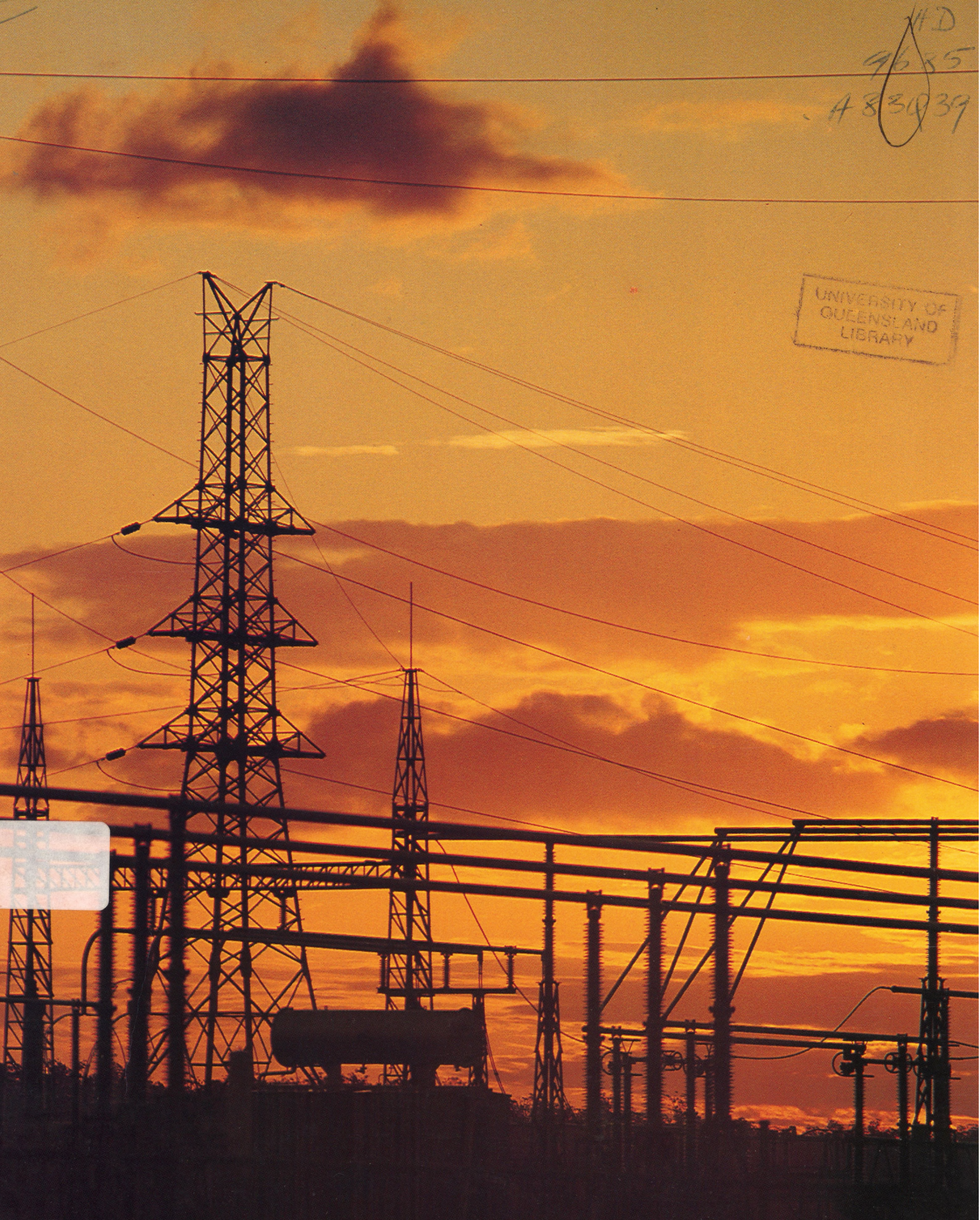


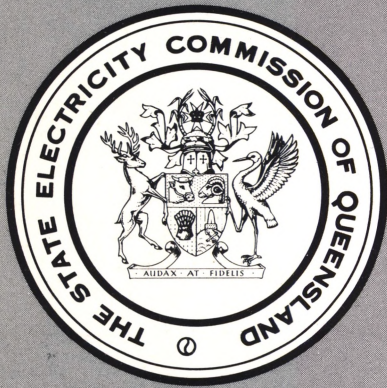
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The State Electricity Commission of Queensland Annual Report 1983-84

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The State Electricity Commission of Queensland

Location:
Corner Gregory Terrace
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Other details:
Postal Address: Box 10, G.P.O.,
Brisbane. 4001
Telephone : (07) 253 9811
Telex : AA41772
Telegraphic : SECQ, Brisbane

Forty-seventh Annual Report 1983/84

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Some facts about the Electricity Supply Industry in Queensland

The following facts indicate the size of the industry in Queensland:-

- It employs approximately 13 100 people.
- The cost of its assets exceeds \$4 700 M.
- Its revenue in 1984/85 is expected to exceed \$1 000 M.
- Over 99 per cent of all Queenslanders have a public electricity supply.
- About 17 000 GW.h are generated annually.
- Over 135 000 km of electric lines are in use.
- Its generating capacity is over 4 200 MW.
- Sales of electricity are more than doubling every 12 years.
- It is the largest consumer of coal in the State (about 8 M tonnes per annum).

Queensland was the first State to:-

- Generate electricity from natural gas.
- Use hydro-electric power from an artesian bore at Thargomindah in 1893.
- Utilise a gas turbine for public electricity supply.
- Have an electrically lit Parliament House (in 1886).
- In addition, Brisbane achieved the milestone of a public electricity supply in 1882, the same year as London and New York.

Abbreviations

Abbreviations used in this Report are:-

kW.h	kilowatt hour
MW.h	megawatt hour (1 000 kW.h)
GW.h	gigawatt hour (1 000 MW.h)
kW	kilowatt
MW	megawatt
kV	kilovolt
kV.A	kilovolt ampere
MV.A	megavolt ampere
Mvar	megawatt ampere reactive
SWER	single wire earth return
GJ	gigajoules
km	kilometre
M	million

Cover: Switchyard at the new 1 400 MW Tarong Power Station.



THE STATE ELECTRICITY COMMISSION OF QUEENSLAND
OFFICE OF THE COMMISSIONER

BRISBANE
QUEENSLAND

1 July 1984

Sir,

Pursuant to section 434 of the Electricity Act 1976-1982, I have the honour to present to you, for submission to Parliament, the Forty-seventh Annual Report of The State Electricity Commission of Queensland. The Financial Report which is also required by section 434 of the Act will, later in the financial year, be available for tabling in Parliament.

In addition, the Act requires that The Queensland Electricity Generating Board, each Electricity Board, The Queensland Electricity Supply Industry Superannuation Board and The Electrical Workers and Contractors Board shall present Reports of their operations to the Commission. These will be submitted to you in due course.

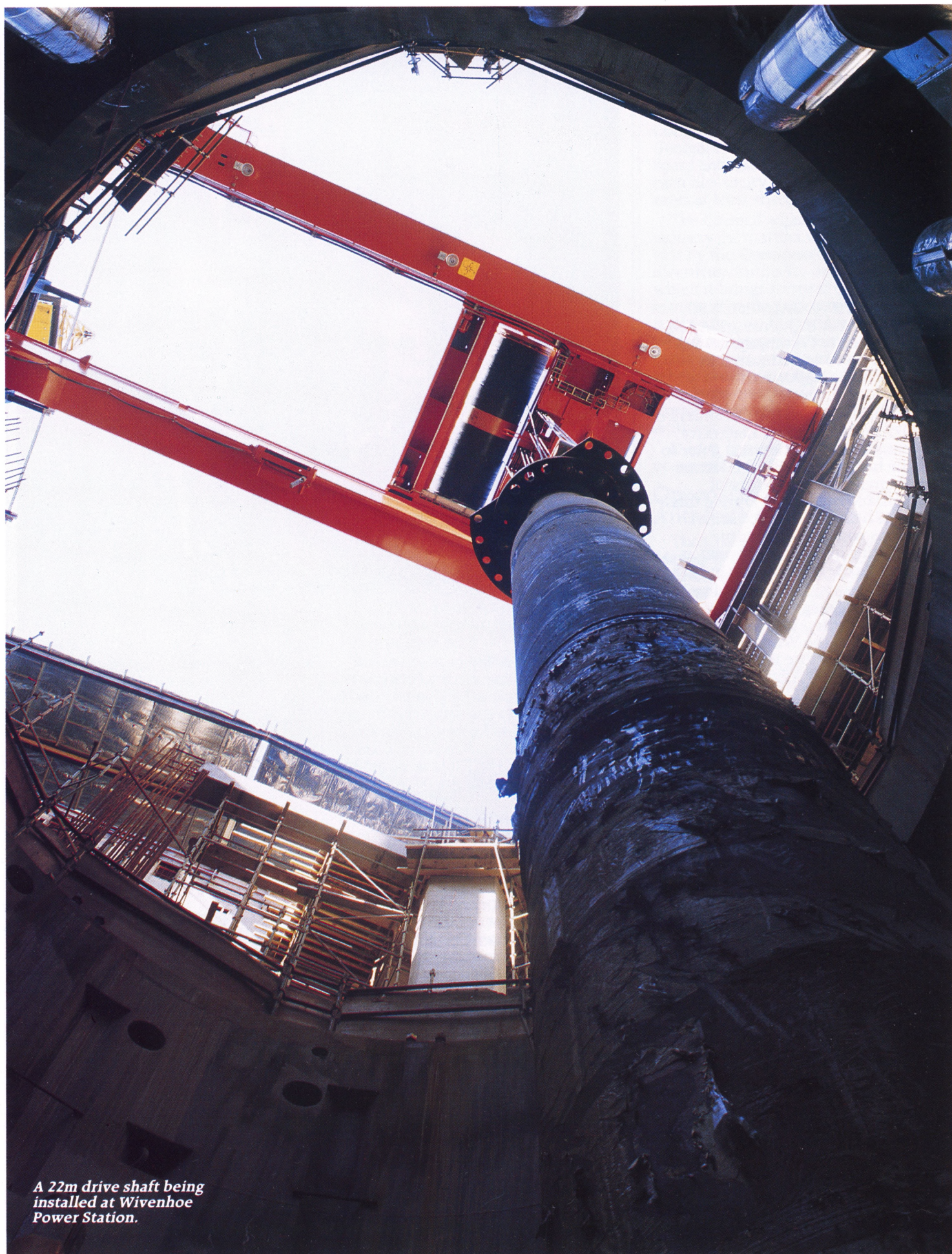
Again I am pleased to report that it has been a year of continued growth for the Industry. It has seen many achievements - notably the commissioning of the first generating units at the Tarong Power Station and the Wivenhoe Power Station. These projects provide further evidence of the continued growth of the State. This growth presents many challenges to an Industry which is well aware of its responsibilities to provide a secure supply of electricity to the State's residents. I express my gratitude to you and the Government for the guidance and support given in helping to meet those responsibilities.

I also express my appreciation for the co-operation received from other Government Departments, Local and Statutory Authorities and all sections of the electricity supply industry in Queensland. In particular I thank the staff of the Commission for their continued enthusiasm, loyalty and support during the past year.

A handwritten signature in cursive script, appearing to read 'N. Galwey'.

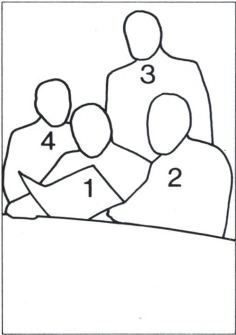
N.A. GALWEY
State Electricity Commissioner

The Honourable Ivan J Gibbs, M.L.A.,
Minister for Mines and Energy,
BRISBANE Q 4000



A 22m drive shaft being installed at Wivenhoe Power Station.

Statutory Officers of the Commission



1. NEIL ARTHUR GALWEY, B.E., F.I.E.Aust., A.A.U.Q.(Prov.), F.A.I.M., State Electricity Commissioner since July 1980; born and educated in Brisbane and a graduate of Queensland University.

Mr Galwey joined the Commission in 1977 as Deputy State Electricity Commissioner (Engineering). Prior to this he had served with the former Southern Electric Authority of Queensland since 1954. During this time, he held a number of senior positions with the Authority culminating in his appointment as Chief Engineer Distribution in 1975.

He is Deputy Chairman of the Queensland Energy Advisory Council; a member of the Australian National Committee of the World Energy Conference and Vice President of the Electricity Supply Association of Australia.

2. JAMES RICHARD HAMILTON, M.I.E.Aust., Deputy State Electricity Commissioner (Engineering) since July 1980; born and educated in Brisbane.

Mr Hamilton commenced his career in the electricity supply industry in Queensland in 1948 as an Electrical Fitter/Mechanic with the Brisbane City Council.

In 1955 he qualified as an engineer and subsequently held a number of senior engineering positions with both the Council and the former Southern Electric Authority of Queensland.

In July 1977 Mr Hamilton was appointed Assistant General Manager Operations with The Queensland Electricity Generating Board and held this position until his appointment as Deputy State Electricity Commissioner (Engineering).

3. KEITH DESMOND VIERTEL, B.Com., A.A.U.Q.; Deputy State Electricity Commissioner (Administration) since May 1970; born and educated in Brisbane and is a Queensland University graduate.

Since joining the State Public Service in 1943, Mr Viertel has served in several Government Departments.



He joined the Commission in 1961 as Internal Auditor and later spent a period as an officer of the then Treasury Computer Centre prior to his appointment as Secretary to the Commission in 1966.

4. ERIS MICHAEL ROBINSON, A.A.U.Q.; Secretary since March 1975; born and educated in Brisbane and is a qualified accountant.

Mr Robinson is a career public servant having commenced with the Stamp Duties Office in 1947. He subsequently served with the Auditor-General's Department for twelve years and in 1962 was appointed to the position of Internal Auditor with the Commission. After holding a number of senior positions with the Commission he was appointed Secretary in 1975.

Executive Officers:

Chief Engineer Planning
W.C.E. Wager, B.E., M.Eng. Sc., M.I.E.Aust.

Chief Engineer Resources
P.E. Browne, M.I.E.Aust., M.I. Mech.E., M.Inst.E., M.A.I.E.

Chief Engineer Services
J.F. Carter, B.E., M.I.E.Aust.

Chief Electrical Inspector
G. Thorsborne, Dip.Mech. and Elec. Eng.

Industrial Officer
R.J. Green, J.P.

Loans Officer
R.D. McKenzie, B.Com., A.A.S.A.(Senior) A.A.U.Q.

Highlights of 1983-84

Through special administrative arrangements the State Electricity Commission and The Queensland Electricity Generating Board started acting as a single operating unit pending legislation to formally amalgamate them as the Queensland Electricity Commission.

The first generating unit at Tarong Power Station went into commercial operation on schedule in May 1984 following the official opening of the station by the Premier, the Honourable J. Bjelke-Petersen, M.L.A.

Maximum demand on the State's interconnected electricity supply system during the year was met by total generation of 2 882MW.

Electricity consumption in the State rose more than 16 per cent above last year's level.

The first delivery of coal from the Curragh Mine was received at Gladstone Power Station in September 1983. Curragh coal will ultimately be supplied to the new Stanwell Power station.

At the Stanwell Power Station site, preliminary earthworks expected to take some twelve months, started in January 1984.

A further 352 properties received electricity under the Rural Electricity Subsidy Scheme.

The number of different tariff levels throughout the State was further reduced from 49 to 42.

Coal deliveries to power stations reached a new record of 8M tonnes, over 12 per cent more than in the previous year.

Testing and commissioning of the first generating unit of the Wivenhoe Pumped Storage Scheme was completed. The associated Mt England 275kV switching station was commissioned in August 1983.

Organisation and Objectives of the Electricity Supply Industry

The principal purpose of the Electricity Act 1976-1982 is to provide the administrative framework within which a public supply of electricity is made available to consumers throughout the State.

That supply is required:

- (i) to have been properly planned and effectively co-ordinated;
- (ii) to have been generated on the most economical basis; and
- (iii) to be reliable.

The present organisational arrangements are that the Commission is the arm of Government through which these functions are co-ordinated. The Commission also has direct responsibilities for electrical safety (in its widest sense), loan raising, fixing tariffs and planning the electricity system.

The Queensland Electricity Generating Board plans, constructs and operates the major power stations and the main transmission system. It provides electricity to the Electricity Boards and to certain special major consumers.

Electricity is supplied to other consumers by the seven Electricity Boards, namely - The South East Queensland Electricity Board; The South West Queensland Electricity Board; The Wide Bay-Burnett Electricity Board; The Capricornia Electricity Board; The Mackay Electricity Board; The North Queensland Electricity Board, and The Far North Queensland Electricity Board.

In addition, electricity is supplied under licence by the Council of the North West County District of New South Wales to the Town of Goondiwindi, and the Shires of Inglewood and Waggamba.

As reported last year, the Government has decided to amalgamate the Commission and the Generating Board and enabling legislation is presently being prepared. As an interim measure, the Government has dissolved the Generating Board and appointed the Commission to perform the functions and duties of that Board. Through special administrative arrangements, the Commission and the Generating Board to a large extent are acting as a single operating unit while ensuring that the separate legal entities of the two authorities are maintained.

Industry Committees Consultative Council

This Council, constituted under the provisions of the Electricity Act 1976-1982, consists of the Commissioner as Chairman, the General Manager of the Generating Board and the General Manager of each Electricity Board. It is required to meet at least three times a year.

The Council assists and advises the industry on matters which are referred to it by the Commission or an Electricity Authority or on matters which it brings forward on its own motion. The decisions of Council are not binding on the industry. However where recommendations have been made on policy matters or matters where uniformity is desirable, these have been endorsed by the Commission and the Electricity Authorities.

During the year Council met on six occasions.

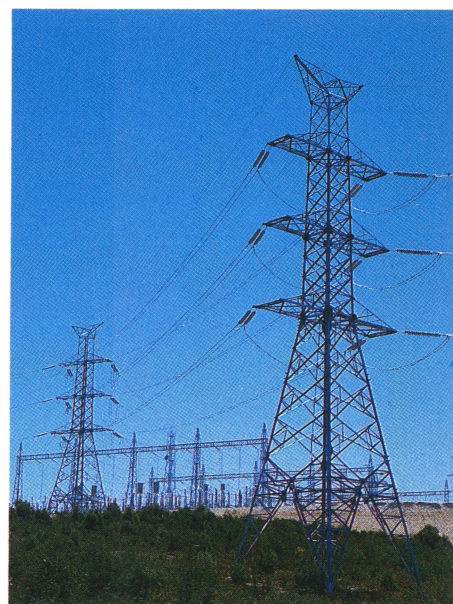
Queensland Electricity Authorities' Conference

The Chairmen and General Managers of the statutory Electricity Authorities meet, at least annually, to confer on matters of general importance to the industry.

The 1984 Conference was held on 2 and 3 May.

Although decisions of the Conference are not automatically binding on Electricity Authorities, it is unusual for recommendations of the Conference to be rejected.

The Conference is therefore an important avenue for policy consultation on matters affecting the Queensland electricity supply industry.



Planning and Investigations

Future Electricity Requirements

Electricity generated and purchased during 1983/84 was 16.1 per cent above that of the previous year. This increase met consumers' demands which were not spread evenly across the community as the subdued economic conditions affected the commercial and light industrial sectors in the first half of the financial year. Growth in domestic consumption was also affected by economic conditions.

The aluminium smelter on Boyne Island continued to be progressively commissioned during the year with two potlines almost fully operational by the year's end. The rapid growth in the electricity requirements of the smelter has contributed substantially to the increase in electricity sales.

Coal mining operations consumed 9.7 per cent more electricity in 1983/84 than in 1982/83. This increase was due to the commencement of new steaming coal mines at Tarong, Curragh, Newlands and Blair Athol, and the build-up in the Riverside and Oakey Creek mines which commenced operations in the previous year. The slightly lower use of electricity by established mines (resulting from the widely reported downturn in international demand for coal) has been offset by the electricity requirement of the new mines.

Future electricity needs depend on a wide range of factors such as growth in economic activity, incomes and population trends, the price of competing fuels and the availability and cost of alternative energy forms. In the present economic climate, uncertainty surrounding many of these factors has increased considerably. Current forecasts are based on a reduced expectation of long term population and economic growth compared with the high levels of growth experienced in recent years. Some moderation of the growth in consumption by existing consumers is also anticipated.

While Queensland continues to have significant industrial potential, further development of large power-intensive industries will, in part, be determined by international markets. The provision made in the forecast for such loads anticipates a modest economic recovery in the later 1980's with Queensland, because of its favourable position in basic mineral and energy resources, attracting developments in the longer term provided community costs can be contained.

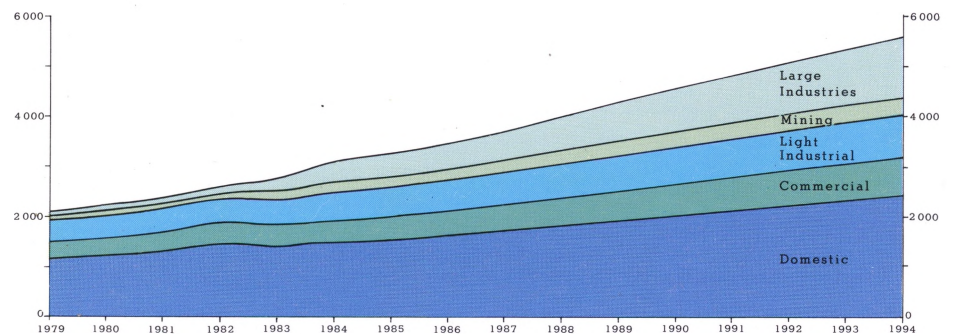
On account of the long construction time for new generating stations, planning decisions must be based upon long term forecasts of electricity requirements. The installed generating capacity must be able to meet the future peak demand for electricity with Queensland's peak demand occurring in winter. Forecast peak demands for the coming decade are shown in the accompanying figure.

the start-up to 1991 is being preserved in major contracts and the scheduling of work. This will allow the timing of Stanwell power station to be reviewed before a final commitment to completion dates for major contracts is required.

It is important to maintain flexibility in timing new generating capacity to avoid over-commitment on plant while at the same time

PROJECTED ELECTRICITY DEMANDS

(Megawatts)



Queensland's annual consumption of electricity is growing more rapidly than the peak winter demand. This is due to the increasing dependence on electricity throughout the year in producing goods and services to improve living standards and to specific policies pursued by the industry to shift consumption away from peak times. This, together with the addition of major industry requiring a continuous supply of electricity, will improve the utilisation of installed generating plant.

Generation

A programme of power station construction is continuing which will ensure adequate electricity supplies throughout the State until the mid 1990's. When completed these stations will add 4 000 MW of new generating capacity comprising :-

- Wivenhoe 500 MW
- Tarong 1 400 MW
- Callide 'B' 700 MW
- Stanwell 1 400 MW

The Wivenhoe pumped-storage power station is being developed to provide peaking capacity which will supplement the base load power generation from coal-fired plant.

The Queensland Electricity Generating Board is proceeding with construction of a 1 400 MW power station at Stanwell for completion by the mid-1990's. A final commitment has not yet been made on the start-up date for the first unit but work to maintain the option of a start-up date of March 1990 with flexibility to defer

preserving the capability to meet new demands for power as they arise.

Planning investigations to provide for future long term power expansion have been proceeding in three key areas.

Studies have been conducted to determine feasible sites along the east coast of Queensland where future coal-fired power stations could be located using sea water for cooling. Recommendations will be made to the Government for the acquisition of suitable land. The limited extent of inland water available for cooling purposes and the rate at which development is occurring along the coast makes it necessary to act now to preserve the ability to site some of the State's future power stations on the coast.

Other investigations are being completed in south east Queensland to identify and preserve possible pumped-storage hydro-electric sites for development in conjunction with coal-fired power stations.

An investigation is being carried out to assess the full extent of the hydro-electric potential of North Queensland streams and to determine which schemes show the best potential for development.

Transmission and Bulk Supply

Planning investigations of the transmission and bulk supply system have continued to ensure the supply system is adequate to meet the increasing demands of consumers throughout the State. To meet these demands a number of major transmission projects have been initiated.

Reinforcement of the main grid supplying Far North Queensland is required and this comprises a double circuit 132 kV transmission line from Kareeya Power Station to Turkinje on the Atherton Tableland. To cater for the next major reinforcement of Far North Queensland from Ross near Townsville in the early 1990's, acquisition of transmission line easements and a site for a major 275/132 kV substation at Millstream west of Kareeya has also been initiated in conjunction with this project.

Extensive investigations were completed into the electricity requirements of Roma and South

West Queensland including Charleville, Cunnamulla, Quilpie and the border areas presently supplied in bulk from New South Wales. Work has also been initiated to provide a transmitted supply to these new areas by 1987 from the main grid supply point which will be established at Roma. To cater for these additional loads to be supplied from Roma, reinforcement of the transmission system has been put in hand. This comprises a double circuit 132 kV transmission line from Tarong to Chinchilla and a second 132 kV circuit from Chinchilla to Roma.

Construction of a 132 kV transmission line from Ross to Kidston to supply the Kidston Gold Mines project has commenced. In the Bowen Basin mining area, transformer capacity at the Moura 132/66 kV substation is to be increased to allow for an increase in supply to the Theiss Dampier Mitsui open cut coal mine at Moura.

A number of other projects for the reinforcement of the regional transmission systems have been initiated. These include new 33 kV

switchgear at Bulimba, a new 110/11 kV substation at Broadbeach and augmentation of bulk supply transformer capacity at Bundaberg and Cairns. A 110 kV transmission line is also being constructed from Beenleigh to Rocky Point. This will be operated initially at 11 kV to provide a system reinforcement associated with supply to Karragarra, Lamb and Macleay Islands and in the longer term will be upgraded to 110 kV operation to augment supply to Stradbroke Island.

Investigations into the supply requirements of the Gladstone to Blackwater Rail Electrification Project are nearing completion. Supply will be required at six substations along the route where the 132 kV transmission voltage will be stepped down to the 50 kV traction voltage. At four locations where the existing power system has a relatively low capacity to supply the traction load, special equipment using thyristor control devices will be employed to reduce the effect of the variable traction load on the power system.

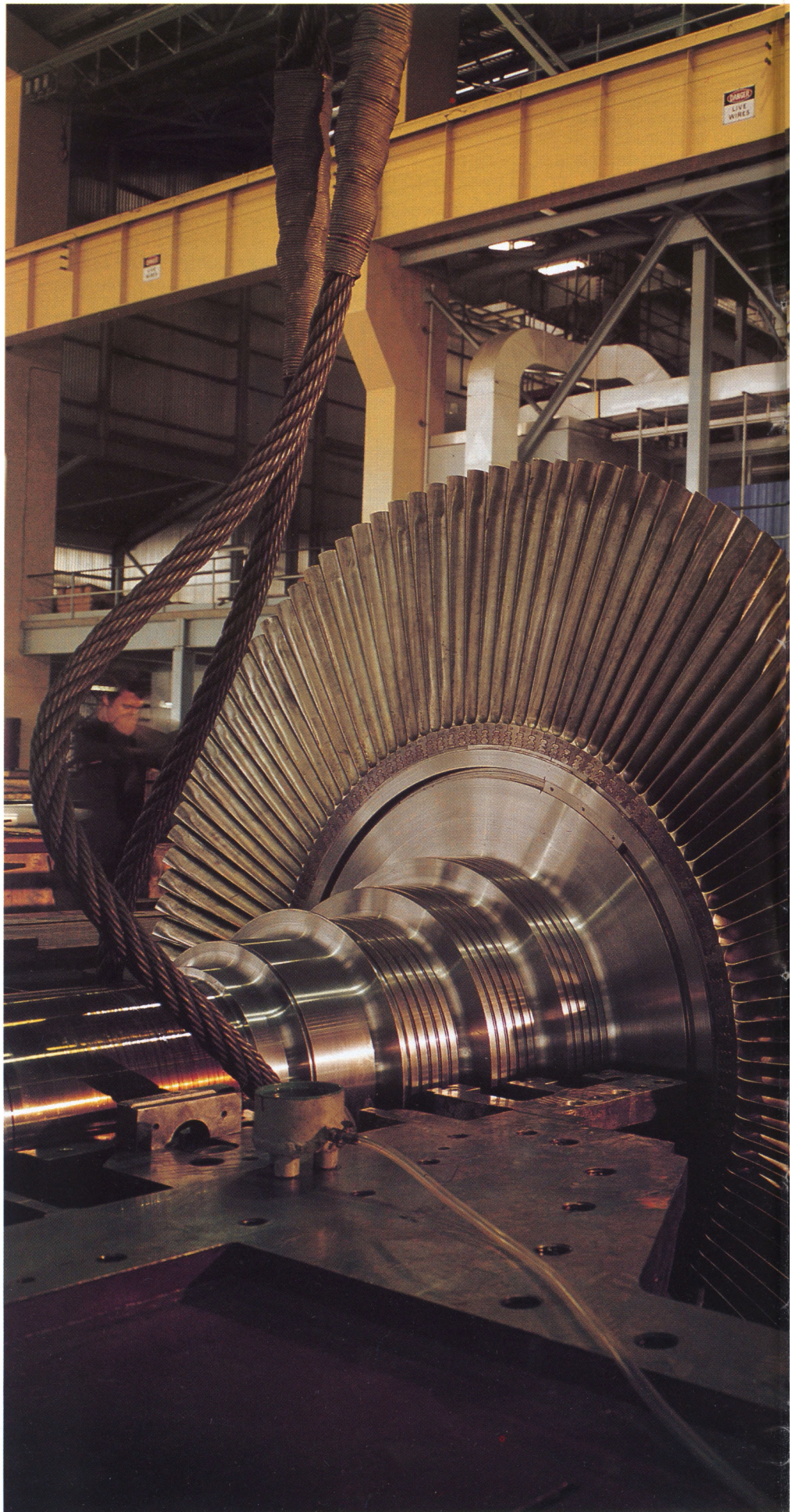
Below: Aerial view of Stanwell Power Station site.



The Commission has also continued to provide advice to Government Departments on matters relating to electricity supply for possible new industrial projects.

Studies continue to be carried out to define the most suitable long term plans for extra high voltage transmission lines and substations to supply the populous areas near Brisbane and the relatively high density agricultural development of the immediate hinterland. To minimise the impact upon existing and future land use, work is proceeding to acquire easements for transmission lines and sites for substations where they may be required within the next decade. It is essential that these projects are integrated into the overall 30 year plan for electricity supply in south-eastern Queensland.

On a much shorter time scale, bulk supply substation sites are being acquired at West Bundall on the Gold Coast, West Maroochydore and on Russell Island to service rapidly developing areas of the region.



Right: Considerable care is needed in assembling components to ensure reliability of operation.

Resources

Fuel Supplies

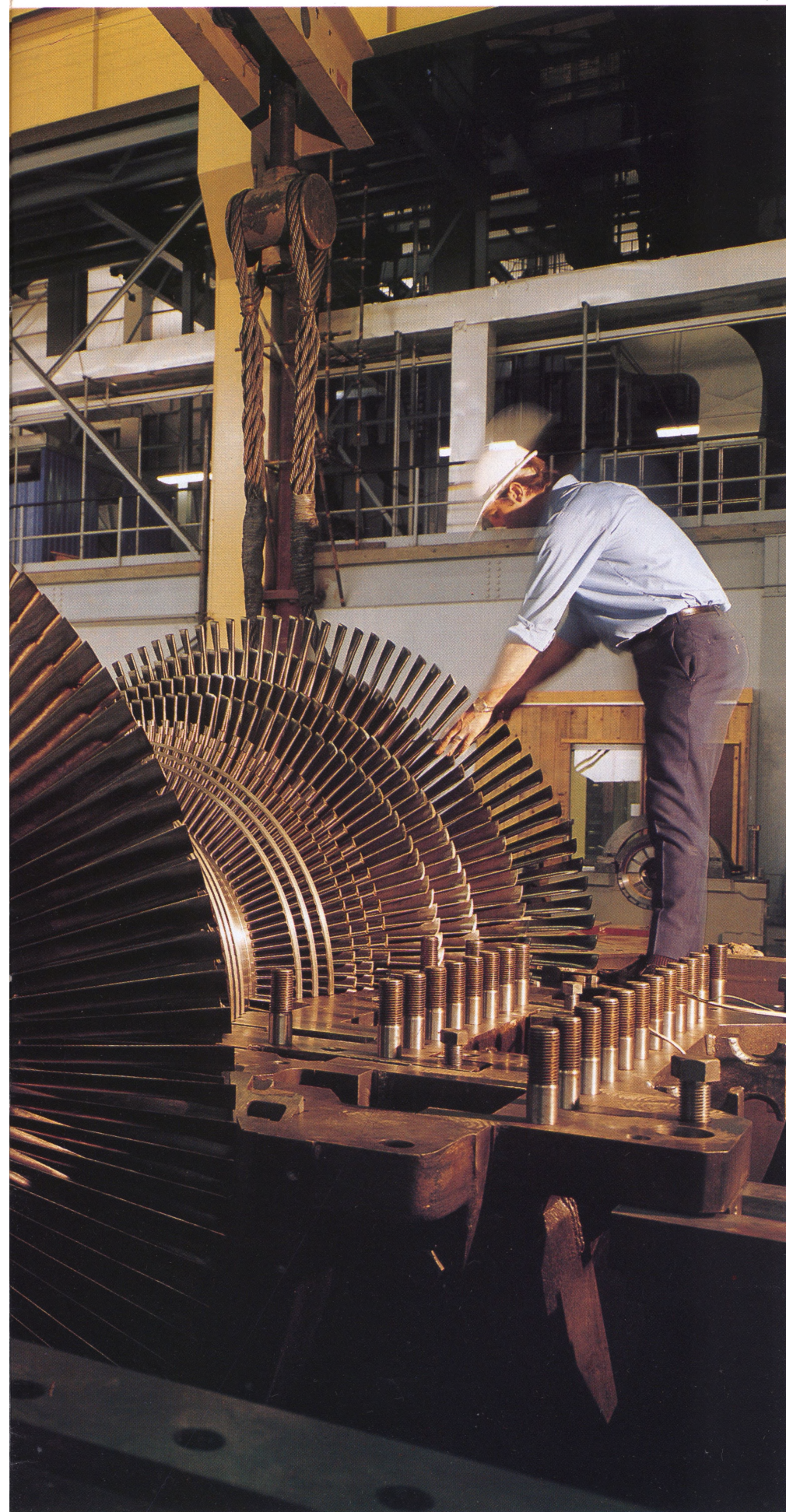
In accordance with its responsibilities for fuel supplies for electricity generation, the Commission is evaluating all the presently known non-coking coal deposits within the State to assess their suitability for electricity generation. This activity has required the development of techniques for evaluating the economics of coal mining operations and it is proposed to use these techniques to investigate future coal supply tenders as well as to monitor coal production variations due to changes in mining conditions. As some of the State's coal resources have high ash levels, advanced coal preparation techniques involving oil agglomeration are being evaluated to determine any advantage which may exist for the electricity industry.

Further exploration has been carried out within the Commission's Authority to Prospect 369C with scout drilling being undertaken to the east and west of the previously delineated Jellinbah East deposit. No shallow coal was intersected on the eastern side. However on the western side of the Jellinbah Fault, drilling has revealed a shallow, workable quality coal seam some 6.3 metres in thickness over a strike distance of about 8 km. The area is entirely overlain by 20 metres of unconsolidated sands and gravels. Further drilling is planned during the coming year to prove this deposit to a status of measured reserves. The coal is of similar quality to that at Curragh.

Additional drilling was also undertaken during the year in the Curragh East area, east of Blackwater Creek. Large diameter cores were taken for pre-treatment and other tests. The results of this drilling programme indicate that the reserves are slightly larger than previously thought.

The first delivery of coal from the Curragh mine was received at Gladstone Power Station in September 1983. This marked the fruition of a unique development of one of the State's resources some 10 years after this coal deposit had been reserved by the Government for use in electricity generation.

The contract with the Co-Venture partners developing and operating the Curragh mine is for the supply of 66.438 M tonnes of steaming coal over 20 years with coal initially railed to the Gladstone Power Station and ultimately to the Stanwell Power Station being constructed near Rockhampton.



A major achievement during the year was the commencement of operations at the Tarong Power Station with deliveries of coal from the adjacent mine commencing in November 1983.

The significant feature of the Tarong Power Station is its ability to burn low quality steaming coal. This coal, comprising 28 per cent ash and 14 per cent moisture has a gross heat value of only 19.38 GJ/tonne and would require substantial beneficiation for use in power stations not specifically designed for it.

As a result of the difficulties faced by coal mining companies in the West Moreton district and the effect on employment in the area, two significant steps were taken during the year. Firstly, the electricity industry purchased an additional 150 000 tonnes of coal from the Southern Cross Colliery in 1984 to assist the orderly closure of the mine following completion of its contractual obligations to supply the Swanbank Power Station.

Secondly, the Government established the West Moreton Coal Field Study. This committee, comprising the Government, the coal mining industry, coal mining unions and coal consumers, sought submissions from interested parties.

A detailed submission was made by the Commission on behalf of the electricity industry, and the committee has now reported to the Government.

During the year the State's power stations received a total of 8.0 M tonnes of coal, an increase of 12.7 per cent over the previous year's State total of 7.1 M tonnes.

Gladstone Power Station received 1.1 M tonnes from Utah Blackwater, 1.7 M tonnes from Thiess Callide mines at Dunn Creek and Boundary Hill and 1.6 M tonnes from Curragh. German Creek and Cook Colliery supplied a total of 0.4 M tonnes to complete short term arrangements established the previous year to overcome the temporary stockpile deficiency at the power station. The total deliveries to Gladstone of 4.8 M tonnes was some 14.3 per cent above the previous year's total of 184.2 M tonnes.

Other coal deliveries were 0.6 M tonnes to Tarong, 1.7 M tonnes from West Moreton and Rosewood mines to Swanbank and the Brisbane stations at Tennyson and Bulimba, whilst Callide received 0.6 M tonnes and Collinsville 0.3 M.

Consumption of oil for start-up and flame stabilisation at the coal-fired stations totalled 24 175 tonnes. This

was an increase of 21 per cent over the previous year and was partly due to the testing and commissioning of the first unit at the new Tarong Power Station.

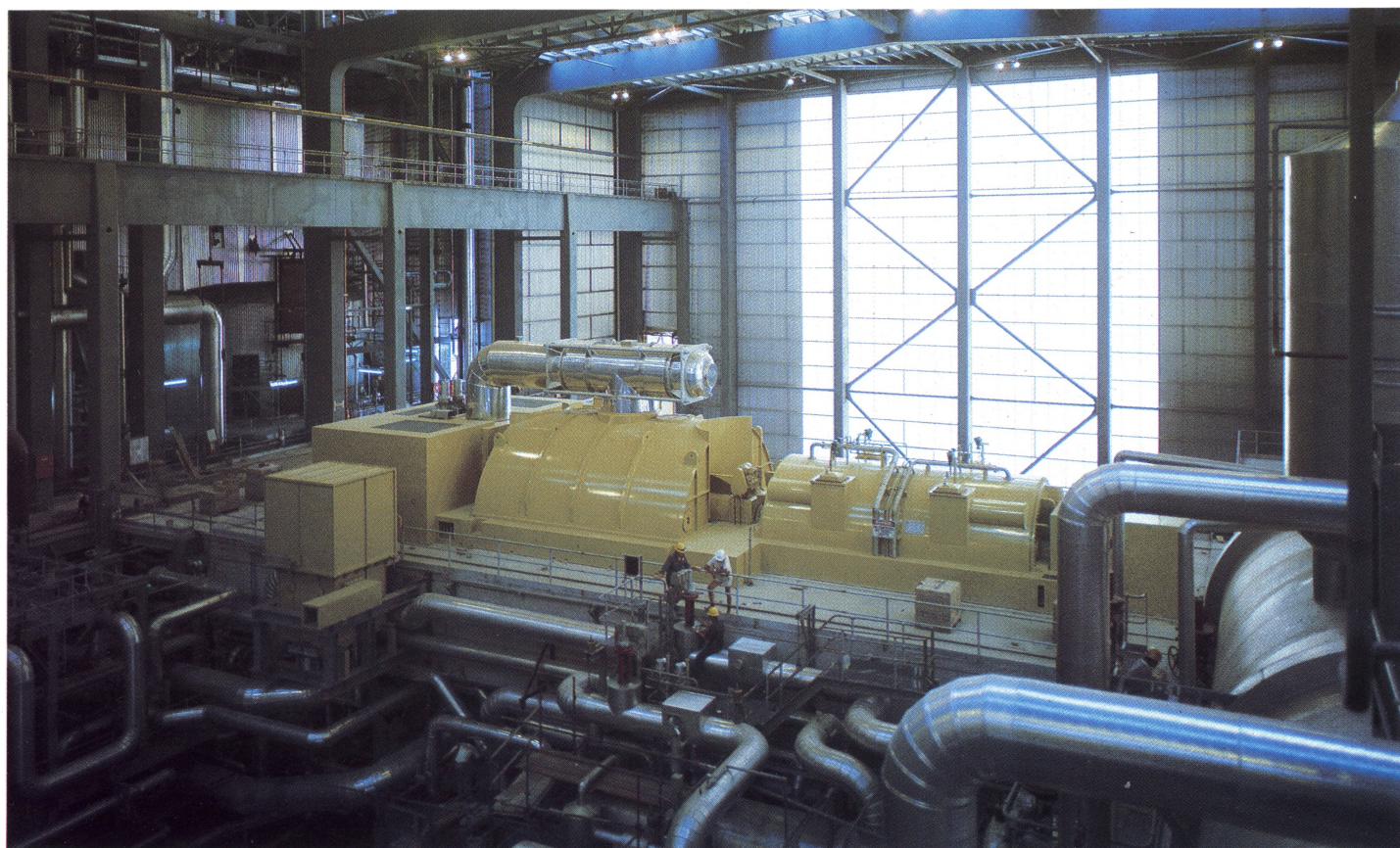
Peak load gas turbine plant connected to the main grid consumed 2 405 tonnes of distillate while the diesel generating plant supplying isolated communities consumed 21 000 tonnes of distillate and 12.1 M cubic metres of natural gas.

The hydro-electric stations at Kareeya and Barron Gorge produced a total of 452 153 MW.h during the year. This production equates to some 220 000 tonnes equivalent of coal.

As part of investigations into the combustion of difficult fuels, the Commission has studied the use of fluidised bed combustion for utilizing reject material from coal washing operations. Overseas developments have shown that units capable of generating up to 100 MW are feasible and appear to be capable of producing electricity at much the same cost as conventional plant. This work is continuing.

Below: Aerial view of Tarong Power Station.





The Commission welcomes the decision to erect a national coal combustion test facility on a site near Ipswich as this will enable the industry to more readily assess the suitability of coals offered for power station use.

Energy Alternatives

In light of the world oil supply situation over the past year, there is still little incentive for Australian industry to enter into any major development projects for coal liquefaction. However, the aluminium industry is continuing to show interest in partial coal liquefaction by pyrolysis. The main objective in this case is the production of an anode carbon material from coal as a substitute for the petroleum coke. The process under investigation will produce char as a by-product and the Commission will continue its investigation into the use of this char as a fuel for electricity generation using conventional boiler plant. Laboratory combustion tests on char prepared from a Walloon measure coal have shown that it is extremely reactive and should ignite readily.

Despite the relatively easy world oil supply situation the Commission is still concerned at the industry's consumption of comparatively high priced petroleum fuels and is continuing its search for lower cost replacement fuels. One option currently under test is the use of lower

grade fuel oil to replace the distillate used for boiler light-up and flame stabilization. Although these tests are showing promise, the material is still a petroleum product and must be regarded as insecure. Another option being examined is the use of a coal methanol mixture and it is proposed to participate in a joint study with commercial interests. It is hoped this study will receive Federal Government support by means of a National Energy Research Development and Demonstration Council grant.

Efforts are also continuing in an attempt to find a satisfactory substitute for diesel oil which is the major energy source for generation in the isolated western areas of the State.

Work is progressing on various studies into the use of solar energy for electricity generation. One such study is an investigation by the University of Queensland's Solar Energy Research Centre into the use of a solar pond coupled with a low temperature heat engine to produce electricity on a scale suitable for a small isolated township. This work is more than half complete and preliminary results indicate some promise provided construction costs can be contained and suitable sources of salt or brine for the pond can be found close to any proposed site.

The other area of interest is the generation of electricity direct from sunlight using photovoltaic cells. These cells are being produced in many countries, including Australia,

Above: Tarong Power Station — the first unit went into operation in May 1984.

and their technology is well understood. However the complete system requires some method of storing the electricity produced from the cells and then converting it into the 240 volt alternating current required by domestic appliances. The Commission is directing its attention in this latter area and has awarded a research contract to the Capricornia Institute of Advanced Education to develop a novel inverter system. It is hoped that prototype systems will be in operation within a few years and that these will demonstrate that such systems can provide a more cost effective way of providing electricity to the rural homesteads than the alternative of extending the grid.

In the field of wind energy the Commission is working with The Far North Queensland Electricity Board with the aim of developing a proposal for wind generation on Thursday Island. Wind measurements are being made on the island and when data is available for a period covering at least twelve months, an economic assessment can be made of a possible installation. Meanwhile, the board is taking steps to acquire a suitable site and manufacturers of wind generation plant are being approached. A number of these manufacturers have expressed considerable interest.



System Operations Interconnected System

The maximum demand on the State's interconnected system occurred in June 1984, and was met by total generation of 2 882 MW. This represents an increase of 4.4 per cent on the maximum demand of 2 760 MW in June 1983. Total energy generated and purchased amounted to 17 005 GWh for the year, which is a 16.1 per cent increase on the 1982/83 year. This is the second year of operation for Boyne Smelters Limited, and the high load factor of this industry continues to represent a major part of the increased energy generated.

The operating year has been one of achievement and consolidation, and has been free of major industrial actions that have previously affected power station output. The achievement has been in commissioning the first units in two new power stations, at Tarong and Wivenhoe. Both of these stations are valuable additions to meet the growing demands of the State network - Tarong for the low operating cost of its 350 MW units which will run as base generation, and Wivenhoe for the facility to provide short term generation at peak load periods from its two 250 MW units. Wivenhoe will also have the capacity to start rapidly automatically, or by direction from the State Control Centre, and to respond in many modes to different system requirements. In the past year, plant difficulties caused small amounts of load to be shed on four occasions averaging less than 10 minutes each.

It is expected that the extra Tarong capacity, and the flexibility Wivenhoe brings, will reduce the risk of load shedding in the future.

The first stage of the new State Control Centre at Belmont was commissioned in December. This facility now houses staff and equipment appropriate to operate the State's generation and transmission system as safely, reliably, and economically as possible. The second stage involving the installation of equipment to assist the operators with system security and operating cost information is expected to be completed by July 1984.

Left: Tarong Power Station switchyard will channel power into the State's transmission system.

During the year there has been a major effort made to upgrade the reliability of the transmission system in northern Queensland, and protection modifications have been made in several key substations. But it is impossible to eliminate power failures and there have been a number of interruptions caused by storms, cane fires, wildlife and equipment breakdown. A minor equipment failure can cause an extended transmission system interruption, yet in the wild cyclonic weather which south east Queensland experienced on 7 and 8 April 1984, the transmission system was not significantly affected.

Isolated Generation

The Far North Queensland Electricity Board, The North Queensland Electricity Board, The Capricornia Electricity Board and The South West Queensland Electricity Board own and operate nineteen internal combustion power stations which supply electricity within towns and adjacent rural areas which at present cannot be supplied from the interconnected grid system.

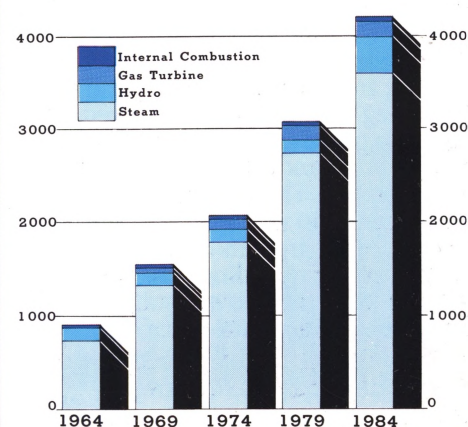
Public electricity supply in Karumba is provided by The Far North Queensland Electricity Board which purchases electricity in bulk from a major fishing enterprise, A. Raptis and Sons. The North Queensland Electricity Board purchases electricity in bulk from Mount Isa Mines Limited and provides a public electricity supply to Mount Isa, Cloncurry and the adjacent rural areas.

The installed capacity of the isolated generating stations at Camooweal, Boulia and Bedourie was increased during the year by 40 kW, 120 kW and 110 kW respectively.

Due to limited capacities of electrical works installed in many of the small townships, some restrictions on the use of electrical articles have been imposed. These restrictions remain in force until adequate capacity is provided. During the year, Georgetown was connected to the main grid system by means of a 22 kV line from Mt Garnet and the restrictions that had applied prior to interconnection were removed.

Electricity supply to isolated Aboriginal communities is the responsibility of the Department of Community Services or appropriate Shires such as the Shires of Aurukun and Mornington. The Department and these Shires operate small isolated power stations with engineering and other assistance being provided on a recoverable charge basis by the appropriate electricity authorities.

INSTALLED GENERATING PLANT (MW)



Major Capital Projects Generation

Tarong Power Station

The first of Tarong Power Station's four 350 MW generating units went into commercial operation on schedule in May 1984. Synchronisation of the unit with the State's interconnected system was first achieved on 12 December, a month ahead of the programme.

About 1 000 guests attended the official opening of the station, performed by the Premier of Queensland, the Hon. J. Bjelke-Petersen, M.L.A., on 4 May.

The successful commissioning of the unit is a significant achievement in Australia's electricity industry because the original commissioning date was advanced by 17 months some 18 months after the project had started.

Continued progress, using the project management organisation structure adopted by The Queensland Electricity Generating Board, indicates that the advanced commercial load dates for the remaining three units will be achieved.

By 30 June, expenditure on the station had reached about 70 per cent of the estimated final cost at 1983 prices of \$1 220 M.

Preparations were completed for the chemical cleaning of the No. 2 boiler to take place in July 1984. The second unit is scheduled for commercial operation in 1985.

First fuel from Tarong Coal's nearby Meandu Mine was received in November. The water supply pipeline to the station from the Queensland Water Resources Commission's Boondooma Dam went into service in February. Water for earlier commissioning requirements was obtained from Meandu Creek Dam near the station.

Installation of an air monitoring network, comprising six gas and dust sampling sites, was completed. This will enable predictions of chimney stack performance to be tested and will assist in studies of any effect of the station on crops, trees and soil.

Environmental studies in the Tarong area also involve soil and crop sampling, together with infra-red and satellite photography to obtain information and data on productivity and land use. The studies were commenced in response to concern expressed by growers and marketing organisations regarding possible adverse effects of power station emissions on agricultural crops.

The number of houses built by the Generating Board in Kingaroy,

Nanango and Yarraman to accommodate permanent employees and their families' reached 280 by June.

Continued success was achieved in fostering the integration of the project and its work force into the local communities. More than 15 000 people attended the fifth Open Day, held on 5 May, and large numbers were involved with other activities associated with Open Day and the Official Opening. These included the opening by the Generating Board's General Manager, Mr F.A. McKay, of Nanango's Pioneer Park, which was partly financed by the Board.

Stanwell Power Station

Following a review of the Stanwell Power Station construction programme, a target date of March 1990 was set for the station's first generation of electricity.

However the programme remains flexible and contains an option for deferral of the project to provide for first operation in March 1991.

Detailed design work is continuing and an environmental impact statement with studies on water, air, noise and land use is almost complete.

Tests conducted at Gladstone Power Station with Curragh coal, which will be burnt at Stanwell, provided information for boiler, and coal and ash handling plant design. Tests also were made on the behaviour of fly ash from Curragh coal, to help in the design of the station's flue gas cleaning plant.

Site earthworks started in January and are scheduled to be completed in January 1985. The work includes clearing, levelling, fencing, stormwater and sewerage pipelines, roadworks and car parks.

Highway intersection works to connect the site access road with the Capricorn Highway are due to be completed in October. They include overbridges across the highway and the adjacent railway line.

Accommodation facilities for the contractors' work force were established in Rockhampton.

Callide 'B' Power Station

Work on Callide 'B' Power Station continued according to a programme providing for the first of two 350 MW generating units to go into commercial service in March 1988.



Top right: Early construction on the main support columns of a cooling tower.

Bottom right: Over half of the industry's Capital Works expenditure is on power station construction.



Contracts valued at \$72 M were awarded during 1983/84 for the station including coal, ash and dust handling plants, electrostatic precipitators, chimney and cooling towers.

Contracts for main foundations, construction office, main store and turbine house structural steelwork were completed, and erection of boiler structural steel started in June.

The site work force of 300 at June 30 is expected to expand to more than 600 by December 1984.

Infrastructure augmentation work in the Biloela area progressed, with upgrading of roads and sporting facilities and the letting of a contract by the Department of Local Government for a water treatment plant to supply domestic water to both the town and power station. A new high-level bridge over Callide Creek on the Dawson Highway was built.

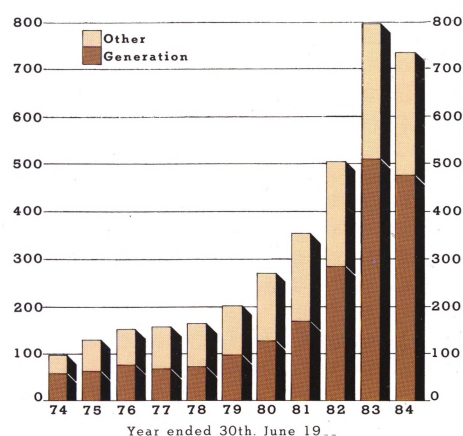
Sixty-four houses were built during the year to provide accommodation for project supervisory staff and their families. Additional single men's and family accommodation for construction workers neared completion. These facilities will provide sufficient accommodation until the end of 1985.

Design of the station will ensure all water and wastes associated with its operation will be contained on the site. This will prevent contamination of the Callide Valley's water resources.

The station will incorporate separate furnace ash and fly ash handling systems. Fly ash will be transported by compressed air about 1.5 km to a dense-slurry disposal system. Reduction in ash water quantities will be achieved, allowing use of a smaller ash dam and improving environmental controls.

CAPITAL EXPENDITURE

[Millions of dollars]



Gladstone Power Station

Design work started on a two-year project, estimated to cost about \$8 M, to improve the operating flexibility of the existing ash handling plant. These modifications will improve significantly the ability of the plant to handle the diverse range of coals now being burnt at the station.

Work continued on upgrading the station's coal handling plant to reduce dust problems.

Final field studies were completed for the environmental survey of the biology of Calliope River and its environs. The report of this study, one of the most comprehensive estuarine studies carried out in Australia, is nearing completion.

The air monitoring network established in the Gladstone area to measure ground-level concentrations of gas and dust continued to provide useful data. The levels being measured are generally well below the most stringent standards adopted by environmental protection agencies.

Wivenhoe Pumped Storage Project

This project, consisting of two fully automatic remotely controlled 250 MW generating/pumping units, is being built in conjunction with the construction of the main Wivenhoe Dam as the first pumped storage power station in Queensland. The Snowy Mountains Engineering Corporation is the engineering consultant for the project.

The final cost of the project is estimated to be \$245 M when it is completed in the second half of 1984. Since the start of work on the project, approximately \$235 M has been spent on Splyard Creek Dam, power station and tunnel excavation, main power station silo construction and main plant purchase and installation.

The construction of the main power station, comprising excavation and construction of the silos, is complete. All tunnel works, together with the upper intake structure, are complete.

A consortium of Thiess-Codelfa Cogefar-Evans Deakin was responsible for the complex civil works on the project.

All overseas components of the pumps, turbines and generators, manufactured principally in Japan by Mitsui/Toshiba and Mitsubishi, have been delivered and assembly of the two generating units is complete.

The two main generator transformers, manufactured in Brisbane by GEC Australia Ltd., were satisfactorily delivered to site and installation is now complete.

A problem with welding on the upper intake gates led to the Contractor, Samsung Heavy Industries of Korea, agreeing to re-manufacture the gates at no additional cost. This work was completed and the gates have been installed.

Testing and commissioning of the first generating unit is complete and it was available for service for the winter of 1984.

Testing of the second generating unit is nearing completion and the whole power station will be finished by September 1984.

Kareeya and Barron Gorge Hydro-Electric Power Stations

Work began on a programme to upgrade facilities in the control room and administration building and the former construction camp area of the Kareeya station. The programme, planned for completion in 1985, will improve amenities and facilities at the power station. New electrical maintenance and carpentry workshops are being provided. Re-location and re-equipment of vehicle maintenance facilities and provision of modern air-conditioned office space and enlarged storage space are also included in the programme.

At Barron Gorge a new workshop building with overhead travelling crane was completed, improving maintenance facilities and working conditions.

Transmission

Interconnected System

The Mt England 275 kV switching station which is associated with the Wivenhoe Pumped Storage Scheme was commissioned in August 1983. Mt. England will also serve as a switching station for one of the three Tarong Power Station transmission circuits and provide for delivery of power into the 275 kV network supplying the south east Queensland region.

The 275 kV switchyard at Tarong Power Station was commissioned in September 1983. The second stage of transmission for Tarong Power Station comprising a double circuit 275 kV line from Tarong is under construction and will be completed by 1985 with one circuit terminating at Mt. England (Wivenhoe) and the other at Swanbank.

A major reinforcement of the transmission system supplying the Bowen Basin coal mining area is in progress for completion by 1985. This comprises a new 275/132 kV substation at Lilyvale, north of Blackwater, to be supplied by a single circuit 275 kV line 107 km in length

from a switching station being established at Broadsound.

Work is in progress to extend the grid to Ross near Townsville by the construction of a 162 km double circuit 275 kV line from Nebo to Collinsville to connect with an existing 275 kV line between Collinsville and Ross, currently operating at 132 kV. A new 275/132 kV substation is being established at Ross to connect into the existing 132 kV network. This first stage will be completed in 1985 and a second 275 kV line between Collinsville and Ross will be completed in 1986 to provide duplicate circuits from Central Queensland to Townsville.

Regional Supplies

Augmentation of the electricity supply network in Central and Northern Queensland has continued with the commissioning of a new 132/66 kV substation at Clermont and of additional transformer capacity at the Cairns 132/22 kV substation.

In south east Queensland reinforcement of Maryborough by a second 132 kV transmission line was completed in August 1983. Augmentation of supply to the Sunshine Coast is in progress with the establishment of new 132/11 kV substations at Noosaville and Alexandra Headlands together with 132 kV transmission lines from Cooroy to Noosaville and from Mooloolabah to Alexandra Headlands.

New 110/11 kV substations are also under construction at Redbank Plains, Springwood and at Charlotte Street in the Central Business District. A similar substation was recently completed at Nerang to consolidate supply to the northern part of the Gold Coast.

Distribution

Area Reinforcement and Extensions

Continued development of the distribution system was required to cater for strong population growth in many areas of the State during the year. The fringe areas of Brisbane and the coastal resorts were the main growth areas in the south of the State, while aluminium, coal mining, electricity generation and tourism projects were responsible for major expansions in the northern and central areas.

Right: When completed, Tarong Power Station will add 1 400 MW to the State's interconnected system.



This has required considerable capital expenditure for extensions into the new areas and reinforcement of the system generally. The latter has involved increases in transformer capacity, the construction of additional high and low voltage lines, an increase in size of existing conductors and the construction of new substations. The policy of progressively undergrounding urban reticulation to improve system reliability is being pursued and the trend to the use of underground reticulation in new subdivisions for aesthetic reasons is continuing, with considerable support from local authorities which by law are the arbiters of whether the extra cost of undergrounding is justified for environmental reasons.

Rural Electrification

The Rural Electricity Subsidy Scheme was introduced on 1 July 1978

and continues to receive very favourable acceptance from the rural community. 352 properties were connected during the year at a cost of \$9.7M.

The purpose of the Scheme is to assist in the completion of the rural electrification of the State to the maximum extent that this is feasible. The Scheme provides for the supply of electricity to small townships which do not have a public electricity supply, as well as for supply to groups of rural properties.

Although the State Government subsidy of \$6 M was exhausted during the 1982/83 financial year, the Scheme continues to operate under the same terms and conditions using industry funds.

High demand for new extensions in reticulated rural areas also continued during the year.

Finance

Operating Results of the Electricity Supply Industry

For the 1983/84 financial year, the total receipts of the Commission and the various Electricity Authorities exceeded payments by \$21.7 M.

Details are :-

	\$M	\$M
Receipts		
Sales of Electricity	939.4	
Other, including interest on investments	<u>154.3</u>	1093.7
Payments		
Operation and Maintenance	568.9	
Capital Charges	293.2	
Contribution from revenue to cost of capital works	<u>209.9</u>	1072.0
Surplus for year		<u>\$21.7M</u>

The surplus has been carried forward to 1984/85 to help offset current costs.

Loan Raising

Following the successful introduction by the Commonwealth Government of a bond tender system in the 1982/83 financial year, the Commission decided to use a similar system for raising part of the 1983/84 loan programme. On 14 September 1983 institutions were invited to tender for \$30 M of private loans and the response was very satisfactory. As a result the Commission decided that the inscribed stock tender system should become an important method for seeking loans from major Australian lending institutions. Four tenders were held as part of the 1983/84 financial year from which \$118.6 M was raised.

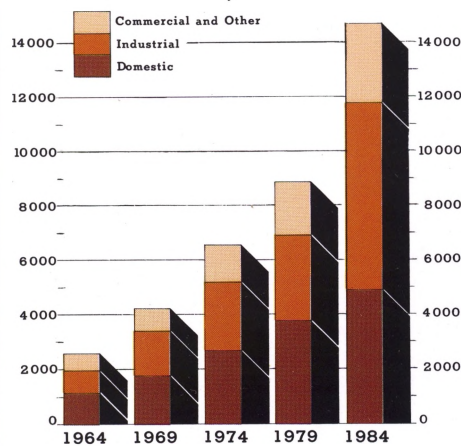
Interest rates fluctuated during the financial year. On 1 July 1983 the interest rate offered by the Commission on loans of 10 years or longer was 16.1 per cent but by the end of February 1984 that rate had fallen to a year's low of 13 per cent. The floating of the Australian Dollar in December 1983 had a steadying effect on interest rates and at 30 June 1984 the Commission's long term rate was 14 per cent.

Details of the Electricity Supply Industry's loan programme for 1983/84 were:

For new works	\$M	517
For conversion of maturing loans		<u>108</u>
		<u>\$625</u>

Of this amount \$492 M was raised in Australia and \$133 M from overseas.

SALES OF ELECTRICITY (GW.h)



The borrowings comprised:

Commission raisings:	\$M
Public Loans	116
Private Loans issued at par	243
Private Loans issued by tender	119
Overseas Loans	133
Direct raisings by Electricity Authorities	
Private Loans	<u>14</u>
	<u>\$625</u>

Overseas borrowings of A\$133 M include:

A Commercial Paper issue in the United States market	\$US 50M
A Euro-Dollar Note Issue	\$US 60M
A Private Note placement in Japan	Y 5 billion

At 30 June 1984 agreements for all issues had been executed but only the Japanese Yen placement had been drawn down yielding \$24.7 M.

An amount of \$45 M on account of the 1984/85 capital works programme was raised during 1983/84 by way of:

Public Loan 101	\$M	5
Private Loan Tender No. 5		35
Private Loans		<u>5</u>
		<u>\$45</u>

The amount raised has been applied to conversion of maturing debt up to 1 August 1984.

Moneys available for short term investment consist mainly of loans raised for capital works, sinking funds which the Commission is required to create under the Electricity Act, trust funds held by Electricity Authorities such as consumers' security deposits and sums held for payment of creditors accounts not yet due. Interest earned from short term investments in 1983/84 was \$42 M.

Registry of Inscribed Stock

In the 1983/84 financial year the Registry of Inscribed Stock allotted a total of \$324 M in public and private loans raised on the domestic market. Redemptions for the year totalled \$115.2 M. Stock to the value of \$14.4 M was allotted on behalf of Electricity Authorities and \$2 M redeemed on their behalf.

Branch Registry operations in Sydney, Melbourne, Adelaide and Perth were closed as from 30 June 1984. The SEA Special Stock registered on the branches will be transferred to the Principal Registry in Brisbane on 1 July 1984. A full range of services will be provided for former southern stockowners at the Principal Registry and the Interstate Marking Service will be maintained in Sydney and Melbourne.

The Registry is continuing its redevelopment of computer systems and it is expected that the new system will be available by the end of 1984, thus enabling the Registry to continue its high level of service to its stock owners.

As at 30 June 1984 the Registry had 41 000 stockowners registered holding \$2 108 M of which \$65 M related to Electricity Authority borrowings.

Capital Expenditure

The 1983/84 capital works programme provided for expenditure of \$771 M on :-

	\$M
Generation	473
Main transmission	58
Distribution	152
Miscellaneous	<u>88</u>
	<u>\$771M</u>

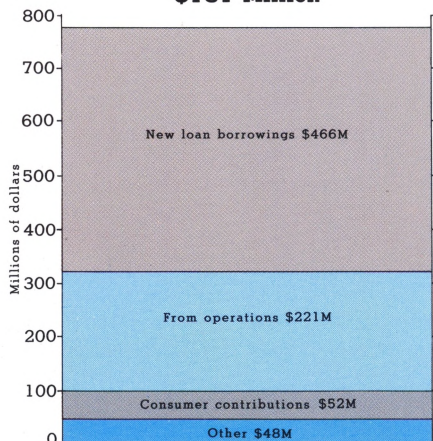
Of this total programmed expenditure \$711 M was expended on works during the financial year and \$60 M is being carried over to the 1984/85 financial year.

The programmed sources of funds to finance capital works in 1983/84 were:

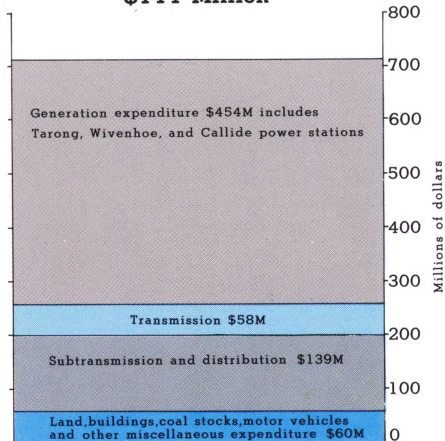
	\$M
Carryover from 1982/83	48
New Loan Moneys	466
Internal Funds	209
Capital Contributions etc.	<u>48</u>
	<u>\$771M</u>

The total amount of moneys actually available (\$787 M) during the financial year was very close to these estimates.

CAPITAL WORKS RECEIPTS
\$787 Million



CAPITAL WORKS EXPENDITURE
\$711 Million



The major portion of expenditure was on generation and generation-related projects, the most significant being the Tarong Power Station, Callide 'B' Power Station and the Wivenhoe Pumped Storage Project.

Financial Planning

In conjunction with the Co-ordinator-General and the State Treasury, the Commission formulates a financial plan for the electricity supply industry which fits into the co-ordinated works programme of the State and accords with the overall financial policy of the State Government.

The plan makes provision for expenditure on new and replacement works after taking into consideration the economic environment, demand for electricity and availability of funds required to finance the necessary projects.

Each year, only that expenditure considered essential for the development of the electricity supply industry in Queensland and maintaining the reliability of the system is included in the plan so that the requirement for loan funds is kept to a minimum and expenditure accommodated within the co-ordinated works plan of the State.

Electricity Tariffs

Tariff determinations made on 11 June 1983 formed the basis of charging for most electricity consumed in Queensland in 1983/84. The effect of these tariff determinations was to:

- increase the bulk supply charges paid by the Electricity Boards to the Generating Board by approximately 16 per cent from 1 July 1983, and
- increase retail tariffs by an average of 9 per cent from 2 July 1983.

Following a review of the financial situation and taking forecast costs for 1984/85 into account, tariff increases of 12.5 per cent for bulk supply and 9.7 per cent in retail tariffs were approved for the 1984/85 financial year.

The increased bulk supply charges apply from 1 July 1984 and the new levels of retail tariffs from 16 June 1984.

In the seven years that have elapsed since the reorganisation of the electricity supply industry, the numbers of different tariff levels have

been significantly reduced. In July 1977 there were about 180 different tariff levels compared with only 42 levels since mid-June 1984.

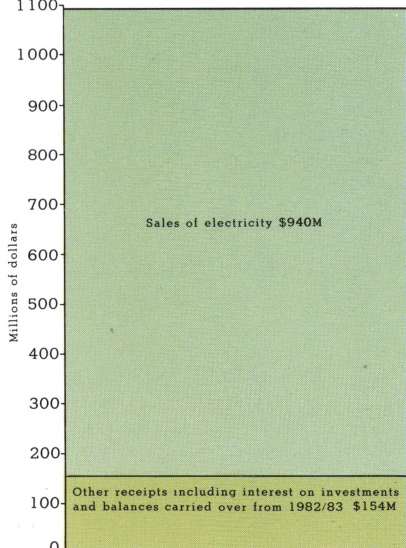
In July 1977, charges under the domestic lighting and power tariffs applicable in cities of central and northern Queensland were approximately 50 per cent higher than charges in Brisbane with margins of up to 150 per cent in some more isolated areas. Subsequent movements towards uniformity will have reduced this margin to about 3 per cent at the end of 1984/85.

Further tariff initiatives taken in mid-1984 have effect in the following areas:-

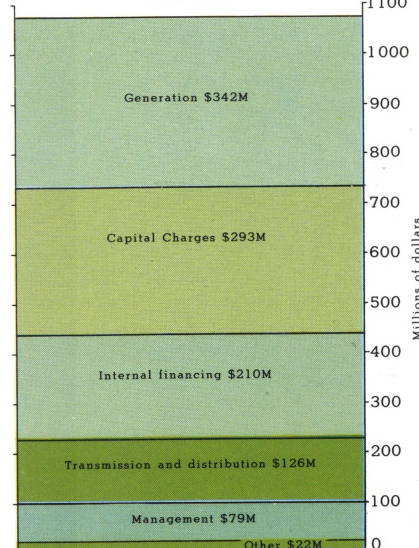
- Controlled Water Heating Tariffs are to be introduced progressively in all Board's areas. Concurrently, the continuous water heating tariff will be phased out.
- small general supply consumers (churches, charities and small businesses etc) are seeing reduced charges due to a restructuring of the initial blocks of the General Supply Tariff.
- a tariff for large consumers (60 000 kW to 160 000 kW demand level) has been introduced. This tariff has been designed as the basis for charging new consumers of this magnitude.

Provision has also been made in 1984/85 for transfers of funds between Electricity Boards to achieve a greater degree of tariffs uniformity than existed in 1983/84. To effect this, funds will be provided by The South East Queensland and The Mackay Electricity Boards and received by The Far North Queensland, The North Queensland, The Capricornia, The Wide Bay-Burnett and The South West Queensland Electricity Boards.

OPERATING FUND RECEIPTS
\$1 094 Million



OPERATING FUND DISBURSEMENTS
\$1 072M



Industrial Relations

The industrial relations climate in the industry during 1983/84 has been good. A contributing factor to this is the restraints imposed by Arbitration Tribunals on unions in their quest for wage increases and improvements in conditions.

National Wage Flow-on

On 11 October 1983, the Industrial Conciliation and Arbitration Commission of Queensland, subject to certain modifications, adopted the principles of Wage Fixation enunciated by the Australian Conciliation and Arbitration Commission in its National Wage Case Decision of 23 September 1983.

This adoption was conditional upon unions giving global undertakings that they will not, for a period of two years from 6 October 1983, pursue any extra award or overaward claims except where consistent with wage fixation principles.

Following appropriate responses being received, the Commission increased adult wage rates and salaries in its Award, with certain exceptions, by 4.3 per cent operative from 10 October 1983.

The increase of 4.3 per cent reflected the increase in the Consumer Price Index for the June and September Quarters.

In conformity with the Wage Fixation Principles the Industrial Commission flowed on the National Wage increase of 4.1 per cent which reflected the Consumer Price Index increase for the September and December 1983 Quarters. This increase was effective from 9 April 1984.

Disability rates and allowances prescribed in Awards were similarly increased.

Anomalies Procedure

The Wage Fixation Principles enunciated by the Industrial Commission, in part, provided for the resolution of anomalies and inequities. On 30 November 1983 the Commission issued a decision which outlined the procedures for dealing with such matters.

Claims filed must be brought before the Anomalies Conference constituted by a Commissioner as Chairman and with representatives from the Crown, Queensland Confederation of Industry, Trades and Labour Council of Queensland, Combined Industrial Unions Committee and the Australian Workers' Union. The Commissioner decides whether there is or is not an arguable case to be decided by a Full Bench of the Commission.

Federal Logs of Claims

The Log of Claims served on the Industry by the Municipal Officers' Association in May 1983 seeking a Federal Award came on for hearing before a Federal Commission on 28 July 1983. The Commissioner, after hearing the parties, recorded the finding of a dispute in the terms of the Act.

The Association has since advised that it is not its current intention to proceed with the making of a Federal Award.

Appointment of Industrial Commissioner to deal with Industry Disputes

In April 1984 the President of the Industrial Court announced that Mr Commissioner Ledlie would hear all disputes in the industry in lieu of Mr Commissioner Birch.

Industry Personnel

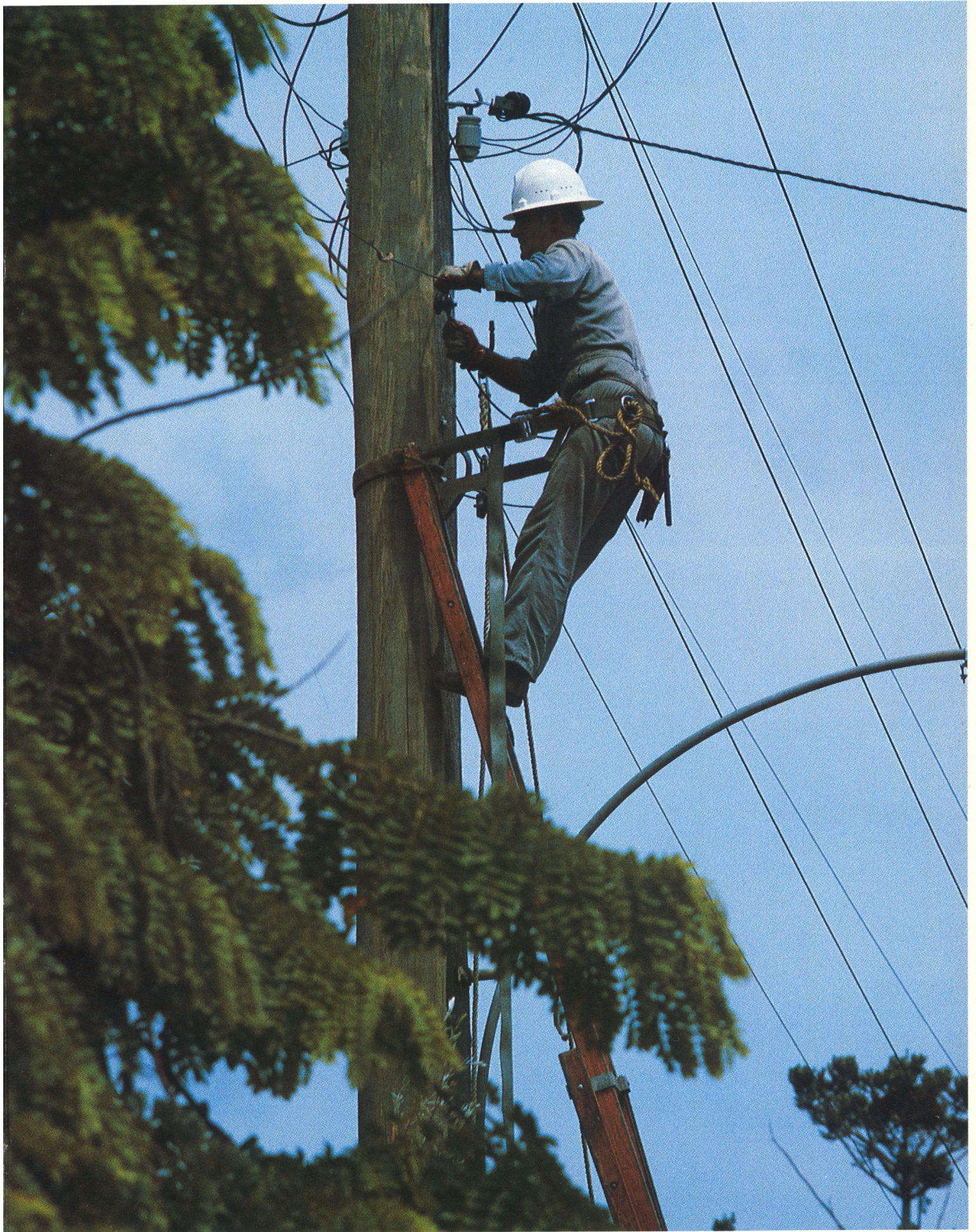
At the end of June 1984, there were approximately 13 100 persons employed by the Industry in electricity authorities and the Commission. This represents a growth rate over the past year of just under one per cent.

Previous reports have excluded the Commission's staff numbers from industry figures. However due to the approaching amalgamation of the Commission and Generating Board these staff are now included in the industry total.

Of the present total employment approximately 60 per cent of staff are employed by the seven electricity boards responsible for distribution of electricity, while the remaining 40 per cent are employed in industry administration, generation, main transmission and the planning and management of new major power projects.

Right: Electricity Boards provide a 24 hour service to ensure that the electricity supply is reliable.







Safety

Inspectorial Activities

Officers of the Commission's Inspectorial Branch carried out inspections in Electricity Boards' areas of supply throughout the year. A number of licence areas were also visited. Generally a satisfactory standard was reported in respect of Authority works and consumers' installations.

As accident statistics for the electricity supply industry indicate the need for constant safety consciousness on the part of all personnel in the industry, particular attention was given to the use of safety equipment and to safe working procedures.

Routine checks of electrical articles for sale and hire revealed a high degree of compliance with the relevant provisions of the Electricity Act 1976-1982.

Electrical Inspectors continued to give assistance to the Queensland Electrical Education Council in its continuing public safety campaign and also to the Electrical Workers and Contractors Board in the examination of candidates for certification and licensing and by investigating complaints of dangerous or defective work.

Officers of the Inspectorial Branch serve on various technical committees of the Standards Association of Australia and the Electricity Supply Association of Australia and continued to liaise with and render technical assistance to other Government Departments on request.

Accidents & Fatalities

During the year 24 fatal electrical accidents occurred compared with 16 in 1982/83.

The total number of electrical accidents reported to the Commission rose from 455 last year to 487 this year. The majority of these accidents occurred on domestic premises.

There were 31 accidents involving employees of Electricity Authorities, compared with 13 accidents last year.

A detailed analysis of accidents on consumers' premises showed that the three main causes of accidents were lack of maintenance, unauthorised work and contact with overhead conductors. Publicity advising the dangers associated with the misuse of electricity has continued.

The electrical safety education programme which is designed to educate all Grade 8 secondary school students has continued and been well received, with a new electrical safety film being incorporated into the school programme.

Approvals

The year saw an increase in the number of items being submitted on a voluntary basis for examination by the Commission, particularly in regard to the types of electrical equipment being offered to Government Departments.

The amount of equipment found not to comply fully with minimum safety requirements has certainly proven the value of the scheme.

In the past twelve months no additional items were classified as coming within the scope of a prescribed electrical article.

There were continued discussions between the Statutory Electrical Approvals Authorities, manufacturers and importers regarding the difficulties being experienced both from delays in testing and increased testing charges in the aligning of Australian Standards with those of the International Electrotechnical Commission. Further discussion will soon be held so that Australian policy in regard to this very sensitive area can be finally determined.

The number of items being submitted for a Certificate of Suitability or a Certificate of Approval continued to increase and all testing and processing facilities within the testing laboratory and Commission have been fully committed.

Safety Education and Publicity

The Electrical Industry Safety Advisory Committee, and its various sub-committees, have continued to meet regularly to consider accident reports and review methods for achieving safe working conditions throughout the industry. From this, the Committee can determine trends which may be developing and take action to educate industry personnel in the avoidance of potentially hazardous practices and procedures.

Such action involves contact between the Commission and the accident victim, where it is established that he has been negligent, and the employer where some negligence is attributable to him.

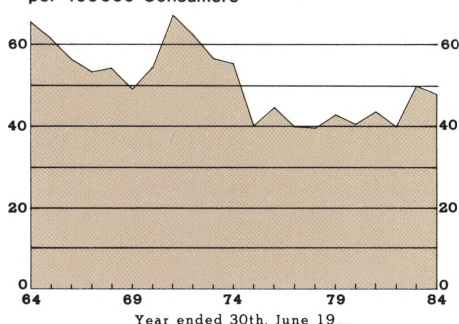
Serious and fatal accidents receive wide publicity throughout the industry so that persons performing similar work are made aware of the possible dangers.

This year, in order to bring the activities of the sub-committees to the attention of members of the industry in country areas, meetings have been held in Rockhampton and Cairns.

Over 250 copies of the Commission's film 'The A.B.C. of Resuscitation' have been sold in Australia and overseas and all State Regulatory Electricity Authorities now use the companion book 'Resuscitation in the Electrical Industry'.

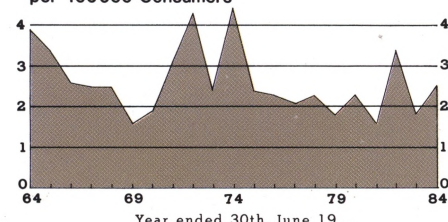
ELECTRICAL ACCIDENTS

per 100000 Consumers



ELECTRICAL FATALITIES

per 100000 Consumers



Far left: Staff training helps ensure safe working practices throughout the industry.

Environment

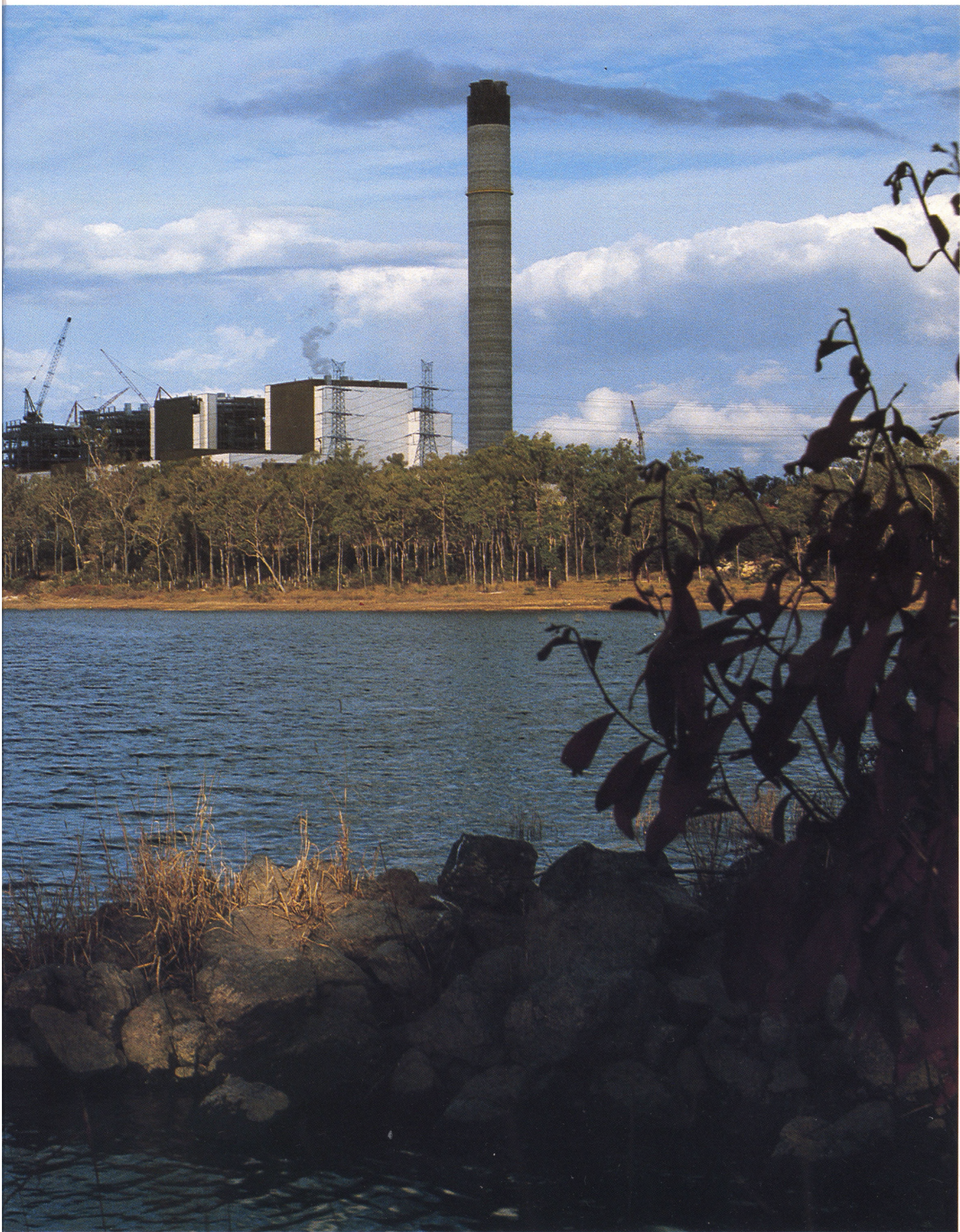
Most of man's developments in technology affect the environment in some way. The provision of a public electricity supply is a continuing development which must impact on the environment but the electricity supply industry is always very conscious of its responsibility for environmental protection. Transmission lines and power stations have to be sited, built and maintained with every concern for their impact upon surrounding country, particularly their appearance on the landscape, and possible adverse effects of associated works or emissions during operation. The location of such works, even in remote areas, has to anticipate future developments where people may later go to live, or where recreation areas may be developed.

There are strict procedures in Queensland to ensure that any environmental impact is fully considered in all major new electricity works, and that the views of Advisory Bodies are sought in connection with any such projects. These Advisory Bodies include Government Departments, Shire Councils, and others with specific knowledge of the area of development. Their advices are considered in the preparation of the Environmental Impact Study reports for major projects.

By these actions, and continued surveillance of ongoing effects on the environment of existing works, the electricity supply industry demonstrates its responsible attitude towards environmental protection.



Right: Thousands of trees and shrubs have been planted around the new Tarong Power Station.



Boards' Operations and Activities

The Queensland Electricity Generating Board

Energy generated and purchased totalled 17 005 GW.h, which was 16.1 per cent above that of 1982/83. Sales included 2 563 GW.h to the Boyne Island aluminium smelter, and 569 GW.h to the Gladstone alumina refinery, the Board's two industrial bulk supply customers.

Maximum demand on the Board's interconnected system, 2 882 MW on 18 June, was 4.4 per cent above that of the previous year.

Commissioning of the first 350 MW generating unit at Tarong Power Station in May increased the total installed capacity of the Board's stations by almost 10 per cent to exceed 3 950 MW.

Generating capacity over peak periods was further increased in June with the commissioning of the first of two 250 MW units at the Wivenhoe Pumped Storage Hydro-Electric Power Station. The second unit is due to be commissioned in August 1984.

This station, built by The State Electricity Commission of Queensland under delegation from the Co-ordinator General, is being operated by the Board.

One feature of 1983/84 was completion of the programme to upgrade flue gas cleaning plant at three of the Board's older power stations, to meet revised Air Pollution Council requirements.

Installation of fabric filters on all 24 boilers at Tennyson and Bulimba Power Stations was completed in December 1983. Acceptance testing of most of this plant was completed satisfactorily.

Fitting of similar equipment at Callide 'A' Power Station to replace mechanical filters originally installed was also completed in December but to date the plant's performance has not met the contractor's guarantees. Modifications are due to be completed by December 1984.

Gladstone Power Station was the system's major producer, responsible for some 61 per cent of total generation. During July and August, the station achieved exceptionally high reliability, generating record amounts of 945 and 956 GW.h respectively. This was a major factor in enabling the Board to maintain a reliable supply during the 1983 winter.

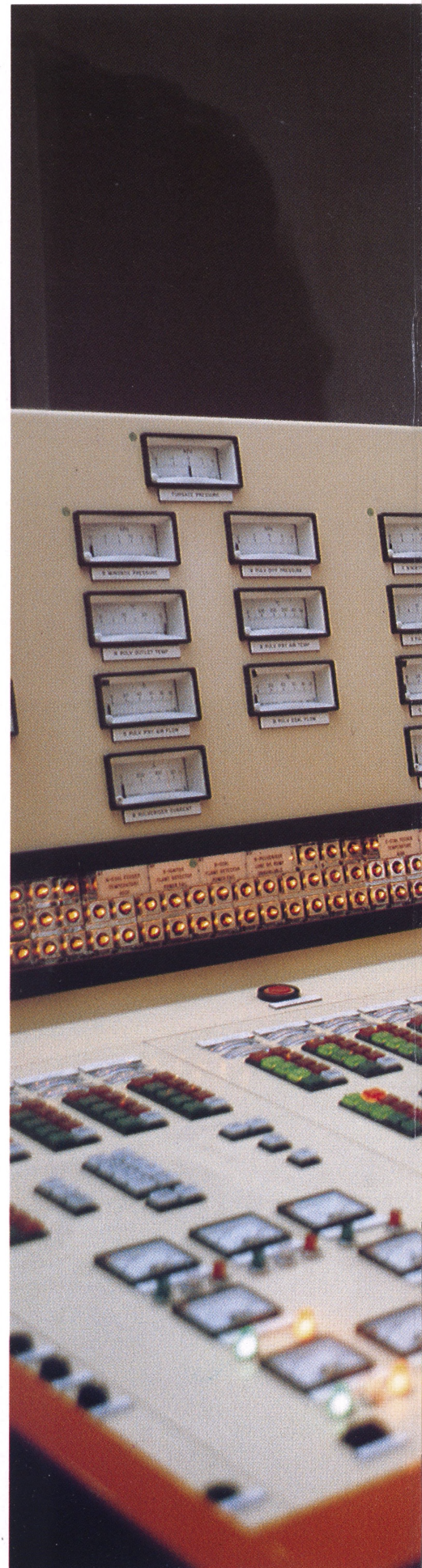
After September, however, lower quality coal caused a decrease in the station's availability which was aggravated in the first quarter of 1984 by other plant problems.

Availability of Collinsville Power Station continued to improve. In April, all five generating units were in operation simultaneously for the first time since August 1979. This improved availability offset a reduced hydro-electric contribution in the northern part of the system. For the second successive year, poor summer rains severely restricted output of both Kareeya and Barron Gorge Power Station. Despite conservation measures, the level of Koombooloomba Dam, which supplies the Kareeya station, did not rise above 73.2 per cent of maximum capacity.

The Board's coal stockpiles have increased significantly as a consequence of energy sales being lower than expected and a special coal purchase to assist in the orderly reduction of employment in the West Moreton coal fields. At 30 June, stocks were about 600 000 tonnes, (40 per cent) above requirements for coal supply security, with the excess located mainly at Swanbank and Gladstone.

Industrial disputes resulted in the loss of 9 145 man-days during the year, compared with 7 540 man-days in 1982/83.

Work on construction of the Board's new power stations continued on schedule. Details of these projects and of transmission works carried out are given in the Major Capital Projects section of this Report.



Right: Operators at Tarong will be trained on this \$3 million simulator.



The South East Queensland Electricity Board

Electricity sales to south east Queensland consumers increased by 1.8 per cent during the year to total 6 706 GW.h, and consumer numbers rose to 595 824, a 4.1 per cent increase over 1982/83 figures.

Major projects to cater for the electricity needs of the Board's supply area included the virtual completion of a joint project by it and the Redland Shire Council to provide power supply to the Redland Bay Islands of Macleay, Karragarra, Lamb and Perulpa. In July 1983, reticulation was completed to Macleay Island with Karragarra, Lamb and Perulpa Islands receiving supply in August 1983. As demand for electricity in the Moreton Bay Island group grows, work is continuing on additional extensions agreed to by the Redland Shire Council.

The establishment of a new 33/11 kV substation at Browns Plains was completed in October 1983, at an overall project cost of \$4.2 M. This involved the construction of a double circuit overhead line spanning 10.3 kilometres between Loganlea and Browns Plains.

Other overhead projects completed were the construction of the 110 kV line between Caboolture and Toorbul Point at a cost of \$2.5 M together with the 33 kV line to Beechmere, to provide an alternate power supply to Bribie Island. A 49 kilometre 110 kV overhead line between Kingston and Bromelton was also commissioned at a cost of \$4 M in October 1983.

A new 6 kilometre (\$4 M) 33 kV overhead power line was established during the year to provide supply to the Gold Coast City Council's water pumping station at the wall of the Hinze Dam, and a 33/11 kV substation was constructed at Marburg to replace the existing installation and cater for electricity load growth in the area. Substations at Miami, Nambour, Wacol, Carole Park and Meeandah were also updated in 1983/84 to meet local power needs.

Significant works which are presently in hand and expected to be completed in early 1984/85 include the construction of a new \$6.3 M substation at Noosaville, the first stage of the conversion of the Alexandra Headland Substation to 132/11 kV operation, and the stringing of a 132 kV transmission line between Cooroy and Noosaville.

Work has also begun on the establishment of a new 110/11 kV substation with associated underground and overhead powerlines at Charlotte Street, Brisbane. This project, expected to cost around \$13 M, is designed to meet the electricity demands of building development in the inner city into the next decade. The north Springwood substation, presently under construction, is due to be commissioned next year.

Two new depots were officially opened and an extension to existing depot facilities at Raceview was completed in 1983/84.

The new Gatton depot, which opened for business on 6 October 1983, was designed to meet the growing electricity needs of consumers in the Gatton, Laidley and part of Esk Shires. The Burleigh Heads depot, an operational centre for construction and maintenance work, will service the electricity requirements of 15 000 Gold Coast consumers.

The new office building at Raceview depot was built to cater for an increase of more than 100 per cent in consumers using the depot's accounts payments and inquiries facilities.

The South West Queensland Electricity Board

A major development during the year was the approval of a project to extend a transmitted supply of electricity at 66 kV from Roma to Charleville and St. George in 1987 and to Cunnamulla in 1988.

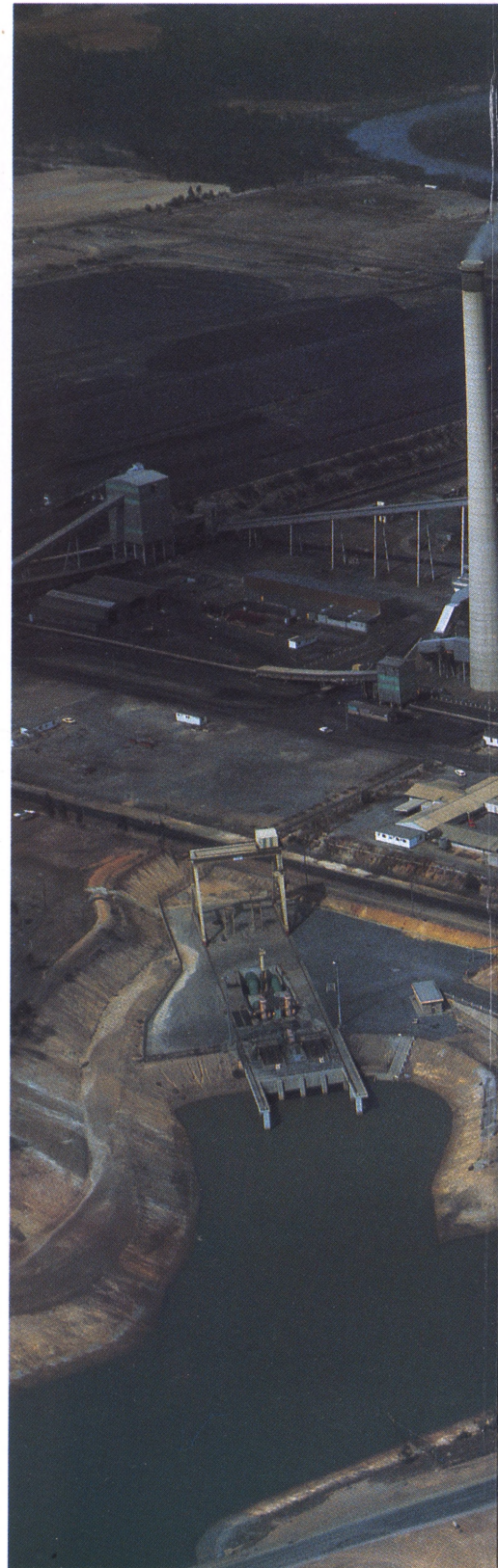
In order to meet load demands in the Charleville and Cunnamulla areas prior to 1987 and 1988 respectively a new 700 kW diesel generating set was installed at Cunnamulla during the year and an existing 800 kW diesel generating set will be relocated from the Roma power station to the Charleville power station by winter 1985.

The main system reinforcement works completed were the installation of 11 kV shunt capacitors at the West Dalby Zone Substation, the erection of a regulator on the Chinchilla to Miles 33 kV line, the purchase and installation of 3 MVA 33/11 kV transformers at Norwin and the reconductoring of twenty six kilometres of Cooby Creek 33 kV feeder.

Augmentation of a number of SWER systems by the erection of additional isolating substations and high voltage supply lines was also commenced and this work will be completed early in 1984/85.

Contracts were let for the survey, clearing and construction of a new 33 kV line from Miles to Wandoan. Completion of this work is planned for 1984/85.

Further extensions to the distribution system under the State Government Rural Electrification Subsidy Scheme were completed during the year with the erection of an



additional 437 kilometres of line making a supply of electricity available to 43 consumers.

Construction work commenced on the erection of major extensions to the Board's Head Office in Dalby. The extensions will be completed early in 1984/85 and will allow the Board to have all Head Office staff housed in the one building.

Depot improvements were completed at Toowoomba, St. George, Stanthorpe and Cunnamulla and the first stage of the development of a new distribution depot in Dalby was finalised.

Staff training and development activities were carried out during the year with emphasis on supervision and communication. These activities are part of a continuing program

which will provide the necessary training support for staff at all levels within the Board.

The technical training of apprentices and electrical linesmen also formed an important part of the year's activities with an increased number of apprentices appointed in 1984.

Below: Gladstone Power Station is the State's largest with a capacity of 1 650 MW.



The Wide Bay-Burnett Electricity Board

The Board continued to meet the objective of maintaining a reliable supply of electricity to consumers in 1983/84 and contained increases in expenditure over which it has control to 3.3 per cent or 5.2 per cent if capital charges are also included. Staffing levels remained constant at 435 throughout the year. The shortage of linesmen which contributed to delays in supplying consumers in previous years has now been overcome.

An unusually wet year coupled with a downturn in the economy and low commodity prices caused electricity sales to slump. Electricity sales fell in 1983/84 by 3.6 per cent to 458 GW.h. This followed an increase of 17.3 per cent in 1982/83. The Board incurred an operating loss of \$2.9 M resulting from a budgeted deficit for the year of \$0.5 M combined with the decline in sales.

Economic factors also led to a reduced demand for new supplies. The number of new consumers connected fell from a peak of 1 948 in 1981/82 to 1 728 in 1983/84. Consequently, the construction of distribution works by contract (other than those associated with rural subsidy development) has been suspended for the time being. During 1983/84, contractors only accounted for \$0.3 M of the total expenditure of \$3.9 M on major extensions.

The continuation of the Bundaberg Irrigation Scheme required the construction of a 66/11 kV zone substation at Bullyard to provide power to a Queensland Water Resources Commission pump station comprising four 330 kW motors. A further 66/11 kV zone substation was constructed at Owanyilla near Maryborough to provide power for the main pumping station of the Lower Mary River irrigation scheme.

Several large scale irrigation extensions were completed including Farnsfield, St. Agnes, Berrembea and a further 6 MW of irrigation motors were connected. In the four years from July 1980 to June 1984, a total of 35 MW of electric irrigation motors has been connected in the Board's area for irrigating sugar cane, citrus orchards, small crops and dairy pastures.

The demand for supply to subdivisions, particularly in the Hervey Bay and South Burnett areas, shows little sign of slackening. Developers were required to contribute \$1.2 M for supply to subdivisions, and there are a further 2 000 or more lots without supply in subdivisions where the developer was not required to provide electricity.

Two large rural extensions to supply consumers at Monogorilby and west of Eidsvold are nearing completion. These are the only significant parts of the Board's area without supply. When completed in August 1984 a further 83 consumers will have been connected to the public electricity system at a cost of \$1.4 M. The Board is subsidising these connections to the extent of \$676 400 or \$8 149 per consumer. The Allies Creek sawmill and township will be supplied in conjunction with the Monogorilby extension at a cost of \$185 700. In all, 432 km of line will be constructed by contract.

The installation of load control relays to give consumers the advantage of the cheaper rates associated with the controlled water heating tariff is nearing completion. With 66 per cent of water heaters now controlled a reduction of 13.7 MW is expected in the State's peak demand.

Plans for the Board's new headquarters at Maryborough to be constructed on the corner of Alice and Adelaide Streets are nearing completion. The three storey building to house administrative and technical staff is expected to cost approximately \$3.7M. Construction will commence in 1984/85 and be completed the following year.

The Capricornia Electricity Board

This year the Board increased its energy sales by 6.8 per cent to 1 384 GW.h. This increase was due to the consolidation of existing mining projects together with two new major developments on the Bowen Basin.

Large industrial and mining development also remained the stimulus for system augmentation, with sales to this group amounting to 873 GW.h.

There was a slowdown in the mining industry because of the general economic climate but this was not as significant as first envisaged.

The capital works programme carried out by the Board during the year included:

- Construction of new 66 kV substations at Bedford Weir and Clemont and the upgrading of Yeppoon, Awoonga, Calliope, Biloela, Glenmore, Parkhurst and Miriam Vale substations.
- Construction of a second overhead 66 kV line to Emerald, and from Calliope to the Awoonga Dam Water Pumping Station.
- New rural distribution schemes were constructed at Lake Leamouth, Riversleigh, Stoodleigh, Valentine Plains Stage 2, Mantuan Downs, Copperfield, Yan Yan West Cotherstone/Dysart, Mt. Sirloin - Blackwater and Duaringa South. During the year 340 additional rural supply points were connected to the Board's system involving the construction of about 998 kilometres of transmission lines.
- The installed capacity of the Board's diesel generating station at Bedourie was increased to 238 kW with the installation of a new 111 kW unit.

A new stores building is also nearing completion in Rockhampton to replace the existing complex housed in the original power station which was constructed in 1924. The new building, with a floor area of 2 400 square metres is centrally located to all of the Board's functions at its Glenmore complex. An 11kV control building was also constructed in Rockhampton to relocate switchgear from the obsolete generating station.

The Board has also continued its programme of providing consumers with electricity information and advice through its Consumer Advisory Centre in Rockhampton and advisory officers at Gladstone, Biloela and Emerald area offices.

Staff and apprenticeship training programmes were also further developed by the Board to cater for the changing environment and a greater awareness of safety was fostered by staff educational projects during the year.

The Mackay Electricity Board

Sales of electricity for 1983/84 totalled 682 GW.h, an increase of 15.8 per cent over 1982/83 when the increase was 13.6 per cent. Sales to the general sector were 366 GW.h up 8.5 per cent on last year, whilst sales to coal mines were 316 GW.h, an increase of 25.4 per cent on 1982/83. The very high growth in sales to coal mines resulted from the commencement of normal operations of the new Riverside mine. The number of consumers supplied increased by 6.0 per cent to 35 160.

The demand for underground residential reticulation continued at a high level with supply being made available to 771 lots at a total cost of \$602 000. The construction of underground residential reticulation in the new mining township of Glenden was completed. The town services the Newlands Coal Mine and is the first coal mining township in Queensland to have underground reticulation.

Two major long term projects were completed during the year. Construction under the rural electrification subsidy scheme was completed for all groups in September 1983. During the four year period the scheme was in operation supply was made available to 114 consumers at a total cost of \$2.5 M. Work on the \$2.2 M project to install peak lopping load control equipment on water heaters throughout the Board's areas was also completed. The three year project required the installation of 16 260 receivers at consumers premises and injection equipment at four bulk supply points and has provided consumers with a 28 per cent saving on their water heating costs.

The new Proserpine office and depot in Faust Street was opened on 30 November 1983. The \$652 000 building was constructed on the site of the old depot which was built as the town's first power house in 1929. Work has begun on construction of a new \$705 000 office building on the site of the Board's Ness Street, West Mackay depot.

The Board celebrated the Diamond Jubilee of electricity supply in Mackay on 9 April 1984.

Top right: The South East Queensland Electricity Board provided advice in converting this foundry to electric operation.

Bottom right: Earthworks at Stanwell Power Station will take some 12 months to complete.



The North Queensland Electricity Board

A continued consumer growth rate of around 3 per cent, or an additional 2 264 connections over the 1983 total of 69 581, combined with the connection of the Newlands mine site and expanded Collinsville Coal operations boosted the maximum demand of the Board's coastal system to 169 MW. Energy purchases of 1 072 GW.h represents an increase of 7 GW.h over the Board's 1984 budgeted figure of 1 065 GW.h, while receipts from the sales of electricity were \$37 M over the budgeted figure of \$79.65 M. The growth in consumer numbers was paralleled by the number of work programmes commenced or completed during the year to upgrade or reinforce the existing transmission and distribution systems.

Following the successful introduction of the controlled water heating tariff H2 in Mount Isa, the Board commenced a programme that will progressively connect consumers in its coastal districts to tariff H2 over the next four years. To date approximately 90 per cent or 2 300 consumers in Bowen are supplied at tariff H2 while another 1 800 consumers in Townsville's rapidly developing and expanding western suburbs have been connected in anticipation of the tariff's introduction.

The second stage of a programme to install more than 60 MV.A of shunt capacitor compensation on the subtransmission system was commenced during the year. Installation of the 11 kV capacitors, in all of the Board's major substations, will enable it to make better use of the existing distribution systems as well as to save costs on future augmentation works.

Major capital works completed by the Board during the year included the construction of a 66 kV transmission line from Bowen to Mount Gordon, and construction of a 33 kV line and temporary 33/11 kV substation to provide construction supply at the Burdekin Falls dam site. The Bowen/Mount Gordon line will be extended to Proserpine in 1984/85, and when completed will provide the rapidly expanding Bowen district with an adequate alternative 66 kV supply.

In Home Hill, the construction of a new substation control building and installation of new 11 kV switchgear, control panels and shunt capacitors enabled the Board to retire the existing 30 year old equipment.

A recommendation to construct a new stores building in Townsville, which will provide for greater efficiency in stores handling and inventory procedures, as well as improved working conditions for staff, was approved by the Board in January. Construction, although delayed by the wet season, is now well under way and it is anticipated that the building will be ready early in the new financial year.

In Bowen, staff and consumers will benefit from the Board's decision to construct a new district office and showroom. Scheduled for completion by November this year, the new building's open plan concept will replace the cramped and crowded conditions of the existing premises.

The Board's programme of supply extensions to isolated rural consumers under the Rural Electrification Subsidy Scheme was almost complete at 30 June 1984. In the year under review, 918 km of SWER line were erected and an additional 69 new consumers connected to reticulated supply. Since the scheme's inception more than 9 270 km of reticulation, costing \$15.7 M have been erected and 538 isolated rural consumers have been connected or are in the process of being connected to mains supply.

The introduction of a centralised control system for the Townsville district was approved at the Board's May meeting in Camooweal. Installation of the supervisory control and data acquisition (SCADA) system will take place in the seven zone substations in Townsville on a progressive basis over the next two years. The new system will provide system control staff with accurate and detailed data on the operational state of the system and will greatly improve its operation. Isolation of faults will be sped up, as will restoration of supply, and load transfer will be facilitated.

The Far North Queensland Electricity Board

The Far North Queensland Electricity Board supplies 52 528 consumers with electricity, an increase of 4.8 per cent over last year.

Electricity sales to these consumers totalled 531 GW.h for 1983/84, an increase of 4.6 per cent for the year.

Electricity was purchased and produced as follows -

Bulk purchases from The Queensland Electricity Generating Board 564.9 GW.h.

From A Raptis & Sons, Karumba 2.8 GW.h.

Diesel generation at isolated systems 10.8 GW.h.

Board System Maximum Demand 102.2 MW.

Work was completed on the 217 km 22 kV feeder from Mt Gamet connecting the township of Georgetown to the main system. Supply was also made available to the small townships of Forsayth and Einasleigh.

There has been a continued demand for rural and urban extensions to new consumers. Under the Rural Electricity Subsidy Scheme 62 km of 19.1 kV SWER line was constructed to supply properties in the Forsayth area. Work is proceeding with the remaining 240 km of the Einasleigh/Oak Park 19.1 kV SWER line with 207 km of this line already completed supplying eleven properties.

Reticulation construction to urban subdivisions has remained at a high level.

Installation of Load Management Control Equipment on the distribution system is in progress. Equipment for the six 22 kV injection stations has been received. Cairns and Kamerunga stations have been commissioned and installation of relays in these areas is in progress. Work on the installation of injection equipment at Mareeba has been commenced.

A new building to accommodate 22 kV switchgear has been constructed at the Cairns Hartley Street Bulk Supply Substation. Stage 1 of the new switchgear associated with The Queensland Electricity Generating Board transformer augmentations at the substation has been installed. The building also houses a capacitor bank and the Board's load management equipment for the Cairns area.

The Board continued to provide engineering and other assistance to Aboriginal Communities to construct, operate, repair and maintain isolated electricity schemes at Bamaga, Doomadgee, Edward River, Kowanyama, Lockhart River and Mornington Island.

Top right: Swanbank Power Stations provide a large part of the State's electricity needs.

Bottom right: The Capricornia Electricity Board's diesel powered Power Station at Bedourie.



The Queensland Electricity Supply Industry Superannuation Board

The Queensland Electricity Supply Industry Employees' Superannuation Scheme managed by the Board currently provides superannuation benefits to over 10 000 persons employed in the electricity supply industry and their dependants.

During 1983/84 the Board paid benefits in excess of \$14.52 M (\$14.09 M in 1982/83) to members upon their retirement or termination of employment for other reasons and in excess of \$1.64 M (\$2.24 M in 1982/83) to the dependants of deceased former members.

The Scheme was last actuarially investigated as at 30 June 1982. In the report covering this investigation it was confirmed that the Scheme could be expected to meet future benefit commitments on the basis of the present level of contributions payable by both members and employers being maintained. The Board is not aware of any circumstances which have arisen since the time of that report that question the Board's ability in this regard. The Board is to arrange for the next actuarial investigation of the Scheme to be conducted no later than 30 June 1987.

The contributions accumulated by the Board to meet these future liabilities are invested in the manner approved by the Governor in Council, namely in Money Market investments, Queensland Public Securities, Other Public Securities, Mortgages, Other Fixed Interest investments, Shares and Land and Improvements.

1983/84 represented the fourth year of operation of the Scheme and the optimum investment portfolio distribution which the Board set in July 1980 has essentially been achieved. Almost half of the assets of the previous industry superannuation and provident funds taken over by the Board in 1980/81 and 1981/82 were invested with life assurance companies in units in common pools.

All of these units have now been realised at current market values (which were well in excess of cost) to provide the Board with funds to carry out its investment strategy. The objective proportions for each category of investment are of course subject to continuing review and the Board is also prepared to depart from these guidelines from time to time to take advantage of market opportunities.

As at 30 June 1984 the book value of the Board's assets was in excess of \$200 M compared with \$152.2 M in 1982/83.

The Electrical Workers and Contractors Board

The Electrical Workers and Contractors Board is charged with the implementation of that part of the Electricity Act 1976-1982 that deals with Electrical Workers and Contractors, its principal function being the licencing of electrical workers and contractors to ensure that standards of electrical workmanship and public safety are maintained.

The Board has noted a steady increase in the numbers of persons coming to Queensland from interstate and overseas (including New Zealand). Due to developments in the area of reciprocity in recent years the majority of these persons have received their certificates with a minimum of delay.

Applicants for Certificates of Competency as Electrical Fitters and/or Mechanics, or for Restricted Certificates of Competency to perform limited electrical work associated with their trade, who in the first instance are unable to satisfy the Board of their competency, are required to produce evidence of having successfully completed an Electrical Revision Course for a Certificate of Competency as Electrical Fitter and/or Mechanic and Restricted Electrics Course for Level I and Level II Restricted Certificates of Competency. The Electrical Revision Course is available at Colleges of Technical and Further Education in Brisbane on a semester basis, so that it is possible for an applicant to qualify for a Certificate of Competency in approximately six months. These courses are also available from the Technical Correspondence School and extend over a normal school year. Provided that the Board is satisfied with their practical experience, they may be granted a Certificate.

The Board continues to conduct preliminary theory and practical trade tests on certain applicants, including some migrants, to determine what further study, if any, they may be required to undertake or what further experience they may be required to gain in order to qualify for a Certificate of Competency.

During the year under review a total of 168 applicants or their nominees were required to undertake the Board's examination to qualify for the issue of an electrical contractor's licence. The number of applicants who attempted the examination totalled 130.

In addition, 43 licence holders surrendered their licences for cancellation. The number of electrical contractors licences current at 30 June 1984 was 3 740.

Certificates of Competency issued in the categories of Electrical Fitter, Mechanic, Linesman and Joiner totalled 1 323. Certificates of Competency (Restricted) were also issued and these totalled 159.

Close liaison is maintained with the Chief Inspector of Factories and Shops, the Industry and Commerce Training Commission and the Department of Technical and Further Education. In particular, the Board receives excellent co-operation from the Department of Education in conducting trade tests throughout the State for the Board.

In the interests of public safety, the Board has continued to make regular checks throughout the State in an endeavour to ensure that only persons in possession of the appropriate certificate of competency or permit are performing electrical work and that only persons, firms or companies in possession of an electrical contractor's licence are performing electrical contracting work.

Electricity Authorities throughout the State have also assisted in policing the Act by drawing attention to illegal and unauthorised electrical work.



QUEENSLAND



ELECTRICITY SUPPLY SYSTEM

AS INSTALLED 30th. JUNE 1984.

SCALE IN KILOMETRES



LEGEND

POWER STATIONS

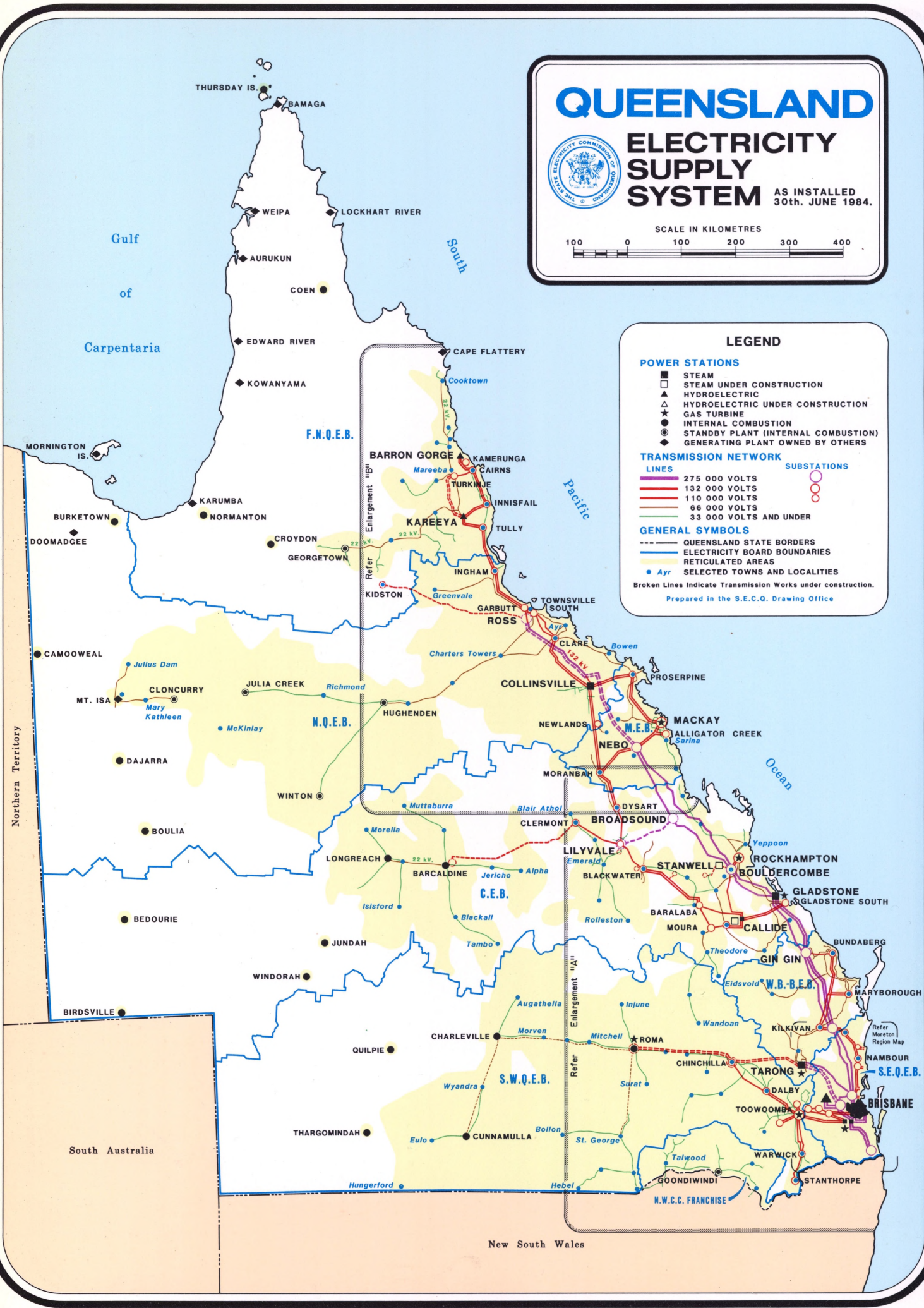
- STEAM
- STEAM UNDER CONSTRUCTION
- ▲ HYDROELECTRIC
- △ HYDROELECTRIC UNDER CONSTRUCTION
- ★ GAS TURBINE
- INTERNAL COMBUSTION
- ◐ STANDBY PLANT (INTERNAL COMBUSTION)
- ◑ GENERATING PLANT OWNED BY OTHERS

TRANSMISSION NETWORK

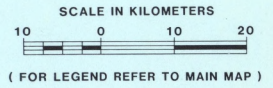
- | LINES | SUBSTATIONS |
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GENERAL SYMBOLS

- QUEENSLAND STATE BORDERS
 - ELECTRICITY BOARD BOUNDARIES
 - RETICULATED AREAS
 - Ayr SELECTED TOWNS AND LOCALITIES
- Broken Lines Indicate Transmission Works under construction.
Prepared in the S.E.C.Q. Drawing Office



MORETON REGION



110 kV. SUBSTATIONS (City of Brisbane)

- 1 NUDGEE
- 2 STAFFORD
- 3 BUNYAVILLE
- 4 ASH GROVE WEST
- 5 MAKERSTON ST.
- 6 CHARLOTTE ST.
- 7 VICTORIA PARK
- 8 NEWSTEAD
- 9 ROCKLEA
- 10 WEST DARRA
- 11 RICHLANDS
- 12 RUNCORN



New South Wales

ENLARGEMENT 'A'

(FOR LEGEND REFER TO MAIN MAP)



275 KV. SUBSTATIONS

- A BELMONT
- B SOUTH PINE
- C MT. ENGLAND

POWER STATIONS

- 1 TENNYSON
- 2 BULIMBA
- 3 SWANBANK "A"
- 4 SWANBANK "B"
- 5 SWANBANK "C"
- 6 MIDDLE RIDGE



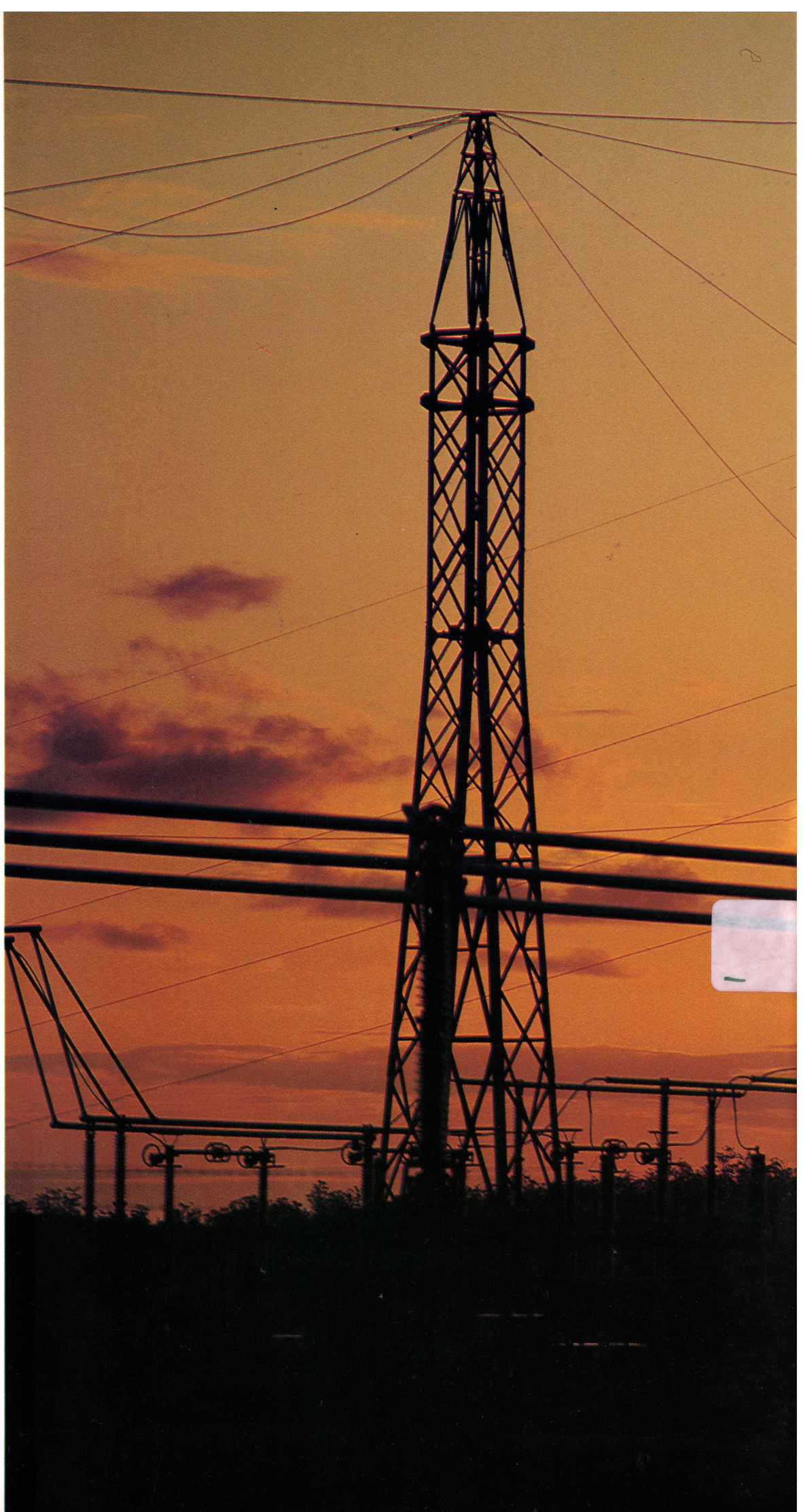
New South Wales

ENLARGEMENT 'B'

(FOR LEGEND REFER TO MAIN MAP)



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PROUDLY PRINTED
IN QUEENSLAND

