

DEPARTMENT OF THE SENATE	
PAPER NO.	1653
DATE	
PRESENTED	23 MAR 1965
23rd March, 1965	
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1964 - 65

THE PARLIAMENT OF THE COMMONWEALTH OF AUSTRALIA

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS

R E P O R T

relating to the proposed construction of the

R.A.A.F. ACADEMY

at

POINT COOK, VICTORIA

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PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS

R.A.A.F. ACADEMY, POINT COOK, VICTORIA

R E P O R T

By Resolution of 20th October, 1964, the House of Representatives referred to the Parliamentary Standing Committee on Public Works for investigation and report, proposals for the construction of the R.A.A.F. Academy at Point Cook, Victoria. The Committee have the honour to report as follows :-

GENERAL

1. The Committee received statements from the Departments of Air and Works and heard evidence from representatives of these departments, and the Commandant and academic staff of the R.A.A.F. Academy. A visit was paid to Point Cook and the site of the proposed works and existing accommodation and facilities were inspected.
2. The Committee noted that the Defence Business Board had considered and endorsed the proposals.

HISTORICAL

3. Point Cook was chosen as the site for the establishment of Australia's first venture into military aviation when the Central Flying School was formed in 1914. The Australian Flying Corps was disbanded in 1921 and the Royal Australian Air Force was created. Point Cook was the first station of the new service and the base for No. 1 Training School.
4. A cadet training scheme was set up in 1923 to provide the pilots required in the Service. Up to the outbreak of World War II some 500 cadets were trained under the scheme.
5. During World War II, Point Cook was a centre of R.A.A.F. training and up to the cessation of hostilities, 2,700 pilots graduated from the station. A signal school, established during the war, trained some 7,100 airmen.
6. Post-war Cadet Training. To meet the changing needs and growing complexity of military aviation after World War II, a R.A.A.F. College was formed at Point Cook in 1947 to train cadets for careers in the service. The course was of four years duration. The syllabus was designed to

provide cadets with a liberal education in the arts and sciences and a knowledge of the basic service subjects. The level of training was roughly equivalent to second year level in a Bachelor of Science degree course.

7. Arising from a review of the syllabus of the College in 1956, and effective from 1961, the name of the College was changed to the R.A.A.F. Academy and the course of training lengthened to four years and six months.

8. Functions of Point Cook. The changing circumstances and complexity of requirements of the R.A.A.F. are reflected in the various units at present located at Point Cook. These include :-

- Base Squadron, Point Cook
- Headquarters, R.A.A.F. Base, Point Cook
- No. 1 Basic Flying Training School
- Officers Training School
- R.A.A.F. Academy
- R.A.A.F. Institute of Aviation Medicine
- R.A.A.F. School of Languages

Together, these units employ 89 officers, 662 other service personnel and 57 civilians.

9. In addition, Cadets training under the diploma training scheme at present located at Frognall, Victoria will be moved to Point Cook shortly.

THE R.A.A.F. ACADEMY

10. The officer establishment of the R.A.A.F. at present is 2,377 including 984 positions in the General Duties Branch. Officer needs in this branch are met by those graduating from the Academy and the Flying Training School. Officers required by other branches come from direct entrants and the various graduate and diploma training schemes.

11. Aim. The aim of the course is to provide instruction, experience and incentive to each cadet so that he will graduate with the knowledge and qualities of leadership expected of a junior officer

of the R.A.A.F. and with a basis for continued development through a life time of service leading to readiness for responsibility as a future air commander. The curriculum is designed to impart a thorough knowledge of the elements on which air power is based and to develop character, physical fitness and an understanding of men.

12. Academy Training. The programme of training which was implemented as a result of the 1956 review includes -

- (a) courses of study leading to the degree of Bachelor of Science at the University of Melbourne;
- (b) flying training to the basic stage and
- (c) physical, military, humanities and leadership training.

It was agreed that this course should be of four years and six months duration and should include six months advanced flying training. Pilot graduates of the Academy complete their flying training at No. 1 Applied Flying Training School.

13. The need for higher academic instruction which prompted the 1956 inquiry arose from the requirement for an increasing number of officers able fully to understand the role and use of both manned aircraft and guided missiles. The increasing rate of technological change required that the R.A.A.F. train officers with an ability to comprehend not only the military problems of modern warfare but the technical details of modern weapons which are playing an important part in future R.A.A.F. planning.

14. A Statute of Affiliation of the Academy to the University of Melbourne was determined under which the University agreed to grant degree status to the course at the Academy subject to certain conditions. Among these was a requirement that the R.A.A.F. provide adequate staffing and facilities for teaching and research to the satisfaction of the Faculty of Science at the University.

15. Cadet Intakes. Intakes of cadets to the Academy have varied according to the numbers and quality of applicants offering but over the

last twelve years have averaged about 28 per annum. Wastage during training, which runs at about 40 per cent, occurs mainly during the first year of the course and is roughly equivalent to wastage in first year science courses at Australian universities. Evidence given to the Committee indicated that this rate is probably a little high considering the highly selective recruitment processes used. Statistics relating to intakes of cadets still at the Academy are :

<u>Year</u>	<u>Applicants</u>	<u>Appointees</u>	<u>Cadets still in training</u>
1961	190	27	13
1962	203	34	16
1963	274	26	20
1964	319	34	31

16. The proposals referred to the Committee have, on this and past experience, been based on an academy of 96 cadets in training at one time.

PRESENT FACILITIES

17. The Site. The present Committee agree with the conclusion reached by the Committee which investigated and reported in 1961 on the proposal for the Science Block for the Academy, that this is a logical permanent location for the Academy. Point Cook has an aerodrome, is close to the University and the Academy can be maintained there economically. The claims for Point Cook are strengthened by the traditional association it has had with cadet training since 1923.

18. The Science Block. This building which has now been completed and occupied is the first permanent structure of the Academy complex. The urgent need for it arose not only from the requirement for better teaching accommodation generally, but to provide space and facilities for instruction to third year University level for cadets admitted under the new course, the initial entry being in 1961. Prior to the completion of the block, facilities for teaching to this level did not exist.

19. The Science Block is a two-storey building providing

laboratory and teaching accommodation for physics and mathematics. The facilities include two physics lecture theatres, three physics laboratories, two mathematics class rooms as well as stores, work space, a library, common room and offices. The eastern wall of the block is a partial curtain wall in aluminium and glass with enamelled aluminium spandrels. The western wall is mainly face brick work and adjustable sun louvres have been fitted.

20. The Committee considers that the Science Block in siting, design and choice of materials is an appropriate first stage development for this type of institution and sets a standard which future buildings should follow.

21. Other Buildings. Other accommodation at present used by the Academy is in temporary huts constructed during World War II which have been converted to laboratories, class rooms and study/bedrooms. They provide only the minimum services and facilities for instructional and living purposes, are reaching the end of their economic life and generally, are in poor condition. The laboratories and classrooms are well below the standard required for teaching at tertiary level as required in the agreement with the University of Melbourne.

MASTER PLAN OF R.A.A.F. ACADEMY

22. The site layout submitted to the Public Works Committee when it considered the Science Block was for a hollow square complex of buildings near the main entrance to Point Cook and fronting Williams Road. Besides the Science Block the future development plan included a research laboratory, an applied science building, administrative offices, an arts and military studies building and a chemistry building. The parade ground, assembly hall, kitchen, messes and accommodation blocks were to form a separate complex adjacent to the instructional group of buildings.

23. The previous Committee agreed that the Science Block was correctly sited in relation to the Master Plan then presented and noted that this siting would determine to a large extent the planning of the remainder of the Academy.

24. Consideration in detail of the requirements of the Academy has lead to a number of minor changes in the original Master Plan.

These include :-

- (a) the relocation of the assembly hall to become the focal point of the instructional group at the northern end of the hollow square;
- (b) the resiting of the cadet study/bedroom block to the south of the Arts and Military Studies Block and closer to Williams Road. In the new location it will be more closely associated with the instructional buildings and be contained in the area reserved for a future cadets mess and the sleeping quarters for other cadets training at the station;
- (c) filling the site to create a slightly elevated and level plat on which the buildings will stand and landscaping the area to unite the various elements.
- (d) re-locating the parade ground on the eastern side of Williams Road opposite the Headquarters Building.

In making the changes in the Master Plan, liberal provision has been made for future expansion of the Academy.

25. The Committee believe that the Master Plan as amended will produce a functionally satisfactory complex of buildings, that the space available will be used efficiently and that sufficient provision has been made for future development.

THE PRESENT PROPOSALS

26. The proposals referred to the Committee are described in the paragraphs which follow. Subject to the qualifications which are referred to later in the report, we recommend the construction of the buildings which comprise this reference.

27. Chemistry Building. A single storcy building is planned accommodating

- a lecture theatre with tiered seating for about 40 cadets and fitted with a demonstration bench, fume cupboard, bio box, screen and appropriate services.

- a teaching laboratory with three island benches for half a class of 18 cadets with an extra bench for group or special work. Each work space will have gas, water, vacuum and electric outlets and lockers for the storage of chemical equipment. Ancillary facilities will include two large fume cupboards, an eye wash basin, an emergency shower and areas for titration, balances and write-up.
- a research laboratory for staff members with two island benches, wall benches, a fume cupboard and necessary services.
- a chemical store, preparation rooms and work rooms for the storage of chemicals and glass ware, the preparation of exhibits and the repair of apparatus.
- a library and tutorial room. The library will house reference material and periodicals, arranged to form areas for tutorial work.
- offices for staff.

Liquified petroleum gas cylinders will be stored externally while noxious and explosive chemicals will be located in an external store adjacent to the building.

28. Research (Physics) Building. This two storey building is to be linked to the existing Science Block by an elevated bridge. It will provide research areas and facilities for the teaching staff and workshops for the maintenance and construction of laboratory equipment. A small electric-hydraulic lift rising to roof level will permit the mounting there of research equipment. The space and communications research areas and the precision workshop are to be air-conditioned.

29. Applied Science Building. This is to be a single storey building containing laboratories and lecture rooms for the teaching of aircraft engineering, aerodynamics, applied electronics and meteorology. The accommodation will include :

- two lecture rooms each accommodating 30 cadets at individual tables. Each room will be fitted with a demonstration bench on a dais, blackboard space, facilities for slide projection and power outlets for both A/C and D/C current.
- an applied electronics laboratory for demonstrating electronic equipment. Power outlets will be provided as required on the walls and at the island benches. There will be access from the laboratory to the adjacent garden area where aerials can be erected.
- an engineering laboratory for use as the structure and propulsion laboratory. It will have access to the paved and screened courtyard where small power units can be run and tested.
- an aerodynamics laboratory fitted with island and wall benches. The principal equipment will be two sub-sonic wind tunnels, one super-sonic wind tunnel and a water tunnel. Noisy experiments will be conducted in the adjacent screened courtyard.
- workshops are to be provided adjacent to the engineering and electronics laboratories to permit the assembly, adjustment, testing and maintenance of equipment.

30. Arts and Military Studies Building. This two storey building will contain a cinema with seating for 60 cadets and a plant room on the ground floor. The first floor will accommodate classrooms for 30 cadets for each of English, Social Studies and Military Studies and the General Library. The latter will seat 60 cadets and house reference material not held in scientific libraries. A library store and service area is adjacent. A small Specialist Library on the same floor will provide storage for material appropriate to the Arts and Military Studies Departments.

31. Assembly Hall. The hall is designed to seat 400 persons. The facilities planned include a stage, screen, bio-box, dressing rooms, toilets, an office, store and plant rooms. A flat floor is proposed and the seating will be movable to permit multi-purpose use. In view of the importance of the Assembly Hall in the life of the Academy and its use for meetings and the reception of important visitors, it has been sited in a prominent position. The most striking feature of the Hall is the roof which is claimed to be of aerodynamic shape, symbolic of flight.

32. Headquarters Building. This is another two storey structure. It faces Williams Road, overlooks the landscaped courtyard at the rear and is conveniently placed near the entrance to the Base. The building provides accommodation for the administrative functions of the Academy including offices for the Commandant and the supporting service and academic staff.

33. Cadet Study/Bedroom Block. This building is to be erected south of the instructional group of buildings and convenient to the present messing facilities. It will be the first of a future complex of buildings containing bedroom and messing accommodation for Academy and other cadets in training at Point Cook. It is to be a three storey block containing 32 individual study/bedrooms on each floor. Two tutorial rooms are provided on each of the first and second floors.

34. Laundry. A laundry building equipped with washing machines, drying rooms and ironing facilities is to be built adjacent to the Cadet Study/Bedroom Block.

35. Cadets Mess. An area of land has been reserved, adjacent to the Cadets Study/Bedroom Block, for a future Cadet Mess, which will be used by all cadets stationed at Point Cook. Detailed design of this building cannot proceed until a decision is made on the number and category of other types of cadets to be located at the base. A provision of £80,000 has been made in the estimates for a proportion of the cost of the building to be included in the overall cost of the Academy.

36. Playing Field. The proposals include the provision of an additional playing field at the southern end of the built-up area adjacent to the existing Headquarters Building.

37. Construction and Materials. Buildings are to be in framed construction in either reinforced concrete or light steel depending on the size and requirements of the building concerned. Floors are to be concrete. External walls are to be face brick with aluminium windows and precast spandrels.

38. Internally the materials to be used will be of good quality and have low maintenance characteristics. Brick partitions will be used for stair wells, toilet blocks and where sound proofing is required. Demountable partitions are to be used generally in office spaces.

39. Roofing. The estimates referred to below are based on the use of ribbed copper decking on all roofs. We were told that this material would cost about £50,000 more than galvanised steel decking which is the cheapest suitable alternative. In view of the unusually high cost of providing copper roofing, the Committee recommend the use of a cheaper appropriate material which would produce the same functional and aesthetic result. This could produce a saving of between £28,000 and £50,000 depending on the material chosen.

40. Mechanical Services. Air-conditioning will be provided in the space research and communications research rooms of the Research (Physics) Building for functional reasons.

41. Space heating will be provided elsewhere, except in such areas as stores, ablutions, toilets and plant rooms. As bedrooms will be used for study purposes they will be heated. Generally, heating will be by hot water baseboard type convection units. Ducted warm air ventilation will be provided in areas requiring controlled air movement such as class rooms, laboratories and the Assembly Hall. Oil fired hot water boilers will be located in the Headquarters Building (to serve also the Arts and Military Studies Building and Cadets Study/Bedroom Block) and in the Applied Science Building (to serve also the Assembly Hall). The Research (Physics) and Chemistry Buildings will be supplied by increasing the capacity of the plant installed in the Science Block.

42. Toilet and bathroom areas, darkrooms and projection rooms will be mechanically ventilated. Exhaust fans will service such facilities as fume cupboards, compressed air and gas installations.

43. Hot water will be reticulated to ablutions areas, laboratories and to laundry points.

44. Fire Protection Measures. A thermal type fire alarm system will service all buildings with detectors located according to the requirements of the code of the Standards Association of Australia. The system will be connected by P.M.G. lines to the Fire Station. Portable fire extinguishers will be installed at strategic points and a separate water system will be installed for external fire hydrants and hose reels. An automatic sprinkler system will protect the basement plant room of the Chemistry Building.

45. Electricity Supply. The sub-station supplying the Science Block will be increased in capacity to meet the needs of those new buildings in an economical distribution radius. A new sub-station will be installed to supply the needs of structures beyond the scope of the existing facility. Cabling to individual buildings will be underground in ducts with capacity for future needs.

46. Hydraulic Services. The needs of the Academy for water supply, sewerage and storm water drainage can be met by connection to existing services.

47. The Committee noted that the proposals have been planned on the basis of the needs of the next 10 years and up to 96 cadets in training simultaneously. Evidence indicated that there is a small reserve capacity in this planning to cater, under the present system of training, for a minor expansion in cadet numbers. We ascertained also that, given additional study/bedroom accommodation and some extra instructional staff, the instructional accommodation now proposed would have capacity to cope with more cadets than are at present in training.

48. The Master Plan in its present form includes a number of reserve sites for unforeseen building requirements and extension space for several of those included in this reference.

CADETS STUDY/BEDROOM ACCOMMODATION

49. Room Sizes. During the inspection of the existing facilities at Point Cook, the Committee saw the quarters at present occupied by Academy cadets. The inspection added point to evidence given that these facilities are markedly sub-standard, do not provide the level of amenity that might reasonably be expected by students undertaking a university degree course or service cadets in training and have contributed in part to the high wastage rate of cadets particularly in the first year of training.

50. Evidence was given to the Committee about the standards which guided planning of the proposed study/bedroom block and a mock-up of a study/bedroom, with built-in furniture in place, was inspected. The bedroom planned is of 108 square feet. The basis for this is the provision for Senior N.C.O.'s (i.e. Sergeants or equivalent and above) in the Services' Scales and Standards of Accommodation of a single cubicle of 100 square feet. Regard was also had to the allowance of 120 square feet for study/bedrooms in some recent halls of residence erected at Australian universities. In this latter connection, however, it was noted that planning at International House at the University of Melbourne was based on a study/bedroom of 108 square feet.

51. The Committee feel that the needs of cadets at the R.A.A.F. Academy are closer to those of a University student than they are to a Senior N.C.O. in one of the services. The course of training at the Academy is a long and arduous one demanding, by its very nature, extended hours of study. We consider that these factors alone warrant first class living and study conditions.

52. The floor area of the mock-up when first inspected was 108 square feet and it was later extended to 120 square feet. It was evident to the Committee from this inspection, and this view was supported in evidence given by the Commandant of the Academy and academic staff, that the smaller area barely meets requirements. It was clear that at 120 square feet the room provided an additional

degree of amenity that was warranted, and justified the expenditure of the extra £10,000 it would cost to extend each study/bedroom by 1 foot. The Committee therefore strongly recommends that the internal measurements of each study/bedroom be increased from 12' x 9' to 12' x 10' at an extra cost of £10,000.

53. Ablution Facilities. The study/bedroom block is a three storey building containing 32 study/bedrooms on each floor. Two ablutions areas each comprising two showers, a bath and three wash basins are planned for each of the floors. This provision is in accordance with the Services' Scales and Standards of Accommodation.

54. The Committee took evidence on and considered at some length the adequacy of these facilities, having regard to the heavy peak loads that would be imposed on showers and wash basins and the nature of cadets activities and concluded that the scale did not entirely recognise the needs of an institution such as the Academy.

55. In the light of the extension of the study/bedroom recommended above and noting that the Services' Scale provides for wash basins and mirrors in junior officers' quarters, the Committee feel that there was justification for these amenities to be provided in individual cadets study/bedrooms. This would permit the omission of two wash basins from each ablutions area as now planned. The additional cost of this work is estimated to be £4,500.

56. Furthermore, we believe that the installation of showers in the ratio of 4 to each 32 cadets is not realistic in the circumstances and recommend that this provision be doubled. It is understood that the additional showers can be provided for £600 and if two wash basins are deleted from each ablutions area, they can be provided without the need to entirely recast the existing plans.

CONSTRUCTION PROGRAMME

57. It has been estimated that working drawings and tender documents can be completed 12 months after instructions to proceed are given. Tenders can be called and a contract let about two months after the completion of the drawings and documents. The total

construction period, if the work is let in one contract, is estimated to run to 24 months. Progressive occupancy of various of the buildings could be obtained in that period.

58. The Committee understand that the Department of Air is hopeful of obtaining the funds to permit all of the work included in this reference to be included in one contract. We believe that there is an urgency for the completion of all of the buildings proposed and recommend that tenders be called as soon as working drawings and tender documents can be completed.

COSTS.

59. The cost of the work included in this reference and as submitted to the Committee is £954,000 made up as follows :-

Buildings

	£	£
Chemistry	95,000	
Research (Physics)	78,000	
Applied Science	110,000	
Arts & Military Studies	152,000	
Assembly Hall	80,000	
Headquarters	73,000	
Cadets Study/Bedroom	<u>164,000</u>	752,000

Engineering & Other Services

Electrical	14,000	
Area Lighting	8,000	
Water Supply & Sewerage	27,000	
Civil Engineering and Forecourt	36,000	
Roads, Drainage, Landscaping	<u>37,000</u>	122,000
Contribution to cost of Cadets Mess		<u>80,000</u>
		<u>£954,000</u>

60. As noted above, enlarging the study/bedrooms as recommended would cost an additional £10,000, providing each study/bedroom with a wash basin and mirror an extra £4,500 and increasing the number of showers a further £600. The total cost of the work would then become

£969,100. The cost of the additional facilities recommended would, however, be more than offset by the saving resulting from the use of a cheaper appropriate roofing material.

SUMMARY OF RECOMMENDATIONS AND CONCLUSIONS

61. The summary of recommendations and conclusions of the Committee is set out below. Alongside each the relevant paragraph in the report is indicated. Recommendations appear in bold type.

	Paragraph
(1) Point Cook is a logical permanent location for the R.A.A.F. Academy.	17
(2) The Science Block is in siting, design and choice of materials an appropriate first stage of development for the Academy and sets a standard which other buildings should follow.	20
(3) The Master Plan as amended is expected to produce a functionally satisfactory complex of buildings; the space available has been used efficiently and sufficient provision has been made for future development.	25
(4) SUBJECT TO THE RECOMMENDATIONS WHICH FOLLOW, CONSTRUCTION OF THE BUILDINGS WHICH COMPRISE THE REFERENCE IS RECOMMENDED.	26
(5) IN VIEW OF THE HIGH COST OF RIBBED COPPER ROOFING, THE COMMITTEE RECOMMEND THE USE OF A CHEAPER APPROPRIATE MATERIAL WHICH WOULD PRODUCE THE SAME FUNCTIONAL AND AESTHETIC RESULT	39
(6) THE INTERNAL MEASUREMENTS OF CADETS STUDY/BEDROOMS SHOULD BE INCREASED FROM 12 FEET BY 9 FEET TO 12 FEET BY 10 FEET AT AN ESTIMATED COST OF £10,000.	52
(7) EACH STUDY/BEDROOM SHOULD BE PROVIDED WITH A WASH BASIN AND MIRROR AT AN ESTIMATED COST OF £4,500.	55
(8) THE PROVISION OF SHOWERS IN EACH ABLUTIONS AREA SHOULD BE INCREASED FROM TWO TO FOUR AT A COST OF £600.	56

- (9) TENDERS SHOULD BE CALLED AS SOON AS WORKING
DRAWINGS AND TENDER DOCUMENTS CAN BE COMPLETED.

58

- (10) The estimated cost of the proposed work including
the larger study/bedroom and additional wash
basins and showers is £969,100 less the saving
resulting from the use of a cheaper appropriate
roofing material.

60

W. J. Brimblecombe

(W. J. Brimblecombe)
Chairman.

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Parliament House,
Canberra, A.C.T.
18th February, 1965.