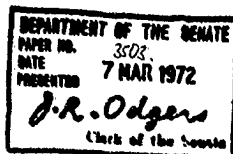


1972



THE PARLIAMENT OF THE COMMONWEALTH OF AUSTRALIA

Parliamentary Standing Committee on Public Works

REPORT

relating to the proposed construction of a

SEWERAGE SYSTEM

at

Tennant Creek, Northern Territory

(FIFTH REPORT OF 1972)

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PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS

SEWERAGE SYSTEM
TENNANT CREEK, NORTHERN TERRITORY

R E P O R T

By resolution on 24 November 1971, the House of Representatives referred to the Parliamentary Standing Committee on Public Works for investigation and report to the Parliament, the proposal for the construction of a sewerage reticulation and treatment plant at Tennant Creek, Northern Territory.

The Committee have the honour to report as follows:

THE REFERENCE

1. The proposal referred to the Committee involves the construction of a water-borne gravity sewerage reticulation system with branches for house connections and a pondage treatment and evaporation plant.
2. The work is estimated to cost \$900,000.

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 public hearings at Tennant Creek. We also took evidence from a Member of the Legislative Council of the Northern Territory and from representatives of mining and business interests and the Town Management Board. Several written submissions were also received.

4. The Committee inspected the town and the existing facilities for sewage disposal and treatment. We also inspected the proposed site for the treatment and evaporation ponds.

TENNANT CREEK

5. Tennant Creek is situated on the Stuart Highway, 312 miles north of Alice Springs which is the nearest railhead. Air services provide links with Alice Springs, Darwin and the southern capital cities and there are regular bus services to Alice Springs and to Darwin.

6. The climate is arid with high temperatures in the summer months and low in the winter. The mean yearly maximum temperature is around 90°F. with extremes rising to 115°F. The mean yearly minimum temperature is about 65°F. with extremes falling to 36°F. The annual rainfall averages about 14 inches. Exploitation of the nearby Kelly Well water basin has given the town a reliable water supply.

7. Industry Tennant Creek is situated in the centre of a highly mineralised area known as the Warramunga field. Consequently, mining is the town's major industry and there are two large companies in the area producing mainly gold, copper, bismuth and silver. The value of the output in 1967-68 was \$11.56 million, rising to \$12.85 million in 1968-69, \$13.91 million in 1969-70 and \$13.18 million in 1970-71. Most of this output represented export income.

8. The original growth of Tennant Creek as a town occurred mainly as a result of gold mining activity. This growth was relatively slow and at the 1966 population count 1,065 persons were living in the town and 487 on nearby mining leases. Four years later these figures had grown to 1,706 and 743 respectively.

9. Other Development By June 1970, there were some 370 houses and 33 flats in Tennant Creek. Other accommodation in the town includes two hotels, three motels, a caravan park and five hostels. There are also a variety of business and service interests, a hospital and a school.

10. Tourism is increasing although the local attractions are limited to the mines, the Devil's Marbles (70 miles south) and the Devil's Pebbles (10 miles north). Tennant Creek is, however, an important stopping point for the rapidly increasing number of persons, including tourists, using the Stuart Highway.

11. Municipal Services The management of municipal affairs in Tennant Creek is the responsibility of the Northern Territory Administration with the District Officer as the local representative. The Administration provides garbage clearances and other municipal services.

12. A town management board of nine nominated members assists the Administration on matters affecting the town. It was a recommendation of the Tennant Creek Town Management Board that a water-borne sewerage system be constructed in Tennant Creek.

EXISTING ARRANGEMENTS FOR SEWERAGE SERVICES

13. Sewage at Tennant Creek is disposed of mainly by means of individual septic tanks with absorption trenches. About 25% of services are by sanitary pan collection. Due to the impervious nature of the ground, the majority of the septic systems do not function properly, many tanks overflow and absorption trenches become saturated requiring frequent pump-outs. In addition, seepage from absorption trenches is unable to drain away rapidly enough and the subsoil tends to become saturated often to within a foot of the surface.

14. Septic tank pump-outs are arranged as a municipal service at a cost of \$2.40 per service, the tanker being emptied at the sanitary reserve. Sanitary pans which are collected twice a week are emptied into trenches in the sanitary reserve and then covered with soil. The charge for this service is 29c per pan per clearance.

15. Some equipment associated with pan washing is now becoming due for replacement, in particular the boiler shell, fire tube holes and plates and it is expected that the cost of maintenance of the equipment will increase annually until the machinery becomes beyond economical repair and requires replacement.

THE NEED

16. Growth of Township The growth of Tennant Creek, which has occurred in recent years mainly due to expansion of the nearby mining activities, is expected to continue at a substantial rate for some time. The Committee were told that predictions of future growth suggest that by 1975 the combined population of the town and the mines will be in the region of 5,300.

17. The two major mining companies based on Tennant Creek are constantly carrying out exploration for new ore bodies and proving reserves. This ensures continued and expanding production by opening up new prospects as known ore bodies are depleted. It is understood that use of bismuth metal is increasing due to a greater understanding of its application and uses and it is expected that Tennant Creek will become one of the world's major suppliers of this metal.

18. Both Peko Mines N.L. and Australian Development N.L. have adopted a policy of recruiting married men to their workforces rather than single men.

The latter customarily lived at the mine sites, but the practice with married staff is to accommodate them in Tennant Creek. This trend and the demand of expanding service industries and private developments will ensure a continuing requirement for serviced land in Tennant Creek in the future. The Committee noted that some 260 serviced residential or light industry building lots have been developed in the last six years.

19. Problems of the Present System Problems in the disposal of sewage now occur especially where the population is concentrated, such as in the commercial centre, hotels, motels, hostels, the school and the hospital. The Committee noted that several business undertakings including the open-air theatre and the soft drink factory have difficulty in disposing of short term peak loads of effluent. Often, tanks at business premises are required to be pumped out more than once daily and at weekends proprietors have had difficulty in obtaining a satisfactory service.

20. Various attempts have been made to overcome the problem, ranging from the installation of additional tanks, construction of greater lengths of absorption trenches and the sinking of bore holes through the impervious strata layers. However, most of these measures have been of short term benefit only. The overall results have been unsatisfactory and there continues to be evidence of overflowing tanks and discharges of effluent into public places, road gutters etc.

21. Health Risk The health risks occasioned by overflowing tanks and saturated drainage trenches must be regarded as substantial. It is known, for example, that mosquitoes breed in septic tanks, many of which, unfortunately, are left open to facilitate inspection and pump-outs.

Whilst cases of infective hepatitis cannot be directly traced to unsatisfactory sewage disposal facilities, it is significant that the relative incidence of notification is substantially higher in Tennant Creek than for example in Darwin.

22. Conclusion The Committee received ample evidence of the unsatisfactory nature of the arrangements for sewage disposal at Tennant Creek, which are considered to constitute a health hazard, and heard from local witnesses pressing for an improvement of the present system. It was noted that attempts to overcome the shortcomings in the present system have usually been of short term benefit only. Under the circumstances of a rapidly expanding population, the Committee believe that the problem could only worsen using existing methods.

23. We therefore concluded that there is a need for a modern sewage disposal system and associated treatment plant for Tennant Creek.

CONSTRUCTION

24. Evaluation of Suitable Systems The Committee were told that the particular circumstances of Tennant Creek favour a water-borne gravity system. We noted that at one of the mining sites, a system which involves draining and pumping the effluent from installed septic tanks to a centralised evaporation pond is being used. A system on this same principle would cost marginally less to instal at Tennant Creek but has major disadvantages. Firstly, before the existing pan clearance system could be eliminated, some 25 per cent of homes would require installation of septic tanks. Secondly, all new homes and other buildings would require the installation

of septic tanks so that they could be connected to the drainage system. The conclusion was that this system was not an appropriate solution to the Tennant Creek problem.

25. The Proposed System The proposed work consists of a system of gravity sewers draining the town area to a treatment plant to be located south-west of the town near the existing sanitary reserve. Reticulation mains will be placed generally in laneways and easements at the rear of properties and in the nature strips of road reserves. House connection branches will be provided but connections to these branches will be the responsibility of the owners of the individual lots. Sewers are expected to range in size from 6 in. in diameter to 21 in.

26. Sewage will be treated by ponding in primary and secondary lagoons covering an area of about 12 acres. Tennant Creek is regarded as having an ideal climate for evaporative disposal of effluent. The reserve for the treatment and evaporation plant will be fenced.

27. The system is to be planned to facilitate future expansion. Initially, the treatment plant will service a population of 5,000 but trunk sewers will have a capacity to serve a future population of 9,000 to avoid the need to later duplicate mains.

28. Treatment Plant Site The treatment and evaporation ponds will be constructed in the sanitary reserve which is to be enlarged. They will then be about one mile south-west of the outskirts of the town. This site is well located in relation to prevailing winds which blow from the east and south-east. Odours from the ponds are thus not expected to be a nuisance in the town.

29. Sewerage Charges At present, the only charges levied are those associated with the cost of pump-outs and pan clearances. We were told that on completion of a sewerage scheme, it is proposed to declare the town a sewerage area with charges in accordance with current Northern Territory regulations. This would mean that each user would be required to pay the charge applicable to his property regardless of whether or not he is connected to the scheme and he would be required to meet the cost of the connection. However, it was noted that this latter requirement is not compulsory, provided that the present method of disposal is operating at all times in a satisfactory manner.

30. Conclusion The Committee recommend the construction of the work in this reference.

ESTIMATE OF COST

31. The estimated cost of the work when referred to the Committee was \$900,000 made up as follows:

	\$
Sewer mains	700,000
Treatment lagoons including evaporation ponds	200,000
	<u>900,000</u>

PROGRAMME

32. After an approval is given to proceed, the Department of Works plans to call tenders for the work in mid-1972 and expects construction to commence in late 1972. The target for completion of the contract is mid-1974.

33. In view of the unsatisfactory operation of the present arrangements for disposal of sewage and the attendant health risks, the Committee consider that the Department of Works should take any measures which will reduce the design and construction period.

OTHER OBSERVATIONS

34. Operation of Present System Whilst it is quite clearly the Committee's view that the present system is inadequate and should be replaced as soon as possible, attention must be drawn to the unsatisfactory septic tank pump-out service which has caused considerable dissatisfaction amongst the townspeople. During the hearing, we were told that rather belatedly a new tanker of 1,500 gallons capacity was being put into service to supplement the existing tanker. This step which will alleviate some of the present objections to the service is overdue.

35. Re-Use of Effluent The Committee were told that the town water supply system will be able to cope with the extra demands imposed on it by a water-borne sewerage system. However, some apprehension was expressed before the Committee by private witnesses about the long term capacity of the Kelly Well basin to meet the town's increasing demands for water. It was pointed out that using the treated effluent from the sewerage system for purposes not requiring high grade water, may be a means of lessening the load on the basin.


36. We were told that the nature of the effluent precludes its use for crop irrigation, but it was submitted that it might be utilised for general town beautification proposals or for green belt development. The latter was particularly suggested as a means of affording the town some protection from the prevailing southerly and south-easterly winds.

37. We therefore noted with satisfaction the evidence of the Department of Works that an examination is being made of the possibility of re-using the effluent. The Committee believes that there is good reason in the Tennant Creek situation to make efficient use of all water resources and urges that the departmental study be given close and early attention.

RECOMMENDATIONS AND CONCLUSIONS

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

		<u>Paragraph</u>
1.	THE COMMITTEE RECEIVED AMPLE EVIDENCE OF THE UNSATISFACTORY NATURE OF THE ARRANGEMENTS FOR SEWAGE DISPOSAL AT TENNANT CREEK.	22
2.	THERE IS A NEED FOR A MODERN SEWAGE DISPOSAL SYSTEM AND ASSOCIATED TREATMENT PLANT.	23
3.	THE COMMITTEE RECOMMEND THE CONSTRUCTION OF THE WORK IN THIS REFERENCE.	30
4.	THE ESTIMATED COST OF THE WORK WHEN REFERRED TO THE COMMITTEE WAS \$900,000.	31
5.	THE DEPARTMENT OF WORKS SHOULD TAKE ANY MEASURES WHICH WILL REDUCE THE DESIGN AND CONSTRUCTION PERIOD.	33


(C.R. KELLY)
Chairman

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

2 March 1972.