

DEPARTMENT OF THE SENATE
PAPER NO. 1131
DATE PRESENTED - 6 DEC 1962
Clerk of the Senate

THE PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS

REPORT

relating to the proposed provision of



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R E P O R T

relating to the proposed provision of

ADDITIONAL WELLS, RETICULATION AND TANK

to augment the

ALICE SPRINGS WATER SUPPLY

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THE PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS

AUGMENTATION OF ALICE SPRINGS WATER SUPPLY

R E P O R T

By resolution on 14th November, 1962, the House of Representatives referred to the Parliamentary Standing Committee on Public Works for investigation and report, the proposal to provide additional wells, reticulation and tank for the Alice Springs Water Supply. The Committee have the honour to report as follows:-

GENERAL

1. The Committee visited Alice Springs where inspections were made of bore sites and possible sites for dams on the Todd and Charles Rivers. Evidence was heard from representatives of local interests, of the Northern Territory Administration and the Department of Works.

ALICE SPRINGS.

2. Located at the northern end of the railway from Adelaide and at the southern end of the bitumen road from Darwin, Alice Springs is developing as a centre for the pastoral and transport industries and as a tourist centre. All these activities are developing, particularly tourism. Over the last few years the population of the town has been increasing at a rate of 7% to 8% per annum and there is confidence that this increase will continue.

Alice Springs is located in an arid region with an average annual rainfall of 9.93 inches.

EXISTING WATER SUPPLY

3. The water supply for Alice Springs is drawn from an alluvial basin under the town, known as the Town Basin, which is replenished by infiltration from the Todd River when it flows.

4. Storage - There have been a number of investigations made in an effort to determine the volume of water in storage in the beds and the safe yield. On the best advice available the quantity of water stored was 250 million gallons in September 1962, all of which could not be efficiently extracted.

5. Recharge -- During the last four years drought conditions have existed and recharge from river flows has fallen short of the quantity extracted by some 80 million gallons per year.

6. Reticulation - Water is extracted from the Town Basin by pumping from bores to storage tanks from where it is reticulated through the town. Private bores also draw water from the Town Basin.

THE NEED FOR AUGMENTATION OF THE WATER SUPPLY.

7. The view is now held that stored water available for pumping from the Town Basin has fallen to such an extent that a continuous and unrestricted supply to the town can no longer be guaranteed.

8. Population - Recent census figures reveal a rate of growth of 7% to 8% per annum, the population of the town being 4,668 in 1961. On the basis of past trends a population of 8,800 is predicted by 1970.

9. Consumption - The present daily average consumption per capita is 116 gallons and the Northern Territory Administration has based forward planning on a daily average consumption of 130 gallons. The higher figure will meet the requirements of a sewerage scheme now being installed and provide a margin of safety. The Committee agree that this is a reasonable figure on which to base future planning.

10. On this figure, for a population of 5,000 expected in January 1963, annual consumption would be 200 million gallons, maximum daily demand one million gallons and maximum peak demand 95,000 gallons per hour.

11. The safe yield from the Town Basin has been estimated to be 80 million gallons per annum or 1.6 million gallons per week. Water is being extracted at a much higher rate than this, but the effect is to deplete storage and increase the possibility of salinity.

12. Based on population predictions the maximum weekly consumption will rise from 6.9 million gallons in 1962/63 to 11.5 million gallons in 1969/70. By 1970 therefore some 10 million gallons per week will need to be provided from some source other than the Town Basin.

13. Planning is based on the absence of restrictions on water use and the Committee are convinced that this attitude is correct. In arid areas the fresh appearance which ample water can give to lawns and gardens relieves the inhospitable appearance the landscape would otherwise take on in the searing heat of summer.

14. It is unfortunate, to say the least, that water restrictions are about to be imposed in Alice Springs. We believe that this situation should not have arisen, and that the means should have been provided for determination of the potential of new sources of water much sooner. It is to be hoped that when the need for further augmentation arises, the authorities concerned will be able to act well before a critical situation is reached.

POSSIBLE SOURCES OF WATER

15. The possible ways to augment the Alice Springs Water Supply are by other groundwater supplies, by surface storage in dams or by spreading works to increase the recharge of the Town Basin.

16. Surface storage - To evaluate a surface storage it is necessary to determine whether a suitable site exists for a dam which will hold a sufficient quantity of water, and whether rainfall over the catchment will maintain the storage.

17. There are sites on the Todd and Charles Rivers upstream of Alice Springs where dams could be built and these were inspected by the Committee. Dams at those sites would be relatively small, evaporation would be high, siltation problems would arise and there is a possibility that the water would need to be filtered. These factors would not present insurmountable problems and it is quite possible that, in the future, surface storage may prove to be practical.

18. The other factor to be considered in reaching a decision about the advisability of utilising surface storage is the hydrological one. To evaluate the safe yield of a proposed dam, stream flow and rainfall records are necessary over a period of some twenty years. Such records have only been kept at Alice Springs since 1953.

19. Although topographical surveys are in progress and hydrological information is being gathered the Committee believe that, due to the uncertainty that exists at this stage, a surface storage scheme should not be considered at present.

20. The Committee recommend however that examination of all aspects of surface water storage should be made in relation to any future development of the Alice Springs water supply. Such examinations should not overlook the possibility of providing facilities for water sports for the local population and tourists.

21. Spreading works - To aid recharge to the Town Basin, it may be possible to divert flood water into pondages from which it could enter the groundwater basin instead of escaping through Heavitree Gap. While this may sound attractive, evidence was given that recharge of groundwater basins has not been developed in Australia and that it is largely experimental elsewhere. The lack of records over a sufficient period prevents an assessment of the possibilities of such a solution to the problem.

22. It should also be pointed out that any scheme which would tend to stop the Todd River flowing through Heavitree Gap, either above or below ground level, would affect the replenishment of the Inner Farm Basin. This is the area downstream of Heavitree Gap where citrus growing is developing.

23. The Committee were told that in this area, given adequate water, at least 100,000 acres of first class arable land could be developed for orchards and vegetable gardens which would be capable of producing sufficient fruit and vegetables to supply the needs of the Northern Territory. Dairying also could be developed to meet local needs.

24. This area draws water from the Inner Farm Basin and we would not favour a scheme which might prevent its replenishment and therefore jeopardize the agricultural potential of the area.

25. Groundwater storage - The use of naturally occurring groundwater storage seems to offer the best means of providing the additional water Alice Springs needs.

26. Inner Farm Basin - Investigations which have been carried out have revealed that the Inner Farm Basin offers no solution for it is, hydrologically, merely an extension of the Town Basin and depends on the same recharge for its replenishment.

27. Bitter Springs Limestones - There is a considerable amount of water available in the Bitter Springs Limestones north of the aerodrome but the quality is inferior to other supplies and its use for a town supply is not favoured.

28. Outer Farm Basin - The Outer Farm Basin offers the best solution to the problem of augmenting the Alice Springs Water Supply. The water in this area is sub-artesian and independent of local and seasonal variations in rainfall. The intake is spread over a wide area and the recharge characteristics are quite unlike those in the Town Basin.

29. Investigations so far carried out indicate that bores will yield supplies of at least 12,000 gallons per hour per bore at moderate pumping depths. The quality of the water is significantly better than the present supply.

30. The Committee are satisfied that the correct way to provide additional water for Alice Springs at this stage is to exploit the Outer Farm Basin. It is a storage of good water which is filtered naturally and which is not subject to loss from evaporation.

THE PROPOSED SCHEME

31. It is proposed to increase the Alice Springs Water Supply by pumping from the Outer Farm Basin. Initially three bores will be sunk to a depth of approximately 350 feet. These are expected to yield 12,000 gallons per hour each. The source, which is approximately 8 miles from Alice Springs, is expected to provide at least 10 million gallons per week of good quality water.

32. Although the ultimate safe yield has not been evaluated, it is confidently anticipated that it will be well in excess of the demand proposed to be placed on it. The proving of the bores is being undertaken at present.

33. Water from the bores will be collected and pumped through a 15 inch diameter main to a service reservoir of 1 million gallon capacity from which it will be reticulated to the town. Pumping will be by electric power.

34. When the new scheme is in operation, the demand on the Town Basin will be considerably reduced and this will permit recharge of it. It is hoped that this will prove beneficial to the storage in the Inner Farm Basin, upon which agricultural development already mentioned would, to a large extent, depend.

35. In moving for the reference of this work to the Committee, the Minister for Works pointed out that the cost could be higher than the estimate if the water proved to be aggressive to asbestos cement pipes. Evidence was given that the quality of the water in the Outer Farm Basin is significantly better than the present supply and we have therefore assumed that the pipes will not suffer damage.

36. Implementation of the work to augment the Alice Springs Water Supply, as referred to the Committee, is recommended.

ESTIMATES OF COST

37. The estimated cost of the work proposed is £271,000 made up as follows :-

3 Bores	£ 18,500
Bore pumps and motors	10,500
Collecting mains and tank	13,000
Main pumps, motors and pump house including recording and control equipment	11,000
15 inch diameter rising main	103,500
Storage tank of 1 million gallon capacity	42,500
Pipes and valves connecting to storage tank and reticulation	42,000
Electric power line to bore sites	30,000
	<u>£271,000</u>

38. The cost of sinking additional bores as required in the future would be approximately £12,000 each.

CONSTRUCTION TIME.

39. Provision has been made in the 1962/63 Civil Works Programme for this work. Provided there are no unforeseen delays, the work should be completed by the end of the 1963 winter. The Committee stress the urgency for this work and recommend that steps be taken to ensure that the new scheme is in operation by the summer of 1963.

SUMMARY OF RECOMMENDATIONS AND CONCLUSIONS

40. The recommendations and conclusions of the Committee, arrived at after studying the evidence submitted, are set out below in summary. The number quoted alongside each conclusion or recommendation, refers to the relevant portion of the report.

	<u>Paragraph in report</u>
(1) A daily average per capita consumption of 130 gallons is a reasonable figure on which to base planning for the Alice Springs Water Supply.	9
(2) The means should be available to permit planning in time to ensure that future augmentation of the water supply can be implemented before the need to impose restrictions arises.	14
(3) Due to the absence of sufficient data, a surface storage scheme should not be considered at this stage.	19
(4) An examination of all aspects of surface water storage should be made in relation to any future development of the water supply.	20
(5) Any scheme which might jeopardise the replenishment of the Inner Farm Basin would not be favoured by the Committee.	24
(6) The Committee are satisfied that the correct way to provide additional water at this stage is by exploitation of the Outer Farm Basin.	30
(7) Implementation of the work proposed to supply Alice Springs with water from the Outer Farm Basin, as referred to the Committee, is recommended.	36
(8) The estimated cost of the work proposed is £271,000.	37
(9) Steps should be taken to ensure that the new scheme is in operation by the summer of 1963.	39

R. L. Dean

(R.L. Dean)
Chairman

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4th December, 1962.