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THE PARLIAMENT OF THE COMMONWEALTH OF AUSTRALIA

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS

R E P O R T

relating to the proposed

NIGHTCLIFF HIGH SCHOOL

at

DARWIN, NORTHERN TERRITORY

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PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS

NIGHTCLIFF HIGH SCHOOL, DARWIN, NORTHERN TERRITORY

R E P O R T

By resolution on 11th May, 1966 the House of Representatives referred to the Parliamentary Standing Committee on Public Works for investigation and report, the proposal to erect a High School at Nightcliff, Darwin in the Northern Territory.

The Committee have the honour to report as follows:-

THE COMMITTEE'S INVESTIGATION

1. The Committee received submissions and drawings from the Northern Territory Administration and the Department of Works and took evidence in Darwin from representatives of these organisations and from members of the Darwin High School Committee, the Nightcliff and Rapid Creek Community Association, and the Nightcliff Primary School Committee. We inspected the site of the proposed school and the Nightcliff area generally.

THE PROPOSAL

2. The proposal submitted to the Committee is for the construction of a co-educational, comprehensive secondary school in the Nightcliff District of Darwin at a total estimated cost of \$2.2m. The school is being designed for an enrolment of 1000 - 1100 pupils.

3. It is planned that the school will meet the public secondary school needs of the population living in the District of Nightcliff which includes the neighbourhoods of Nightcliff, Coconut Grove, Millner and Rapid Creek. In the first instance, however, pending the complete residential development of the Nightcliff District, its catchment will extend to newly developing residential areas in the District of Casuarina including the neighbourhoods of Alawa and Jingili.

ADMINISTRATION OF EDUCATION IN THE NORTHERN TERRITORY

4. The Education Department of South Australia, under an agreement with the Commonwealth Government, is responsible for the administration of education services in the Northern Territory including staffing, curricula, teacher training and the operation of schools generally. In these matters it maintains a close liaison with the Northern Territory Administration through the Superintendent of Schools in the Northern Territory who is an officer of the South Australian service. The Northern Territory Administration provides accommodation and equipment, etc. and meets the cost of education.

DARWIN HIGH SCHOOL

5. The present Darwin High School was built in two stages and the Committee reported to Parliament on these in November 1959 and August 1963 respectively. This school was built on Bullocky Point north-west of the commercial and administrative centre of Darwin and adjacent to the neighbourhood of Parap and is the only public school offering secondary education in the Darwin area. It is reasonably convenient to the older established residential areas and when the Nightcliff High School is operating, its catchment will be confined to the Darwin City area, the neighbourhoods of Larrakeyah, Stuart Park and Parap, the Narrows Subdivision, the R.A.A.F. Base and Berrimah.

6. Stage I of the new Darwin High School which was planned to accommodate 530 pupils, was occupied in August 1963. The second stage, which came into use this year, lifted the capacity of the school to about 1000. When the Stage II proposal was investigated it was expected that the school would reach its full capacity about 1968. Actual enrolments since 1961 and the percentage increase in enrolments from year to year, have been -

<u>Year</u>	<u>Enrolments</u>	<u>% increase in enrolment</u>
1961	358	-
1962	400	12%
1963	501	25%
1964	593	18%
1965	683	15%
1966	795	17%

7. Under current education policy, Darwin High School, as with the proposed Nightcliff High School, provides academic and non-academic courses for both boys and girls.

NEED FOR A NEW HIGH SCHOOL

8. The probability that high school enrolments will continue to increase for some time at at least the same rate as in the past five years, was clearly demonstrated to the Committee's satisfaction by an analysis of a number of factors including primary school enrolments. The conclusion reached was that the rate of increase will be not less than 16% per annum for some years, with the expectation that this rate will be exceeded.

9. That this assumption is reasonable is borne out by a study of the following local census figures taken in June 1964 of the Greater Darwin area.

	<u>0 - 4 years</u>	<u>5 - 12 years</u>	<u>13 - 17 years</u>
Number in each age group	2594	2922	1149
Average in each yearly age group	518	365	229

10. A further factor expected to ensure that the growth rate does not fall below the present level is the recent raising of the school leaving age in the Northern Territory to 15 years. It was also suggested to the Committee that it is possible that by the time the proposed Nightcliff High School is completed this age will have been raised to 16 years.

11. The Committee noted that enrolments at the only private secondary school in the Darwin area in the last four years have run at between 67 and 88 pupils. There are no plans for the erection of any further private secondary class rooms.

12. Two church hostels in Darwin have accommodation which enables students from outside the city area to attend secondary schools and the Baptist Church is planning to build a third. In addition, approval has been given to the establishment by the Welfare Branch of an educational complex at Berrimah, designed to permit the accelerated introduction of aboriginal children into the stream of post primary education.

13. Assuming that the growth rate will remain at about 16% per annum, high school enrolments in Darwin in the next seven years are expected to follow the following pattern -

<u>Year</u>	<u>Enrolment</u>
1967	930
1968	1030
1969	1250
1970	1450
1971	1680
1972	1950
1973	2260

14. It was thus clear to the Committee that the capacity of the Darwin High School will be adequate to about 1968 but that after that time, overcrowding of the existing facilities will occur. We agreed with the submission made to us that additional high school facilities will be needed no later than the opening of the 1970 school year and that a complete new high school of 1000 - 1100 capacity should be completed no later than 1972. The same information also showed that forward planning should be based on the need for the initial places in a third high school to be available no later than the beginning of 1974.

15. These conclusions assume that the growth rate of high school enrolments will remain at about 16% per annum. Should this rate be exceeded, and the indications are that this is possible, the programme for the provision of additional high school places will need to be accelerated.

#### THE SITE

16. It has been evident for some time that under the Darwin Town Plan recent and planned residential development in the neighbourhoods of Nightcliff and Rapid Creek would make the District of Nightcliff the logical location for Darwin's second high school. This conclusion has been strengthened by the plans being developed for new residential subdivisions generally beyond Rapid Creek and towards Lee Point and particularly in the Casuarina and Dripstone Districts. The Committee noted that work has already commenced on the subdivision of the neighbourhood of Alawa in the Casuarina District and that plans are being drawn up for the subdivision of nearby Jingili.

17. Full residential development of the four neighbourhoods in the Nightcliff District is expected to yield 1100 secondary school students. However, because large areas of the district are held under agricultural and other types of leases, so far only 1445 residential units have been occupied, 186 homes are under construction and there are 106 serviced blocks on which building could commence shortly. Primary schools in Nightcliff and Rapid Creek have been completed, that for Millner is being planned and a site has been reserved for the Coconut Grove Primary School.

18. Although the ultimate density of residential development in the Nightcliff District may not be realized by the time the Nightcliff High School is completed, those areas now held under agricultural and other types of leases will eventually be subdivided for residential purposes either by the Administration or by private developers. The Committee noted that in the interim capacity enrolments at Nightcliff High School will be maintained by students from Alawa and to a lesser extent from Jingili.

19. The construction of Darwin's second high school at Nightcliff as proposed will leave the catchment of the Darwin High School restricted to those areas referred to in paragraph 5 above. These areas are expected to produce a school enrolment appropriate to its capacity.

20. Unfortunately no Crown land was reserved for a secondary school when subdivision of the Nightcliff area was planned. However, a large area of undeveloped land consisting of 25 acres 34 perches, held under a Darwin Town Area Lease and suitable as a secondary school site was available and it was compulsorily acquired early in 1966. This site, which is in the neighbourhood of Nightcliff, is not ideally placed for access from the other three neighbourhoods, but the distances for students in the most remote areas of the district will not be excessive. It will be very convenient to the proposed swimming pool at Nightcliff and is close to the beach adjoining the mouth of Rapid Creek.

21. The area acquired has frontages to three sealed roads - 1250 feet to Ryland Road, 600 feet to Nightcliff Road and 1630 feet to Rapid Creek Road - and on the fourth side adjoins land reserved for residential purposes. The site has a gradual fall of 14 feet diagonally from the junction of Nightcliff and Ryland Roads to the north-east corner.

22. An alternative site considered was in the area adjacent to the intersection of Bagot Road and Progress Drive nearer the centre of the District. This particular area is subject to a number of separate agricultural leases and apart from the administrative difficulties of acquiring this site from a number of different lessees, additional costs would have been involved in sewerage as it cannot be commanded by the existing Darwin sewerage system. Furthermore, it is a relatively low lying area and the Committee were told that in certain conditions of weather and tide the area is troubled by surge from the nearby beachfront.



23. The Committee concluded that it was appropriate for the second high school in Darwin to be built in the Nightcliff District. We also found that the site selected is most suitable for the construction of the proposed school.

EDUCATIONAL REQUIREMENTS OF NIGHTCLIFF HIGH SCHOOL

24. There is a wide range in interest, ability and attainment in the children in the Nightcliff District. Potential pupils include children from families occupying Housing Commission homes as a result of a slum clearance programme, as well as the children of senior public servants and professional people. It is thus proposed to cater for the full range of students at the post primary stage.

25. Planning of the Nightcliff High School has been based on requirements specified by the South Australian Director of Education. It has, however, been designed for the special needs of secondary students in the Darwin area. As with the Darwin High School, there will be an academic stream leading to matriculation at 5th year level, commercial courses and a non-academic stream. These courses are based on those followed in South Australia but there are some differences. For example, a special class for slow learners was started at first year level at the Darwin High School in 1965. Other students take a common first year course and then move into the several streams. Provision is made for students to move from one stream to another but generally there is a fairly clearly defined path based on ability, attainment and interest after the common first year course.

26. Art and craft facilities will be used by students of both the academic and non-academic streams. However, non-academic students will give more attention to art and craft and will take these subjects to higher levels than other students.

27. At second year level, students begin either the P.E.B. course or the alternative course. The former leads to external examinations set by the Public Examinations Board of the University of Adelaide at third, fourth and fifth year levels, known respectively as

the Intermediate, Leaving and Matriculation examinations. The alternative course for students not wishing to matriculate, has an internal examination at the end of third year, successful students being awarded the Intermediate High School Certificate.

28. As with the Darwin High School, it is intended that the facilities of the school will be available to the people of the district for adult education and apprenticeship training when not being used for normal school requirements. However, in planning the school, no special provision is being made for courses other than those on the high school curricula. Special trade and apprenticeship training will be carried out by the Adult Education Board in its own premises.

#### DESIGN

29. The design brief given to the Department of Works formed the basis for the preparation of preliminary sketches which were then closely studied by specialist officers of the South Australian Department of Education to ensure that the design conformed to modern and approved concepts of school design.

30. The Design Approach A current trend in schools design is towards grouped separate buildings linked by covered ways rather than one single large structure. This principle has been followed in the proposals referred to the Committee on the Nightcliff High School. Studies indicated that single storey structures would result in a grossly extensive complex whilst 3-storey buildings were thought to be undesirable. The solution proposed is a balanced and integrated group of linked 2-storey and single storey units.

31. The slightly elevated area at the western end of the site lends itself to such a grouping. Variations in the respective heights of the components of the complex will provide an interesting and satisfactory visual effect in massing as well as producing an acceptable and practical planning solution.

32. It is proposed to position the school diagonally across the western and higher portion of the site facing the corner of Nightcliff and Ryland Roads. This location will allow a north/south orientation for all window walls, will provide easy access for visitors and will leave a maximum area of land for recreational purposes. Students and staff will enter from Rapid Creek Road from which an entry point is proposed to the staff car park.

33. The four components of the complex are -

- (a) a main 2-storey class room block;
- (b) a 2-storey annexe containing the administration and library units joined at the upper floor level to the main class room block by a glazed access link;
- (c) a single storey block containing trades and craft rooms and service areas and facilities;
- (d) a covered shelter area for school assembly, a general purpose and music room and a canteen.

34. As it is desirable for the school to be air conditioned by central plant, the separate buildings are to be closely grouped. Advantage has been taken of the layout to form two courtyards for use by students in their free time. The courts will provide covered, paved areas and open grassed spaces with seating grouped under shade trees.

35. Landscaping and Site Development The area in the immediate vicinity of the school buildings is to be landscaped and roads, paths and parking space for 16 vehicles are proposed. Open areas are to be grassed and many of the existing trees are to be preserved. Concurrently with the building programme, it is proposed to develop two sports ovals, two hockey fields, four tennis courts and four basketball courts in the area generally to the east and north-east of the building complex.

36. Proposed Accommodation The proposed accommodation includes:-

(a) MAIN 2-STOREY CLASSROOM BLOCK:

Ground Floor:	16 classrooms each 24' x 24' } for 2 small classrooms each 24' x 16' } general commercial classroom 40' x 24' } instruction
	bookstore
	2 general stores
	2 medical rooms
	male and female toilets and change rooms with lockers
	air conditioning plant rooms
First Floor:	9 classrooms each 24' x 24' for general instruction
	2 small classrooms each 24' x 16', separated by a folding screen divider
	3 large classrooms each 32' x 24'
	3 art classrooms and art stores
	physics laboratory 32' x 24' with store
	biology laboratory 32' x 24' with store
	tiered science lecture room 32' x 24'
	general science/chemistry room 40' x 32' for demonstrations
	upper chemistry laboratory 32' x 24' with store
	upper physics laboratory 32' x 24' with store
	2 demonstration laboratories each 32' x 24' with stores
	laboratory workshop
	2 dark rooms
	optics store

(b) TWO-STOREY ANNEXE:

Ground Floor:	entrance and reception area
	general office
	Headmaster's office
	2 Deputy Headmasters' offices

11.

2 offices for senior staff  
staff common room  
staff work room  
female staff rest room  
male and female staff toilets  
kitchenette

First Floor:

library  
2 study rooms  
work room  
display area in glazed link to classroom block

(c) SINGLE STOREY CRAFT BLOCK:

2 woodwork classrooms  
metalwork classroom  
2 materials stores, 2 project stores  
and finished work store  
2 teachers' rooms  
planning room  
needlework classroom  
laundry classroom  
kitchen classroom  
separate toilet facilities for teachers  
and students  
mechanical equipment plant room  
electrical sub-station and switch room

(d) COVERED SHELTER AREA:

main shelter area  
stage and chair store  
general purpose/music room  
canteen and store  
air conditioning plant room

36. The facilities proposed and the sizes of rooms were determined after consultation between the various authorities concerned. Variations in class room sizes will allow flexibility of use.

CONSTRUCTION AND FINISHES

37.           Structural The main class room block is to be in reinforced concrete. Beams will span the building transversely at 12 ft. centres to support a reinforced concrete first floor slab. At roof level reinforced concrete beams will carry steel purlins, which in turn will support the roof decking and suspended ceiling. There will be two transverse expansion joints.

38.           The 2-storey annexe will be of load bearing brick wall construction supporting, at first floor level, a reinforced concrete beam and slab floor system. The roof framing for the annexe will be open web joists carried by steel box columns. Steel purlins will carry the roof decking and suspended ceiling. Lateral stability will be provided by transverse brick walls.

39.           The frame of the single storey craft block will be structural steel box columns supporting open web joists and steel purlins. Lateral strength will be provided by transverse brick walls. Floor slabs will be of reinforced concrete.

40.           Covered ways will generally be steel framed with rectangular hollow steel sections.

41.           Preliminary tests have shown that the site conditions are suitable for the use of simple spread footings under columns and for conventional strip footings under brick and concrete walls.

42.           Finishes Exposed external reinforced concrete columns of the main class room block are to be finished off form. Spandrels will be faced with precast concrete exposed aggregate panels and a similar finish will be applied to the east and west end walls and to all masonry surfaces of the annexe. Window frames will be in anodised aluminium. Roof decking is to be in ribbed galvanised steel and will be suitably insulated.

43.           External wall finishes to the single storey craft block will be off form concrete or brickwork. The latter finish will also be used on the inner surfaces of the sheltered areas.

44. Internal finishes of masonry partitions and wall surfaces will be face brickwork. Floors generally in class rooms, laboratories and corridors will be surfaced with vinyl, but parquet flooring will be used in selected areas such as the general purpose room. The sheltered area will have granolithic paving. Stairs will have a vinyl finish with non slip treads.
45. Suspended ceilings with acoustic tiles will be provided in class rooms and corridors.
46. Toilets will have terrazzo floors and ceramic tiling on the walls behind fittings.
47. Mechanical Services It is proposed to air-condition the main classroom block and the administration annexe from a central chilled water plant which would serve several air handling plants. The craft block is to be mechanically ventilated.
48. Miscellaneous mechanical services will include fire sprinklers in the craft block, mechanical exhaust ventilation systems at appropriate points, a domestic hot water supply, drinking water units, incinerators, liquid petroleum gas supply and hand fire extinguishers.
49. Electrical Services Electricity will be supplied by the Electricity Supply Undertaking through a high voltage underground cable to a sub-station near the mechanical plant room. From the main switch board, power will be distributed to suitably placed distribution switch boards.
50. Internally, artificial lighting will be provided from fluorescent fittings, the levels of illumination conforming to the requirements of the appropriate Australian Standard Code. Perimeter security lighting will be installed on buildings and token area lighting will be provided in the open courtyards.
51. Fixed electrical equipment will be direct wired and general purpose outlets provided where necessary. A public address system will be installed for broadcasts from the general office and the Principal's office.

52. Fire Protection The main class room block and annexe will be protected by a thermal fire alarm system connected to the local fire brigade station. Hand fire extinguishers will be installed at strategic points at both floor levels and press button fire alarm bells will be provided near the front and rear entrances to the school. The craft block will be protected by a sprinkler system. External fire hydrants and hoses will be provided.

53. Hydraulic Services Water supply will come from reticulation mains in Ryland and Nightcliff Roads. Fire services will be in cast iron and the domestic supply will be piped in galvanised steel and copper.

54. Sewerage will be connected to the existing town system in Fernau Street off Ryland Road. Sewerage pipes will be of concrete and glazed earthenware.

#### COMMITTEE'S OBSERVATIONS

55. Subject to the qualifications which follow, the Committee recommend the construction of the works in this reference.

56. Car Parking It seemed to the Committee that the provision of only 16 on-site car parking spaces was inadequate, as there will be more than 50 on the teaching staff and allowance needs to be made for visitors cars. Allowing for the fact that on special occasions an overflow of cars could park in nearby streets, we believe that the on-site car parking space should be redesigned to provide about 50 spaces.

57. Staging of Construction The proposals referred to above comprise the total works for the Nightcliff High School for 1000 - 1100 pupils. However, on the assumption that the full facilities will not be required until 1972, the Northern Territory Administration is planning to have the first stage ready for use at the beginning of 1970 and the second stage at the beginning of 1972. The second stage, valued at \$440,000, comprises part of the main



2-storey classroom block and includes 12 general purpose classrooms, three art rooms with stores and a science demonstration room and store. It would also involve some sporting facilities and ground development which would not be completed initially. The assumption on which this planning is based relies on enrolments not growing at more than 16% per annum.

58. The Committee think that the 16% enrolment growth rate will prove to be conservative and that completion of the second stage of the school should be accelerated for occupation at the beginning of 1971. If this course is adopted, the whole project could be completed under one contract with a staged completion, whereas with the stages two years apart, separate tenders would need to be called for each stage.

59. There are financial advantages in having a staged completion of the building contract rather than completing each stage under separate contracts. The saving in this instance is estimated to be of the order of \$50,000.

60. The Committee therefore recommend that the proposed school be built under one contract, the first stage to be ready for occupation in January 1970 and the second in January 1971.

61. Site Development In the case of the Darwin High School, although the development of grounds, roads and landscaping were part of the proposal, for financial and contractual reasons these segments of the work are still to be completed.

62. In the present reference we noted that the proposal includes roads, paths, landscaping and playing fields and that this work is to be part of the building contract. We recommend that steps be taken to ensure that these parts of the proposal are completed concurrently with the building contract.

ESTIMATES OF COST

63. The total estimated cost of the proposals referred to the Committee is \$2.2m as follows:

Building work	\$1,251,000
Mechanical engineering	\$564,000
Electrical engineering	\$131,000
Hydraulic services	\$78,000
Civil engineering works	\$157,000
Miscellaneous items	<u>\$19,000</u>
	<u>\$2,200,000</u>

PROGRAMME

64. The Committee were told that after an approval to proceed is given, the preparation of tender documents, invitation and consideration of tenders and the letting of a contract is expected to take 12 months.

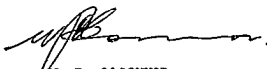
65. It has been estimated that a contract period of at least two years will be required for the completion of the buildings and the site development.

RECOMMENDATIONS AND CONCLUSIONS

66. 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. OVERCROWDING OF DARWIN HIGH SCHOOL WILL OCCUR AFTER 1968	14
2. ADDITIONAL HIGH SCHOOL FACILITIES WILL BE NEEDED NO LATER THAN THE OPENING OF THE 1970 SCHOOL YEAR.	14
3. INITIAL PLACES IN A THIRD HIGH SCHOOL SHOULD BE AVAILABLE NO LATER THAN THE BEGINNING OF 1974.	14

	<u>Paragraph</u>
4. IT IS APPROPRIATE FOR THE SECOND HIGH SCHOOL IN DARWIN TO BE BUILT IN THE NIGHTCLIFF DISTRICT	23
5. THE SITE SELECTED IS MOST SUITABLE	23
6. SUBJECT TO THE QUALIFICATIONS WHICH FOLLOW, THE COMMITTEE RECOMMEND THE CONSTRUCTION OF THE WORKS IN THIS REFERENCE	55
7. THE ON-SITE CAR PARKING AREA SHOULD BE REDESIGNED TO PROVIDE ABOUT 50 SPACES	56
8. THE PROPOSED SCHOOL SHOULD BE BUILT UNDER ONE CONTRACT, THE FIRST STAGE TO BE READY FOR OCCUPATION IN JANUARY 1970 AND THE SECOND IN JANUARY 1971	60
9. STEPS SHOULD BE TAKEN TO ENSURE THAT ROADS, PATHS, LANDSCAPING AND PLAYING FIELDS ARE COMPLETED CONCURRENTLY WITH THE BUILDING CONTRACT	62
10. THE ESTIMATED COST OF THE PROPOSALS REFERRED TO THE COMMITTEE IS \$2,200,000.	63

  
 W. P. O'CONNOR  
Vice Chairman

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

16th August, 1966.