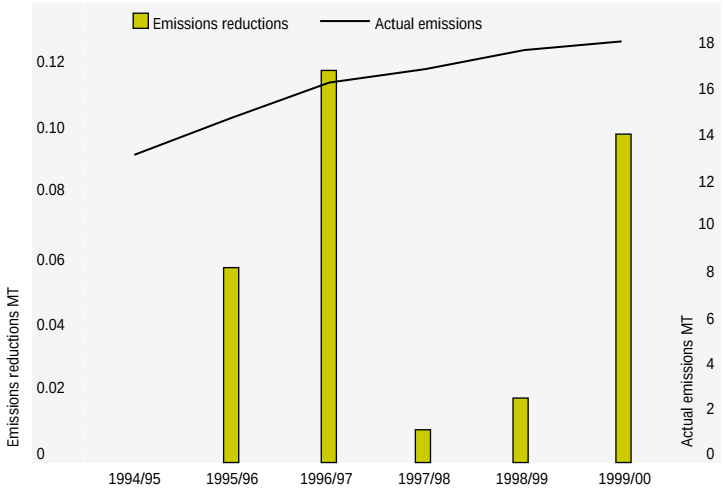
Greenhouse Initiatives	Potential Saving tonnes/year CO_2
Increasing thermal efficiency at each power station site	225,000
Co-firing with biomass fuel	150,000
Utilising coal mine ventilated methane as a fuel	500,000
Construction and installation of mini hydro systems	6,000
Utilising bagasse from sugar mills, as a renewable fuel for electricity generation	350,000

Greenhouse Challenge

Delta Electricity is conscious of the increasing community concerns about greenhouse emissions and has developed and implemented initiatives to reduce these emissions. In 1997, Delta Electricity joined the Federal Government's Greenhouse Challenge Program – a voluntary program to reduce greenhouse gas emissions.

The Action Plan contained in Delta's Greenhouse Co-operative Agreement demonstrates a commitment to environmental enhancement that will continue to guide its environmental efforts beyond 2000.

Greenhouse Challenge Program
Emissions reductions and Actual Emissions



Delta Electricity Greenhouse Challenge Cooperative Agreement: Progress Report for Year Ending 30th June 2000

I am pleased to advise that Delta Electricity has fully completed all but four of the fourteen items committed in our original Greenhouse Challenge Agreement action plan. Two actions were partially completed with further action proposed in later years. One action was partially completed with no further action proposed, and action has commenced on the remaining item. Work has also commenced on a further two actions added to our action plan in 1998/99.

In previous reports, Delta Electricity stated its long-term goal of developing sustainable renewable generation capability. I am pleased to report that progress has been made on these projects. Two micro-hydro projects will commence operation in 2000/01. Further micro-hydro projects are in the planning stage. Development of large-scale biomass generation using sugar cane bagasse has progressed to the financial evaluation stage.

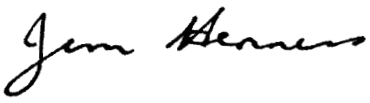
In addition, Delta is currently trialing biomass generation at our existing power station facilities, with a view to commercial implementation within the next 12 months. An investigation is proceeding into the use of methane drainage from an existing coal supply source. These projects are still at the investigation stage but have the potential to further reduce emissions by more than 1 million tonnes of carbon dioxide equivalent per year.

Our baseline emissions and reductions have been modified due to updated production levels and inclusion of additional gases in our accounting methodology. Our total revised baseline emissions for the 1999/00 year under static efficiency were18,528,039 tonnes of CO_2 equivalent. Through implementation of our revised action plan we estimate a reduction in greenhouse gas emissions of 0.5% has been achieved in 1999/00. Significantly greater reductions are expected from 2000/01 as the above mentioned projects are implemented

I confirm that all variations to our original agreement have been documented in this report, including:

- Actions that have not been achieved,
- Actions that have been delayed or abandoned, and
- New actions identified for coming years.

This report represents aggregated data only. Supporting documentation has been kept at sites to substantiate the information presented here. Should verification of the data be required, Delta Electricity would be happy to provide this information to the Commonwealth.



Jim Henness

CHIEF EXECUTIVE
DELTA ELECTRICITY

Environmental Performance Measures

In the process of producing electricity from the combustion of black coal, flue gases are released into the atmosphere containing oxides of nitrogen (NOx) and oxides of sulfur (SOx). Along with these flue gases is also the emission of a small amount of particulate matter. Strategies have been developed by Delta Electricity to reduce atmospheric emissions from all power station sites. Details of these measures and Delta's performance are provided in the following sections.

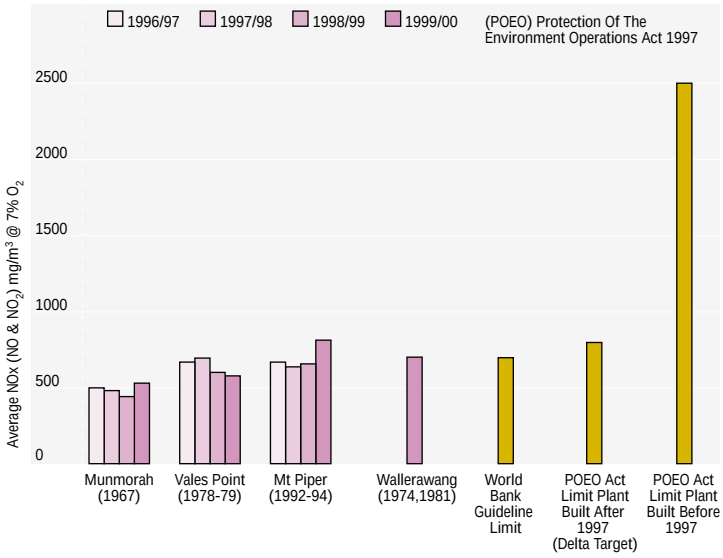
Oxides of Nitrogen (NOx)

The production of oxides of nitrogen (NOx) in flue gas is dependent on boiler design, coal characteristics and operating conditions. NOx emissions are generally higher at higher operating loads. Although all Delta Electricity plants were built before 1997, Delta has set a target average NOx emission rate of less than the NSW Clean Air (Plant and Equipment) Regulation limit of 800 mg/m^3 for plant built after 1997.

The Protection Of The Environment Operations Act 1997 prescribes limits for NOx emissions depending on whether the plant was built before or after 1997. All of Delta's power stations were built before 1997 and the applicable NOx emission limit is 2500 mg/m^3. In 1999/00, the highest emission rate for any Delta power stations was Mt Piper with a rate of 822 mg/m^3.

It should be noted that Mt Piper and Wallerawang NOx emissions for the period were determined by mass emissions equations, which may overestimate emissions. Mass emission monitoring has now commenced at Mt Piper and Wallerawang power stations. This will allow a more accurate determination of average NOx emissions for future reports.

Average Oxides of Nitrogen Emissions

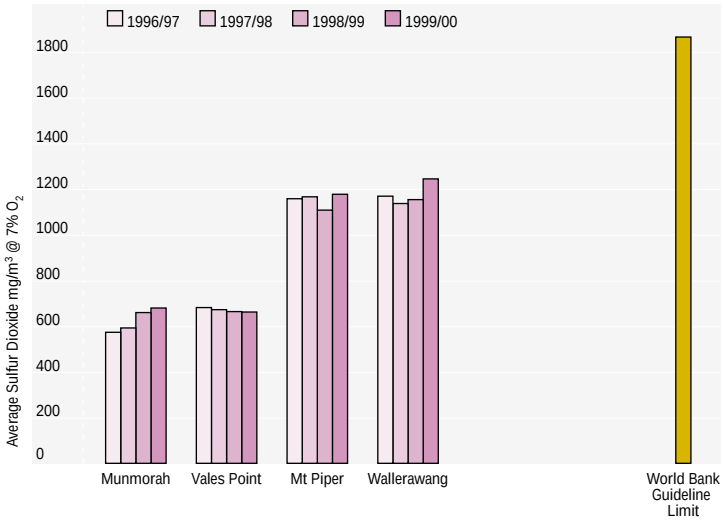


Oxides of Sulfur (SOx)

The amount of sulfur dioxide emitted from the combustion of black coal depends on the sulfur level in the coal. Coal used in Delta Electricity power stations contains 0.3% to 0.6% sulfur, which is very low by world standards. This means that our boilers do not require the installation of energy-consuming SOx scrubbing plant.

Whilst there are no oxides of sulfur emission limits in NSW, emission levels achieved by Delta sites in 1999/00 were well below the World Bank guideline limit for new projects. Both the level of SOx in flue gases at each power station site and the sulfur in coal are continuously monitored to ensure that our SOx emission levels remain at these low levels.

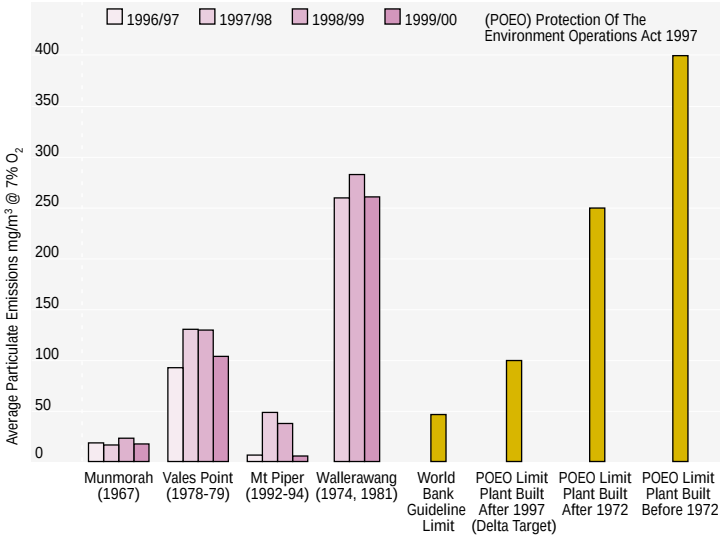
Average Sulfur Dioxide Emissions



Particulate Emissions

Particulate (dust) emissions from power station stacks depends on the type of flue gas cleaning equipment installed. Power stations equipped with fabric filters (Munmorah and Mt Piper) achieve dust emission levels well below the World Bank guidelines for new plant. Power stations such as Vales Point and Wallerawang are equipped with the less energy-consuming electrostatic precipitators. These power stations emit dust at a slightly higher rate, but still well below the NSW statutory limits. The planning approval for construction of Wallerawang Power Station's unit 7 was before 1972 and thus the NSW Clean Air (Plant and Equipment) Regulation limit of 400 mg/m^3 applies to that unit only. Emission data for Wallerawang Power Station in the following graph is an average of both units 7 and 8.

Average Particulate Emissions



Although all stations were constructed before 1997, Delta Electricity has set an ambitious target of average dust emission from precipitator stations of less than the NSW Clean Air (Plant and Equipment) Regulation limit of 100 mg/m^3 for plant built after 1997. To achieve this target, a number of investigations have been conducted at Wallerawang and Vales Point.

To improve the efficiency of the Wallerawang electrostatic precipitators, flue gas conditioning with sulfur trioxide was trialled. As a result of these successful trials, flue gas conditioning plant has recently been installed on both units and emissions from Wallerawang Power Station are expected to fall by at least 50 per cent in future years.

Sulfur trioxide injection was also trialled at Vales Point Power Station, but was found to be less effective than at Wallerawang. Other methods for reducing particulate emissions currently being trialled at Vales Point include:

- Alternative electrodes to improve electrostatic field strength and reliability,
- Improved control systems,
- Alternative gas flow systems, and
- Dust pre-charging.

National Pollutant Inventory

The National Pollutant Inventory (NPI) is an Internet database designed to provide the community, industry and government with information on the types and amounts of certain substances being emitted to the air, land and water.

Since July 1998, Delta Electricity has been estimating and reporting substances emitted to air for the NPI developed by the National Environment Protection Council. The NPI may be viewed at www.environment.gov.au/database/npi3/npi3.html. This year we reported a total of 16 substances emitted by Delta Electricity power stations.

The table below lists the mass in kilograms per year of the 16 substances reported. Most of the emission masses were calculated using emission factors from the Emission Estimation Technique Manual for Fossil Fuel Electric Power Generation. Investigations are currently taking place to determine the accuracy of such emission factors, but it is believed that they over estimate the actual levels being emitted.

National Pollutant Inventory (continued)

Substance	Emissions to Air (kg/yr)			
	Vales Point	Munmorah	Mt Piper	Wallerawang
Antimony & compounds	18	0	3	12
Arsenic & compounds	71	1	7	73
Beryllium & compounds	2	0	4	64
Cadmium & compounds	16	0	6	18
Carbon monoxide	703,804	36,215	899,368	478,337
Chromium(III) compounds	270	5	57	251
Fluoride compounds	141,000	7,000	337,000	109,000
Hydrochloric acid	401,784	23,360	85,143	102,177
Lead & compounds	390	5	46	466
Manganese & compounds	1,317	23	85	440
Nickel & compounds	241	5	80	204
Oxides of nitrogen	17,192,000	823,000	26,885,000	12,852,000
Particulate Matter ≤10.0 µm (PM_{10})	1,612,000	21,000	243,000	2,623,000
Polychlorinated dioxins & furans	0	0	0	0
Sulfur dioxide	18,234,000	1,039,000	38,674,000	16,303,000
Total Volatile Organic Compounds (VOC)	1,218	71	1,531	854

Water Utilisation

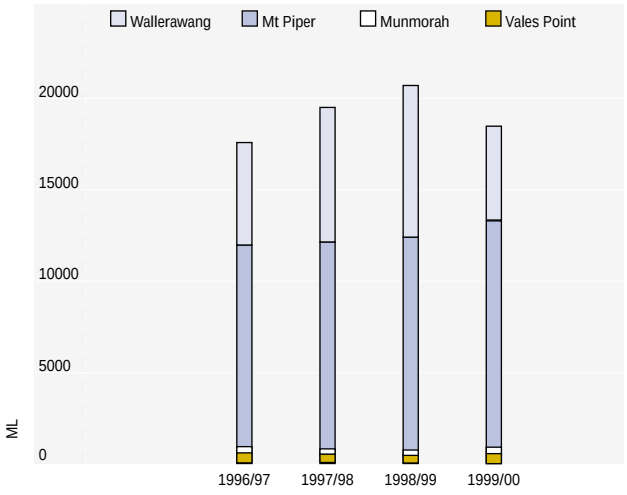
The management of power station fresh water consumption is dependent upon the site's locality and operational requirements. Fresh water usage requirements of coastal power stations are much less than for inland power stations. Munmorah and Vales Point Power Stations located on the Central Coast draw saline cooling water from estuarine lakes. Wallerawang and Mt Piper Power Stations draw fresh cooling water from the Fish and Coxs Rivers. Although Central Coast power stations utilise far less fresh water than inland power stations, programs are in place to further reduce water consumption.

For the past two years Delta, in cooperation with the NSW Department of Land and Water Conservation and community groups, has been developing new sustainable environmental flow rules for the Coxs River. This included a water efficiency study.

The new rules mean water flows in the Coxs River will be significantly increased to:

- Enhance the ecological health of the river,
- Improve the quality of water flowing into Sydney's drinking water storage at Warragamba, and
- Ensure the security of future water supply for Wallerawang and Mt Piper Power Stations.

Fresh Water Consumption ML



Environmental Incidents

Environmental incidents at Delta Electricity power stations are classified into 3 categories and reported regularly to management for attention. Category 1 incidents are the most serious, possibly involving a breach of a licence condition or other statutory regulation. Category 2 incidents are “near miss” incidents requiring attention to prevent a possible Category 1 incident in the future. Category 3 incidents are minor plant incidents, but may be a valuable pointer to the level of environmental care being exercised at a particular plant.

In 1999/00, only two category 1 incidents were reported at Delta Electricity sites. Both these incidents occurred at Wallerawang Power Station, when fluoride readings above the licence limit condition of 1.5 mg/L were detected at a monitoring site in the Coxs River. These two incidents occurred due to the discharge rate from the Caustic Injection Plant Settling Ponds being too high for the low flow of the Coxs River. Both incidents were corrected by decreasing the discharge volume from the Caustic Injection Plant Settling Ponds to match reduced flow in the river.

The table below lists the number of environmental incidents in each category reported from all Delta Electricity sites in 1999/00.

	Central Coast Operations						Western Operations					
	Munmorah			Vales Point			Wallerawang			Mt Piper		
Category	1	2	3	1	2	3	1	2	3	1	2	3
1999/00	0	0	2	0	2	2	2	5	6	0	2	10

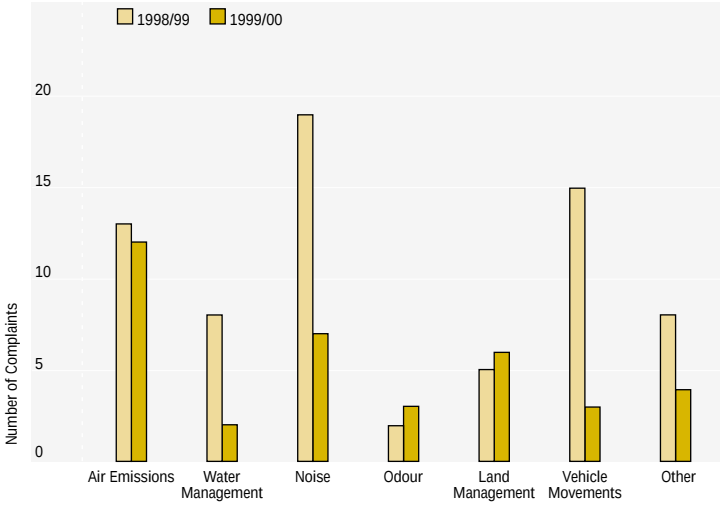
Incident Category 1	A breach of EPA licence condition, environmental regulation or incidents requiring mandatory reporting to the EPA.
Incident Category 2	A potential, possible or suspected breach of EPA licence condition or other environmental regulation. A non-trivial discharge that flows to but is contained within a final holding pond.
Incident Category 3	Minor discharges to the environment or other on-site incidents contained locally and not included in any of the above categories.

Community Inquiries

Investigation of the type and frequency of community complaints or inquiries continues to provide Delta with valuable feedback for continuous improvement of environmental performance. In 1999/00, the number of community inquiries has decreased significantly compared to the previous year, for issues including water management, noise and vehicle movements. Significant factors in the reduction of vehicle movement inquiries were the diversion of coal trucks through non-residential areas and installation of the Wyee coal rail unloader.

Consultation with the community is effective in alleviating concerns about power station operations. Copies of our previous Environment Report were distributed to Community Groups and other interested parties, as well as being made available on our web site (www.de.com.au). In 1999/00, newsletters were prepared and distributed to local communities to communicate environmental information on activities, operations and new developments. In addition, several face to face meetings with community groups were held in both regions.

Community Complaints or Inquiries



Environmental Audits

Environmental auditing identifies an organisation's environmental risks, legislative non-compliance and impacts on the environment. In 1999, Delta Electricity engaged external consultants to conduct a number of audits including environmental management, facilities and process, compliance, due diligence and environmental management system ISO 14001 gap analysis. Findings and recommendations from these audits will not only assist in the management of identified risks, but will facilitate implementation of effective environmental management systems required for ISO 14001 Environmental Management System accreditation.

The number of high, medium and low areas of environmental concerns identified during the 1999 facilities and process audit findings against corresponding power station sites is provided in the following table. Delta Electricity aims to address all recommendations within twelve months of completion of an audit report.

Environmental Management and Facilities and Process

Location	Audit Date	High	Medium	Low
Munmorah Facilities & Process	January 2000	0	3	26
Vales Point Facilities & Process	January 2000	0	10	31
Central Coast Environmental Management	January 2000	0	4	4
Wallerawang Facilities & Process	September 1999	5	14	40
Mt Piper Facilities & Process	September 1999	2	21	13
Western Environmental Management	September 1999	0	7	5
Central Coast Compliance	May 2000	0	5	18
Western Compliance	May 2000	8	10	22

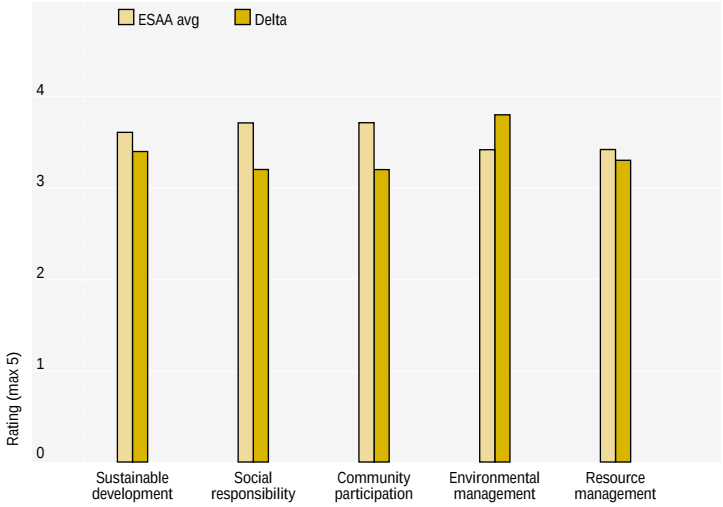
High	may cause significant environmental harm or nuisance if not rectified.
Medium	significant departure from best environmental practices or significant offsite environmental effects.
Low	minor departure from best environmental practices or minimal offsite environmental effects.

Delta, as a signatory to the Electricity Supply Association of Australia's Code of Environmental Practice (ESAA), is expected to audit its performance against the code. An environmental consultant audited the organisation's performance against the Code in May 2000. The results of the audit are shown in the graph below. Observations from this audit are that Delta is performing:

- above industry average for environmental management,
- at or near industry average for sustainable development and resource management, and
- below industry average for social responsibility and community participation.

New environmental targets have now been set to improve our performance in the areas of sustainable development, social responsibility and community participation.

Performance vs ESAA Code of Environmental Practice



Rating Criteria	Score
No evidence of any activities being undertaken to address a Code action	0
Code action planned and documented	1
Systems or processes being implemented	2
Systems or processes are implemented	3
Full integration into management decisions and business functions	4
Evidence of leadership or industry best practice in implementation and functioning of a Code action. (Note that leadership or industry best practice may vary from year to year)	5

Supporting Data

Information relating to previous year's emissions and typical resource usage were included in the Delta Electricity Environment Report 1996 -1999. Copies of this report are available on the Delta Electricity website at www.de.com.au, or by request from the Delta Electricity's Corporate Environment Officer at the contact address shown in the front of this Review.

ATMOSPHERIC EMISSIONS

	Delta Electricity Atmospheric Emissions (tonnes)	
	Delta Production Central Coast 1999/00	Delta Production Western 1999/00
Oxides of Sulfur	21,700	58,000
Oxides of Nitrogen	18,700	37,600
Particulates	2,970	4,150

GREENHOUSE GAS EMISSIONS

	Million tonnes of CO_2
1999/00	18.4

ASH RECYCLED

	Delta Production Central Coast		Delta Production Western	
	Ash Produced (kilo tonnes)	Total Ash Used (kilo tonnes)	Ash Produced (kilo tonnes)	Total Ash Sold (kilo tonnes)
1999/00	745	264	1,061	183

WASTE TO LANDFILL

	Waste to Landfill (Tonnes)			
	Munmorah	Vales Point	Wallerawang	Mt Piper
1999/00	84	103	95	73

Eco-efficiency Profile

The concept of eco-efficiency was developed by the World Business Council for Sustainable Development (WBCSD) in 1992 and is widely recognised by the business world. This concept brings together economic and environmental progress in a way that focuses businesses on attaining more value with lower inputs of materials and energy, whilst reducing emissions.

The information in the Eco-Efficiency profile is presented in a standard format that allows comparison across time, sectors and industries. The concept uses a number of "indicators" to track and demonstrate performance, which are transparent, verifiable and meaningful to everyone.

Two "generally applicable" indicators are used, namely quantity of goods or services produced or supplied to customers, and net sales. A number of "business specific" environmental influence indicators are used, including energy consumption, materials consumption, water consumption, greenhouse gas emissions and ozone depleting substances emissions. These are presented as an eco-efficiency ratio, represented by:

$$\frac{\text{product or service value}}{\text{environment influence}}$$

Environmental influence includes aspects of product or service creation and aspects of product or service consumption or use. Progress in eco-efficiency can be achieved by providing more value per unit of environmental influence. In this form of expression, an increasing efficiency ratio reflects a positive performance improvement. (As opposed to tracking environmental influence per unit of value set out elsewhere in this report, where a declining ratio reflects a positive performance).

Delta's eco-efficiency ratios indicate that the organisation's utilisation of water resources has improved and the sulfur dioxide eco-efficiency has improved in the last year after a decline in the two previous years. Eco-efficiency for greenhouse gas emissions has been static. There are insufficient data to trend particulate and NOx emissions.

Further information about the concept of eco-efficiency can be obtained from the website www.wbcsd.org

Organisation Profile

Type of Business:	Electric utility
Number of Employees:	797
Period of Concern (Year):	Fiscal year 2000
Reporting Scope:	Entire company
Full Corporate Environment report:	www.de.com.au
Contact information:	Suzanne Wheeler: suzanne.wheeler@de.com.au
Methodology:	Data based on currently available information collected through various internal tracking mechanisms

Value Profile:

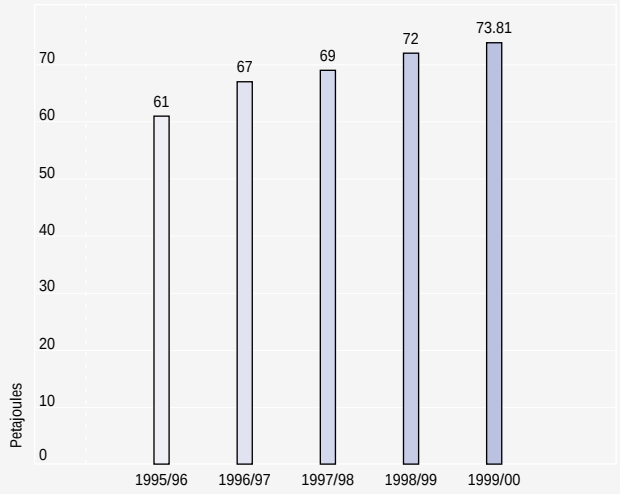
Generally Applicable Indicators:

Electricity supplied:	74 PJ
Sales revenue:	A$640m

Business Specific Indicators:

Ordinary profit (gross):	A$133m

Electricity Supplied



Environmental Profile:

Generally Applicable Indicators:

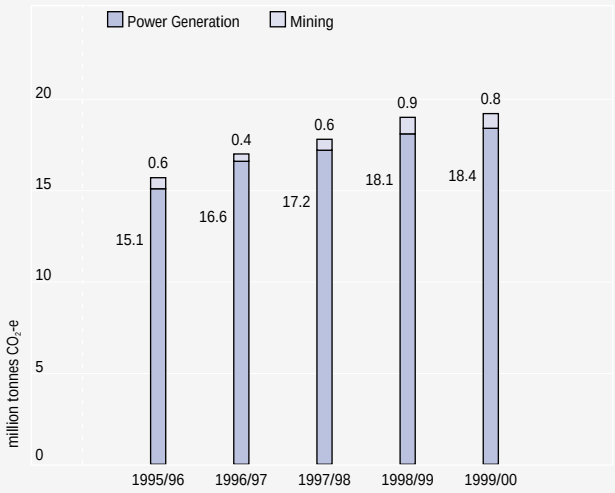
Energy consumed:	133 PJ
Water consumed:	22.1 mil. M^3
GHG emissions:	18.4 mil. t CO_2-e
ODS Emissions:	0 t CFC11 equiv

Business Specific Indicators:

Total GHG emissions*:	19.2 mil. t CO_2-e
SOx emissions:	74.3 kt
NOx emissions:	56.3 kt
Particulate emissions:	7.1 kt

* Includes CO_2-e emissions from coal mining.

CO_2 Emissions



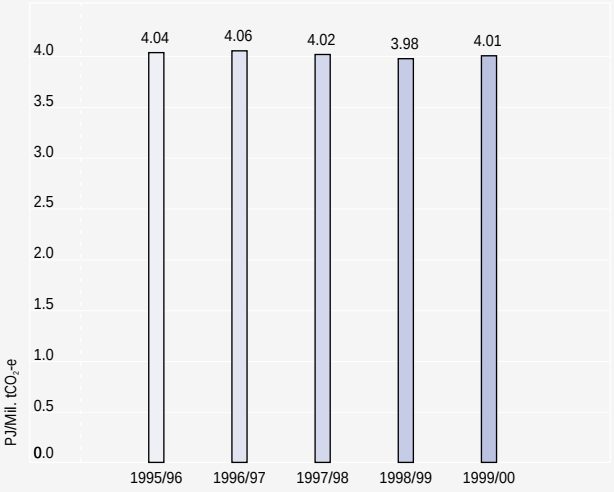
Eco-efficiency Ratios:

Electricity supplied per

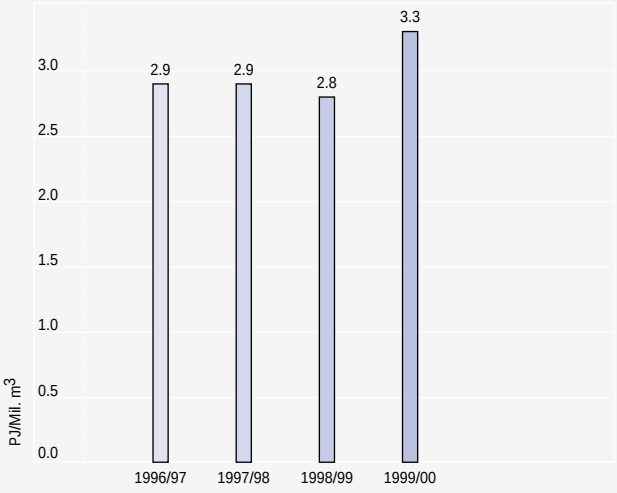
GHG :	4.01 PJ/M tonne CO_2-e
Water use:	3.3 PJ/mil. M^3
SOx:	0.99 PJ/K tonne SOx
NOx:	1.3 PJ/K tonne NOx
Particulates:	10.3 PJ/K tonne Particulate

*No total corporate data for years 1995/96 - 1998/99 for NOx and particulate emissions

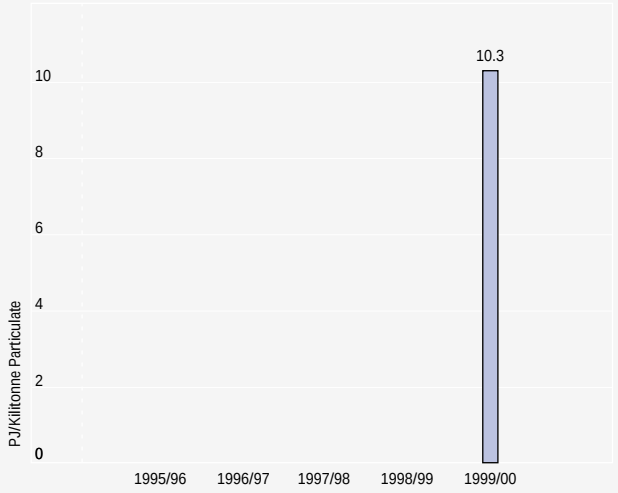
Eco-efficiency on GHG emissions



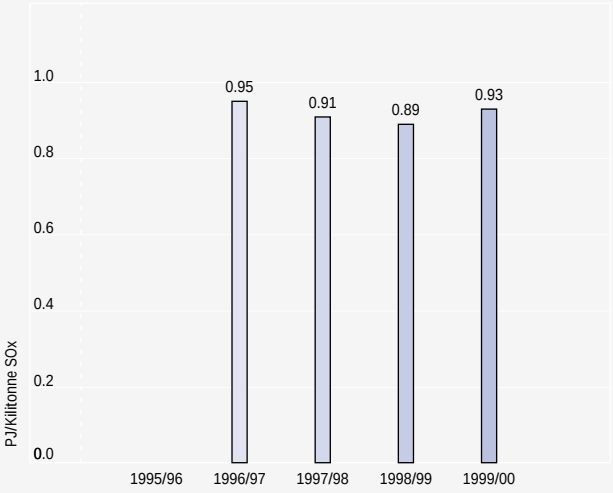
Eco-efficiency on water use



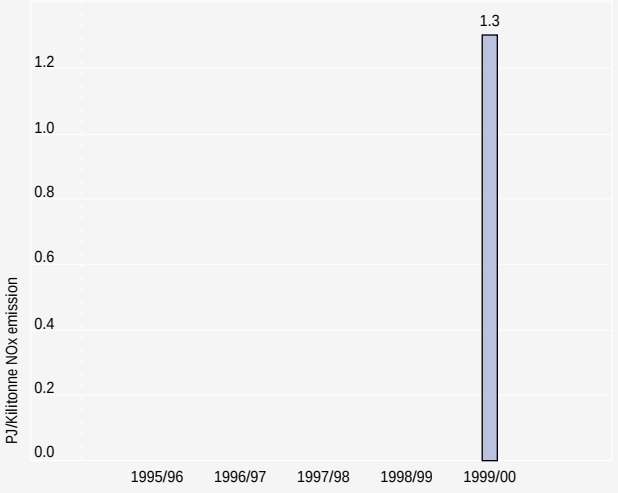
Eco-efficiency on Particulate emissions



Eco-efficiency on SOx emissions



Eco-efficiency on NOx emissions



Terms of Reference

CAA	Clean Air Act
CARE	Community Access Regional Environment
CO_2	Carbon Dioxide
ESAA	The Electricity Supply Association of Australia Limited
ISO 14001	International Standards Organisation Environmental Management Systems Specification with guidance for use.
kW	Kilowatt
ML	Megalitres
NEPC	National Environment Protection Council
NOx	Oxides of Nitrogen
ODS	Ozone Depleting Substances
NPI	National Pollutant Inventory
Particulates	Particles of dust suspended in the air
PCB	Polychlorinated biphenyls
T/GWh	Tonnes per gigawatt hour
mg/kg	Milligrams per kilogram
SOx	Oxides of Sulfur


Delta
electricity