

The Parliament of the Commonwealth of Australia
Parliamentary Standing Committee on Public Works



Report Relating

to the proposed

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New laboratory complex
at DSTO Salisbury, SA.

(Seventh Report of 1994)



Parliamentary Standing Committee on Public Works

REPORT

relating to the proposed

NEW LABORATORY COMPLEX AT DSTO SALISBURY, SA.

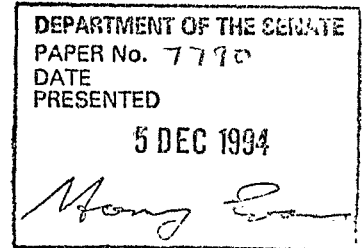
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**MEMBERS OF THE PARLIAMENTARY STANDING COMMITTEE
ON PUBLIC WORKS**

(Thirty-First Committee)

Mr Colin Hollis MP (Chairman)
Senator Paul Henry Calvert (Vice-Chairman)

Senate

Senator Bryant Robert Burns
Senator John Robert Devereux

House of Representatives

Mr John Neil Andrew MP
Mr Raymond Allen Braithwaite MP
Mr Russell Neville Gorman MP
Mr Robert George Halverson OBE MP
Hon. Benjamin Charles Humphreys MP

**Sectional Committee on the proposed New laboratory complex at DSTO
Salisbury, SA.**

Mr Colin Hollis MP (Chairman)
Hon. Benjamin Charles Humphreys MP (Vice-Chairman)
Senator Bryant Robert Burns

Committee Secretary: Peter Roberts

Inquiry Secretary: Michael Fetter

Secretarial Support: Trish Grice
Mahesh Wijeratne

**EXTRACT FROM THE
VOTES AND PROCEEDINGS OF
THE HOUSE OF REPRESENTATIVES**

No. 82 dated Wednesday, 29 June 1994

**5 PUBLIC WORKS – PARLIAMENTARY STANDING
COMMITTEE – REFERENCE OF WORK – NEW
LABORATORY COMPLEX AT DSTO SALISBURY, SA**

Mr Walker (Minister for Administrative Services), pursuant to notice, moved – That, in accordance with the provisions of the *Public Works Committee Act 1969*, the following proposed work be referred to the Parliamentary Standing Committee on Public Works for consideration and report: New laboratory complex at DSTO Salisbury, SA.

Question – put and passed.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS

NEW LABORATORY COMPLEX AT DSTO, SALISBURY, SA

By resolution on 29 June 1994 the House of Representatives referred to the Parliamentary Standing Committee on Public Works the proposed new laboratory complex at DSTO Salisbury, SA.

THE REFERENCE

1. DSTO Salisbury is located 22 km north of Adelaide. It accommodates DSTO's Electronics and Surveillance Research Laboratory (ESRL) which primarily undertakes research into electronic-based defence systems. The present research facilities are spread over 1 039 ha and 650 buildings, many of which were constructed for the manufacture of explosives in 1940.
2. The proposal referred to the Committee involves concentrating ESRL activities into a 280 ha site and provide a new laboratory complex which will accommodate 545 research and support staff.
3. When referred to the Committee the estimated out-turn cost of the project was \$50.714m.

THE COMMITTEE'S INVESTIGATION

4. The Committee received a submission and drawings from the Department of Defence (Defence) and took evidence from representatives of Defence at a public hearing held in Salisbury on 13 September 1994.
5. The Committee also received submissions and took evidence from representatives of the following organisations:
 - Government of South Australia – Department of Housing and Urban Development and Economic Development Authority
 - Council of the City of Elizabeth
 - Association of Professional Engineers, Scientists and Managers Australia (APESMA)

- Community and Public Sector Union
- Automotive, Food, Metals and Engineering Union.

6. Written submissions were received by the Committee from:

- Australian Heritage Commission
- National Trust (South Australia)
- South Australia Department of Environment and Natural Resources
- Institution of Engineers, Australia (South Australian Division)
- South Australian Housing Trust
- Defence Science and Technology Organisation Salisbury Institute Inc
- Council of the City of Salisbury
- Council of the City of Munno Para
- Commonwealth Department of Primary Industries and Energy
- Energy Conservation Systems Pty Ltd
- South Australian Gas Company
- Commonwealth Fire Board
- Ebor Computing.

7. Prior to the public hearing the Committee inspected the DSTO complex at Salisbury, a number of existing laboratories and the site for the proposed laboratory complex.

8. Following advice from Defence about changes to the design of the laboratory complex, the Committee further questioned Defence officials at a private meeting held at Parliament House, Canberra on 10 November

1994. It should be noted that this private meeting was held after the Committee had endorsed a draft report on this reference. This matter is discussed later in this report.

9. A list of witnesses who gave evidence at the public hearing is at Appendix A.

10. The Committee's proceedings will be printed as Minutes of Evidence.

BACKGROUND

Defence research and development

11. DSTO is the second largest government research and development organisation, eclipsed only by the CSIRO. DSTO is the research and development arm of Defence and plays a central role in supporting the development of the combat and combat support capability of the Australian Defence Force. In essence, the role of DSTO is to provide advice that is professional, informed and impartial on the application of science and technology best suited to Australia's defence and security needs.

12. DSTO has in recent years undergone significant restructuring - whereas once there were four research laboratories, there are now two:

- the Aeronautical and Maritime Research Laboratory (AMRL), based predominantly in Melbourne
- the Electronic and Surveillance Research Laboratory (ESRL), based at Salisbury.

13. It has a staff of 2600 but under Defence restructuring initiatives DSTO plans to reduce staff to 1300 by 1996/97.

DSTO Salisbury

14. DSTO Salisbury is located about 22 km north of Adelaide. The wider Defence site comprises RAAF Base Edinburgh as well as DSTO. The DSTO managed site is bounded by the Adelaide - Gawler railway line to the east, the Adelaide to Port Pirie railway line to the south, RAAF Base Edinburgh to the west and the Bellchambers/Winterslow roads to the north.

Contingents of the Army, Royal Australian Navy and Defence contractors occupy tenancies on the DSTO site.

History of the Salisbury site

15. The site was compulsorily acquired by the Commonwealth for the construction of a munitions factory in the middle of 1940. Construction of the factory commenced in November, production of munitions commenced within a year and the factory became fully operational by the end of 1942. The factory has been described as "...the Commonwealth's biggest single construction work of the war and by far the biggest in the history of South Australia."¹ Brick construction was used extensively throughout. The factory comprised 1595 buildings with more than 11 000 m² of floor space. The manufacture of munitions, broader in scale than anywhere else in Australia, continued until 1945. The factory was South Australia's prime contribution to the call for "total war on the industrial front".²

16. After the end of the Second World War the factory's workforce quickly declined and by the end of 1945 only 300 remained on the payroll. In March 1948 the site was made available to the Anglo-Australian Joint Project, the Long Range Weapons Organisation.

17. The former munitions factory adapted well to the new role of a defence science and engineering establishment:

All things considered, adapting the Explosive Factory to its new role in a more complex era of military science was accomplished with surprisingly little fuss, and with the benefit of hindsight we can see what a good choice had been made. Over the intervening years the grounds have seen more changes than the buildings which adapted well to nearly all the later requirements.³

¹Peter Morton: *Fire across the Desert: Woomera and the Anglo-Australian Joint Project 1946-1980*, AGPS for the Department of Defence, Canberra, 1989, p. 44.

²*Ibid*, p. 45.

³*Ibid*, p. 49.

18. There was little new construction and much re-use of the existing buildings:

Apart from the wind tunnel, for which a contract was signed with a Port Adelaide firm of metal fabricators in April 1952, and some static test stands, the only new structures on the site are the two laboratories 171 and 180, though it is true of course that many buildings have been gutted and rebuilt for purposes very different from those intended by their architects.⁴

THE NEED

19. The need for a new laboratory complex at DSTO Salisbury stems from the following factors:

- the Salisbury site has 650 buildings spread over 1039 ha and a program of rationalisation is underway which aims to consolidate all of DSTO Salisbury in 13 new or recently refurbished buildings on about 280 ha
- consolidation will provide an integrated research environment resulting in a more cohesive, effective and productive research effort
- annual savings in site maintenance and operating costs of about \$5.0m
- consolidation has the potential to release up to 700 ha of property, with the added benefit of the potential to generate revenue (but this would be subject to the provision of alternative accommodation required for current non-DSTO Defence tenants).

⁴*Ibid*, p. 50.

Northern Adelaide Defence landuse study

20. Any consolidation of DSTO activities could result in some land being no longer required for defence purposes. Defence commissioned a study of the future use of Defence land in the northern Adelaide area, including the DSTO site and RAAF Base Edinburgh. The study is due for completion shortly and will report possible uses of the land. There has been consultation with state, local and regional authorities to examine the options available for the land which Defence will no longer require. The Committee was advised that 700 ha could be made available and options which the study will examine will include a mixture of commercial, industrial and residential development around the DSTO facility.

21. The Committee sought clarification from Defence about the future prospects of tenants on the DSTO site. Defence advised the Committee that tenants on the site comprise two groups. First, Defence agencies, of which there are six with a combined staff of 120. The study is leaning towards relocating them into the laboratories area. Defence believes there is sufficient space available to accommodate them. The second group, comprises defence industry organisations, such as contractors, who have indicated an interest in remaining close to DSTO. The study is leaning towards locating this group in an industrial/commercial area.

22. The South Australian Government believes that the consolidation of DSTO activities will provide potential for high quality residential development in the southern portion of the site in association with industry, research expansion and employment opportunities generated both on and off site. The land is at a critical location in the metropolitan context and it is therefore important that the Government and the community are consulted in relation to future uses and other site specific matters such as soil remediation, recreation open space, stormwater management and infrastructure issues. The Committee questioned representatives of the South Australian Government about the possibility of the State acquiring some or all of the surplus land. The State Government's policy at present is not to acquire any more broad-acre land, the reason being that government assets in the north and south of Adelaide are quite high.

Alternatives considered - investment versus 'greenfield' site

23. Defence considered the practicalities of relocating the DSTO Salisbury-based divisions and support elements to a 'greenfield' site such as Technology Park, Adelaide. The Defence view was that because of the substantial investment which has been made at Salisbury, the option of relocating to a greenfield site was not considered further. Defence indicated that the laboratories area at Salisbury is a considerable investment and a number of facilities have recently been refurbished or are soon to be completed. These buildings and costs are:

- building 71 - relocation of ablution areas and upgrading of kitchen and tea areas - cost \$250 000
- building 73 - upgrading of airconditioning to the computer facility, re-roofing of the building, relocation of ablution facilities - cost \$1.3m
- building 77 - complete internal/external upgrading, including airconditioning, ablutions and re-roofing - cost \$1.1m
- explosives ordnance division project - involving the construction of a new building with a floor area of 1640 m² to accommodate 76 staff and the refurbishment of 12 other buildings - cost \$5.947m
- communications building - this is a secure communications development facility with a floor area of 2973 m² - cost \$9.23m and was exempted from scrutiny by the Committee by virtue of paragraph 18(8)(c) of the *Public Works Committee Act 1969*
- systems simulation building - this building is used to test systems under controlled conditions and has a floor area of 1032 m² - cost \$2.5m
- scientific and engineering services building - this building is the DSTO workshop support facility - cost \$1.32m.

Proximity to other facilities

24. By DSTO remaining at Salisbury there would be considerable additional benefits stemming from the close relationships with other users of the site. These include the recently upgraded explosives ordnance division facility and the RAAF electronic warfare facility. The site also has areas suitable for test ranges and aerial farms which provide a buffer zone to the laboratories area.

Development options

25. Defence advised the Committee that two options for the provision of additional accommodation were considered. These options involved:

- option 1 - the construction of a new office and scientific laboratory complex of 20 000 m² of net useable accommodation
- option 2 - the construction of a building of 10 000 m² and extensive refurbishment of the remaining five larger former munitions buildings in the laboratories area.

Consideration of options

26. Defence advised that option 2 would have a small initial construction cost saving of 6.4% (or \$3.05m) over option 1. Nevertheless, proceeding with this option would involve higher recurrent expenditure on maintenance and would attract operational penalties associated with the dispersed nature of the structures. A larger new facility would provide greater long-term cost benefits and for these reasons Defence proceeded with the option 1 proposal. Larger existing buildings in the laboratories area which are suitable for DSTO and Defence users, would be retained under both options.

Committee's Conclusions

27. The Defence Science and Technology Organisation's facilities at Salisbury, which include the Electronics and Surveillance Research Laboratory, represent a substantial investment by the Commonwealth and occupy a much larger than necessary site.

28. A process of rationalisation is underway which will concentrate activities into a 280 ha site with the potential to release up to 700 ha.

29. There is a need for the provision of a new office and scientific laboratory complex.

30. Whilst the cost of consolidating staff and research activities into a combination of a smaller new building and the refurbishment of existing buildings would be marginally cheaper than the proposed larger new laboratory complex, it would incur operational penalties associated with the dispersed nature of structures and higher recurrent expenditure.

Committee's Recommendation

31. The Department of Defence should continue the process of consultation with the South Australian Government, local councils and relevant authorities concerning planning matters arising from the Northern Adelaide Defence landuse study.

THE PROPOSAL

Integrated research environment

32. The proposal involves the construction of a new building in the laboratories area which will be integrated with thirteen of the larger existing buildings. This approach will integrate the best of the existing buildings with the new building.

33. A major objective of the new laboratory complex is the creation of an integrated research environment. The divisional structure will be retained within DSTO to provide the principal means by which products and services are delivered to clients. The creation of an integrated research environment will allow divisions to evolve to meet contemporary and future needs. The new environment will also enable laboratories, facilities and equipment to be shared between divisions and promote increased staff interaction.

34. A number of science and technology complexes or hubs will be formed in the new environment. Each will address one of the following disciplines:

- communications and information science and technology
- optical science and technology
- radiofrequency science and technology

- acoustic science and technology
- systems.

35. The hubs will comprise laboratories, facilities, equipment and other research tools and will be supported by staff from divisions whose missions align with the field of science and technology. In the proposed new complex divisions will be located in close proximity to hubs relevant to their functions.

Master planning

36. Master planning studies identified the following objectives for the development of the new facility:

- a single compact building of two storeys to make maximum use of the site and to maintain minimal travel distances
- separation of secure and unsecured public and common-user facilities
- the provision of an internal pedestrian street to facilitate circulation throughout the facility
- a planning arrangement allowing for flexibility and expansion.

Changes to design

37. As was mentioned in paragraph 8, Defence advised the Committee on 31 October 1994 of the outcome of a review of the schematic design of the proposed building. The timing and nature of this advice were most unfortunate because the Committee had by that stage concluded its inquiry and a report on the reference was about to be printed. The advice from Defence was such that the printing of the report was halted and officials from Defence were asked to explain the timing and the substance of the design review at a private meeting in Canberra on 10 November 1994.

38. The plans and construction details which formed part of the Defence submission considered by the Committee at the public hearing held at Salisbury on 13 September, and upon which organisations based their

written submissions and evidence, were schematic designs prepared by Australian Construction Services (ACS).

39. The Committee had agreed, on 13 May 1994, to a request from Defence to proceed with the documentation of the project concurrently with its inquiry. Accordingly, Defence called for expressions of interest for the appointment of a design consultant responsible for developing the design to working drawings.

40. The design consultant reviewed the internal layout and the building footprint of the ACS schematic design. The review revealed several changes to the schematic design could be made to improve functionality.

41. The schematic design proposed an elongated internal pedestrian street running in north-south and east-west directions, with several open air courtyards. At the public hearing held on 13 September Defence indicated that the schematic design would satisfy user requirements; there was no indication from Defence at that stage about major refinements.

42. The major change proposed by the design consultant to the ACS schematic design comprises the provision of a central circulation spine in the form of a covered mall. Defence believes this feature will improve circulation, energy efficiency, user amenity and link existing facilities. The basic building will be rectilinear, of two storeys, with single storey wings, located on the northern and southern extremities to provide ground access to laboratories.

43. The structure will incorporate brick and a precast concrete facade on a steel frame structure. The external treatment will be similar to the schematic design with some changes to building form and massing. Specific changes include:

- the provision of an additional 750 m² to accommodate an additional 45 staff
- additional space for meeting rooms and tea making facilities.

44. Defence now believes that the schematic design layouts did not appear to maximise the opportunity for open planning in laboratory areas and did not reflect a clear vision on how future changes could be accommodated.

For these reasons Defence indicated an enhanced degree of 'comfort' with the revised design.

45. A feature of the schematic design which remains unchanged will be the cafeteria and shower and change rooms centrally located between buildings 71 and 77, adjacent to the common outdoor recreation court to optimise access. Similarly, the corporate services wing, to be located centrally at the front of the building remains as originally proposed.

Savings

46. The provision of a covered mall will achieve a budget saving of \$640 000. When pressed at the private meeting on 10 November 1994 if this will reduce the estimated cost of the proposal by a similar amount, Defence advised a requirement to house an additional 45 staff in the building had been identified during design revision. This will cost an additional \$810 000. The schematic design catered for 545 staff, with the additional 45 staff being accommodated in adjacent former munitions factory buildings. Defence believes that greater functionality would be achieved by locating these staff in the building rather than in other buildings on the DSTO site. Whilst the cost of providing accommodation for an additional 45 staff will not be completely offset by savings generated by the provision of the covered mall, Defence intends to ensure that the Limit of Cost budget of \$47.73m at December 1993 prices will not be exceeded.

Committee consideration

47. At the private meeting on 10 November 1994, the Committee made its displeasure about the proposed changes known to senior Defence officials. At best, Defence should have advised the Committee of the likelihood of design changes as soon as it became apparent from the design review that design changes would be made. At worst, the timing of the advice to the Committee may be construed as a *fait accompli*, notwithstanding that many thoughtful submissions were made to the Committee based on the schematic design; an entire day was devoted to the public hearing and that the Committee's report to Parliament would address any concerns raised and where necessary make recommendations.

48. Whilst Defence indicated that consultations with staff associations and the users of the proposed facility will continue during further design development, these will be internal to Defence and evidence of effective

implementation of features to allay concerns of staff will not be open to public scrutiny. The Committee therefore believes that Defence should consult with staff associations regarding the revised design and report to the Committee about these consultations.

49. The Committee recognises that it is not unusual for most projects to undergo some design development during the detailed design stage, but the extent of design development should not result in a completely revised concept. Should this occur, it will tend to reinforce the view that schematic proposals were based on inadequate information.

50. It became clear to the Committee during the private hearing on 10 November 1994 that the functional analysis by Defence of the schematic design was inadequate and that further design work to competently address the DSTO user requirement was necessary. This was done after the public hearing. From the evidence presented at the public hearing, the Committee took the view that the schematic design would facilitate the development of an integrated research environment which places an emphasis on flexibility and a strong client focus. The building was supposed to provide specialised facilities and a working environment not usually found in Defence facilities. Functionality appears to be the major criterion against which designs must be competently tested.

51. For these reasons the Committee believes that in future, when schematic designs are presented to it which purport to be the considered 'solution' to user requirements or functional design briefs, the Committee will seek unequivocal assurances that major changes will not be made during detailed design. If changes are foreshadowed, the Committee will consider whether to proceed on a case-by-case basis with the inquiry or to adjourn it pending more information being made available.

52. The Committee also believes that when planning the provision of specialised facilities such as science and engineering laboratories, Defence should review procedures for the testing of schematic designs against user requirements to minimise changes.

53. The Defence advice about savings resulting from the design changes were stated as \$680 000. The Committee construed this as a positive feature of the revised design. However, when on 10 November 1994 Defence was pressed about the possibility of the overall cost of the project being reduced by a similar amount, the Committee was advised of additional requirements

which had emerged following the public hearing. It is worth emphasising that this information was provided as a result of detailed questioning by the Committee - it was not provided in the advice of 31 October 1994.

Committee's Conclusions

54. The revised design represents a major departure from the design originally submitted to the Committee by the Department of Defence.

55. Whilst the Committee agrees that the revised design is an improvement, the circumstances surrounding the development of the schematic design lacked rigorous analysis necessary for the specialised functions and activities to be carried out.

Committee's Recommendations

56. The Department of Defence should consult with staff associations regarding the revised design and report to the Committee about these consultations.

57. The Department of Defence should review procedures for the testing of schematic designs against user requirements to minimise changes.

Occupants

58. The proposed new facility will provide permanent accommodation for 545 (plus 45) staff for the following functional elements:

- land, space and optoelectronics (LSO)
- electronic warfare (EW)
- information technology (IT)
- guided weapons (GW)
- maritime operations (MO)
- communications (CD)

- library
- corporate communications.

Space to be provided

59. The arrangement of offices, laboratories and other functional areas were described to the Committee as follows:

- general office space - individual offices, tea rooms, photocopier and fax rooms, group discussion and meeting rooms and group common storage areas
- corporate areas - include reception areas, conference rooms, training facilities, the canteen, recreation areas, records storage and the library
- two types of laboratories - standard and special. The former will be flexible multipurpose facilities which can be configured for a range of research activities. Special laboratories/workshops will be dedicated facilities, able to be shared, configured to cater for special requirements - screened, dustfree, vibration free
- standard modular workstations similar to those being installed as part of a number of major proposals examined previously by the Committee such as the Rationalisation of Inner Melbourne Accommodation (RIMA) (*Committee's Fifth report of 1993, Parliamentary Paper 215/93*).

Reactions to the proposal

60. Representatives of staff associations raised a number of concerns with the Committee regarding the extent of consultations with management, the concept of integrated research environment and specific features of the design. The associations also questioned the cost of the proposal and the alternatives considered.

61. In relation to consultation with staff associations, Defence advised the Committee that various working parties were established during the formative planning processes to address a range of issues such as security, parking, traffic, storage and shared facilities. Of particular relevance to

concerns expressed by staff associations was the creation of an open planning working party which is still operating.

62. The associations asserted that the adoption of the concept of an integrated research environment will radically alter a particular element of working conditions of employees without being able to demonstrate gains in productivity which will result. In particular, the associations indicated an aversion to open plan accommodation based on workstations of dubious functionality and ergonomics. They indicated that the absence of visual and aural privacy and general conditions of chronic environmental distraction, inherent in open office planning, could lead to an inability of staff to meet current performance expectations. Research staff are required to undertake tasks requiring long periods of concentration. For these reasons the associations believed the Defence approach to the planning of the interior of the new complex should recognise that the functional requirements of officers should be examined on an individual basis and a planning framework should be established to enable that to occur.

63. In response to these concerns Defence held discussions with the associations just before the public hearing at which a number of points of agreement were reached. These included:

- DSTO will ensure that all unions and staff are fully consulted and advised regarding all aspects of the proposed laboratories complex through current forums
- the terms of reference of the open plan working party will be reviewed by associations and management to determine if they need to be extended
- a post occupancy review of accommodation will be conducted 12 months after full occupancy of the building
- the establishment of a management/union office sub-group to determine special cases for the allocation of individual offices for officers below Senior Professional Officer Grade B and senior research scientist. This subgroup will be guided by the Government guidelines, promulgated by the former Department of Local Government and Administrative Services (the DOLGAS guidelines), for the provision of separate offices.

DOLGAS accommodation guidelines

64. DSTO advised the Committee that the DOLGAS guidelines state that separate offices may be warranted where functions and operations require:

- controlled access for physical security of money and personnel
- document confidentiality, where other measures such as security containers are inadequate
- extensive, high level representational activities
- frequent in-confidence counselling and supervision of staff
- frequent in-confidence interviews with clients, where interview rooms are not available
- activities disruptive to other staff, such as frequent meetings, where a meeting room is not available
- complex mental tasks requiring long periods of undisturbed concentration.

65. DSTO indicated that two additional guidelines would be added to the DOLGAS list, namely:

- significant direct supervisory responsibilities
- frequent confidential negotiations with contractors.

Need for client focus and teamwork

66. The representative of the APESMA disagreed with the creation of the proposed subgroup because it would not involve consultation but rather an implementation process which the subgroup would legitimise.

67. Defence advised the Committee that one of the major deficiencies at Salisbury has been the 'tyranny of geography'. This has meant that many of the research divisions with interests in common in science and technology have not been able to get together. The Director of ESRL summarised the position from a management perspective as:

A comment on our culture over time has been that we have tended to create tribal communities within the laboratories on the site. In my view, that has been perhaps the greatest impediment on research.⁵

68. The adoption of the concept of integrated research and development environment will focus on relevance and excellence. DSTO believes that in the past the standard of excellence has not been in question, but the organisation has been criticised by military clients in recent times because of the relevance of the work being undertaken. New practices aimed at building a client focus have been adopted and teamwork is central to the concept. DSTO therefore believes that the proposal represents an attempt to put a physical manifestation on the changes underway within the organisation which are aimed at fostering teamwork with a strong client focus. Defence acknowledged that privacy, security and some confidentiality issues exist and assured the Committee that they would be taken into account.

69. The Committee notes the concerns of staff associations that Defence is placing too much emphasis on the perceived benefits of open plan offices.

Flexibility

70. The Committee and the associations, questioned the extent of flexibility which the design will provide. Defence advised the Committee that flexibility was a very important design criterion. The interior design is directed at enabling movement of single offices, conversion of single offices into conference rooms and the enlargement and contraction of laboratories. Defence also indicated that the plans reflect a good mix of working accommodation, open space accommodation and office accommodation in any given zone. In response to the suggestion from the associations that functionality should be one of the crucial design criteria, Defence indicated that the design brief was driven by functionality and the functional needs will be met by the design solution proposed.

Cost

71. The Committee questioned Defence about the basis of the high cost of the proposed facility, especially the design, construction management and

contingency fees, details of which were provided to the Committee on a commercial-in-confidence basis.

72. In terms of the cost of the building, Defence advised that the building will be 23 500 m², equivalent to a 20 storey building (assuming 1000m²/floor). The building will be 200 m long. Cost estimates were based on the most recently completed facility at DSTO. In addition, Defence examined a range of more recent developments around Australia of comparable nature. This examination revealed that the unit cost (m²) of the CSIRO research complex at Clayton \$1638/m², the CSIRO laboratories at Parkville cost slightly over \$2000/m² and the organic material composite building at Maribyrnong cost \$1860/m².

73. The unit cost of the proposed laboratories complex at Salisbury is estimated at \$1450/m². At the public hearing Defence advised that the cost of new construction is slightly over \$30m for 20 000 m², other cost components comprising:

- relocation of personnel
- demolition of sundry buildings and their associated external works
- external site services and works
- design and construction management fees
- construction contingency
- allowances for escalation during project delivery.

74. Defence also advised the Committee that a number of special design features will be provided in the building which are contained within the estimated cost. To accommodate the requirements of the design brief required a-column-free-floor space which placed a premium on construction costs. This will provide a 21.6 m clear span, not found in a typical structure. To provide this feature will require a deep steel beam at roof level. Deeper than usual ceiling spaces for services reticulation have also been provided. To enable research staff to place equipment on the roof, provision has also been made for equipment platforms. Engineering services will also have additional capacity - 20% in case of the thermal plant system and 50% for

⁵Transcript, p. 96.

electrical engineering services. These provisions were made in the project brief to cater for future requirements.

75. In response to questions from the Committee about the design, construction management and contingency fees, Defence advised the following:

- design and construction management fees are fees paid to professional engineers, architects, quantity surveyors, cost controllers, time controllers; estimates of fees are slightly under 10% of project value reflecting the competitive market existing at the moment for architects and engineers
- funds for construction contingencies will be used mainly for latent conditions, for conditions discovered on the site during excavation; it is possible to undertake only a limited number of geotechnical investigations prior to a proposal being referred to the Committee, Defence are not aware of the extent of services in the ground and are unable to detail or obtain documents about services on the site
- the escalation contingency reflects a predictor obtained from the Department of Finance on how much escalation will take place between now and the completion of the project; as time progresses the building price index is expected to increase and this will be reflected in higher subcontractor prices.

Contamination of site

76. Part of the footprint of the proposed building will encompass the former plating shop. The cost of demolishing this structure and removing the top one metre of soil and storing it on-site has been factored into the overall cost.

Defence White Paper

77. The Committee questioned Defence about the relevance of the Defence White Paper, which is shortly to be presented to Parliament, on the proposal, bearing in mind that policy changes in the past have radically altered the requirements for a number of proposals examined by the Committee. DSTO indicated that it is not expected that there will be any

radical change for the foreseeable future. The policy of defence self-reliance is enduring and this will continue to require a very independent research and development capability. Accordingly, although DSTO will take the White Paper into account in terms of future directions, it is not anticipated that it would necessitate any change in the way the organisation is proceeding.

Support for the proposal

78. The South Australian Government and councils with municipalities adjacent to the Salisbury site, indicated strong support for the consolidation of DSTO and the construction of the proposed complex.

79. The South Australian Government indicated that the importance of the DSTO land is recognised in the Metropolitan Adelaide Planning Strategy as a potential source of land supply from a number of perspectives including:

- the expansion of the Elizabeth Regional Centre to the west across the rail line
- the provision for existing and future facilities to have a greater commercial focus
- the development of centres of excellence in association with the multi function polis
- the potential for suitable portions for housing development to support economic development initiatives
- its location abutting several existing railway stations.

80. The South Australian Government assured the Committee that it will continue to support Defence in its role as a major employer and the DSTO land as a centre of economic activity in the region by ensuring surrounding land uses remain compatible and responsive. The State and the development industry should be consulted on the timing for the release of any land and the development strategy proposed.

81. Defence advised the Committee that all State and local government legislation will be complied with and that consultations will take place as requested.

82. The Council of the City of Salisbury stated that DSTO makes an important contribution to the local community and indicated support for the laboratories. The Council also advised the Committee that it will continue to support integration of DSTO and RAAF Base Edinburgh within the region, especially their enhanced commercial focus. Specific matters of interest and concern to the Council may be summarised as follows:

- a request to be briefed on the results of the Northern Adelaide Defence landuse study
- the proposed new laboratory complex, within the designated laboratories area, must therefore complement the wider study
- up to 700 ha of land may be released for non-Defence development and the Council would need to be assured that any new development meets best practice in urban development
- development of the laboratories and the area ultimately released should be developed in an environmentally sustainable way
- drainage of the consolidated DSTO site should be integrated with the broader requirements for development of the surplus land to be released
- traffic and pedestrian circulation should link with future development
- tree planting should be consistent with that recommended by Council
- aquifer discharge should be in accordance with recommended practice
- external security fencing should utilise materials that will respect future development.

83. Defence assured the Committee that the Council will be consulted in relation to site drainage and aquifers, traffic and pedestrian access, and tree plantings.

84. The Council of the City of Elizabeth also indicated strong support for the proposal. The potential release of land matches a number of development scenarios identified for that local government area.

Committee's Conclusions

85. **The cost of the proposed building will provide special provisions the need for which is based on functional grounds, and can be justified on that basis.**

86. **The Defence Science and Technology Organisation does not believe the forthcoming Defence White Paper will change the direction in which the organisation is proceeding nor the need for the laboratory complex.**

Committee's Recommendations

87. **Concurrent with the further development of the proposal, the Department of Defence should undertake or commission a study of the impact on staff efficiency and productivity of open planning and other forms of office accommodation.**

88. **Costs associated with contingencies and escalation should be reduced.**

FIRE PROTECTION

89. A separate dedicated fire service ring main system will be provided to service fire hydrants, fire hose reels and fire sprinkler systems. Fire services will include indicator panels, smoke detectors in laboratory spaces and return air ducts, manual call points, magnetic smoke door holders and an emergency warning and intercommunication system.

90. The Commonwealth Fire Board (CFB) made a number of comments about the proposed fire protection measures. These were:

- the need to give special attention to air handling arrangements for laboratories and their fume cupboards - the CFB therefore recommended the adoption of relevant Australian Standards

- electrical safety in laboratories should follow relevant Australian Standards
- in addition to the provision of a ring main, smoke detectors etc, fire compartmentalisation of high cost equipment should be subject to risk analysis
- all active fire systems and appliances, including the ventilation systems, should be connected to the building management system to enable the monitoring of the status of each fire system and to enable the earliest possible indication of a fire emergency to be received. The CFB did, however, indicate that full integration of fire systems into building management systems is not yet permitted by the various standards and codes
- the CFB commended Defence for the intention to consult the South Australia Metropolitan Fire Service (SAMFS) and urged that ongoing consultation and familiarisation should occur to ensure an efficient fire service response in an emergency both during construction and on completion.

91. In response, Defence advised the Committee that the design consultants for the project had consultations with the SAMFS; this would continue during design development, documentation and construction phases of the project. The Committee was assured by Defence that the project brief requires that special attention be given to Australian Standards relating to safety in laboratories, fume cupboards, recirculating fume cabinets and electrical aspects.

92. Defence also advised the Committee that any additional fire compartmentalisation requirements will be incorporated to protect staff and high cost equipment.

93. The suggestion from the CFB that all active fire systems and appliances, including the ventilation systems, should be connected to the building management system had not been resolved. The Committee urges Defence and relevant authorities to resolve this matter.

CHILD CARE

94. Defence advised the Committee that its policy on the provision of child care facilities is still being prepared. On present planning Defence does not envisage a need to provide child care facilities on the DSTO site. The Committee was advised that there are facilities adequate to cater for the projected requirement in adjacent municipalities.

HERITAGE AND ENVIRONMENTAL IMPACTS

Heritage

95. Defence commissioned a conservation analysis of the laboratories area, a small portion of the former munitions factory site, in March 1994. The objective of the analysis was to examine potential heritage implications directly associated with options for the proposed new development of the laboratory complex. The report of the analysis recommended extensive conservation measures and raised a potentially significant impact on broader areas and issues being addressed by the North Adelaide landuse study.

96. Defence advised the Committee that because the scope of the heritage analysis was limited to only a portion of the former factory site in isolation, a comprehensive Conservation Management Plan was subsequently commissioned. This plan, to address the entire former factory site from a national, State and local heritage perspective, was completed shortly before the Committee's public hearing.

97. The Australian Heritage Commission (AHC) indicated concern to the Committee that the site of the former factory has not yet been nominated to the Register of the National Estate, despite the recommendations of the Conservation Management Plan and the information in the plan to support a nomination. The AHC strongly recommended that the heritage values of the site should be formally recognised by listing before any redevelopment plans are finalised.

98. The South Australian Department of Environment and Natural Resources (State Heritage Branch) recommended that proposals in the laboratories area be required to consider heritage issues raised in the Conservation Management Plan and that the wider site be nominated to the Commonwealth Register of the National Estate and the State Heritage

Register. The National Trust (South Australia) made similar recommendations.

99. Defence confirmed the view that the former factory is a significant item of Australia's wartime industrial heritage and that consultations will continue with relevant authorities to determine the extent of conservation recommendations which will best preserve the historic significance.

100. The Committee believes that a formal framework for consultation between Commonwealth, the South Australian Government and the National Trust should be established which will enable heritage implications to be addressed during the further development of the proposed work, as well as the wider site. This formal framework should comprise a heritage committee with membership from Commonwealth, State and public heritage organisations. It is important for this committee to meet regularly to consider the project as it is developed further. Members of the heritage committee should not, however, lose sight of the need for Defence to ensure that the property continues to be used in an efficient and effective manner.

Committee's Recommendations

101. A formal framework for consultation between Commonwealth, State and public organisations involved in heritage matters should be established which will enable heritage implications of the proposed development and the wider site to be addressed in a timely manner.

102. Any requirements designed to ensure the heritage integrity of the site should recognise the need for the Department of Defence to operate in an efficient and effective manner as required by the Government.

Site decontamination

103. It should be mentioned here that the Committee has under consideration a proposal involving the decontamination of another former explosives factory site at Albion, Vic. The remediation work proposed to be undertaken at Albion could cost up to \$57m.

104. In 1992 Defence commissioned a preliminary contamination assessment of the DSTO property. This assessment addressed a number of contaminants at a range of sites as a consequence of concerns about occupational health and safety. A further, more detailed and wider

contamination study was undertaken in January 1994. This study examined a number of sites with an initial emphasis on the laboratories area. The study:

- determined current site conditions
- assessed the human health and environmental risks associated with the conditions
- identified and evaluated the remedial alternatives to reduce the identified risks to acceptable levels.

105. A supplementary Defence submission to the Committee, presented at the public hearing, advised that contaminated soil occurring on the site at discrete locations has been recommended for removal. The submission advised the Committee that Defence proposed to relocate about 10 000 m³ to an existing waste dump which will remain under Defence ownership and control. The dump will be redesigned and engineered, at a cost of \$3m, into a landfill site capped with clay to prevent ingress of water.

106. Defence acknowledged that some low level widespread contamination will remain on the site because it will not pose a health risk or a threat to groundwater. The Committee was assured that the ultimate landuse of any area to be released from Commonwealth ownership will be influenced by the level of contamination and compliance with acceptable health risks.

107. The contamination study found low-level contamination of the aquifer and this was generally confined to areas previously used for the dumping of industrial waste. Defence advised the Committee that the aquifer is quite saline and that groundwater contamination is not a concern at present.

108. The contamination study also found some low level radioactive waste which Defence advised the Committee is below short-term occupational health and safety concerns. This waste was found in a waste dump outside the area to be retained by Defence. Defence propose to let a contract to remove and condition the waste which will then be stored in a temporary repository pending removal and long-term storage in the national waste repository.

109. In summary, Defence assured the Committee that all known discrete contamination will be removed and the risk assessment of low level

widespread contamination will be incorporated in the planning of ultimate landuses.

Assurances to the Committee

110. In the context of the Committee's inquiry into the Albion decontamination project, the history of the decontamination, the remediation strategies proposed there and the costs associated with decontamination, the Committee therefore was determined to seek a number of assurances from Defence about the Salisbury site. The Committee was mindful that the Albion decontamination project was only referred to it after considerable expenditure on decontamination had already taken place and was therefore conscious of the possibility of a similar situation developing in relation to Salisbury. The assurances sought from Defence relate to the extent of contamination, the strategies to be used in remediation and the cost of the remediation.

111. When asked if the Salisbury site is similar to Albion, Defence advised the Committee:

I believe that we do not have an Albion situation on our hands but a very different one. While DSTO is an old explosives factory, the work that we have done to date indicates that, in explosives factory terms, it is very clean. This is probably because it operated for a very short period as a brand new facility. It was closed down while it was still in a reasonably new condition.⁶

112. Defence reiterated earlier advice about the extent and nature of the contamination:

The contamination on the site is very localised. It results from, as has been described earlier, some leaking underground storage tanks holding fuels, some dumping of materials, scraps, swarf from electroplating shops and workshops. As is the case in

⁶Transcript, p. 84.

landfills over time, a relatively small amount of radioactive material was also buried as part of the other equipment in some landfills - about 10 000 cubic metres.⁷

113. The remediation work to be undertaken was described:

What has been proposed by the consultants who have been looking at this matter in conjunction with the larger planning study is to relocate the material to an engineered landfill within the RAAF portion of the site - a site which is known as site five - and put it in a properly contained landfill so that it cannot leach into the watertable. It should be in an area which remains under Defence control so that it cannot be used for inappropriate activities.⁸

114. Defence assured the Committee that the watertable at the site of the landfill will not be contaminated:

There are two issues involved. The first is the type of contaminant. We are not talking about explosive contaminants at Salisbury. We are talking predominantly about heavy metals and some petroleum hydrocarbons. We want to store them at an engineered landfill - I emphasise that it is an engineered landfill - so that the material cannot leach into the watertable.⁹

115. The Committee questioned Defence about the possibility of using thermal desorption techniques, similar to those proposed for the Albion site, to treat the contaminated soil. Defence advised the Committee:

Because of the relatively small quantity of material we are talking about, that is probably not economically feasible. It is cheaper to build a small engineered landfill in which to place the material than to try to treat the material on site.¹⁰

⁷Transcript, p. 84.

⁸Transcript, p. 84.

⁹Transcript, p. 85.

¹⁰Transcript, p. 84.

116. The radioactive waste will not be buried:

That [radioactive waste] will eventually go to the long-term, low level radioactive storage repository. It will be removed and conditioned on site - in other words, encapsulated in concrete - and it will be stored along with other low level waste on site, pending removal to that repository.¹¹

117. Defence also advised the Committee that ultimately the South Australian Environment Protection Agency and the South Australian Health Commission will be responsible for giving the land a clean bill of health.

118. The cost of the relocation of material to the engineered landfill site was estimated to be of the order of \$5m, which includes the excavation and relocation of the material and the construction of an engineered landfill site.

Further advice from Defence

119. Following the public hearing Defence provided the Committee with more comprehensive information regarding the location landfill site, its design, cost and the cost of disposal of soils from all sites. In summary, what Defence now propose is as follows:

- the excavation of contaminated soils for disposal at an engineered landfill
- the engineered landfill will have a clay cap, vertical groundwater flow barriers and a groundwater control system
- it will be constructed adjacently to an existing major waste dump on the corner of Fifth Avenue and Smithfield Road
- this area is Commonwealth-owned land adjacent to RAAF Base Edinburgh and is within the area proposed to be retained under the master rationalisation plan
- the strategy has received approval in principle from the South Australian Environment Protection Authority with a

commitment by Defence to obtain design approval and to continue to monitor groundwater

- remediation costs relate principally to the construction of the engineered landfill and the volumes of contaminated soils to be excavated and dumped and the replacement of topsoil
- the final design capacity of the required landfill is approximately 40 000 m² at a cost of \$540 000
- the cost of disposal of contaminated soils from all sites is a maximum of \$3.98m. Included in this cost is the remediation of a large waste dump containing heavy metals, asbestos and radioactive waste
- priority has been given to that waste dump with remediation to commence shortly at a cost of \$0.325m.

Committee's Recommendation

120. When remediation of soil contamination proceeds, the Department of Defence should provide the Committee with regular reports about the extent of the remediation work and the costs associated with it.

Impacts from construction

121. The site is relatively remote from residential areas. Traffic, construction noise and vibration associated with the development will have some impact on DSTO facilities. The building site will be fenced off for occupational health and safety reasons. Construction of new engineering services will be managed to minimise disruption on DSTO activities.

122. There will be some impacts off-site such as increased vehicular traffic on public roads.

¹¹Transcript, p. 85.

CONSULTATION

Staff

123. The framework for consultation with staff has been addressed above and the Committee has made a number of recommendations to ensure that matters of concern raised by staff associations are resolved.

Authorities

124. Commonwealth, State and local government authorities were consulted by Defence during the development of the proposal. In many instances these consultations will need to continue, especially with organisations such as the AHC, before the project commences and during construction.

COST, PROGRAM AND DELIVERY

125. The Limit of Cost estimate for the proposed laboratories complex is \$47.73m at December 1993 prices (the out-turn cost for 1997 is \$50.714m). The cost does not include an allowance of \$1.8m for loose furniture and fittings.

126. Subject to all necessary approval, current planning envisages commencement of construction in February 1995 and completion by mid-1997.

127. Defence proposes that the project be contracted as a single contract package for the building and site engineering services.

Committee's Recommendation

128. Whilst recommending that the Department of Defence undertake a broader study on the effects of open plan offices on productivity, the Committee believes the project should not be held up pending the outcome of the study and therefore recommends that the proposed construction of a new laboratory complex at the Defence Science and Technology Organisation, Salisbury, should proceed at an estimated out-turn cost of \$50.714 million.

CONCLUSIONS AND RECOMMENDATIONS

129. The Committee's conclusions and recommendations and the paragraph in the report to which each refers are set out below:

Paragraph

Committee's Conclusions


1. **The Defence Science and Technology Organisation's facilities at Salisbury, which include the Electronics and Surveillance Research Laboratory, represent a substantial investment by the Commonwealth and occupy a much larger than necessary site.** 27
2. **A process of rationalisation is underway which will concentrate activities into a 280 ha site with the potential to release up to 700 ha.** 28
3. **There is a need for the provision of a new office and scientific laboratory complex.** 29
4. **Whilst the cost of consolidating staff and research activities into a combination of a smaller new building and the refurbishment of existing buildings would be marginally cheaper than the proposed larger new laboratory complex, it would incur operational penalties associated with the dispersed nature of structures and higher recurrent expenditure.** 30
5. **The revised design represents a major departure from the design originally submitted to the Committee by the Department of Defence.** 54

6. Whilst the Committee agrees that the revised design is an improvement, the circumstances surrounding the development of the schematic design lacked rigorous analysis necessary for the specialised functions and activities to be carried out. 55
7. The cost of the proposed building will provide special provisions the need for which is based on functional grounds, and can be justified on that basis. 85
8. The Defence Science and Technology Organisation does not believe the forthcoming Defence White Paper will change the direction in which the organisation is proceeding nor the need for the laboratory complex. 86

Committee's Recommendations

1. The Department of Defence should continue the process of consultation with the South Australian Government, local councils and relevant authorities concerning planning matters arising from the Northern Adelaide Defence landuse study. 31
2. The Department of Defence should consult with staff associations regarding the revised design and report to the Committee about these consultations. 56
3. The Department of Defence should review procedures for the testing of schematic designs against user requirements to minimise changes. 57
4. Concurrent with the further development of the proposal, the Department of Defence should undertake or commission a study of the impact on staff efficiency and productivity of open planning and other forms of office accommodation. 87

5. Costs associated with contingencies and escalation should be reduced. 88
6. A formal framework for consultation between Commonwealth, State and public organisations involved in heritage matters should be established which will enable heritage implications of the proposed development and the wider site to be addressed in a timely manner. 101
7. Any requirements designed to ensure the heritage integrity of the site should recognise the need for the Department of Defence to operate in an efficient and effective manner as required by the Government. 102
8. When remediation of soil contamination proceeds, the Department of Defence should provide the Committee with regular reports about the extent of the remediation work and the costs associated with it. 120
9. Whilst recommending that the Department of Defence undertake a broader study on the effects of open plan offices on productivity, the Committee believes the project should not be held up pending the outcome of the study and therefore recommends that the proposed construction of a new laboratory complex at the Defence Science and Technology Organisation, Salisbury, should proceed at an estimated out-turn cost of \$50.714 million. 128


Colin Hollis MP
Chair

17 November 1994

APPENDIX A

WITNESSES

ACTON, Mr Stephen Joseph, Assistant Secretary, Automotive Food, Metals and Engineering Union, 229 Greenhill Road, Dulwich, South Australia

ALLISON, Mr John Scot, Director, Electronics and Surveillance Research Laboratory, Defence Science and Technology Organisation, Department of Defence, Commercial Road, Salisbury, South Australia

BELL, Mr Terence Keith, Manager, Strategic Planning Branch, Department of Housing and Urban Development, State Government of South Australia, 55 Grenfell Street, Adelaide, South Australia

FOSTER, Mr Graham Thomas, Chief Executive Officer, The City of Elizabeth, 3 Windsor Square, Elizabeth, South Australia

GREY, Mr Nicholas, Industrial Officer, Professional Division, Community and Public Sector Union, 1st Floor, Norwich Centre, 55 King William Street, North Adelaide, South Australia

HARTLEY, Mr Rolfe George, Director, Environment and Heritage, Department of Defence, Campbell Park Offices, Canberra, Australian Capital Territory

LOUGH, Dr Roger, Acting Director and Chief of Air Operations Division, Aeronautical and Maritime Research Laboratory, Department of Defence, 506 Lorimer Street, Fishermens Bend, Victoria

MARSH, Ms Roslyn Marion, Industrial Officer, Association of Professional Engineers, Scientists & Managers Australia, 11 Bagot Street, North Adelaide, South Australia

NEMETH, Mr Peter Damien, Project Director, Department of Defence, Campbell Park Offices, C-2-7, Canberra, Australian Capital Territory

PINNOCK, Mr David John, Principal Architect, Australian Construction Services, 10 Pulteney Street, Adelaide, South Australia

REINHOLD, Mr Olaf, President, South Australian Branch, Federal Committee of Management, Association of Professional Engineers, Scientists & Managers Australia, 11 Bagot Street, North Adelaide, South Australia

SHARP, Mr Peter Kenneth, Assistant Secretary, Science Corporate Management, Defence Science and Technology Organisation, Department of Defence, Anzac Park West Offices, Canberra, Australian Capital Territory

TYSOE, Mr Terry Richard, General Manager, Business Climate, Economic Development Authority, Terrace Towers, 10th Floor, 178 North Terrace, Adelaide, South Australia

APPENDIX B

CONSTRUCTION DETAILS

Aim of design

1. The design aims to provide a flexible working environment by integrating and including the following features:
 - column-free floor areas on the first floor and single storey sections of the building
 - a ceiling space of 1200mm to permit services separation
 - plant room roofs to be used equipment platforms to support sundry research equipment and equipment plant which will vary in relation to research tasks.

Structural design

2. The foundations will comprise a reinforced concrete raft, considered appropriate for the reactive clay soils at the site. Pad footings in areas of high concentrated point loads will be included. Isolation slabs will also be provided where required.
3. The building will be provided with lateral resistance by the frame action. It will not be a braced system. The steel roof frames for both single and double storey areas will be supported by concrete columns.
4. The floor system for the two storey area will be a flat slab with localised drop panels over the columns.
5. Measures to reduce and isolate vibration from plant rooms will be provided by a relatively stiff floor system.

Materials

6. Materials and finishes were selected to provide a high level of serviceability and compatibility with existing materials and finishes whilst at the same time requiring a low level of maintenance.
7. Floor finishes will vary in accordance with requirements, and will include carpet, carpet tile, vinyl sheet, sealed concrete and ceramic tile.
8. External walls will be a combination of brick, metal panel and high performance glass in varying combinations to suit internal functions and architectural design solutions. The north, west and south facades of the corporate support area will have precast concrete which has been designed to complement the adjacent Secure Communications Building. External sunshading devices will be employed for sun control to windows where required.
9. Internal walls will comprise solid masonry in wet areas, plant rooms and secure areas where required. Partitions will be light gauge steel stud frame plasterboard. Walls will be weighted to suit acoustic performance requirements, glazed where appropriate and finishes will be appropriate to functions.
10. Ceiling finishes will vary according to requirements and will include acoustic tiles, flush plasterboard and unlined surfaces to utility spaces.
11. Roofs will comprise zincalume sheeting on galvanised sections and will include appropriate levels of insulation.

ENGINEERING SERVICES

Mechanical engineering services

12. The airconditioning system is based on centrally generated chilled and heated water being reticulated to major air handling units supplying conditioned air to discrete zones. Heat removed from the building will be discharged to roof mounted cooling towers.

13. Pipes for chilled and heated water will be located, fitted and sized to facilitate the connection of supplementary air conditioning plant as required to meet changing needs in laboratory areas and to cope with possible redistribution of loads in the future.

14. The main air handling units will be configured for economy cycle operation to minimise running costs. Supplementary air handling units will be provided to serve meeting and conference rooms.

15. Individual laboratories will be provided with separate and special air conditioning units where required. They will take the form of either chilled water fan coil units mounted in the ceiling space or self-contained independent units mounted on the roof.

16. Mechanical ventilation systems will be provided to meet the requirements of relevant and Australian Standards and codes. Fume cupboards and special exhaust systems will be provided where required. Similarly, smoke exhaust will be provided to meet the requirements of relevant standards.

17. Industrial gases will be reticulated to laboratories from an externally accessible storage area. Individual gas cylinders will be provided to serve remotely located laboratories

18. Natural gas will be provided from an underground reticulation to serve the heating water boilers in the main thermal plant room and to serve domestic water heaters supplying the canteen and associated ablutions.

19. Two air compressors are installed in the thermal plant room from where it will be reticulated to laboratories. Outlets will be provided in laboratories which require them. Elsewhere, outlet valves will be provided in the ceiling spaces of laboratory areas for future connection.

20. Cold and hot water services will be provided to equipment and fixtures as necessary.

Electrical engineering services

21. The existing 33KV distribution system is replaced with an underground 11KV system. Power will be distributed to each facility on the site by Electricity Trust of South Australia styled sub stations.
22. Low voltage power will be reticulated within the new building from three main switchboards to about 40 distribution boards and to the main mechanical services switchboard. Spare capacity will be provided in the submains, distribution boards and circuits to allow additions to the electrical installation to be made without major modification.
23. Site lighting will be provided along service loads, in carparks and walkways. Internal lighting will comply with Australian Standards and low brightness fluorescent fittings will be used throughout areas containing screen based equipment.
24. The proposed laboratories complex will have two hydraulic lifts; one, with capacity for 11 people, will be located in the front of the building. The second lift, essentially a goods lift with capacity for 26 people, will be within the mall of the building. The goods lift will service the mechanical plant on the roof and will also enable equipment to be installed on the roof.
25. A building management system, connected to mechanical services direct digital control equipment, will be provided in Building 101.
26. The existing communications switchboard, located in Building 101, will be extended to provide voice communication facilities to the new building.
27. Electronic security provisions will include distributed panels, perimeter door sensors and detectors in offices, laboratories and workshops. The new panels will be connected to the existing central supervisory system in Building 101. An electronic access control system will be provided to control access to nominated doors. Duress alarms and video surveillance of reception areas will be provided.

28. Classified and unclassified data cabling networks will be provided from Building 73.

Civil engineering services, roadworks and carparks

29. A new water ring main reticulation network will be provided. It will be connected to new and existing buildings to serve domestic needs, special purpose laboratory and landscape irrigation requirements.
30. New sewerage reticulation pipework will be provided to a new submersible pumping station, discharging to existing sewers in the laboratories area. The proposed new building and existing facilities will be connected to the system. Appropriate trade waste pre-treatment equipment, such as acid neutralisers and oil separators, will be provided to meet State Water Authority standards.
31. Although the central portion of the site is suitably elevated, nominal filling will be provided under the new building for flood protection. Existing open drains will be retained and maintained, cleared and repaired where necessary. New underground pipework, pits and connections to roof drainage systems will be provided to the new building. Wherever practical, open drains will be used in conjunction with landscaping requirements.
32. Although the existing road system will be retained wherever possible, it is proposed to provide new roads to complete the site road network and provide access to the new building.
33. Additional new car parking will be provided for 400 vehicles. The balance of parking requirements will be provided by existing parking spaces on the site.

Landscaping

34. The design of landscaping aims to preserve the existing native flora and will build upon the existing order and formality within the site. This will be achieved through the use of grids, avenues and squares. At the same time the design will recognise the informality which cuts through the site by providing additional native planting, dry creeks and meandering footpaths.

35. Intensive planting, with automatic irrigation systems, will be provided adjacent to the perimeter and main entry of the new building.

36. Other areas, including road verges and car-parks, will be landscaped with trees and selected shrubs and watered, as appropriate, by drip irrigation systems. Landscaping will avoid the creation of extensive lawns.

Fencing

37. The existing security fence will be retained wherever possible. A chain mesh security fence of 2.3 metres in height (including three strand barbed wire) will be provided to a single east-west and north-south side of the existing laboratories area. This will join existing fences to complete the enclosure of the site. A boom gate will be provided at the entrance from West Avenue.

PLANS

Locality C - 1

Defence sites - Salisbury C - 2

Master Plan (ACS concept) C - 3

ACS concept

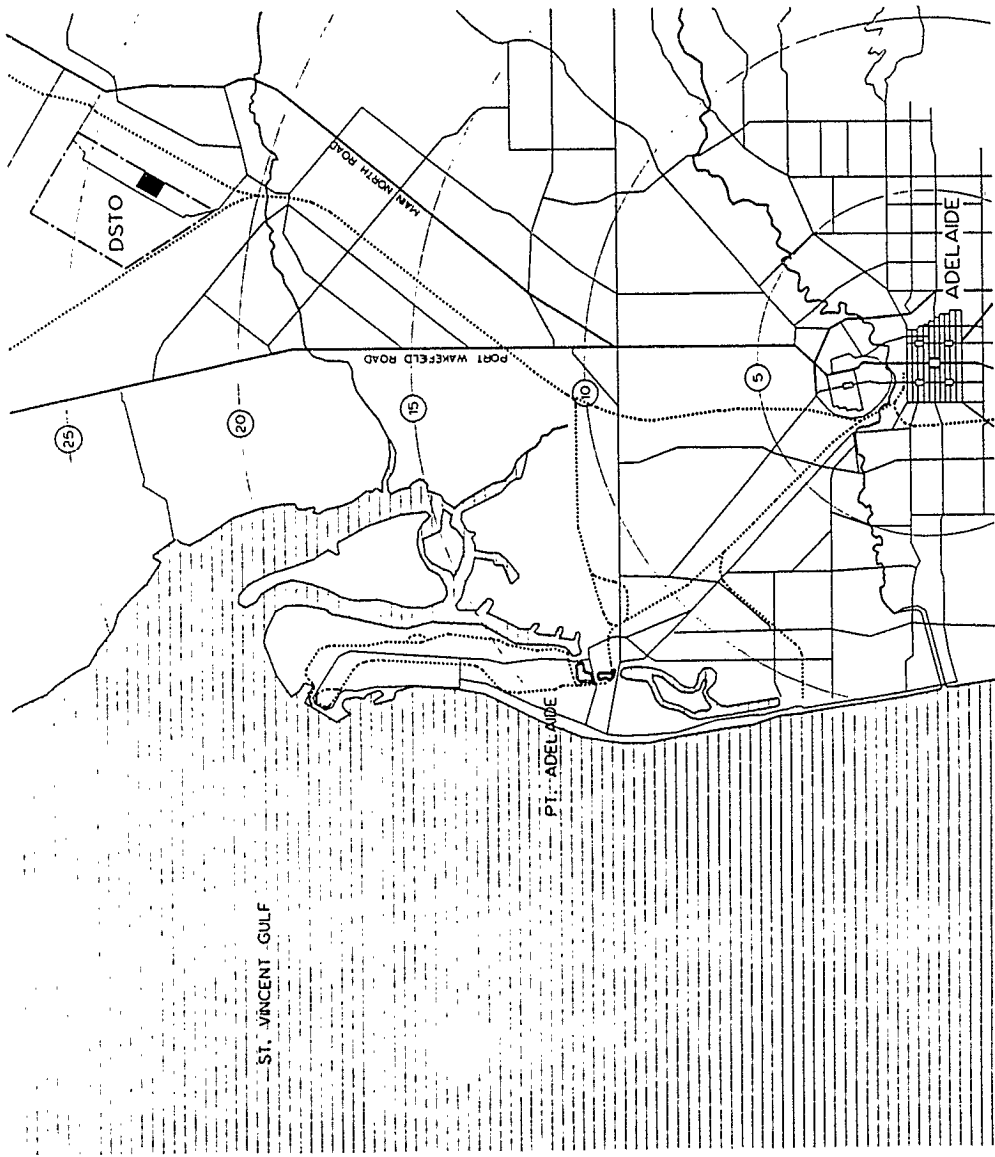
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 First floor C - 5

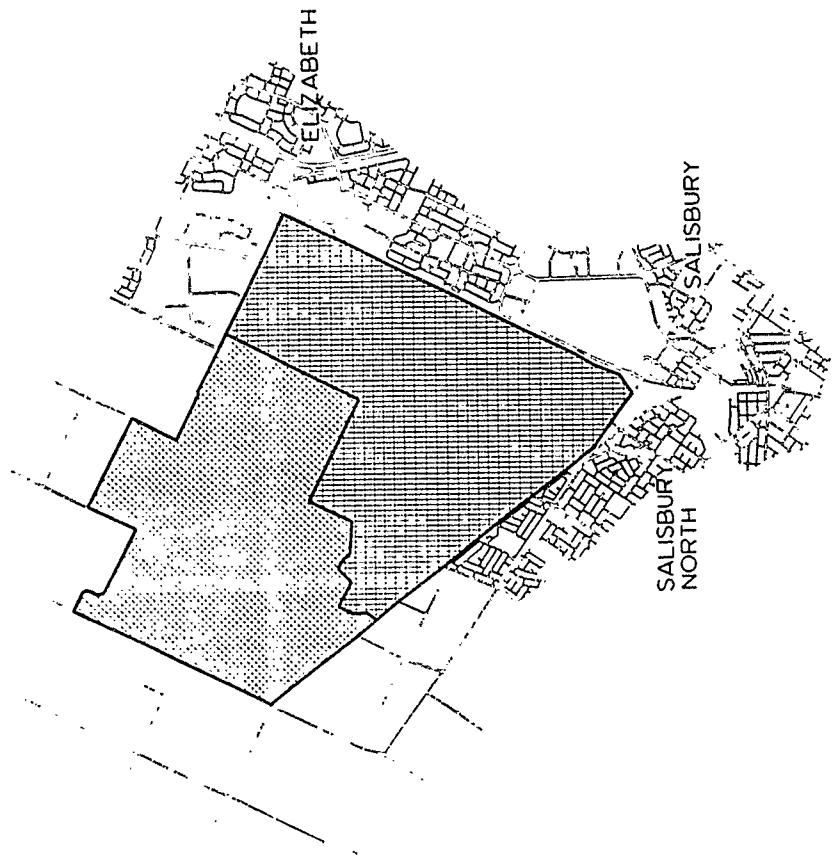
Design adopted

 Ground floor C - 6



 First floor C - 7




DSTO
 AUSTRALIA
 AUSTRALIAN CONSTRUCTION SERVICES
 SERVICES
 DEPARTMENT OF DEFENSE
 DSTO SALISBURY LABORATORY COMPLEX
 LOCALITY PLAN



LEGEND

-  DSTO SITE AREA
-  RAAF EDINBURGH SITE AREA



DSTO 
AUSTRALIAN
CONSTRUCTION
SERVICES &
RESEARCH OF DEFENCE SITES
DSTO SALISBURY
LABORATORY
COMPLEX
DEFENCE SITES
SALISBURY



BUILDING FUNCTION LEGEND

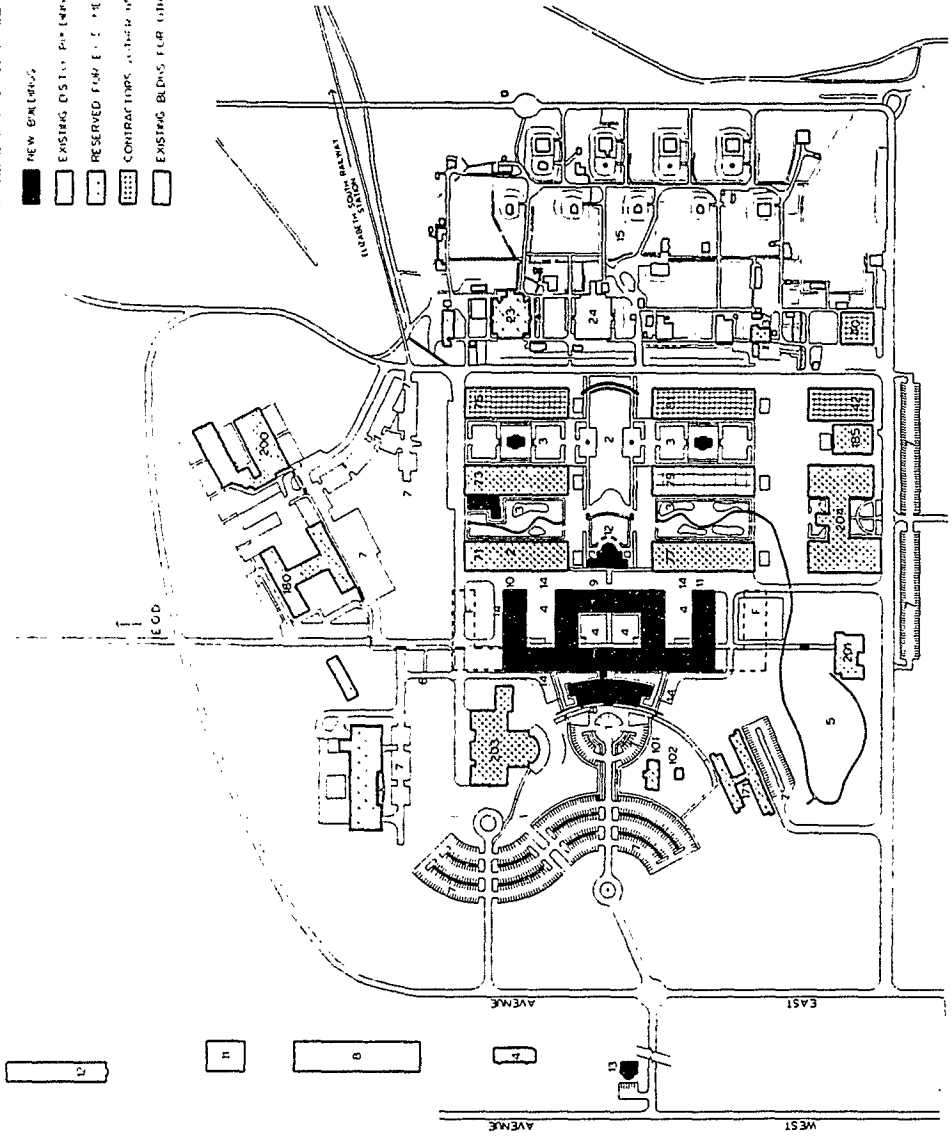
- NEW BUILDINGS
- EXISTING BUILDINGS
- RESERVED FOR FUTURE DEVELOPMENT
- CONTRACTOR'S OFFICES
- EXISTING BUILDINGS FOR OTHER USERS

LEGEND

- 1 ARRIVAL AREA
- 2 PUBLIC SQUARE
- 3 SEMI PRIVATE COURTYARD
- 4 PRIVATE COURTYARD
- 5 SOUTH WESTERN AREA
- 6 NORTHERN AREA
- 7 CARPARKING
- 8 CORPORATE SUPPORT
- 9 CENTRAL COURTYARD
- 10 SOUTH WING
- 11 SOUTH WING
- 12 CANTEEN
- 13 SECURITY GUARD
- 14 HARDSTAND
- 15 HERITAGE AREA
- 24 BUILDING NO 24
- 37 ARCHIVES
- 40 BUILDING NO. 40
- 42 BUILDING NO 42
- 71 BUILDING NO 71
- 73 BUILDING NO 73
- 75 BUILDING NO 75
- 77 BUILDING NO 77
- 79 BUILDING NO 79
- 81 BUILDING NO 81
- 101 BUILDING NO 101
- 102 BUILDING NO 102
- 171 BUILDING NO 171
- 180 BUILDING NO 180
- 185 BUILDING NO 185
- 200 BUILDING NO 200
- 201 BUILDING SIMULATION
- 203 SECURE COMMUNICATIONS BUILDING
- 204 SCIENTIFIC AID ENGINEERING SERVICES
- F FUTURE EXPANSION



DSTO
 AUSTRALIAN CONSTRUCTION SERVICES & DEPARTMENT OF ADMINISTRATIVE SERVICES
DSTO SALISBURY LABORATORY COMPLEX
MASTER PLAN

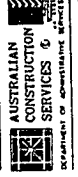




LEGEND

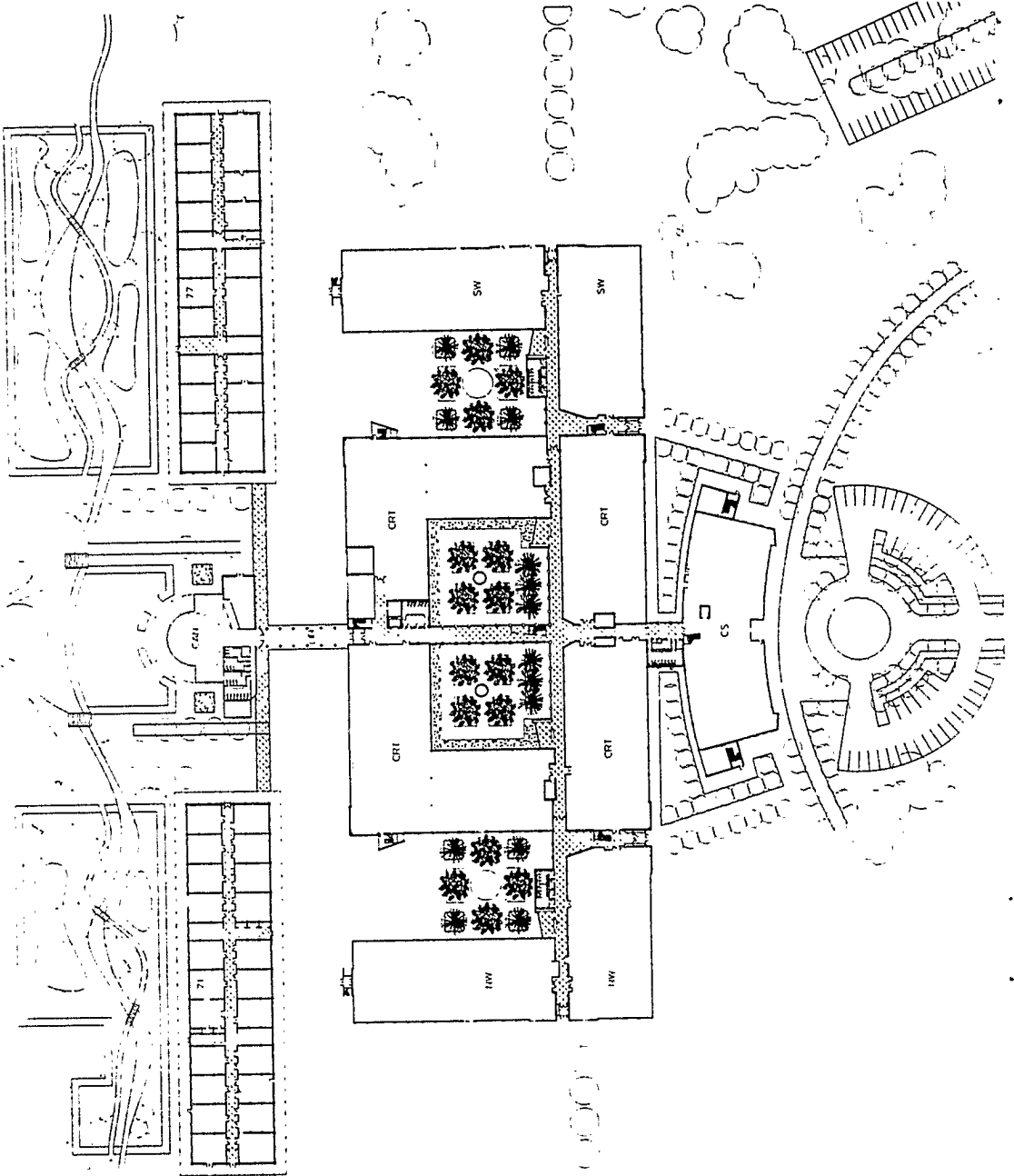
- 71 BUILDING 71
- 77 BUILDING 77
- CAN CANTEEN
- CRT COURTYARD ZONE
- CS CORPORATE SUPPORT
- LN EXTERNAL
- LN UNDERCOVER LINK
- NW NORTH WING
- SW SOUTH WING

DSTO
AUSTRALIA



**DSTO SALISBURY
LABORATORY
COMPLEX**

GROUND FLOOR PLAN





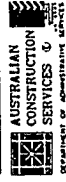
BY PLAN

LEGEND

- 71 BUILDING 71
- 77 BUILDING 77
- CAN CANTEEN
- CRT COURTYARD ZONE
- CS CORPORATE SUPPORT
- LFH EXTERNAL
- LINK UNDERCOVER LINK
- NW NORTH WING
- SW SOUTH WING

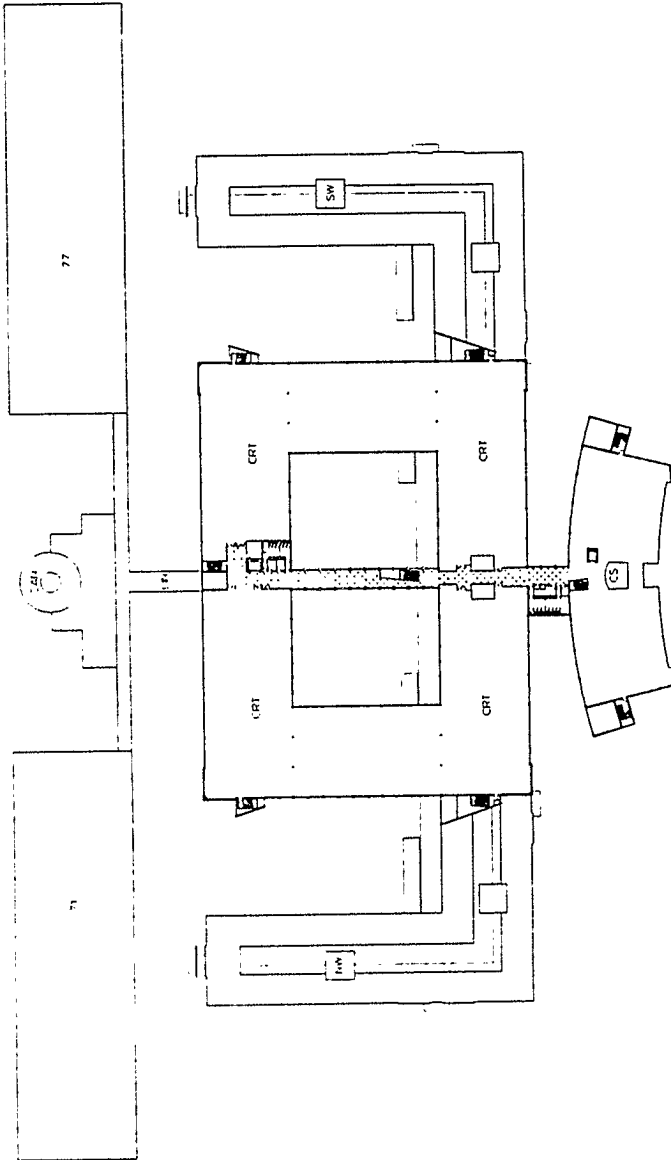


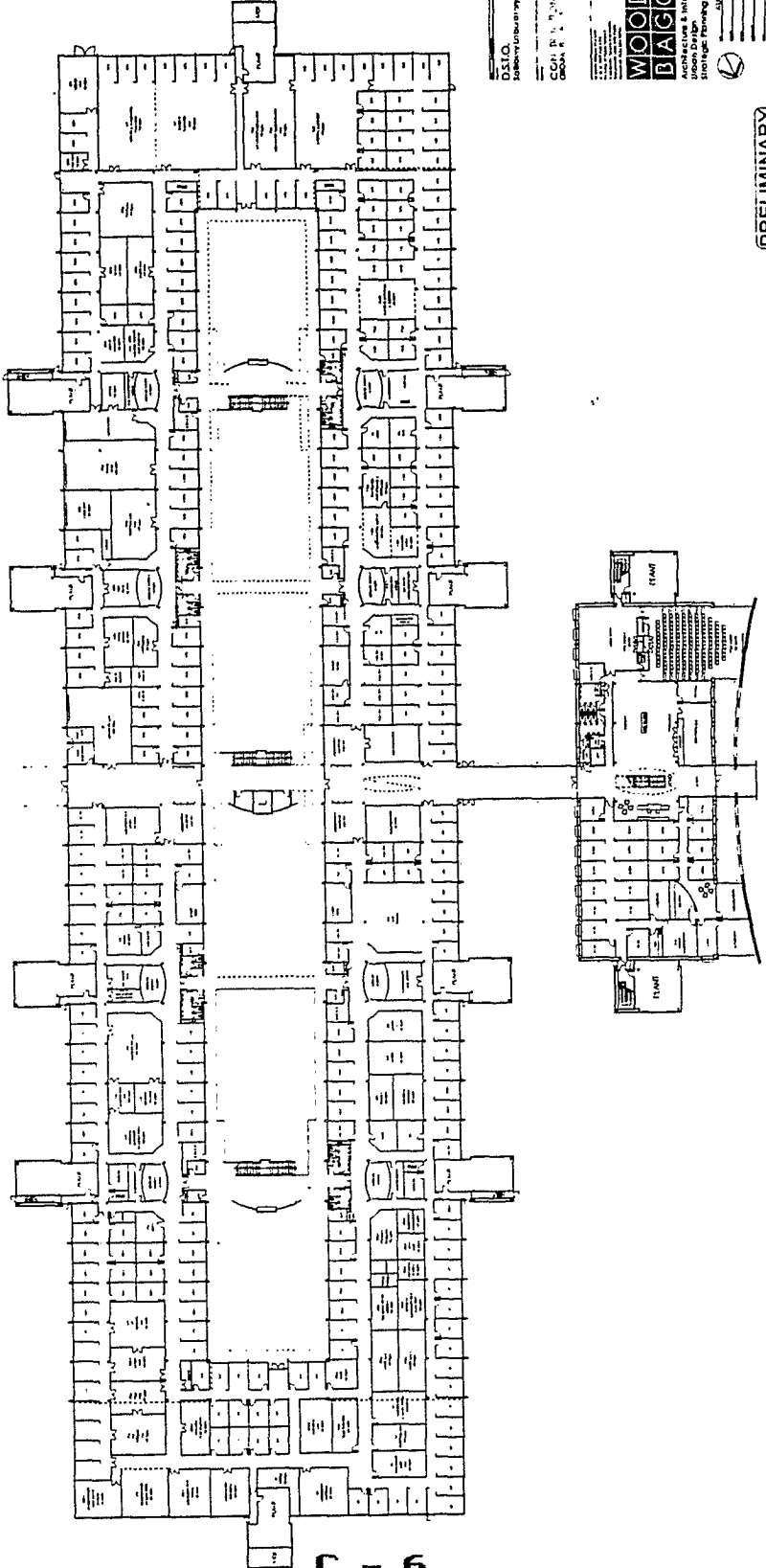
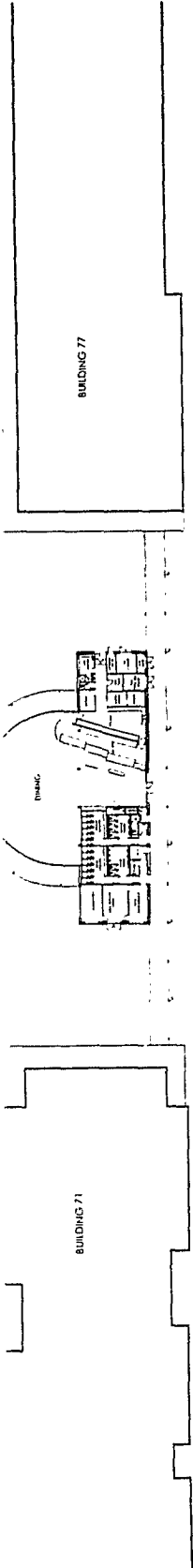
DSTO
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**DSTO SALISBURY
LABORATORY
COMPLEX**

FIRST FLOOR PLAN



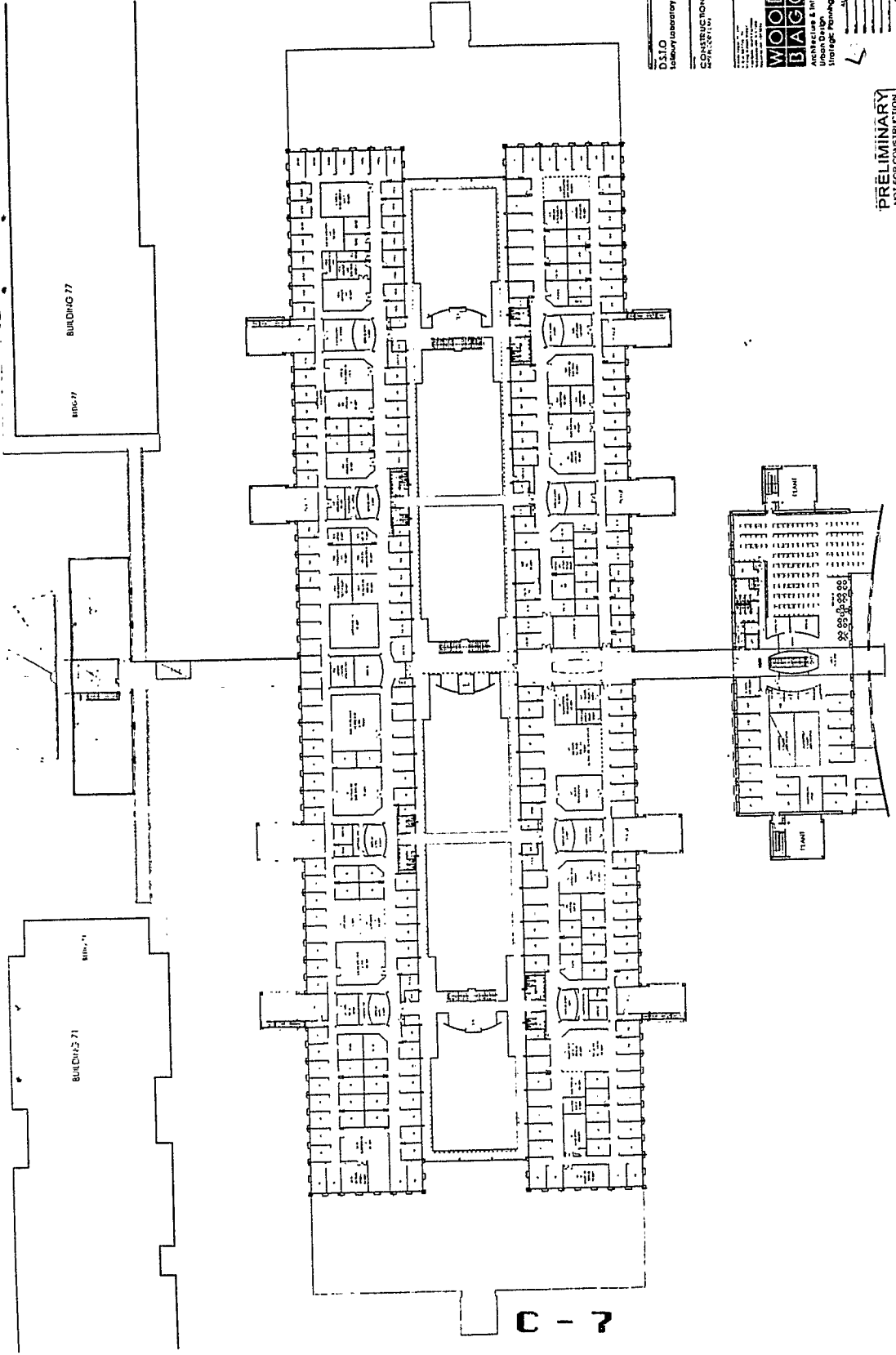


C - 6

G.I.O.
 General Contracting Company
 1000 N. 1st St. W.
 COON RAPIDS, IOWA

WOODS BAGOT
 ARCHITECTURE & INTERIOR DESIGN
 GREEN DESIGN
 LEED AP
 1000 N. 1st St. W.
 COON RAPIDS, IOWA

PRELIMINARY
 NOT FOR CONSTRUCTION



BUILDING 77

BLDG 77

BUILDING 71

BLDG 71

C - 7

D.S.I.O Laboratory Core
CONSTRUCTION WC
SPRINT 1/14

WOODS
BAGOT
ARCHITECTS & INTERIORS
Urban Design
Strategic Planning
...SPECIALTIES

PRELIMINARY
NOT FOR CONSTRUCTION