



1972

THE PARLIAMENT OF THE COMMONWEALTH OF AUSTRALIA

Parliamentary Standing Committee on Public Works

REPORT
relating to the proposed construction of a
POWER STATION
at
Tennant Creek, Northern Territory
(TWENTY-SIXTH REPORT OF 1972)

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PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS

POWER STATION
TENNANT CREEK, NORTHERN TERRITORY

R E P O R T

By resolution on 31 August 1972, the House of Representatives referred to the Parliamentary Standing Committee on Public Works for investigation and report to the Parliament, the proposal for construction of a new Power Station at Tennant Creek, Northern Territory.

The Committee have the honour to report as follows:

THE REFERENCE

1. The proposal referred to the Committee is for the construction of a 4.2 MW diesel power station on a site immediately south-west of the Tennant Creek township, and associated 22 kV reticulation and other facilities. The station is designed to meet the electricity requirements of the town until approximately 1977 when an additional diesel generator will probably need to be commissioned.

2. The present work is estimated to cost \$1.8 million.

THE COMMITTEE'S INVESTIGATION

3. The Committee received written submissions and drawings from the Northern Territory Administration and the Department of Works and took evidence from their representatives at a public hearing in Canberra.

2.

A submission was received from Peko Mines N.L. explaining the reasons for its inability to continue to supply Tennant Creek township with electric power.

4. A Sectional Committee inspected the site of the proposed power station when in the Northern Territory early in August.

5. The Committee's proceedings will be printed as Minutes of Evidence.

TENNANT CREEK

6. Tennant Creek is situated on the Stuart Highway, 312 miles north of Alice Springs, the nearest rail head, and 640 miles south of Darwin, the nearest sea port. Scheduled air and road services link the town with Darwin, Alice Springs and southern capital cities. It is an important and developing regional centre for the mining, tourist, transport and pastoral industries.

7. The town's original growth occurred mainly as a result of gold mining activity. Between 1937 and 1966, growth was relatively slow and at the 1966 census, 1,065 persons were living in the town and 487 on nearby mining leases. Between 1966 and 1971, the population increased at a much quicker rate to 1,789 and 847 respectively. Based on the financial investment in the area, and that planned, particularly by mining companies, the population growth rate is expected to continue at a high level at least for the next four or five years.

THE NEED

8. The first public electricity supply in Tennant Creek commenced in May 1945 when the Department of the Interior took over two 25 kVA generators from the Victorian Country Roads Board, which having completed its section of the new Stuart Highway, was leaving the area.

As the demand for electricity increased, additional generating units were installed and the original machines replaced. By 1949, Tennant Creek power house had an installed capacity of 200 kW consisting of two 80 kW sets, and two 20 kW sets.

9. In 1953 due to the breakdown of one of the sets and therefore a reduction in the installed capacity, difficulty was experienced in operating at an economic level and there were occasional power shutdowns and periods of rationing. Despite increased tariffs, operational losses continued to increase.

10. It became apparent that it would be cheaper to purchase electricity from the nearby Peko Mines N.L. power house and a ten year contract was signed for the company to supply electricity in bulk to the Northern Territory Administration. This commenced in December 1956 following the construction of a substation and a tie line from the Peko power house to the township. The town power house was then closed down and the generating sets sold.

11. In 1966 a further agreement was made which extended the period of supply to June 1977, but the right was given to either party to terminate the agreement on two years' notice. In October 1971 the company advised the Northern Territory Administration that because of heavy expansion and the need to cater for its own electricity requirements, it proposed to discontinue the supply to the Tennant Creek township from 1 November 1974. The company indicated that if necessary it would consider an extension beyond that time, and would help out in any power emergency if necessary.

12. The Committee therefore concluded that there is a need for the establishment of a new power station at Tennant Creek.

THE SITE

13. A number of possible locations for the new power station were investigated.

14. A site north of the town, adjacent to the Stuart Highway, and behind low hills was rejected because of problems with overhead 22 kV lines routed across the approach path to the airport's east-west runway. Undergrounding the lines or diversion over a longer route would add significantly to the cost of the work.

15. Sites east of the town near Peko Road were discarded due to terrain difficulties and associated higher costs in access, services and site preparation.

16. Location in the future industrial area west of the town and beyond the Department of Works' depot was not favoured because of possible noise nuisance and the more appropriate use of the area for industrial development. Sites south of the town have no advantages over the chosen site.

17. It is therefore proposed to construct the power station behind two small hills south-west of the town, and immediately west of the planned industrial area. We were told that the hills and the separation from the residential areas will effectively blanket noise, and that the area will allow for development of both power generation and transmission. The site is favourably placed in relation to the prevailing winds and no air pollution difficulties are foreseen. In addition the site occupies part of the area proposed for future railway development and in that event, advantages could be gained in fuel delivery and handling.

18. The Committee consider that the site selected for the construction of the power station at Tennant Creek is suitable.

ELECTRICITY LOAD GROWTH

19. The annual electricity load growth at Tennant Creek up to 1971 was at a rate of 15%. However, major extensions of mining operations in the area, planned for 1972, and the town's consequent population increase are expected to result in a load growth of 18% per annum up to 1976. It is then expected to revert to 15% per annum. With the known and expected development in and around Tennant Creek, the Committee believe this to be a reasonable basis on which to plan development of the Tennant Creek electricity supply.

20. Depending on weather conditions, the annual peak demand may occur at any time during the year. However, it is estimated that the 1974 peak demand will be 1.9 MW increasing by mid 1977 to 2.8 MW, which is the proposed station's firm capacity. Should the annual load growth fall markedly below 18%, the target date for commissioning future generating capacity will then be delayed.

GENERATING PLANT

21. Method of Generation It is proposed to instal three 1.4 MW diesel alternators thus providing a firm capacity of 2.8 MW with one set out of service. An electricity supply demand of 2.8 MW is not expected until 1977 by which time a fourth generator will need to be commissioned.

22. The possibility of transferring generating sets from other Northern Territory centres was investigated. However, only two sets from Alice Springs could be considered and one of these will not be available until 1975, and the other is better suited for future requirements at Katherine.

23. The diesel engines will operate initially on distillate. However, we noted the engines proposed will be suitable for conversion to operate on natural gas, and although this would result in derating the installed plant, there may be advantages if this fuel becomes commercially and economically available.

24. Electrical Distribution The Tennant Creek area is now fed by an overhead 22 kV line from the Peko power house which connects to the town ring main and then to spur lines and distribution substations. The town system and the low voltage street system is overhead except for some isolated cable sections to individual large consumers. Overhead lines run north to Three Ways, and south to the Cabbage Gum and Kelly Well water supply installations. The town system is being extended to match business and sub-division growth and will eventually provide Tennant Creek with an interconnected 22 kV network.

25. The work proposed in this reference will continue the 22 kV distribution system. It will include construction of a switchyard for transformers and switchgear, and overhead feeders to connect with the existing system.

26. Power Station Building and Other Work The power station building will be a single storey steel framed metal clad structure. It will be equipped with an overhead crane and have five bays, three of which will be used for the initial generating sets, one for the future fourth unit and the other as a loading bay.

27. A combined office, store, workshop and amenities building will be located near the power station building and connected to it by a covered way. The two buildings will be separated sufficiently to reduce noise from the power house to a tolerable level.

The offices and control room will be air conditioned and other areas will be evaporatively cooled.

28. Other work includes fuel and water storage, and extension of road and other services to the site.

29. Committee's Conclusion The Committee recommend the construction of the work in this reference.

ESTIMATE OF COST

30. The estimated cost of the work when referred to the Committee was \$1.8 million made up as follows:

	\$
Building and site works, fuel and	
water storage	580,000
Generating sets, switchgear,	
transformers and overhead	
feeders	<u>1,220,000</u>
	<u>\$1,800,000</u>

PROGRAMME

31. If an early approval to proceed is given, it is proposed to call tenders for the work in November 1972, let contracts by February 1973 and commission the plant in November 1974.

32. Construction is planned in a series of co-ordinated contracts with day labour resources assisting if necessary. It is proposed that the contract for the three generating sets include an option, to be exercised before July 1975, for an additional 1.4 MW set so that it may be commissioned by early 1977 if required.

RECOMMENDATIONS AND CONCLUSIONS

33. The summary of recommendations and conclusions of the Committee are set out below. Alongside each is shown the paragraph in the report to which it refers.

		<u>Paragraph</u>
1.	THERE IS A NEED FOR THE ESTABLISHMENT OF A NEW POWER STATION AT TENNANT CREEK.	12
2.	THE SITE SELECTED FOR THE CONSTRUCTION OF THE POWER STATION AT TENNANT CREEK IS SUITABLE.	18
3.	THE COMMITTEE RECOMMEND THE CONSTRUCTION OF THE WORK IN THIS REFERENCE.	29
4.	THE ESTIMATED COST OF THE WORK WHEN REFERRED TO THE COMMITTEE WAS \$1.8 MILLION.	30


(C.R. KELLY)
Chairman.

Parliamentary Standing Committee on Public Works,
Parliament House,
CANBERRA, A.C.T.

21 September 1972.