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Chairman: The Hon. K.M. Cairns, MP

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- 1 Replaced Mr Lloyd, MP (resigned) on 10 October 1978.
 - 2 Chairman of the Joint Committee of Public Accounts, who, in accordance with Clause (2) of the Resolution of Appointment, is a member of the Expenditure Committee.
 - 3 Replaced Mr Stewart, MP (deceased) on 10 May 1979.
 - 4 Replaced Mr Dawkins, MP (resigned) on 24 May 1978.
 - 5 Replaced Dr Klugman, MP (resigned) on 19 September 1979.

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CONCLUSIONS AND RECOMMENDATIONS

Background

This report results from a request from the Parliamentary Standing Committee on Public Works that the Expenditure Committee examine the use of project management as an alternative method of delivering major capital works of the Commonwealth. After taking evidence from both private and public sector organisations, the Committee decided that its report would address two major issues, namely:

- . whether a greater proportion of public works should be delivered by systems other than the traditional system; and if the answer is in the affirmative;
- . the implications for the role of the Department of Housing and Construction.

Conclusions

The Committee examined these issues by first ascertaining the objectives of the Commonwealth works program and then assessing the extent to which various delivery systems meet these objectives. The delivery systems chosen were the traditional system, design-construct, construction management, project management and selective tendering which is a minor variation to the traditional system.

The conclusions reached on the issues were that:

1. Choice of a particular delivery system for a particular project has to be made in the context of the circumstances of that project and is hence a matter for the judgement of administrators

(paragraph 44)

2. Choice of a particular delivery system for a particular project should continue to reside with the organisation that has prime carriage for the co-ordination of the planning, design and construction of public works

(paragraph 46)

3. It is not practical to formulate guidelines for the selection of a particular delivery system

(paragraph 48)

4. Since a government department or agency is responsible to government and the Parliament for the efficient administration of public works, that department or agency should always have over-riding authority over project management companies and others on these works

(paragraph 69)

Recommendations

Notwithstanding these conclusions there are opportunities for additional information to improve accountability and additional methods to increase efficiency. In view of this the Committee recommends that:

1. The Department of Housing and Construction either include in its annual reports or supply the Parliamentary Standing Committee on Public Works for inclusion in that Committee's general reports the following information on each completed major capital work - tender price, costs of rise and fall contract clauses, design alterations and other costs (specified), and the particular delivery system or systems used for each project

(paragraph 55)

2. The Department of Housing and Construction expedite the preparation of design and supervision costs for major public works and publish these costs in its annual reports

(paragraph 61)

3. The Department of Housing and Construction assess the advantages and disadvantages of contractual project management and use this delivery system when circumstances permit its use.

(paragraph 65)

CHAPTER 1

INTRODUCTION

The Reference

In December 1978 the Parliamentary Standing Committee on Public Works (the PWC) asked the Expenditure Committee for an 'examination of the concept of project management and its implications, as put forward by Civil and Civic Pty. Ltd.' The company had told the PWC that project management was an alternative fundamental method of implementing the design and construction of major capital works. The PWC said this matter was not related strictly to the approval or otherwise of proposed works and was therefore outside its terms of reference (Exhibit 2).

2. This is the second inquiry reference received from another parliamentary committee.¹ The Committee appreciates such co-operation and will continue to give high priority to such requests.

3. The PWC's request was examined by the New References Sub-Committee² which took evidence in May 1979 from the Department of Housing and Construction (DHC), the Project Management Task Force (The Task Force) and others.

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1. *Australia, Parliament, Northern Territory Forestry Program: Report from the House of Representatives Standing Committee on Expenditure*, (K.M. Cairns, Chairman), Parl. Paper 199/1978, Canberra 1978. This matter was referred to the Committee by the House of Representatives Standing Committee on Environment and Conservation.
 2. Appointed by the Committee on 15 March 1978 to examine and propose new references for consideration by the Committee. The sub-committee consists of Mr K.M. Cairns (Chairman), Mr K. Aldred and Mr J. Brown.

The purpose of the preliminary hearing was to ascertain whether there was a *prima facie* case for a formal inquiry into the wider application of project management for the delivery of the Commonwealth's construction program (evidence p.2). Submissions were received from companies and industry organisations both before and after the hearing - from The Royal Australian Institute of Architects (RAIA), the Building Industry Special Contractors Organisation of Australia (BISCOA) and Civil and Civic Pty Ltd (Civil and Civic).

4. After examining the evidence the sub-committee informed witnesses and those who made submissions of its preliminary view 'that the choice of alternative systems, including project management, to deliver the Commonwealth's construction program should be a matter for the professional judgement of administrators' (evidence p.190). Some agreed with this conclusion. Others disagreed and made further submissions. At hearings in March 1980 interested organisations were given the opportunity of discussing this preliminary view with the sub-committee.³ The Committee is satisfied that its inquiry procedures have given witnesses very adequate opportunities to make submissions and to comment on matters of fact and opinion raised at the hearings.

Report Objectives

5. Differences of opinion among witnesses as to precisely what should be investigated has made the task of setting report objectives difficult. The PWC request for Expenditure Committee inquiry originated from a Civil and

3. On 11 October 1979 the Committee appointed another sub-committee, consisting of the same members as the New References Sub-Committee, to take over the inquiry.

Civic submission which asked the PWC to recommend use of the project management approach for some elements of the proposed army buildings at Bonegilla.⁴ What Civil and Civic was really proposing was the design construct delivery system, but there is even lack of agreement between the company and DHC on this matter (evidence, pp. 299, 300, 315, 316). The company did not appear before the Committee at the May 1979 hearing. The Task Force, which Civil and Civic had left, also advocated the use of the project management system but was not referring to design-construct! The Department of Housing and Construction said it had been using project management since 1971 but this did not refer to either design-construct or what the Task Force proposed!! The National Capital Development Commission also uses project management (similar in concept to the Task Force description and Civil and Civic May 1979 description) but in a very different way to DHC!!! After the May 1979 hearing Civil and Civic changed course. In a submission to the Committee (Exhibit 3 p.9) the company said project management is not the issue!!!! The key matter is the role of private enterprise on government projects!!!!

6. At the 11 March 1980 hearing the Master Builders' Federation of Australia (MBFA) said that project management is only one of the alternative delivery systems and advocated selected tendering. Appendix 1 will explain the confusion that surrounds the term project management. Suffice it to say here that the term, as used by DHC, is compatible with the traditional system in which there is the progressive development of design and documentation, competitive tendering based on complete documentation, with the contract awarded to a head contractor who sub-contracts or uses his own labour force. The term as used by the others is an alternative to the traditional system.

4. Civil & Civic submission to the PWC on the development of the army site at Bonegilla. See also page 15 of the Expenditure Committee's evidence.

7. The report objectives can now be stated clearly.
The report will:

- . examine whether a greater proportion of Commonwealth public works should be delivered by systems other than the traditional system; and if the answer is in the affirmative
- . consider the implications for the role of the Department of Housing and Construction.

8. The report will also examine some other matters which are for the most part connected with the major report objectives. It should be made quite clear that a wide-ranging inquiry into the administrative efficiency of the Department of Housing and Construction was not contemplated at any stage. Some of the areas witnesses wanted examined are more appropriately dealt with in such an inquiry.

CHAPTER II

CHOICE OF DELIVERY SYSTEMS

Objectives of the Commonwealth Works Program

9. Evaluation of whether there should be greater use of non-traditional systems should have a reference point. This point is the objectives of the Commonwealth's works program. The purpose of the evaluation then is to assess whether or to what extent other delivery systems meet these objectives when compared with the traditional system. While it may be necessary sometimes to question the appropriateness of objectives the general practice of the Committee is to accept the government's program objectives as given.

10. Initially, the sub-committee did not ask for or receive a statement on the objectives of the Commonwealth's works program but constructed these objectives from the April 1979 submission of DHC. Subsequently, the Chairman wrote to the Minister for Housing and Construction and asked him to indicate the objectives of the works program. The Chairman's letter and the Minister's response are contained in Exhibits 10 and 15 respectively. The goal of a works program is to design and construct buildings or other structures required by government to meet specific needs. Design and construction is carried out by the adoption of procedures which satisfy certain ends (objectives). The procedure objectives are those which:

- . provide for public accountability
- . enable resources to be used economically and efficiently
- . permit flexibility which allows governments to change priorities
- . allow for the orderly flow of public works.

11. The public accountability objective and the appropriate procedures is captured in Finance Direction 19 which states that:

Tenders and Quotations

The underlying intention of regulations 51, 52, 52AA and 53 is that government procurement procedures should be, and be seen to be, beyond reproach: i.e. that all who wish to participate in government business are given the opportunity to do so, that the government maintains a reputation for fair dealing, and that public money is spent effectively and economically. This intention is best achieved by the public invitation of tenders by press or Gazette advertisement (regulation 52) and the subsequent publication in the Gazette of details of contracts arranged (regulation 53). It is not, however, always appropriate to call tenders or publish details of contracts and the Regulations provide alternative procedures which are covered by Directions 31/22-4 and 31/32-4. The underlying intention should always be borne in mind when these alternative procedures are applied.

12. This Finance Direction applies to all government procurement and not merely to public works. For such works with a cost of over \$2m. there is, in addition, the scrutiny function of the PWC. Section 17(3) of the Public Works Committee Act asks that committee to have regard to the need for the work and the most effective use of the moneys when the PWC is considering a proposed work.

13. It is apparent that competitive tendering which is recommended as a means of securing the underlying intentions of accountability may also contribute to the second objective of securing economy and efficiency in resource use. It should be made clear however that the traditional system neither totally nor exclusively operates under competitive tendering. Resources used by DHC in the design and construction stages are clearly relevant to the economy and

efficiency objective but are not subject to competition. In any case the traditional system is not the only one which can make use of competitive tendering. The question of economy and efficiency ultimately comes down to the question of which system is likely to produce better quality at the same costs or lower costs with the same quality. This is not answered merely by asking which makes most use of competitive tendering. This fact is reflected in Finance Directions 31/22-4 and 31/32-4 which allow other procedures to be used where they prove more efficacious.

14. The third procedure objective is flexibility. Governments want flexibility to slow down, defer, cancel or accelerate projects with minimum cost penalties to suit economic conditions or new priorities (evidence p. 26). What can be deferred or slowed down is what has not been committed, i.e. projects for which contracts have not been signed. The Government is accelerating the construction of the Geelong Animal Health Laboratory because of the increased risk of exotic diseases in Australia. The project will cost an additional \$7m. because of a six day working week, a second shift and increased site management costs.⁵

15. The fourth program objective deals with the orderly flow of works. Because of the importance of public works to the building industry, one purpose is to spread the work to avoid peaks and troughs. Since this flow relates to the timing of contracts this program objective does not appear to be affected by the use of any particular delivery system.

5. Commonwealth Record 10-31 December 1979, pp. 1907, 1908.

16. These objectives may not be in complete harmony with one another. Decisions may have to be made to have more of one objective and less of another (trade-offs), a matter not appreciated by some witnesses. Design-construct, for example, appears to reduce flexibility and affects accountability and these objectives have to be traded off against the need for extra speed when considering the use of this delivery system for a particular project. Similarly, contracts negotiated with one builder reduce opportunities for competition so that accountability may again have to be traded off for quicker completion of the project.

17. The alternative systems the Committee proposes to evaluate are design-construct, construction management, project management and selective tendering (a minor variation to the traditional system). But because it is the traditional system that has been criticised so much, it may be useful if we first tested this system against the program objectives.

The Traditional System

18. The Department of Housing and Construction supplied a diagrammatic presentation of the sequence of steps in the development of a Commonwealth government project. The diagram is at Appendix 2. Development begins with the determination of the need for a project and then moves towards the preparation of full working designs, specifications and bills of quantity for a project, calling of tenders for construction and the construction of the project generally under the supervision of the design authority. The process ends, for any particular project, by handing it over for operation to the relevant department or authority. The diagram shows the progression in the development of design and the number of points at which governments can influence, if not determine, the pace at which a project is developed.

19. The department said that the bulk of public works for the major work authorities in Australia, and other countries, are carried out by the traditional system. This system has three important components. First, it is based on full documentation of the project. Design and documentation is undertaken 'in-house' by DHC or by commissioning private consultants or by a combination of both. The Government has directed that 35% to 40% of design work for Commonwealth projects should be given to private consultants. Second, there is open competition for the works. All interested parties are invited, through public advertisements, to tender on a common basis for a project or part of a project. Third, and flowing from these two features, construction contracts are awarded to the successful tenderer(s). Almost all construction is carried out by commercial contractors normally supervised by DHC. There are two types of construction contracts. One is the lump sum contract for the whole job to a single or prime contractor who may sub-contract parts of the job to others or use his own day labour force. The other is a series of individual sequential contract packages, produced by dividing the contract into parts and awarding the parts to one or more contractors. Thus with an army barracks, work on different buildings could be at different stages of design and construction with the construction being undertaken by one or more contractors (evidence, pp. 8-12 and 29).

20. Under the traditional system there is a progression in the design and documentation of a project with government approval required at various stages. This gives governments the flexibility to change priorities by slowing down, deferring or accelerating projects. The traditional system meets the flexibility objective. The accountability objective is met under the traditional system by competitive tendering which offers the opportunity for those interested to bid for the particular job. It has been said, however,

that public tendering does not impose any test of public accountability in economy of design. This matter is discussed in paragraph 24.

21. It is the ability of the traditional system to meet the efficiency objective that witnesses have challenged most. Three major criticisms are identified. The first is that under the traditional system the overall time taken to complete a project is longer than for some other systems because the design and construction phases cannot be overlapped (evidence pp. 33, 148). Since increased time increases total costs this is a valid criticism.

22. A second criticism relates to the tendering system. It has been said that public tendering may not necessarily result in the lowest end-cost because very low bids by otherwise reliable contractors have placed them in financial difficulties, have led to excessive claims for additional payments under the contract and to cost reductions which are incompatible with quality construction (evidence p. 164). This problem would be present for all competitive tendering, and the difficulty then is to compare the disadvantage with the overall advantages and opportunities of competition. It appears to the Committee that the problem is not so much with the competitive tendering system but rather with public criticism and accusations of favouritism that would accompany the awarding of a contract to anyone other than the lowest bidder.

23. The third criticism of the traditional system is overdesign by architects whose fees are based on a percentage of total costs. The conclusion drawn is that architects have no incentive to contain costs (evidence p. 87). This assertion applies to the 35-40% of DHC work since the balance is undertaken 'in-house', i.e. by public servants. It must be remembered that architects engaged by DHC work to a brief

and a cost estimate and that their work is supervised by DHC which can call on builders as consultants at the design stage. Further, firms that overdesign can be penalised by not getting further work. In short, these contrary arguments weaken the overdesign criticism. This is not to say that there is no overdesign by architects, but that evidence is needed to establish the fact. The PWC is the appropriate body to receive such evidence.

24. The criticism that public tendering does not provide accountability in economy of design was supported by one witness which said the problem can be overcome by the preparation of guidelines for the use of project management (evidence pp. 365, 367). The NCDC said that the project manager appoints the architect who works under contract to him. The Committee fails to see much difference between this latter arrangement and the one under which the private sector architect works for DHC under supervision of that department.

25. The conclusion drawn from the preceding paragraphs is that the traditional system meets the objectives of the Commonwealth's works program. In one respect, however, the system may be deficient in meeting the efficiency objective. The questions that have to be answered then are whether other systems can overcome this deficiency (see paragraph 21) without compromising the other objectives, or indeed other parts of the efficiency objective; or whether on balance other systems can satisfy the program objectives to a greater extent than the traditional system.

Design-Construct

26. The design-construct system, called 'commercial project management' by DHC, a description which only adds to the confusion around the term project management, was advocated by Civil and Civic. Under this system the project

manager or builder manages and co-ordinates the design and executes the construction of works. The builder submits a lump sum price to cover the entire project (called the 'target sum' contract, the form normally used) and this price is based on sketch plans. The client generally specifies his needs and leaves the rest to the builder. Design is done mostly 'in-house' and construction by sub-contracting or by the builder's own day labour force. The target sum is adjusted for variations outside the control of the contractor, rise and fall and reimbursable extensions of time. In most cases quality of the finished product is left to the package dealer to administer (evidence p. 13 and Exhibit 3 p. 15).

27. Design-construct does not have the steady progression of design and documentation and projects have to be committed (i.e. contracts signed) at a relatively early stage. This restricts the ability of planners and governments to slow down, defer or cancel projects and so change government priorities. In short, design-construct may fail to meet the flexibility objective.

28. The accountability objective may also be compromised under the design-construct system. Accountability includes competitive tendering and the problem here is to compare bids that could be, and in practice are, prepared in different ways. In in camera evidence DHC said it encountered great difficulty in comparing bids for a project in New South Wales because each tenderer had treated costs, area of building and conditions of contract differently. After DHC had prepared documentation which permitted comparison of bids, tenders were re-invited. Not only were the new tender prices lower than the original offers (the lowest new tender price was 4% lower than the lowest offer made under design-construct) but the ranking of firms also changed.

29. A private citizen told the sub-committee that widely different design concepts can be compared by using value analysis. He supported competitive project management which has three basic features. The first step is to invite organisations to register their interest as tenderers for a design-construct contract for a lump sum. Each initial tenderer should submit a design concept in the form of simple sketches, maximum cost of the concept and a brief description of the concept and the main materials that will be used in construction. The second step is to assess all tenders by using value analysis. This analysis allows comparison between widely different options. Performance factors for each option are listed, weighted and scored, thus giving a total percentage. A value index is then constructed, the index being dollar worth (the lowest priced alternative) divided by the dollar cost (whole-of-life cost). This too is expressed as a percentage. When the performance score is multiplied by the value index it is possible to rate the various options. The one with the highest number is the best value for money design and so forth. The third step is to select from a short list those whose concepts are assessed as the best value for money propositions and invite them to submit final tenders. Competitive project management was proposed for public buildings costing less than \$2m.

30. One can accept readily the benefits of delivery systems that speed up construction time for buildings that earn income, even if questions on efficiency and accountability are unanswered. For such projects, and particularly those where survival of the organisation is related to the income it earns from assets, a rough order of costs may be all that is required. If end costs fall below this level that is a bonus. The niceties of accountability and, up to a point efficiency, can be put to one side. This is not the case with the public sector. Although the Committee has not mastered the intricacies of the concept,

value analysis could be value laden in that arbitrary weights have to be assigned to the performance factors, so that one does not know whether the ranking of options will change when different sets of weights are used. This casts some doubts on the relative efficiency of the system and raises some problems of public accountability. The system could be prone to accusations of favouritism and allegations of corruption. There could be advantages however in DHC assessing the benefits of value analysis.

31. The Committee appreciates the contribution of a public minded private citizen. But it does appear that the design-construct system does not meet many of the program objectives. This is not to say that the system should never be used. It is appropriate for standardised designs, minimal problem designs or situations where cost ceilings or speed of completion outweigh other factors (evidence p. 14). In short, the design-construct system could be used when the objectives of flexibility, accountability, and even efficiency perhaps are traded-off against, for example, speed of construction.

Construction Management

32. Under this delivery system the construction manager is appointed, by contract, at the commencement of design. He is paid a fee for his services. The construction manager advises designers on construction alternatives, arranges for the calling of tenders (he is not permitted to tender), reviews tenders, lets contracts and makes payments. He also co-ordinates work on the construction of the project (evidence p. 12).

33. The construction manager can be appointed after a project is placed on Design List C (see Appendix 2), or at a later stage in the development of design. Appointment of the

manager does not represent a commitment to the project, so that governments can change priorities by cancelling or deferring the project. In short, the construction management system meets the flexibility objective. Similarly, the accountability objective is also met under this system. The construction manager is appointed in a way similar to that of other consultants required for public sector work. Separate tenders are called for the various parts of the project and this permits the observance of Finance Direction 19, a crucial feature of accountability.

34. The efficiency objective is, once again, more difficult to assess. The department says one of the advantages of the system is that efficient phasing of construction can reduce overall project time and cost escalation, thus removing one of the deficiencies of the traditional system. A contrary viewpoint, that time slippage is an added cost was put forward as a disadvantage. Another advantage is that quality, cost and overall construction performance can be controlled by the principal, or, independent consultants. Yet DHC qualifies this statement with the observation that, unlike the traditional system, the construction contractor does not guarantee the overall price or quality of the work. It does appear to the Committee that the realisation of the benefits of construction management depends very much on the quality of the manager. If he has the skills to plan, schedule, and co-ordinate then this system will meet the efficiency objective (evidence p. 34).

35. Construction management does not seem to suffer by comparison with the traditional system. However, its greater use must be influenced by the availability of organisations with this type of expertise and the suitability of projects for this delivery system.

Project Management

36. As indicated in paragraph 5, the term 'project management' means different things to different people. It was suggested that the Committee define the term and NCDC said an inquiry 'would be valuable if for no other reason than we might start to get the language straight' (evidence p. 181).

37. Appendix 1 attempts to clear away some of the confusion that surrounds the term. The Committee is doubtful that a single operational definition can be agreed to because the term 'project management' conveys a flavour of greater organisational efficiency, so that it is attached to the description of many delivery systems that are alternatives to the traditional system. The Department of Housing and Construction uses the term as a philosophy of management. Hence the term can encompass any delivery system. The project management NCDC uses is an alternative to the traditional system and to distinguish one from the other we propose to call the NCDC system, contractual project management.

38. The NCDC defines project management as the overall co-ordination, control and supervision of the various interrelated processes of both design and construction of a project by an experienced organisation under contract to the NCDC. The project manager appointed by NCDC works with the architect nominated by NCDC (on the understanding that the architect will enter into a contractual relationship with the project manager) which approves the design and cost estimates. Construction is carried out under a series of separate contracts covering the specific parts of the total project. As a general rule these parts compare with work carried out by sub-contractors to the head contractor under the conventional lump sum building contract system. However,

under project management each such contract is entered into directly between NCDC and the supplier after the calling of public tenders. The essential difference between project management and construction management is that in the former case the architect works under contract to the project manager who has formal responsibility for design (evidence p. 147).

39. The assessment of project management is thus the same as that of construction management which NCDC said is being superseded by project management (evidence p. 146). The conclusion that can be drawn, then, is that in respect of meeting the objectives of the Commonwealth's works program, contractual project management does not suffer by comparison with the traditional system. However, its greater use would be influenced by the availability of organisations of relevant competence and the suitability of projects for this delivery system.

Selective Tendering

40. The Master Builders' Federation of Australia was critical of the traditional system and particularly of open competitive tendering. The MBFA said experience has shown that the lowest tender obtained in open competition will not necessarily result in the lowest final cost. The Committee was told of research which indicated that projects where a contractor has been selected by a form of restricted tender or following negotiation had a better cost performance than those selected following open competitive tenders (evidence p. 323).

41. The MBFA also said that putting most projects to tender creates 'excessive competition' which has resulted in contractors going out of business and the cost of the project increasing significantly. Open tendering was also said to be

more wasteful in terms of costs of tendering than other systems. The MBFA supported the selected tendering system as a means of letting contracts for fully documented projects. Contractors would have to register for various categories of work and a certain number (6 to 8) would be invited to tender. The work would be awarded to the lowest cost tenderer. The MBFA also stated that, among other factors, alternatives should allow contractors to achieve a more continuous working program. The Federation supported greater use of cost-reimbursement contracts in the public sector.

42. Selective tendering, as advocated by MBFA has certain features which are unacceptable to the Committee. The system tends to restrict competition and to make difficult the entry of new firms into the industry. If as suggested there is excessive competition in the industry this should not be a permanent feature since organisations have the freedom to leave the industry. Competition brings with it both risks and rewards. To protect an industry against the risks is something the Committee is not prepared to advocate. Further, if the proposal of cost-reimbursement contracts and continuous work for particular contractors is added to selective tendering the new system comes dangerously close to a market-sharing arrangement operated by DHC. The anti-competitive features of such an arrangement cannot be condoned.

Conclusions

43. One of the major purposes of this report is to examine whether a greater proportion of Commonwealth public works should be delivered by systems other than the traditional system. The Committee has conducted this examination first by obtaining a set of program objectives and then by assessing the extent to which each of the delivery systems meets the objectives. In the course of this

examination certain conclusions were drawn. It is now time to draw together the relevant facts and opinions in order to arrive at a more basic conclusion.

44. The Commonwealth's works program has several objectives and in certain circumstances one objective may have to be traded off against another or against several other objectives. Further, the various systems also have advantages and disadvantages. Projects themselves differ in size and complexity and this too could affect the choice of a particular system. Finally there is also the question of whether the building industry at present has the capacity to supply more managers of good quality. In view of all this the Committee concludes that:

Choice of a particular delivery system for a particular project has to be made in the context of the circumstances of that project and is hence a matter for the judgement of administrators.

45. Civil and Civic and the Task Force said that client departments, not DHC, should be given the responsibility for choosing a particular delivery system for a particular project (evidence pp. 83 and 298). Both witnesses advocated the use of guidelines to assist in this choice. The reasons advanced for giving client departments this responsibility were unclear and conflicted with other parts of their evidence. It was stated that client departments have people who are skilled in various delivery systems because these people have to prepare the brief of what is required (evidence p.362.) This statement is a *non-sequitor*. It was also stated that some departments have a greater capacity to analyse and assess different systems than others (evidence p. 308) but this comment does not advance the case for delegating responsibility to all departments.

46. On this matter what witnesses have lost sight of is their own evidence. We were told that DHC and NCDC are the leading authorities in the field in the choice of delivery systems (evidence p. 380). Witnesses also conceded that the quality of the project manager is fundamental to the efficiency of project management (evidence pp. 302, 369). Such statements conflict with those that espouse the cause of departments being allowed to choose the delivery system for a particular project. The Committee concludes that:

Choice of a particular delivery system for a particular project should continue to reside with the organisation that has prime carriage for the co-ordination of the planning, design and construction of public works.

47. The question of the need for guidelines was also discussed with witnesses. When communicating its preliminary views, that choice of delivery systems is a matter for the judgement of administrators, the Committee also said that meaningful guidelines were not feasible i.e. for the selection of a particular delivery system (evidence p. 190). Witnesses, however, advanced reasons for guidelines at the March 1980 hearings. It was stated that government departments currently funding projects have written guidelines which explain to their administrators the different systems, how they operate and what they offer (evidence p. 307). The Committee has not sighted these guidelines and does not know what purposes the guidelines serve. From analysis of the information presented the Committee is unable to see a need for guidelines as a means for choosing a particular delivery system. Another reason advanced for guidelines is to ensure technical requirements and accountability (evidence p. 309). This reason relates to projects where a decision has been made to use a system other than the traditional system. The technical, accountability guidelines are not related to choosing a particular delivery system. The Committee was also told that guidelines should apply to the use of project management in cases where it is appropriate (evidence p. 365).

48. The above statement begs the question. Finally it was said that under the Public Service Board's guidelines for the appointment of consultants there is no scope for the appointment of construction or project managers (evidence p. 365). This is a surprising statement because DHC has appointed a construction manager for the Geelong National Animal Health Laboratory project, a fact that should have been known to witnesses and which was told to the Committee in earlier evidence (p. 293). While it may be necessary for DHC and departments to have guidelines and directives for programming public works or for the appointment of consultants (architects, project managers) the Committee has concluded that it would not be meaningful or practical to have guidelines for choosing a delivery system for a particular project. The Committee concludes that:

It is not practical to formulate guidelines for the selection of a particular delivery system.

CHAPTER III

EFFICIENCY AND ACCOUNTABILITY

Introduction

49. So far this report has not made a contribution to increasing efficiency or improving accountability to the Parliament. To expect reports to always contain such contributions is to equate scrutiny with criticism. This is a view the Committee does not hold. Expenditure on capital works administered by DHC and NCDC is significant. The department told the Committee that excluding repairs and maintenance and minor new works expenditure on Commonwealth financed public works is about \$500m. Even if one includes only major works (ie. each work costs \$2m or more) the expenditure would still be significant. It is therefore quite appropriate to test the scope of various delivery systems.

50. The inquiry has thrown up matters of efficiency and accountability which require action by government and it is to these matters that the remainder of this report will be directed.

Information and Accountability

51. The MBFA said that the lowest cost tender obtained in open competition will not necessarily result in the lowest final cost. That organisation supplied information on tender prices and final costs extracted from the 42nd General Report of the Parliamentary Standing Committee on Public Works (evidence p. 326). For the five(5) projects listed, final costs exceeded tender prices by about 35% to 70%.

52. The Committee appreciates the concern of MBFA, the Task Force and other witnesses, of the need to contain costs of public works. In reply to the MBFA criticism DHC said that the fact that the lowest tender selected by open competition does not result in the lowest final cost applies to any other system as well (evidence p. 377). The Task Force supported this conclusion (evidence p. 381). The department also conceded that that information appearing in the PWC's general reports is deficient and agreed that additional information could be provided (evidence pp. 378, 379).

53. The questions that have to be answered are what additional information is required, why is it needed and how (by what means) is it to be provided? The additional information would indicate the various factors responsible for the difference between tender price and final cost, with each factor quantified. Thus if one starts with tender price and puts dollar figures on rise and fall, cost of design alterations and other cost increases (specified), all these when added to the tender price would equal the final cost. In addition the Committee believes the information should also show which delivery system or systems was used for each project.

54. The major purpose for providing this information would be to promote accountability for efficient administration. The department has implied that client department's should get an appreciation of what it costs them to make changes when a project is halfway through design and even into construction. Identification of cost increases caused by design alterations would do just that. Similarly, cost increases resulting from the operation of rise and fall contract clauses or other specific factors might indicate the need to speed up construction or experiment with other delivery systems.

55. This information can be supplied to the PWC for inclusion in its general reports or put into DHC's annual reports. In view of the foregoing the Committee recommends that:

The Department of Housing and Construction either include in its annual reports or supply the Parliamentary Standing Committee on Public Works for inclusion in that committee's general reports the following information on each completed major capital works - tender price, costs of rise and fall contract clauses, design alterations and other costs (specified), and the particular delivery system or systems used for each project.

56. An issue related to the recommendation is the publication of the full costs of major capital works and the recovery of these costs by DHC from client departments. This matter was raised by the Task Force (evidence p. 246).

57. The full costs would be the costs of construction, and design and supervision costs. The department said the latter costs are identifiable parts of the total capital costs of a project. The department said it can supply costs for design and supervision based on either standard commercial fee rates or direct salary costs plus overheads. A computer-based costing system which would allocate costs among major projects is being developed by DHC (evidence, p. 198, 199 and 258).

58. Among the reasons advanced for the development of a computer-based information system were improved management practice and pressure from the Parliament and the private sector. Measurement and disclosure of costs would assist in making DHC more efficient because other organisations could claim that they could do the job for less. The question remains then whether cost estimates should be measured and disclosed at the commencement or completion of a job, or both. Since cost estimates, particularly design and

supervision costs, could be used in a competitive framework, ideally it would be useful for both to be published. If publication of both is presently possible the Committee would favour publication of estimated costs for major capital works at the completion of the project. The annual report of DHC seems to be an appropriate place in which to provide information on design and supervision costs.

59. Recovery of costs from client departments is a matter that has been examined from time to time within the public service. The advantage of cost recovery is that this would lead to a more economical use of DHC resources. For example, there would be a cost penalty for clients that changed their minds halfway through the design or construction process. The department said the disadvantages of charging clients is that they could be deterred from seeking appropriate technical advice or might establish their own particular expertise (evidence p. 261).

60. It is unlikely that departments would be able to obtain resources to duplicate the work of DHC if they had to pay for DHC services. The argument that clients would consult less when they are required to pay has some force because there appears to be no automatic method which penalises departments for the effects of inadequate consultation. In short, we are not aware of any method which allows for the advantages of cost recovery to be assessed or measured against the disadvantages.

61. Publication of design and supervision costs of major projects and subsequent investigation by parliamentary committees as to why these costs appear to be 'too high' might be the most effective way of ensuring efficient use of resources by DHC and client departments. In view of the foregoing the Committee recommends that:

The Department of Housing and Construction expedite the preparation of design and supervision costs for major public works and publish these costs in its annual reports.

62. Adoption of these recommendations should improve accountability for efficient administration in respect of major public works. The Task Force advocated approval for public works only after the PWC has been satisfied that use of a particular delivery system is justified (evidence pp. 240, 369, 381). Evidence of DHC indicates that the department has an extensive process for new public works. The delivery system for each project is examined on a case by case basis and in this examination judgement, based on experience, is applied (evidence pp. 373, 374). It is questionable whether the time at which the PWC makes a decision is the most appropriate time for the selection of a particular delivery system and whether selection at a later date will lead to the adoption of a different system. But over and above all there is the question of who is the best judge of what the PWC should do. This is a matter for the PWC and the Parliament and not for another parliamentary committee.

Contractual Project Management and Efficiency

63. The Committee has concluded that both construction management and contractual project management do not suffer by comparison with the traditional system. An interesting feature of these management systems is the role of the manager vis-a-vis his counterpart in the traditional system. While there are many similarities there is one important difference. Under the traditional system the head contractor is responsible for construction which he undertakes by using his own day labour force or by sub-contracting. In the two management systems this particular function is carried out by the manager who arranges the sub-contracts. In other words

the manager takes the place of the head contractor. This is an important difference because construction and contractual project management represent new forms of competition for the delivery of public works.

64. It is axiomatic that competition, or increased competition, increases efficiency and has a tendency to keep prices lower than they would otherwise be. This new competition should have one of three effects on public work costs in the longer term: prices from head contractors could become keener, the number of project management firms could increase with consequential competitive effects or there could be a combination of both.

65. The Committee recognises that there could be some difficulties in public authorities moving over too quickly to these management systems. Matters of the competence of the manager, a crucial factor acknowledged by witnesses, and the suitability of these systems for particular projects have been mentioned. Another difficulty is that it is not possible to compare the total estimated cost of the same project under the traditional system as against the two management systems. The former is a lump-sum contract for construction and includes the contractors profit whereas the manager's fee (includes his profit) is for managing the design and construction phases of the project. The fact remains, however, that the NCDC uses contractual project management whereas DHC does not. The Committee has concluded at paragraph 44 that choice of a particular delivery system is a matter for the judgement of administrators. But in view of our comments on contractual project management it would be difficult to conclude that there are no occasions under which it can be used by DHC. Accordingly, the Committee recommends that:

The Department of Housing and Construction assess the advantages and disadvantages of contractual project management and use this delivery system when circumstances permit its use.

Position of Project Manager

66. Paragraph 7 stated that the report would deal with two major issues. The first was the need for greater use of systems other than the traditional system for the delivery of public works. If the answer was in the affirmative the second major issue was consideration of the implications of this answer for the role of the Department of Housing and Construction. The answer on alternative delivery systems has not been a positive one. Yet the Committee does not wish to avoid the second issue if only because Civil & Civic has been so persistent in raising it (Exhibit 3, evidence p. 230).

67. The company said the key matter is the role of private enterprise on government projects and if private enterprise can be shown to have benefits and advantages how should DHC utilise these while remaining in control on behalf of the government (Exhibit 3). Civil & Civic appears to have answered this question by supporting contractual project management, asserting that client departments should be free to select the delivery system and maintaining that guidelines should be established to ensure the maintenance of public accountability.

68. All these matters have been examined in this report. Even if these propositions can be accepted there is the question of whether the project manager should be a public servant. The Committee put to Civil & Civic the conclusion of a Canadian Senate Committee that the public works department must take full responsibility on Crown projects and that a departmental employee must occupy the position of project manager if that department is to be

accountable. That conclusion was based on the departmental view that there is a certain project management function that cannot be delegated entirely to outside consultants if the department is to remain accountable to government and professionally responsible to the public.⁶ Civil & Civic saw no reason why the project manager should be a government employee and considered that the responsibility for the job, if clearly defined, could be delegated to outside consultants (evidence pp. 313, 314). This view was opposed strongly by NCDC. The question here is not so much one on the meaning of words such as 'project manager' but rather the question of whether the public sector organisation can direct the project manager on what to do. For example who chooses the architect - the project manager or the government organisation? Under its contractual project management NCDC does because it retains all the responsibilities and control as the principal with the project manager acting in an agency relationship (evidence p. 166). Other witnesses perceived the project manager to have authority or total control (Exhibit 3 and evidence p. 77).

69. Responsibility for administering public monies cannot be delegated by government departments or agencies to private firms or consultants. In view of this the Committee concludes that:

Since a government department or agency is responsible to government and the Parliament for the efficient administration of public works, that department or agency should always have over-riding authority over project management companies and others on these works.

6. The Accommodation Program of the Department of Public Works, Report of the Standing Senate Committee on National Finance, (Canada), September 1978.

70. No attempt has been made in this report to examine all the arguments advanced in favour of or against the various delivery systems, or all the other arguments on other issues. One characteristic of the evidence is that while many hypothesis have been advanced by witnesses these have not been supported by facts or by methods of testing the hypotheses. All this has made difficult the task of finding out what is relevant.

Kevin M. CAIRNS
Chairman

19 May 1980

PROJECT MANAGEMENT

This Appendix attempts to clear away some of the confusion that surrounds the term 'project management'. That the term lacks precision was admitted by many witnesses. It has been said that if you ask for a definition of project management from ten men in a room, they probably will give you ten definitions (Canadian Senate report, p. 97)! Absence of clarity arises because the term is used both in an organisational sense and in a contractual sense.

In its organisational sense the term is a philosophy of management. It is said to be a highly efficient management tool which identifies clearly a certain point of overall integrated responsibility with direct control over all activities of a given project from initial concept through design, construction and commissioning. Its essence is the planning and control of the entire project. Project management can be applied to any project consisting of design and construction of a physical entity such as a building, a factory or a transportation or communication facility.

Prior to the 1970s DHC designed projects in a Design Division while the responsibility for construction lay with a Construction Division. In 1971 the department introduced a project management system under which the departmental project manager is responsible to bring together and use the technical, financial and management resources needed to achieve specific objectives of quality, time and cost. These objectives are specified and written for each job. Time and costs for each job are reported back to the PWC which incorporates this information in its annual reports (evidence, p. 10).

The description of project management given by DHC is similar to the definitions others use. The descriptions of The Building Science Forum of Australia (NSW Division) and the Task Force are:

An individual or organisation charged with the responsibility to ensure that project goals are achieved (particularly in respect of time cost and quality) by co-ordinating the various activities.

(Building Forum, evidence p. 17)

the management of a multi-disciplinary resource to provide a client with design and construction services to meet his particular objectives of performance, cost and time-for the project at hand.

(Task Force, evidence p. 75)

The RAIA said that project management does not, of itself, include other concepts such as 'fast track' or design-build although such concepts can be incorporated into the project management proposal (evidence, p. 17). The Task Force said much the same thing (evidence, p. 75). When used in its organisational sense project management, a philosophy of management, is present in the traditional system and in the other systems as well. In fact DHC said it used project management for the whole of the capital works program under departmental control (evidence, p. 54). It is obvious then that one cannot assess project management as a system when the term is used in this way.

The term takes on a different meaning when used in a contractual sense. While similar to the definition of others the NCDC definition indicates that the project manager is a private sector organisation under contract to the NCDC:

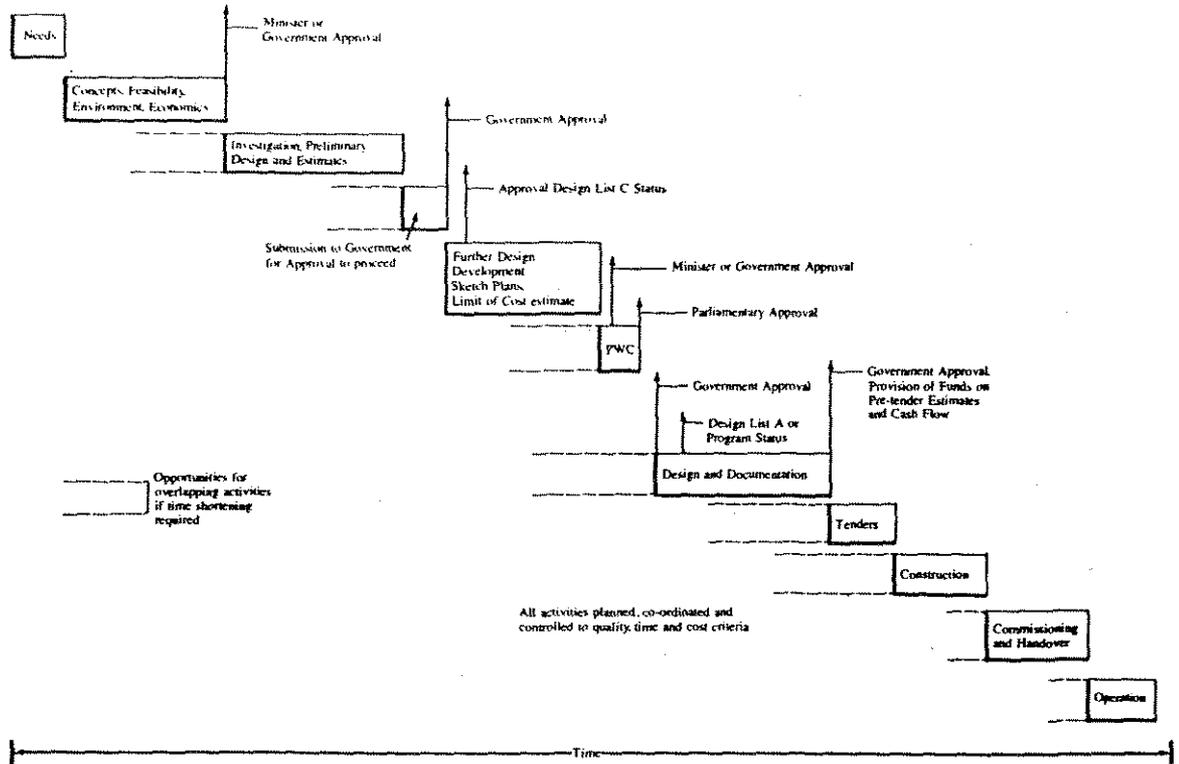
The NCDC defines Project Management as the overall co-ordination, control and supervision of the various interrelated processes of both

construction and design of a project by an experienced organisation under contract to the NCDC.

(evidence, p. 166)

The Task Force and Civil & Civic definitions, which also reflect the contractual sense, are similar to that of NCDC, but appear to state or imply that the project manager has total control and responsibility.

Paragraph 37 explains why, in the opinion of the Committee, it would be difficult to obtain an agreed operational definition of project management. But if it is not possible to achieve the NCDC objective of getting 'the language straight', the next best thing for the industry to do is to seek those who use the term project management to state precisely what they mean.



CONDUCT OF THE INQUIRY, WITNESSES AND EVIDENCE

Conduct of the Inquiry

In December 1978 the PWC asked the Expenditure Committee to examine the 'concept of project management and its implications as put forward by Civil and Civic Pty Ltd'.

The PWC's request was examined by the New References Sub-Committee which was appointed on 15 March 1978 to examine and propose new references for consideration by the Committee. The sub-committee took evidence from a number of private and public sector organisations on 1 May 1979. The purpose of the hearing was to find out whether there was a prima facie case for a formal inquiry into the wider application of project management for the delivery of the Commonwealth's construction program. At the hearing the sub-committee was told that Civil & Civic had left the Task Force. The company was sent the May hearing transcript and made a submission in late May. In early July the sub-committee met informally with Civil and Civic in Sydney and received another submission in July.

In September 1979 the sub-committee informed witnesses (i.e. those who appeared at the May hearing) and interested organisations (i.e. those who made submissions but did not appear at the hearing) 'that the choice of alternative delivery systems, including project management, should be a matter for the professional judgement of administrators'. This letter and most of the responses were incorporated in the 25 October 1979 transcript of hearing.

On 11 October 1979 the sub-committee reported back to the Committee, and informed it of the preliminary conclusion and advised the need for formalising the investigations with the purpose of reporting to the House. The New References Sub-Committee does not have the authority to report, through the Committee, to the House. Accordingly, the Committee appointed another sub-committee to inquire and report to the Committee on Some Issues in the Delivery of the Commonwealth's Construction Program. The report that is presented to the House is entitled 'Alternative Delivery Systems for Commonwealth Public Works'.

On 11 and 31 March 1980 the sub-committee took evidence from interested organisations on the September 1979 preliminary conclusions. As mentioned at paragraph 4 of the report the Committee is satisfied that its inquiry procedures have given witnesses very adequate opportunities to make submissions and to comment on matters of fact and opinion raised at the hearings.

Witnesses

Building Industry Specialist Contractors
Organisation of Australia

Anderson, Mr A.G.C.	.....	President
Holmes, Mr A.E.	.....	Executive Director

Civil & Civic Pty Ltd

Hardy, Mr S.J.	.....	Manager, Community Division
Gould, Mr I.K.	.....	Director & Project Manager, Health Division

Commonwealth Scientific and Industrial
Research Organisation

Bromilow, Dr F.J.	Senior Principal Research Scientist
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Department of Housing and Construction

Thomas, Mr R.H.	First Assistant Secretary
Williams, Mr H.C.	.....	First Assistant Secretary (Major Projects)
Fewell, Mr P.A.	.....	Acting Assistant Secretary (Financial)

Master Builders' Federation of
Australia

Jorgenson, Mr J.M.	.....	Federal Executive Director
Bryant, Mr P.J.	.....	Executive Officer

National Capital Development
Commission

Shannon, Mr G.C.	.....	Associate Commissioner
Curtis, Mr K.J.	.....	Secretary and Manager

Project Management Task Force

French, Mr G.J.	.....	General Manager (at 1.5.79), Leighton Contractors Pty Ltd
Suann, Mr E.A.	.....	Marketing Manager, Ian Turner & Partners
Cook, Mr G.P.	.....	Managing Director, John Holland Construc- tions Pty Ltd
Cole, Mr A.G.	.....	Director, Watkins Ltd
Wright, Mr R.M.	.....	General Manager (at 31.3.80), Leighton Management Services
Hocking, Mr P.W.	Secretary (Eric White Associates Pty Ltd)

Private Citizen

Plath, Mr D.M.	4 Goode Street, Torrens, A.C.T.
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Evidence

Evidence was taken at public hearings on the following days:

1 May 1979
25 October 1979
11 March 1980
31 March 1980

In addition, on 1 May 1979 DHC gave evidence in-camera.

Most of the submissions were incorporated in the transcripts of evidence. Those that were not have been treated as Exhibits and publication has been authorised.

EXHIBITS

Exhibit No		Pages
1.1 to 1.12	Various articles published by Dr F.J. Bromilow between 1969 and 1977 on performance of building contracts	-
2.	Correspondence between Parliamentary Standing Committee on Public Works and Expenditure Committee	1-6
3.	Submission from Civil & Civic dated 21 May 1979	7-49
4.	Submission from Project Management Task Force dated 7 June 1979	50-62
5.	Submission from Civil & Civic dated 6 July 1979	63-76
6.	Submission from the Association of Consulting Engineers Australia dated 2 August 1979	77-82
7.	Submission from the Association of Consulting Engineers Australia dated 5 October 1979	83
8.	Submission from The Royal Australian Institute of Architects dated 9 October 1979	84-85
9.	Submission from Department of Housing and Construction dated 26 October 1979	86-98
10.	Letter dated 6 March 1980 from Chairman, Expenditure Committee to Minister for Housing and Construction	99
11.	Submission from Civil & Civic dated 1 April 1980	100-105
12.	Submission from Department of Housing and Construction dated 14 April 1980	106-107
13.	Submission from The Building Industry Specialist Contractors Organisation of Australia dated 30 April 1980	108-112

14. Submission from The Master Builders' Federation of Australia dated 2 May 1980 113-131
15. Letter dated 13 May 1980 from Minister for Housing and Construction 132-134