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THE PARLIAMENT OF THE COMMONWEALTH OF AUSTRALIA

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS

REPORT

relating to the proposed provision of

ENGINEERING SERVICES TO CASUARINA SUBDIVISION

at

DARWIN, NORTHERN TERRITORY

For Senator Prowse

I present the Report of the Parliamentary Standing Committee on Public Works relating to the following proposed work :-

Provision of Engineering Services to Casuarina Subdivision, Darwin, Northern Territory,

and I seek leave to make a statement in connection with the report.

8th April, 1965.

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PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS

ENGINEERING SERVICES TO THE CASUARINA SUBDIVISION AT DARWIN, NORTHERN TERRITORY.

REPORT

By resolution on 11th November, 1964, the House of Representatives referred to the Parliamentary Standing Committee on Public Works for investigation and report the proposal to provide engineering services to the Casuarina subdivision at Darwin, Northern Territory. The Committee have the honour to report as follows :-

GENERAL

1. The Committee visited Darwin in February, 1965 to inquire into three proposed works, one of which is the subject of this report. The area to be developed was inspected and the Committee took the opportunity to see the subdivisional work being carried out in adjoining Rapid Creek. Evidence was taken in Darwin from representatives of the Northern Territory Administration and the Department of Works.

SCOPE OF THE REFERENCE

2. In the terms of the motion passed by the House of Representatives, the work is known as the "Engineering Services to Casuarina Subdivision". Casuarina is one of three areas on the north-eastern outskirts of Darwin beyond Rapid Creek which the Administration is planning to develop for urban purposes. As with the other two areas, Dripstone and Sanderson, Casuarina is to contain four neighbourhood units, all of approximately the same dimensions and capacity.

3. The first unit in Casuarina to be developed is known as Alawa. The others, not necessarily in order of development are Jingili, Moil and Wagaman.

4. The scope of this reference is basically the engineering services for the Alawa neighbourhood unit. Because Casuarina is separated from existing service lines by Rapid Creek and as Alawa is the first unit in the new area to be developed, designs for Alawa have had to provide, in part, for the future needs of the other three units at Casuarina and to a lesser degree for those of the Sanderson and Dripstone areas.

THE NEED FOR ENGINEERING SERVICES

5. Engineering services for the Alawa neighbourhood unit are needed to ensure a continuity of the supply of serviced residential blocks for private development and Government housing. The demand for residential sites in Darwin comprises the requirements of the Northern Territory Housing Commission, the Northern Territory Administration and other government departments and private developers.

6. Northern Territory Housing Commission. The Commission is the largest housing construction authority in the Northern Territory and has some 360 genuine applications on its Darwin list. New applications are being lodged at the rate of about five per week. The construction programme for 1964/65 in Darwin includes 162 houses. As, at this rate, little impression is being made on the back log of applications, the Commission proposes, subject to the availability of funds, to accelerate its programme as follows :-

1965/66	200 houses
1966/67	250 houses
1967/68	300 houses

7. Northern Territory Administration and Other Government Departments. The Committee were informed that the housing requirement of this group in Darwin for the three year period to June, 1967 is 778 houses against which 187 are under construction or are planned for this financial year. It is intended to construct the balance of this requirement as follows:-

1965/66	200 houses
1966/67	300 houses
1967/68	300 houses (that is, balance of currently known requirement plus 1967/68 estimated requirements).

8. Residential Blocks for Private Development. The demand for blocks for private housing over the last three years has been running at about 150 per annum. This has, however, shown signs of increasing and for planning purposes, the demand is regarded as :-

1965/66	150 sites
1966/67	190 sites
1967/68	220 sites

9. The total demand over the next three financial years is therefore expected to be :-

	1965/66	1966/67	1967/68	Total
Housing Commission	200	250	300	750
Administration	200	300	300	800
Private	150	190	220	560
			Total demand	2110

10. Current and Planned Work All of the residential blocks at present being serviced in the Rapid Creek and Stuart Park hutment area have been sold at auction or have been ear-marked for Housing Commission or Administration needs. It is proposed, however, to programme the following work for completion in the period up to the availability of the first blocks at Casuarina.

1964/65 Works Programme		
Kahlin Subdivision (near Darwin Hospital)	58 sites	
Hudson Fysh Avenue Subdivision	45 "	
Stuart Park (Quarry) Subdivision	106 "	
Rapid Creek Subdivision (acquired area near mouth of Rapid Creek)	28 "	
Narrows Subdivision extension	24 "	261
1965/66 Works Programme		
Bagot Reserve Subdivision	130 sites	
Stokes Street Subdivision	35 "	165
Total		426

11. The sites programmed for development in this financial year will become available between mid-1965 and mid-1966 and those proposed for development on the 1965/66 programme are expected to be available during the calendar year 1966.

12. These sites would be supplemented by 40 unused blocks from previous subdivisions, producing a total of 466 sites available to the end of next year.

13. The Requirement. It will be seen that the deficiency between the demand and available sites in the three year period to June, 1968 is 1644 sites. The Committee were therefore agreed that there is a need to provide additional serviced residential blocks in Darwin.

THE PROPOSAL

14. The Committee were told that the total demand for 2,110 residential blocks over the three year period would be met by the miscellaneous blocks now being serviced and to be programmed in 1965/66 and the 40 unused blocks, a total of 466, and the servicing of one of the neighbourhoods in the Casuarina district in each of the years 1965/66, 1966/67 and 1967/68. Alawa and subsequent units at Casuarina are designed to yield about 650 blocks each. As already mentioned, the 466 blocks would become available progressively between now and the end of 1966.

15. The period required for completion of design of the services for Alawa after an approval to proceed is given has been estimated at six months and the minimum time for construction is eighteen months. The first blocks would therefore not be turned off for housing construction to commence until two years after an approval to proceed is given.

16. Assuming that such an approval is given immediately and if funds are available, the blocks at Alawa would not be fully serviced until April, 1967. And assuming that an approval to proceed were given on the second neighbourhood unit at this time next year, a total of only 1766 blocks would be available to meet the total requirement of 2110 blocks to June, 1968. This, the Committee feel, stresses that the work proposed in this reference should be put in hand as a matter of urgency. It also points up the need to expedite the design and programming of the second and third units at Casuarina.

DESIGN OF NEIGHBOURHOOD UNITS

17. The basis of the development of the new urban areas of Darwin is the neighbourhood unit of about 650 houses, designed to support a primary school of 600/650 places. With seven grades at primary level each school would have an intake and out-turn of about 90 children each year. To provide an intake of this order, each neighbourhood unit would require two pre-school centres.

18. Each district, or group of four neighbourhood units, is expected to generate a requirement for a high school of about 1200/1300 capacity.

19. It is proposed that the internal design of Alawa and subsequent neighbourhood units will comprise sub-units each surrounding a small park and being accessible to a central bus route and the neighbourhood centre. The internal road system will be deliberately designed to make through traffic difficult thus encouraging traffic seeking other sub-units or districts to use the roads designed for that purpose.

20. The size of residential blocks has been kept above the minimum permissible. At Alawa they will average in excess of 8000 square feet, with frontages varying from 60 to 80 feet.

DESIGN OF ENGINEERING SERVICES

21. The engineering services to be provided include :-

(a) Road works and drainage, including sealed gravel road pavements, concrete kerb and gutter, sealed gravel footpaths and underground pipe drainage for the collection and disposal of surface and sub-surface water;

(b) Water supply, including supply mains, fire hydrants, connections for house services, main supply pipelines from outside the area and storage facilities to maintain adequate pressure.

(c) Sewerage, including pipe drainage systems, pumping station, rising main and disposal system;

(d) Electricity supply, including high tension distribution to the area, low tension reticulation to properties and street lights.

22. Roads and Drainage. Roads will be sealed with kerbs and gutters and with widths conforming to normal Australian practice. Within the unit, they will be mainly 24 feet wide between kerbs in a reservation of 50 feet; internal distributors will be 34 feet wide in a 60 feet reserve. On the boundaries where through traffic is expected, a width of 38 feet is proposed, although the prolongation of Trower Road which forms one of the boundaries of Alawa and which will ultimately be an arterial, will be 36 feet wide initially, to permit duplication later as a six lane dual carriageway.

23. Roads will be constructed of gravel with a prime and single seal. Pavement thickness will depend on the stability of the sub-grade material. The minimum thickness will be six inches, increasing to eight or ten inches depending on the quality of the sub-grade material and traffic density. Footpaths are to be sealed gravel three inches thick except near shopping centres where concrete is proposed.

24. To connect Casuarina to the existing town roads system, Trower Road is to be extended across Rapid Creek. A large culvert will be required to carry the flow of Rapid Creek which is considerable in the wet season. The road itself will be constructed as a raised causeway which for the first neighbourhood unit will be wide enough to accommodate a 36 feet pavement.

25. Stormwater drainage will be directed by kerbs and gutters into side entry pits at intervals along roads and conveyed by an underground pipe system into Rapid Creek.

26. Water Supply. Water supply will be reticulated by means of cast iron cement-lined pipes located generally within footpath reservations. Water for fire protection will be supplied by 2½ inch diameter mill-cocks on stand-pipes at regular intervals. It will be necessary along the boundaries of Alawa to provide larger mains than needed for this unit alone, in order to provide capacity for later development.

27. A 15 inch diameter pipeline is to be constructed from the Rapid Creek subdivision, initially, to meet the needs of Alawa and later to become a link in the general Darwin Water supply system.

28. For future neighbourhood units a new local service reservoir will be needed to maintain adequate pressure. For Alawa, however, the existing service storage at Rapid Creek and a one million gallon elevated reservoir soon to be constructed at Winnellie are expected to meet demands.

29. Sewerage. The sewerage reticulation will consist of concrete rubber ring jointed pipes with concrete manholes. Sewers will be laid principally at the rear of blocks to minimise length, allowing in the design for future units where it is necessary to drain them through Alawa. All lines will converge to a connecting manhole on the eastern side of Rapid Creek across which a 30 inch trunk main will be taken to the Rapid Creek pumping station.

30. It has been estimated that the Rapid Creek system with an extension of the ocean outfall line at Seabreeze Point will be capable of dealing with the sewage flow from Alawa. The present system delivers mascerated sewage through a 12 inch line terminating about 1200 feet off Seabreeze Point.

31. The ocean outfall line has operated satisfactorily for several years and it is believed that it will cater for higher populations than are now proposed. An investigation recently undertaken indicates that the ocean off Seabreeze Point could adequately dispose of sewage flows from a population in excess of 60,000.

32. The suitability of Seabreeze Point for very large sewage discharges together with the convenient location and level of the Rapid Creek station suggests that the existing system might be augmented in stages to meet the needs of all the Casuarina development and the Dripstone and Sanderson districts as well. The Committee were told that it would be expedient now to install a pipeline across Rapid Creek of sufficient size to deal with at least a further eight units.

33. Planning the progressive increase of the capacities of the pumping station delivery pipelines and the ocean outfall is to be dealt with stage by stage in the light of experience gained with preceding units.

34. Electricity Supply. Electricity will be reticulated through the unit in accordance with the existing standards. The installation will include seven two-pole sub-stations, overhead low voltage conductors and about 250 twin 20 Watt fluorescent street lights.

35. Alawa is to be connected to the high tension system by an extension from the 11,000 volt overhead distribution line at Oliver Street in Rapid Creek. About two miles of the existing 22,000 volt feeder to the latter point will need to be strengthened by using heavier conductors. Concurrently with the development of the second unit at Casuarina, a 66,000 volt zone sub-station will be established near the centre of the district. An area of 40,000 square feet is being reserved for this purpose.

36. The construction of the engineering services included in this reference is recommended. The designs proposed for the Alawa unit are satisfactory and set a standard which subsequent units in the Casuarina district might follow.

PROGRAMME

37. It has been estimated that after survey work and pegging have been carried out, six months will be needed for design, documentation and tendering and 18 to 24 months for construction. The length of the construction period will depend on contractual resources available at that time.

COSTS

38. The estimated cost of the work in this reference is £1,136,000. The various components in this figure are :-

(i) Roads and drainage, including three lanes of the Trower Road extended along the boundary and the first stage construction of the Rapid Creek Causeway; £710,000

		£
(ii)	Water Supply, including the extension of the 15 inch main along Trower Road to Alawa:	154,000
(iii)	Sewerage, including a 30 inch diameter trunk main across Rapid Creek and extension of the existing outfall line;	197,000
(iv)	Electricity Supply, including sub-stations and high tension line from Rapid Creek.	75,000

39. It has been estimated that of this figure, £146,000 is not properly associated with the Alawa unit itself but is more properly attributable to later stages of development. The details of this figure are :-

	£
Boundary roads	50,000
Boundary water and electricity mains	6,000
Trunk water main	20,500
Trunk sewers	37,000
Sewer outfall extension	7,500
Trower Road Causeway	25,000

40. At a total estimate of £990,000, the cost of servicing the Alawa unit is expected to compare favourably on a per block basis with the cost of servicing the Nightcliff and Rapid Creek subdivisions.

RECOMMENDATIONS AND CONCLUSIONS

41. The summary of recommendations and conclusions of the Committee is set out below. Alongside each is the paragraph in the report to which it refers. Recommendations appear in bold type.

	Paragraph
1. There is a need to provide additional serviced residential blocks in Darwin.	13
2. THE WORK PROPOSED IN THIS REFERENCE SHOULD BE PUT IN HAND AS A MATTER OF URGENCY.	16
3. THERE IS A NEED TO EXPEDITE THE DESIGN AND PROGRAMMING OF THE SECOND AND THIRD UNITS AT CASUARINA.	16

Paragraph

4. THE CONSTRUCTION OF THE ENGINEERING SERVICES INCLUDED IN THIS REFERENCE IS RECOMMENDED. 36

5. The designs proposed for the Alawa unit are satisfactory and set a standard which the subsequent units in the Casuarina district might follow. 36

6. The estimated cost of the work in this reference is £1,136,000. 38

W.J. Brimblecombe

(W.J. Brimblecombe)

Chairman.

Parliamentary Standing Committee
on Public Works,
Parliament House,
CANBERRA, A.C.T.
7th April, 1965.