



**Victoria**

---

**Report  
of the  
Auditor-General**

**Works Contracts Overview  
Second Report**

PROPERTY OF

Russell Walker

VICTORIA

---

*Report*

of the

**AUDITOR-GENERAL**

WORKS CONTRACTS OVERVIEW

**Second Report**

---

*Ordered by the Legislative Assembly to be printed*

---

MELBOURNE  
F D ATKINSON GOVERNMENT PRINTER  
1983



Office of the Auditor-General,  
MELBOURNE, Victoria.

15 June 1983.

Sir,

Pursuant to the provisions of Section 48 of the Audit Act 1958, I transmit herewith the second report on works contracts in Victorian government departments and authorities. This report is complementary to my earlier report of 30 June 1982 on the same subject.

Yours faithfully,

B.J. WALDRON  
Auditor-General

The Honourable the Speaker,  
Legislative Assembly,  
Parliament House,  
MELBOURNE, Vic.

## TABLE OF CONTENTS

PART		PAGE
1	Introduction and Summary	1
2	Works Contracts	
2.1	Footscray Technical School	6
2.2	Police Academy - Indoor Physical Training Complex	16
2.3	State Swimming Centre	23
2.4	M.M.B.W. Sewerage Contract	35

# 1 INTRODUCTION AND SUMMARY

## Introduction

- 1.1.1 A major study was commenced within my office in 1981 to review the procedures of government departments and authorities with respect to works contracts. In my first report issued in June 1982 covering the first 2 stages of the study, I indicated that an examination of selected works contracts was being undertaken. This second and final report in the study reviews the procedures adopted in respect of the 4 works contracts selected for review. These contracts covered:
- (1) Footscray Technical School;
  - (2) Police Academy - Indoor Physical Training Complex at Glen Waverley;
  - (3) State Swimming Centre; and
  - (4) a sewerage reticulation project of the Melbourne and Metropolitan Board of Works.
- 1.1.2 The study was the first review carried out by my office using comprehensive auditing methodology. This approach involves an extension of auditing into value for money issues. It may be defined as an approach to auditing designed to review and report on the management of financial, and other resources so as to provide the greatest possible degree of accountability in the expenditure of public funds. As mentioned in my report to Parliament for the year ended 30 June 1982, a number of smaller pilot exercises involving a comprehensive auditing approach have also been undertaken.
- 1.1.3 Victorian government departments and authorities spend many millions of dollars annually on works. Works contracts cover the purchase, erection of or alteration and improvement to and fitting out of buildings and facilities.
- 1.1.4 No standardised set of procedures has been laid down for the management of works contracts, and procedures vary between organisations. Generally, procedures are governed by the enabling legislation and regulations of the particular organisation plus any governmental and/or ministerial directives which may be issued. Within these parameters each organisation is able to develop an individual approach to works contract procedures. The development and establishment of documented procedures depends to a large extent on the size of the organisation and the nature of the services it provides. In large organisations, this documentation may be substantial while in smaller organisations, little or no documentation may exist.

## Objectives of the Study

- 1.1.5 With the expenditure of such large amounts of money on works contracts, it is important that adequate planning and control procedures are adopted by all departments and authorities for the assessment, design and construction of these works to ensure that there is adequate accountability for the spending of public moneys and that management controls are sufficient to ensure that value for money is obtained. Thus the principal objective of the study was to determine whether these procedural arrangements have due regard for economy and efficiency in the spending of public funds and are being consistently administered in compliance with all relevant statutes, regulations, policies, directives and guidelines.
- 1.1.6 Although many of the audit observations are critical of existing procedures, the essence of the exercise was not in fault finding. The study was intended as a constructive exercise, to ascertain the adequacy of existing procedures and to highlight any changes which may be needed.
- 1.1.7 It must also be stressed that the study was not aimed at evaluating whether or not the facilities being constructed were desirable or fulfil their intended role. The value for money element of this study is that inadequate management controls result in higher costs than necessary to obtain the facility.
- 1.1.8 The specific objectives were to determine whether there were:
- (1) adequate internal controls over contracts including feasibility studies, the preparation of specifications, appointment of consultants and the preparation of the form of contract;
  - (2) sound tendering procedures in operation;
  - (3) proper controls over final approval and authorisation of contracts;
  - (4) adequate controls to ensure that the final approved contract was in accordance with the tender and specifications;
  - (5) adequate safeguards within contracts in the event of non-fulfilment or non-performance of the contract;
  - (6) adequate financial controls to ensure that payments were authorised and made within contract conditions and budget limits, and that expenditure was accounted for and recorded under appropriate classifications; and
  - (7) adequate maintenance and post-contract arrangements on completion of projects.

## **Special Report of June 1982**

- 1.1.9 The first stage of the project was a detailed survey of the procedures used for all aspects of project design, tendering, construction and review in all government organisations. I reported on the results of this overall survey in my special report to Parliament of 30 June 1982. This report documented significant deficiencies in works contract procedures in government departments and authorities.
- 1.1.10 It recommended:
- (1) the establishment of a technical advisory body; and
  - (2) the development and distribution by that body of a code of practice in respect of the management of works contracts.
- 1.1.11 The Public Works Department has advised that since that report the following initiatives have been taken to implement the concepts embodied in those recommendations:
- (1) the Minister for Public Works has confirmed an instruction that government departments and authorities are to use standard conditions of contract;
  - (2) a suggested documentation standard for works contracts has been circulated to all ministers for consideration in relation to departments and authorities for which they are responsible;
  - (3) an interdepartmental working party has been formed to recommend a forward works programming system to the government; and
  - (4) progress has also been made in such matters as adequate design review procedures, regulations and standards, industry consultation and the development of project management techniques.

### **Contents of this Report**

- 1.1.12 The 4 contracts selected for this final part of the study were chosen to provide a representative coverage of government organisations involved in works contracts. The 4 contracts examined in detail cover:
- (1) one project undertaken by a school council;
  - (2) one project undertaken for a government department by the Public Works Department;
  - (3) one project undertaken for a government department by the Public Works Department using an outside consultant as project superintendent; and
  - (4) one contract undertaken by a major statutory authority.

1.1.13 I considered it necessary to look in detail at 4 contracts to test and reinforce the general conclusions arrived at in the first part of the review. The scope of this second part of the study varied depending on the project under review but in the main it encompassed:

- (1) a physical inspection of the facilities and an examination of available documentation inclusive of contractual and financial data;
- (2) an examination of compliance with enabling legislation, other regulatory processes and sound works management procedures; and
- (3) consultations with senior personnel associated with each of the 4 works contracts.

1.1.14 The significant audit observations concerning the 4 works contracts reviewed are as follows:

- (1) control exercised over certain aspects of site selection, brief, design, calling of tenders, awarding of contracts, supervision of consultants, construction and contract administration, was inadequate;
- (2) consideration given to the need for continuing maintenance of the facilities was inadequate;
- (3) insufficient attention was given to financial and budgetary controls;
- (4) the school council did not have the technical, professional and administrative skills to adequately manage works contracts for which it was responsible; and
- (5) with the exception of the project controlled by the Melbourne and Metropolitan Board of Works the role of the organisations supervising construction and their relationship with the client organisations were not clearly defined. Consequently, the vital issue as to which party was ultimately accountable for the financial oversight and satisfactory completion of the projects was not clear. In some instances the absence of a clear definition of individual responsibilities contributed to cost escalations.

### **Recommendations**

1.1.15 This second part of the study has reinforced the recommendations made in my first special report for the establishment of a technical advisory body and the development by that body of a code of practice for the management of works programs.



1.1.16 Further recommendations arising from this second part of the review are as follows:

- (1) the role assigned to school councils in the management of works contracts should be reviewed; and
- (2) the respective roles of the Public Works Department and client departments in works contracts should be clearly defined.

### **Conclusion**

1.1.17 Detailed draft audit reports on each of the 4 works contracts were made available to the organisations concerned prior to the release of this report. Relevant comments from these organisations on audit observations are included in this report.

1.1.18 This study has been managed by an audit review group consisting of senior officers from my staff and a seconded professional engineer with extensive experience in works management. I wish to express my thanks to the group for their dedicated and professional approach. I also wish to record my appreciation of the co-operation and assistance received by the group from officials of the relevant government departments and authorities.

1.1.19 I am confident that this report taken together with my first special report to the Parliament on this matter is a constructive document which by highlighting procedural deficiencies which need attention, should lead to an improvement in the administration of works contracts in the public sector, thus resulting in greater value for money.

## 2. WORKS CONTRACTS

### 2.1 FOOTSCRAY TECHNICAL SCHOOL

#### Background to the Project

- 2.1.1 The need to relocate the Footscray Technical School arose following a decision in 1968 to develop the Footscray Institute of Technology on what was then the site of the school. However, it was not until September 1975 that a 6.2 acre site in Farnsworth Avenue, Footscray, formerly worked as a quarry and forming part of the Footscray municipal tip, was purchased by the Education Department at a cost of \$900 000.
- 2.1.2 In 1975, the Education Act 1958 was amended in order to empower school councils to enter into contracts exceeding \$10 000 for building construction provided ministerial approval was obtained and the work is carried out under such supervision as the minister directs. Prior to this amendment construction of school buildings was the responsibility of the Minister for Public Works under the provisions of the Public Lands and Works Act 1964.
- 2.1.3 The Footscray Technical School Council, the proprietor following the amending legislation, was responsible with ministerial approval, for the major contracts associated with the works.
- 2.1.4 Public Works Department involvement in the project was confined initially to an advisory role and the certification of contract payments under the provisions of the Public Lands and Works Act 1964. The Public Works Department later withdrew its services as it was not responsible for contract supervision, and its officers were being placed in the position of certifying to works of which they had no knowledge.
- 2.1.5 Investigation work began in late 1976 and the prior earthworks contract was let in June 1977. Construction of the school was completed in April 1980, and was formally handed over to the school council in April 1981. The total cost of the project, including the site purchase, was in excess of \$9 400 000.

#### **Summary of Audit Observations**

- 2.1.6 Major audit observations elaborated on within this report are summarised hereunder.
- 2.1.7 In audit opinion:
- (1) the school site had serious deficiencies which created major design, construction and maintenance problems concerning the school building;
  - (2) the Footscray Technical School Council did not have the technical, professional and administrative skills required to control the brief, oversee the consultants, and ensure the satisfactory design and construction of the school; and

- (3) despite the lack of skills available to the school council, the Education Department did not exercise adequate management control over site selection, brief, design, tender call, construction, and contract administration.

### **Audit Observations and Comments**

#### Location of School

##### Observation

The long term need for a school to be located in the area was not properly investigated.

- 2.1.8 The long term need for a technical school in the area accommodating 800 students should have been the subject of a proper study, particularly as the potential school population in Footscray had been decreasing for a number of years. A school population study in 1980 projected a potential population of only 384 in 1982. In order to utilise the school to its design capacity it has been necessary to attract students from nearby suburbs, thereby incurring conveyance costs.

#### Purchase of Site

##### Observations

(1) No evidence was available to audit of a detailed study to establish specific requirements prior to purchase of the site, including an assessment of likely problems associated with building on a recently filled quarry.

(2) Consideration given to alternative sites was inadequate.

- 2.1.9 Detailed studies on the feasibility of building on a tip filled quarry site should have been undertaken prior to purchase, in order to evaluate problems associated with structure movement, methane gas monitoring, cathodic protection, subsidence and substantial maintenance costs. There was no evidence on file of such an evaluation having been made.
- 2.1.10 A design report in 1976 estimated that in addition to the \$900 000 purchase price, further capital costs of \$900 000 would be incurred in building on a tip site. Based on this information and the increased maintenance costs associated with the site, audit considers that alternative sites costing up to \$2 million (1976 values) should have been evaluated. Apart from vacant land in the immediate vicinity of the school site, it would appear that little, if any investigation was made by the Education Department of possible alternative sites. The school council was not consulted on the site purchased.

- 2.1.11 The Education Department did not properly assess problems arising from .92 acres of the site being required by the Country Roads Board to extend Farnsworth Avenue. Despite having received payment (for the land), from the Footscray Institute of Technology in 1976 the department failed to advise the Minister of Education and the project consultants, of the effect of the road requirements. As a result, the project consultants initially located the school building over the road alignment. Efforts by the consultants to have the reservation removed were not successful.
- 2.1.12 The area available for student recreation, car parking, etc. comprises 1.5 acres and is divided by the road extension which has since been built.

### Appointment of Consultants

#### Observation

Control exercised over the selection and appointment of consultants and the provision of documentation to the minister was inadequate.

- 2.1.13 Only one firm of consultants was considered for the project and it was appointed by the school council at the direction of the Education Department. The contract of employment did not provide for a fee reduction resulting from government employee involvement, despite a memorandum from the Education Department's Assistant Director-General (Buildings), that this contribution should be taken into account when fixing the fee.
- 2.1.14 The ministerial approval required under the Education Act 1958 for the school council to appoint the consultants at a fee in excess of \$10 000 (estimated fee in excess of \$500 000 - 1976) could not be produced.

### Preparation of Brief

#### Observation

The failure of the school council and the Education Department to provide basic information to the consultant and to prepare and control the brief was a serious defect which has contributed to a certain degree to the school's current problems.

- 2.1.15 There was no documentary evidence to indicate that a comprehensive brief was supplied to the consultants prior to their appointment. The consultants, as part of their project management responsibilities, carried out the consultation required to establish the education philosophies, objectives, etc. and also community expectations. While this activity was detailed and comprehensive, the consultant's reports to the school council were deficient because they were given no firm directions on costs, specific training needs, size of the permanent buildings and the effect of the road separation.

- 2.1.16 In audit opinion the lack of supervision of the brief and the failure to provide the consultant with basic information would have contributed to some of the current problems experienced by the school. These problems included inadequate room sizes, poor classroom design in some instances and inadequate services.

### Regulations and Government Policy

#### Observation

Controls to ensure the facility was constructed in accordance with regulations, government policy and good practice were inadequate.

- 2.1.17 A Premier's directive that all proposals for air conditioning of public buildings must be referred to the Treasury was not complied with until after tenders had been received. This appears to have placed Treasury in an extremely difficult position and eventually air conditioning of the whole school was approved.
- 2.1.18 The consultant, did not seek a building permit approval from the Footscray Council. A directive from the Premier stated that although many government organisations are exempt from planning controls and regulations, government organisations should comply with these requirements.
- 2.1.19 The consultant drew to the attention of the school council and the Education Department major departures from building regulations concerning fire precautions, ceiling heights, mechanical services, facade tiles, mercury vapour lighting, geometric stairs and tiers of construction. However, apart from certain comment on mechanical services, there was no indication of departmental or council assessment or approval of these departures, a number of which contributed significantly to the operating expenses of the school.
- 2.1.20 The Public Works Department advised the consultants that "as the project presented a departure from usual practice, departmental policy decisions would not necessarily be applicable and the architects could proceed without reference to policy, but with consultation if desired".

### Tender Call and Award of Contracts

#### Observations

- (1) The tendering procedures used throughout the majority of the contracts were contrary to legislation.
- (2) There was a lack of departmental and school council control over the calling and opening of tenders.
- (3) Ministerial approval was not always obtained before the award of contracts.

- 2.1.21 Contracts entered into by the school council ranged from the appointment of consultants through to the purchase of steel for piles, preliminary earthworks, pile driving, the major building contract and a number of associated sub-contracts.
- 2.1.22 The Education (School Councils) Act 1975 requires the use of public tenders for all contracts exceeding \$10 000, except in the case of consultants employed with ministerial approval. Despite these provisions, tender calls were generally by selective tendering for which no ministerial direction or approval could be located.
- 2.1.23 All tenders, other than for the major building contract, were opened in the consultants' offices with no school or departmental representatives present. Despite the Footscray Technical School Council being the proprietor, formal approvals in relation to sub-contracts requested by the consultants from the council were not always provided.
- 2.1.24 The signed contract documents were retained by the consultants and neither the school council, nor the Education Department were able to produce complete copies of contract documentation for audit inspection. In such circumstances these organisations were not in a position to easily examine any certificates or other matters referred to them.
- 2.1.25 Unsatisfactory contract procedures existed in relation to the pile driving contract. The consultants advised the contractor on 14 September 1977 of the acceptance on behalf of the Education Department (not the school council) of a tender of \$235 255 for the driving of the steel piles. This acceptance was unconditional and therefore a binding contract existed. There was no record of acceptance on Education Department files and it was not until 7 November 1977 that approval was given by the Assistant Director-General (Buildings).
- 2.1.26 Site allowances and prolongation costs totalling \$52 660 were paid to the principal contractor in accordance with conditions specified in the contract. It was not the practice of the Public Works Department at that time to include such conditions in a contract or to meet such claims.

### Site Supervision

#### Observations

- (1) Ministerial approval was not given for the appointment of site supervisors.
- (2) There were a number of defects which could have been eliminated with more adequate design and supervision.

- 2.1.27 Due to the complexity of the project, site supervisors were appointed by agreement between the Education Department and the consultants. The agreement provided for the consultants to be reimbursed by the department for the costs incurred. As the school council was the proprietor, this agreement, subject to ministerial approval, should have been made with the council. Ministerial approval was not requested.
- 2.1.28 A number of faults have become apparent since the completion of the project which, in audit opinion, should have been identified by the supervisors and corrected during the construction stage. These include:
- (1) a large pop-up sprinkler being located in the footpath;
  - (2) failure to connect hot water to 23 sink units; and
  - (3) subsidence of drainage gutters around main pathway due to inadequate support

### Financial Control

#### Observations

- (1) Financial controls were inadequate.
  - (2) Budgetary control was not exercised over the total project cost or its separate components.
- 2.1.29 Budgetary control for the project was never established and the consultants were not given a firm estimate by the Education Department within which to design and build the school. Eventually the department adopted the estimates prepared by the consultants. Some serious deficiencies in these estimates became apparent as evidenced by a variation to special equipment, originally costed at \$263 000, which was eventually reduced in specification and supplied for \$145 000. Despite such variations and deletions from the contract amounting to \$250 000, the total cost of the building rose to \$8 005 002, an increase of \$309 002 on the original estimate. The increase could mainly be attributed to rise and fall provisions and costs arising from a total of 262 variations to the principal contract.
- 2.1.30 The consultant as part of his normal practice brought cost escalation claims to the attention of the school council and the department. However, the claims were not checked by the school council or the department. Variations were paid in most instances, without documentation being available to substantiate the claim.

- 2.1.31 Payments to the principal contractors were made on the certification of the consultant. With few exceptions detailed information was not provided to or requested by the department and school council to enable verification of claims submitted. The need for a detailed examination of the certificate provided by the consultants was demonstrated by two overpayments totalling \$44 044 which were corrected at a later date.
- 2.1.32 Budgetary control for the whole project was never established. Neither the school council nor the department maintained separate cost ledgers on the project and as a consequence commitments and cash flows could not be readily assessed against estimates.

Completion of Works, Maintenance and Final Acceptance

Observations

- (1) Details provided to the school council concerning warranties and maintenance procedures were inadequate.
- (2) Maintenance agreements were either ad-hoc or non existent.
- 2.1.33 The completion inspection of the building was carried out by the consultants. However, a formal certificate of completion was not provided, nor was the school council provided with a list of omissions and defects following the inspection. During the maintenance period a number of defects which could be considered to be design faults were rectified at a cost to the Education Department. Examples include doors and door handles being subject to breakage and the cracking of pipes in the sprinkler system.
- 2.1.34 The school council was not provided with full information on warranties, maintenance contracts or maintenance procedures including the use of manuals.
- 2.1.35 As a consequence major mechanical services were not maintained. The school principal informed audit that on his appointment to the school in February 1982, he discovered that the following major mechanical services had not been maintained since May 1981:

- (1) Air conditioning and water treatment
- (2) Fire sprinkler system (part)
- (3) Apparatus for cathodic protection of piles

Two controls had frozen in this period. The cathodic protection is essential to protect the steel piles, on which the school is built, from corrosive liquid generated from the tip filling;



(4) Methane gas extraction

The fill material generates methane gas which, in certain conditions, is explosive or poisonous. To prevent build up of methane the undercroft of the school building has ventilating fans and ductwork to extract the gas. Constant monitoring of the levels through various testing points is important. The methane gas levels were not monitored for a period of at least 5 months and a number of fans had ceased operating.

Post Contract

2.1.36 The school continues to experience many problems associated with the site. These include:

- (1) high maintenance costs associated with the air-conditioning, methane gas monitoring and cathodic protection. Maintenance contracts have subsequently been let for these services. The school experiences difficulty in gaining adequate funding from the Education Department for maintenance purposes;
- (2) the tip site is still settling, a process which has caused considerable damage to the brick paving, internal plumbing and the water sprinkler system, part of which is unserviceable;
- (3) following the road construction the outdoor playing area for 784 students (1983) of 1.5 acres was at March 1983 mainly taken up with mounds of earth left over from the site works. This is completely inadequate, and is contributing to the high maintenance costs of the school as the students are forced to congregate indoors; and
- (4) the Footscray municipal tip on the school boundary is expected to remain in operation until 1986, after which date it will probably be converted to a passive recreation area. The school experiences problems with pollution and vermin from the tip operations.

**Response from Departments and School**

2.1.37 Summarised hereunder are comments received by audit in respect of the draft audit report on the above project:

(1) Public Works Department

The Director-General of Public Works stated in his reply - "I agree with all the observations and recommendations made. The report highlights the pitfalls of handling building works through a system (School Council Contracts) not professionally, technically or administratively geared to cope".

(2) School Principal

The current school principal informed audit of the continuing problems at the school associated with maintenance and the site and building deficiencies. The school council informed the current principal that they were "advised and directed in all matters pertaining to the project by the Assistant Director-General of Education (Buildings), and when doubt existed over detail, his advice was sought".

A member of the school council who had continuous involvement with the project defended the council's actions in the past and emphasised the need for urgent decisions based on advice and information available at the time. Acknowledgement was made of problems with site suitability, although it was further emphasised that the council was not consulted on the quarry site purchase.

(3) Education Department

The Director-General, Education Department, informed audit that in the opinion of officers of his department not all of the findings of the overview were appropriate to school building projects and certain audit assumptions may have been incorrect. However, apart from these comments, acknowledgement was made of the major deficiencies referred to and it was stated that the report has been of considerable benefit to the department in reviewing its current practices and guidelines concerning the authority to be devolved to school councils.

Comments relating to specific areas referred to in the report are quoted hereunder:

(i) Site Selection

"At no time did the Department favour this site but having investigated all alternatives that were available this was the only one that was acceptable to the parties involved".

"The hazardous nature of the site was recognised from the outset but the nature of the exercise necessitated a replacement school in much the same location and in close proximity to the Footscray Institute of Technology".

(ii) Appointment of Consultants

"The points made concerning irregularities as far as the selection and appointment of the architects is concerned are acknowledged".

"The Minister did give his formal approval for their appointment and the performance of the firm concerned was of a very high standard".

(iii) Project Management

"Generally speaking, there was a lack of the proper management skills to execute a project of this magnitude and complexity".

"It is agreed that there were many deficiencies in the case of the Footscray project".

"It would be advantageous if the government were to formulate statewide guidelines on its policies and requirements so that all construction authorities can order and manage their affairs within a common framework".

(iv) Financial Control

"Our new procedures will be drafted in a manner that will ensure proper financial records, monitoring and accountability standards are maintained".

## **2.2 POLICE ACADEMY - GLEN WAVERLEY**

### **Indoor Physical Training Complex**

#### Background to the Project

- 2.2.1 The former "Corpus Christi" Roman Catholic seminary located on approximately 40 acres at Glen Waverley, was purchased by the State Government in 1972 for conversion to a Police Training Academy. One of the additional facilities required by the Police was an indoor physical training complex comprising a swimming pool, pistol range, rope climbing area, gymnasium, basketball court, office and other ancilliary features.
- 2.2.2 Design and supervision of the construction of the complex was undertaken by the Public Works Department with private consultants being employed for contract documentation and preparation of bills of quantities. The Police considered that the Public Works Department had full control over the cost management of the project and the police role was to be restricted to ensuring that the facilities provided met their requirements. Funds were provided by Treasury from the Works and Services Account.
- 2.2.3 The building was originally estimated in 1973 to cost \$710 000. Following protracted delays in determining Police requirements, the relevant minister in 1975, approved of a revised plan costing \$3 819 000. Later discussions between the Police and Treasury resulted in a reduction in the size of the complex, and eventually the building contract was let for \$2 419 489. Construction commenced in 1977 and the building was completed in June 1980 at a cost of \$2 837 215.

#### **Summary of Audit Observations**

- 2.2.4 Major audit observations elaborated on within this report are summarised hereunder.
- 2.2.5 In audit opinion:
- (1) the swimming pool facility is in excess of demonstrated current and future police requirements;
  - (2) delays in determining Police requirements led to a substantial escalation in project costs; and
  - (3) the Police and the Public Works Department failed to exercise adequate management control over certain aspects of the brief, design, cost and construction of the complex.

## **Audit Observations and Comments**

### Concept

#### Observations

- (1) Management controls within the Treasury, the Police and the Public Works Department to evaluate and co-ordinate the provision of facilities to be provided in the complex were inadequate.
  - (2) Protracted discussions on Police requirements contributed to substantial cost escalations.
- 2.2.6 Prior to the commencement of any detailed arrangements concerning the complex it was necessary for agreement to be reached with Treasury on future police numbers and related requirements. Preparation of the basic data began in the early 1970's and an initial 1973 projection by the Police of their requirements provided for 925 members to be in training at any one time by 1975, and for this number to be increased to 1 400 including 1 000 probationary constables as soon as possible thereafter. No information on the basis of determination of these numbers was provided to audit. Based on the above projections Treasury estimated that a training rate of 1 000 probationary constables per annum combined with a wastage factor of 6 per cent. would result in a minimum police strength of approximately 15 500 being attained by 1981. Treasury considered this level to be excessive, a view which was later supported by a Police study in 1981 which predicted a strength of 10 670 by 1985, a number considered reasonable in view of subsequent projections.
- 2.2.7 The need for agreement with Treasury on actual numbers and corresponding requirements was not identified by the Police at an appropriate time and led to considerable detailed work and expense being incurred by the Police and the Public Works Department on designs based on various submissions which later proved to be unsuitable. These protracted delays and the inflationary conditions prevailing contributed to an estimate in 1973 of \$710 000 for the physical training complex, escalating to \$3 819 000 when approved by the relevant minister in 1975. The eventual cost of the complex was \$2 837 215, following agreement between Treasury and the Police to reduce the original proposals.

### Preparation of Brief

#### Observation

The Police and the Public Works Department did not have adequate management procedures to control the brief and the consequential design of the facility.

- 2.2.8 Documentation on the detailed aims, objectives and requirements of the project was not evident on official departmental files held by the Treasury and the Public Works Department. Audit acknowledges that certain documentation may have been retained on the personal files of the project architect who has since left the employment of the department. The Police also advised that many of the detailed requirements were discussed at various meetings with the Treasury and Public Works Department, minutes of which were not kept. A detailed document on police requirements was prepared, but reliance was placed on the Public Works Department to detail the design complexities involved. The lack of detailed performance requirements on the brief made it difficult for audit to determine if decisions were properly made and if adequate control and design of the project was established. In audit opinion effective control of the brief was not established, e.g. discussions on the number of lanes in the swimming pool.
- 2.2.9 The Police, in 1972 said they required a heated 50 metre swimming pool with 10 lanes. To reduce expenditure the Police voluntarily agreed, in May 1974, to reduce the number of lanes in the pool to 6. Despite attempts by Treasury to further reduce the size of the pool to 25 metres the then Premier agreed, in February 1976, to provide a 50 metre pool at the academy. The pool eventually designed and constructed was, in fact a 50 metre, 8 lane facility. Despite extensive research, evidence of approval from the then Premier for the increase from 6 to 8 lanes, could not be located.
- 2.2.10 Further lack of control was evidenced by the number of minor design faults within the complex including the provision of fixed, unvented glass sided offices facing east. The building is not air-conditioned and humid conditions within these offices at times become unacceptable. In audit opinion effective control over the design of the facility would have eliminated or reduced the effect of such defects.

#### Pre-Tender Call Review

##### Observation

The Public Works Department failed to ensure that the design conformed to the brief and that the complex was constructed in accordance with regulations and good practice.

- 2.2.11 Prior to calling of tenders by the Public Works Department the detailed final plans were not presented to the Police for checking and approval. In audit opinion the Public Works Department check was confined to the availability of funds from the Treasury. The lack of a detailed review of documentation became apparent with the number of drawings, signed by public works staff, that contained errors and omissions. This resulted in substantial alterations becoming necessary during the construction stage in order to conform with regulations and departmental requirements.

## Tender Call and Award of Contracts

### Observations

- (1) Reports on prospective tenderers for sub-contracts were not substantiated.
- (2) Insufficient action was taken to investigate alternative sources for the supply of equipment.

- 2.2.12 Reports prepared on prospective tenderers for sub-contracts were considered by audit to be inadequate in that the past history of the tenderer was not checked by the Public Works Department, nor was investigation made of claims that certain products were not available on the local market.
- 2.2.13 Nominated sub-contracts e.g. electrical works (\$155 829) were recommended by a mid level professional officer and endorsed by the Public Works Department regional superintendent. Approvals were informal and took the form of a letter directing the principal contractor to enter into a contract with the nominated sub-contractor. Generally, reports were not available to support recommendations for the engagement of sub-contractors or to indicate that alternative sources of supply were sought or investigated.
- 2.2.14 For example, the swimming pool filtration plant contract was originally estimated at \$60 000. Tenders were received from only one contractor for alternative proposals costing \$183 356 and \$166 311 respectively. Audit enquiries indicated that certain other contractors, who specialised in swimming pool equipment and were likely to have the equipment required, were not invited to tender. One such firm advised audit that plant equivalent to imported equipment supplied could have been provided from local sources for \$60 000. The Public Works Department reviewed the large variations between the estimate and tendered amounts on the filtration plant and established that the original estimate was out-dated, and that the tenderer had included a large price mark-up, particularly on imported items, as it was considered the department's rise and fall provisions were inadequate. The estimate was subsequently revised to \$150 000 and alternative forms of tender were called. Eventually a contract to the value of \$175 046 was awarded to the original tenderer.
- 2.2.15 Despite specific requests, documents associated with this tender call, including the actual contract documents, insurance and guarantees, were not produced for audit inspection.
- 2.2.16 Several other instances were noted where information on alternative products and prices was not sought.

## Construction

### Observation

- (1) Management control over the cost of the project was not maintained.
- (2) The variations on the project were excessive with a large number being caused by inadequate design.
- (3) The Public Works Department failed to maintain adequate test records and no management reports on testing were generated.
- (4) Attention given to minor works items and contracts was inadequate.

2.2.17 Following the reduction in the size of the complex, no action was taken to amend to \$2.4 million, the ministerial approval of \$3.9 million obtained in March 1975. Consequently no queries were raised by the Police when large additional costs were incurred as, in effect, approval existed to spend up to \$1.5 million in excess of the actual contract sum. The Public Works Department also paid little attention to the extent of additional cost when extra approvals were sought. No deliberate abuse of the system was identified by audit but many variations of a technical and professional nature were not referred to the Police as the costs involved were within the ministerial approval.

2.2.18 The lack of management control over the cost of the project contributed to an excessive number of variations being ordered during construction. The additional costs of \$579 765 attributed to variations and prime cost items, represented 24 per cent. of the contract sum of \$2 419 489. In audit opinion, approximately 70 per cent. of the variations ordered were due to design faults including failure to provide for the requirements of service authorities. As an example, additional costs were incurred in making payment to the Gas and Fuel Corporation so that the gas main could be re-located to avoid incorrectly located cables.

2.2.19 Despite the large number of design omissions and faults, few were referred back to the designer or quantity surveyor prior to amendment, in order to ascertain suitability and revision of cost estimates.

2.2.20 There were a number of variations, particularly in the structural area, where, in audit opinion costs incurred should have been recouped from the consultant. No claims were made against the consultant for design omissions despite the considerable costs often incurred in correction.



- 2.2.21 There were no regular reports on testing results available to audit to indicate that adequate testing and management review had taken place. For example, water pipes laid in a trench under the pool site had to be abandoned as they could not withstand the relatively low head pressure applied by the pool. This could have been avoided had a pressure test been applied to the pipes prior to the concrete floor of the pool being poured.
- 2.2.22 Despite this failure, the contractor was paid for the defective work, less a deduction for costs incurred in opening the concrete floor and sealing the pipes.
- 2.2.23 In addition to the main contract there were separate contracts or purchase orders for the supply and installation of various items of equipment. Attention given to these minor works, including satisfactory completion thereof, was inadequate.
- 2.2.24 Examples are shown hereunder:

- (1) lane marking ropes and water polo goals were supplied and paid for under a contract for pool equipment. Despite these items being held in store by the Public Works Department pending installation, another set of lane ropes were requisitioned by the Police for which ministerial approval was obtained; and
- (2) the requisition for the supply of rubber matting for the weight lifting area included provision for cutting and fitting around columns where required. When the complex was inspected by audit, it was established that mats were loosely laid and were not fitted around the columns, although payment had been made in full.

### Completion of Works

#### Observations

- (1) The continued delay in the finalisation of the main contract after its practical completion date was excessive.
  - (2) Provisions for continuing maintenance were inadequate.
- 2.2.25 Practical completion of the project was effected on 20 June 1980. However, at December 1981, the main contract was still being finalised in respect of repair of defects, completion of variation orders etc. In audit opinion, the delay in finalisation of the project, and the payment of \$62 000 for prolongation costs, could be attributed to inordinate delays and indecision within the Public Works Department in processing variation orders and contractual claims.
- 2.2.26 Documentation on file indicated that the Police were not formally advised of the completion of various contracts nor were they provided with any formal written advice on the maintenance and operation of the often complex equipment installed in the training complex.

## Post Contract

2.2.27 In audit opinion, the swimming facilities provided are in excess of current and foreseeable future police requirements. Audit calculations based on a 1982 trainee timetable indicated the facility has the capacity for training in excess of 2 000 recruits per annum. The 1982 recruit intake was 584.

### **Response by Departments**

2.2.28 Summarised briefly hereunder are comments received by audit in respect of the project:

(1) Public Works Department

The Director-General of Public Works advised that audit observations on the project appeared reasonable and were a reflection of the strictures under which the department had to work. Since the Glen Waverley project was commissioned many changes have been made in the department, including the reorganisation of the buildings division, which were aimed at correcting issues raised in the audit report.

(2) Police

The response from the Police to the draft audit report was in the form of a copy of a memorandum forwarded from the technical section to the superintendent of the services department. The response defended Police actions concerning the project and it was stated that many audit observations were incorrect.

Emphasis was placed on undocumented discussions on police requirements and the almost total reliance on the Public Works Department on matters pertaining to the brief and technical aspects. Since completion of the project planning and administrative procedures involving the Police and the Public Works Department have been updated and "budgetary and cost effectiveness of projects now has the highest priority in Police Department administration".

Comments relating to the swimming pool were:

"No explanation is available as to how the pool became widened by the inclusion of two additional lanes".

"It can only be concluded that he (the then Premier) approved of the pool size as presented on the design of the complex and allowed the project to proceed to tender with the amended pool size as such".

"The pool will no doubt meet the needs of the Department well into the next century and as such will prove an economical success".

## 2.3 STATE SWIMMING CENTRE

### Background to the Project

- 2.3.1 On 12 December 1977, State Cabinet approved the reconstruction of the Frank Beaurepaire Swimming Pool in Batman Avenue, Melbourne, to enable it to become the State Swimming Centre. In conjunction with this development, the then existing Olympic Pool at Olympic Park was to be converted into a State Indoor Sports Centre.
- 2.3.2 The development authority for the project was the Public Works Department, with a large firm of consulting engineers, experienced in pool design, being employed as project consultants. The consultants were responsible for preliminary design, documentation, supervision of construction and commissioning of the project. Guidance on the design and construction was given by a steering committee comprised of representatives from the Melbourne City Council, Public Works Department, Department of Youth, Sport and Recreation and the Victorian Amateur Swimming Association.
- 2.3.3 The cost estimate at the time for the Beaurepaire pool conversion was \$1.87 million. This was subsequently amended to \$3.72 million in April 1978, on the premise that a revised design of the pool and ancillary facilities would meet international standards. Financial arrangements provided for contractual payments to be made by the Public Works Department from an "agency trust account", which was periodically reimbursed with trust fund moneys provided by the Department of Youth, Sport and Recreation. A grant of \$120 000 towards the cost of solar heating was received from the Victorian Solar Energy Research Committee.
- 2.3.4 Construction commenced in 1979 and practical completion of the works was certified to on 2 September 1980. Due to certain defects in the centre a certificate of final completion had not been issued at April 1983, and costs incurred to that date were \$5 211 192.
- 2.3.5 To control the centre's operations, a committee of management was constituted on 14 May 1980 under the provisions of the Crown Land (Reserves) Act 1978. The committee currently consists of 2 representatives from the Victorian Amateur Swimming Association, 2 representatives from the Department of Youth, Sport and Recreation, and a chairman who was the former Director-General of the department and chairman of the project steering committee.

### **Summary of Audit Observations**

- 2.3.6 Major audit observations elaborated on within this report are summarised hereunder.

2.3.7 In audit opinion:

- (1) the completed project did not comply with the objectives stated in the submission to the Premier in 1978, for the construction of a modern swimming centre capable of meeting all international competition standards;
- (2) the Public Works Department and the project steering committee did not exercise adequate management control over certain aspects of the brief, design, contract supervision, tender call, construction and provision of continuing maintenance;
- (3) attention given to financial control was inadequate; and
- (4) the centre has inherent deficiencies in design which contribute to the high cost of maintenance.

**Audit Observations and Comments**

Concept

Observations

- (1) The completed project is not in accordance with the original submission made to, and approved by the Premier in 1978, in that it does not conform to olympic and international competition standards.
- (2) The submission to the Premier in 1978 that the centre "offered the possibility of operating on a break-even basis" was in contrast to advice then provided by the Department of Youth, Sport and Recreation.

2.3.8 The reconstruction of the Beaurepaire pool to become the State Swimming Centre was part of a program initiated in 1976 by the Department of Youth, Sport and Recreation to develop international standard sporting facilities within Victoria. The requirement for the centre to serve as a competition venue arose from the Cabinet decision in 1977 to convert the then Olympic Pool into an indoor sports centre.

2.3.9 Following the various feasibility studies produced at the time, Cabinet approved in December 1977, a cost estimate of \$1 870 000, on the basis of a pool for practice meets and minor competitions. Urgency was lent to the project studies when Melbourne's bid for the 1988 Olympic Games became apparent in 1978, due to an understanding that the International Olympic Committee might be influenced in their decision if suitable facilities were provided.

2.3.10 The then Minister for Youth, Sport and Recreation on 10 April 1978, requested approval from the then Premier for a revised estimate of \$3.72 million. The main reason given for the revised estimate was:

"Whereas the original proposal was for a limited re-development of the old Beaufort Pool, the revised scheme would provide full Olympic standard facilities including a seating capacity extended from 1 500 to over 2 000. Provision would be incorporated for all Olympic Aquatic requirements including waterpolo, diving and synchronized swimming, as well as swimming competition".

- 2.3.11 The submission also referred to "the possibility of operating the centre on a break-even basis".
- 2.3.12 The revised estimate was subsequently approved. However, the completed facility did not in fact conform to the Olympic and International competition standards referred to in the minister's letter and as specified by the international swim and diving federation (F.I.N.A.). The "public swimming pools planning manual" prepared by the Department of Youth, Sport and Recreation states that under F.I.N.A. specifications, Olympic standards require the provision of accommodation for 12 000 spectators and a minimum of 6 pools (not necessarily under the same roof) with the main pool dimensions being 50 metres x 25 metres.
- 2.3.13 According to the manual, facilities capable of accommodating international events other than Olympic and Commonwealth Games and World Championships, should contain at least:
- (1) a main pool 50.01 metres x 21.0 metres;
  - (2) a diving pool, 30.0 metres x 20.0 metres and capable of accommodating diving, waterpolo and synchronised swimming competitions at international standard;
  - (3) a warm up pool 25.0 metres x 25.0 metres; and
  - (4) seating accommodation for 5 000 spectators.
- 2.3.14 These requirements were not met as the centre comprises a main pool 50.01 metres x 20.02 metres, a diving pool 22 metres x 18 metres which is incapable of accommodating waterpolo, and has seating capacity for only 1 500 spectators.
- 2.3.15 To date a number of international competitors have participated in events held at the centre, but in the main the pool can only be used for training, and local and national competitions. Use of the pool by the public is restricted to certain hours of operation.
- 2.3.16 The claim by the minister that the centre offered the possibility of operating on a "break-even" basis, contrasts with a study undertaken in 1977 by the Youth, Sport and Recreation Department, which indicated that comparable pools were incurring losses in excess of \$100 000 per annum and "the operation of the new pool will incur a deficit of \$100 000 - \$110 000 per annum".

- 2.3.17 In 1981-82 the centre incurred an operating loss of \$151 901 and anticipates a loss of approximately \$144 000 in 1982-83. In audit opinion "break-even" was never feasible.

### Preparation of Brief

#### Observation

The steering committee and the Public Works Department failed to provide adequate information to the consultant and to control the brief and consequential design of the centre.

- 2.3.18 Decisions on design and other matters were developed progressively by the steering committee and were transferred to the consultants via the minutes of committee meetings. In audit opinion, the steering committee should have been expected to develop a written document or brief which specified the requirements of the completed facility, the various constraints, general standards, and the detailed procedural matters required of the consultant.
- 2.3.19 No such document was produced although certain requirements of the Victorian Amateur Swimming Association were produced in a separate submission.
- 2.3.20 The consultants were initially advised by the Public Works Department that the design was not subject to approval from the relevant planning and regulatory authorities. This advice was at variance with a government directive that such requirements should be complied with. It was not until a dispute with the Melbourne City Council occurred over the height of the building, that a decision was made to comply with planning and regulatory requirements. This decision resulted in protracted delays in obtaining permits and a significant increase in building costs due to inflationary pressures and new design requirements.
- 2.3.21 In general, the failure to provide the consultant with the detailed requirements of what was intended to be an "international facility", resulted in considerable administrative problems and contributed to the large number of project variations later required.

### Pre-Tender Review, Tender Call and Award of Contracts

#### Observations

- (1) Controls within the Public Works Department and the steering committee to ensure the design conformed to the brief and the centre was constructed in accordance with regulations and good practice were inadequate.
- (2) Certain aspects of the calling of tenders were unsatisfactory.

2.3.22 The project to some degree was constructed on the "fast track" procedure in which work is commenced before all design is complete. With this method it is essential that estimates of time and cost be well documented with adequate allowance for contingency items. Many of the problems in the project could be attributed to inadequate cost estimates, incomplete documentation, and failure to properly research certain aspects prior to tender call.

2.3.23 Examples included:

- (1) many of the 304 variations to the main contract could be attributed to deficiencies in drawings, specifications, and documentation prior to tender call. Instances of failing to comply with certain regulatory requirements or good practice concerning ventilation, drainage, and provision of landings on steps should have been apparent had a proper check been made of drawings prior to tender call;
- (2) there was no review to confirm that the design conformed with the approval given by Cabinet for an international standard facility;
- (3) the project was announced prior to negotiation with the Melbourne City Council over the site upon which a long term lease was held. The council was then placed in a strong position to negotiate compensation of \$150 000 for the lease surrender; and
- (4) a comprehensive study was not made on the availability of parking, which is currently very restricted. An area designated for parking in the initial development stage was later declared unsuitable by the Melbourne City Council.

2.3.24 Certain aspects of the calling of tenders were unsatisfactory, e.g.:

- (1) public tenders were called for the filtration plant and the lowest tender was accepted. However, the plant supplied by the successful tenderer was of an alternative type to the tender specification, and is considered by pool management to be unsatisfactory in performance.

Audit enquiries established that other tenderers were unaware that alternative equipment which did not conform to the tender specification could be supplied and a complaint by an alternative tenderer has been received by audit on this matter.

- (2) two tenders received for the electronic timing equipment were well in excess of the estimate of \$60 000. In an attempt to reduce costs, the specifications were amended and a revised quote was accepted for \$65 742. Public Works Department documentation contained no indication of enquiries being made as to the standard of equipment supplied, or past performance of the successful tenderer.

The equipment failed to function satisfactorily and eventually had to be replaced with equipment from another supplier at a cost exceeding \$82 000. The Department of Youth, Sport and Recreation consider that any recovery of the original cost is unlikely.

## Construction

### (1) Site Supervision

#### Observation

Site supervision was inadequate in that certain defects should have been eliminated or brought to attention during construction.

2.3.25 Following the consultants' concern as to the suitability of supervisory staff initially employed on the project by the Public Works Department, arrangements were made for the consultant to provide supervision. Audit was advised by the Public Works Department that this was the first occasion where a consultant had been given responsibility for supervising a Public Works Department contract.

2.3.26 An inherent problem in this arrangement was that the consultants' supervisory staff were unfamiliar with departmental administrative procedures of which one requirement was for contractual claims to be certified by departmental staff. Departmental staff were thus placed in the position of certifying to the performance of works of which they had little knowledge, and which were later found, in some instances, to be unsatisfactory. The resultant delays in processing payments were partially responsible for penalty interest being incurred through non-compliance with contract conditions.

2.3.27 The site supervision was not of a sufficient standard as illustrated by the problems which evolved at a later stage. Typical of these problems were:

- (1) the substantial leakage from the diving pool, which the consultant acknowledged was partially due to poor workmanship;
- (2) the walls in the first aid room were not constructed to design, and prior to urgent repairs being made, were in danger of collapse; and
- (3) horizontal cracking in the southern stand walls which was reported upon by the consultants and attributed to failure to construct piers in accordance with drawings and to anchor pier reinforcement to the stand.

### (2) Variations

#### Observations

- (1) The variations to the project were excessive with a large number being attributed to design omissions and faults.
- (2) The review of variations to the project was inadequate.



2.3.28 Over 600 variations were claimed on various aspects of the project including 304 on the main contract alone. In audit opinion the number and extent of the variations was extraordinary and could be attributed to the following factors:

- (1) inadequate tender-call documentation;
- (2) errors and omissions on drawings;
- (3) design omissions and faults;
- (4) steering committee requests; and
- (5) undermeasures on bills of quantities.

2.3.29 In audit opinion adequate steps were not taken by the Public Works Department to quantify or seek explanation for many of the variations despite the often considerable expense involved. In numerous instances variations were approved with minimal or no supporting evidence with apparent complete reliance being placed on the opinion of the professional consultants.

2.3.30 No evidence was available to audit to indicate consideration was given to recovering compensation from the consultant or responsible parties for design and construction faults.

2.3.31 An exception occurred where a number of variations resulted from an undermeasure of \$46 350 on the bills of quantities prepared by the consulting quantity surveyor. The consultant accepted responsibility and an offer of \$7 000 in compensation was accepted.

2.3.32 Examples of design omissions were:

- (1) failure to specify water proof adhesive for floor tiles laid in the environment of a swimming pool, which resulted in tiles lifting shortly after being laid. Partial replacement of the tiles using water proof glue was effected at a cost of \$951. However, the maintenance period has since expired and ultimately whole sections will need to be replaced at the expense of the committee of management; and
- (2) the P.V.C. piping specified for the pool heating system buckled under the temperatures generated and various sections had to be replaced at additional cost with copper piping. It is anticipated all the P.V.C. piping will ultimately require replacement at the expense of the committee of management.

2.3.33 Final fitting out of certain areas including the gymnasium and storage facilities was completed outside the contract at the expense of either the Public Works Department, the committee of management or the Department of Youth, Sport and Recreation.

## Financial Control

### Observations

- (1) The total project cost rose excessively during the design and construction period.
- (2) Effective financial and budgetary control of the project was not achieved.

2.3.34 The initial cost of the project, as approved by Cabinet in April 1978 was \$3 725 000. At April 1983 \$5 211 192 had been expended.

2.3.35 Apart from the rise and fall provisions in the contract which amounted to approximately \$71 000 other factors contributing to the significant increase in costs were:

- (1) escalation in costs due to delays in commencing construction. The works program originally provided for design to commence in December 1977, with construction starting in March 1978 and completion by June 1979. However, protracted delays in the form of design, and the requirement to conform with planning and building regulations led to tenders being called for the main building in January 1979, 10 months later than anticipated;
- (2) an excessive number of variation orders. Although the consultant claimed many of these components as being outside the original estimates, in audit opinion few would have been totally unforeseen if the project had originally been approached as an international standard facility. Costs arising from planning and regulatory requirements, e.g. the height of the building, should not have been necessary had adequate consultation taken place;
- (3) prolongation costs resulting from design changes and penalty interest on late contractual payments amounted to \$212 000; and
- (4) the consultant reported that where cost options were available for additional contract requirements, the steering committee invariably decided on the more costly option.

2.3.36 Effective financial and budgetary control of the project was not achieved in that each department recorded the expenditure incurred by it, but neither the client department (Department of Youth, Sport and Recreation) nor the Public Works Department had a complete record readily available of all expenditure identified with the project.

2.3.37 As a result, it was not possible for the client department to determine when commitments and expenditure exceeded approved limits.

## Completion of Works, Maintenance and Final Acceptance

### Observations

- (1) The centre has serious design and structural defects and considerable delay has occurred in effecting repairs, determining responsibility, and possible recovery of compensation.
  - (2) Maintenance procedures are generally undocumented and in many instances complete information on warranties and guarantees has not been provided to the committee of management.
- 2.3.38 A certificate of practical completion for the building, subject to the repair of numerous defects, was issued on 4 December 1980. A certificate of final completion had not been issued at April 1983 due to certain defects still remaining. A number of these had been reported upon by the steering committee as early as December 1981.
- 2.3.39 The vast majority of defects stemmed from design considerations or from structural movement, although examples of poor workmanship did exist. Responsibility in many cases is still to be determined, but it was apparent to audit that certain problems demonstrated the lack of expertise in pool design and management within the project steering committee.
- 2.3.40 It is of concern that only limited action was taken to determine responsibility and effect repairs prior to the audit inspection in May 1982, and it was not until August 1982 that a comprehensive report on the adequacy of design and construction was requested by the Public Works Department.
- 2.3.41 Typical problems identified during the audit inspection of the centre were:
- (1) substantial cracking in the walls of the southern stand, south wall of gallery, and south wall of kitchen;
  - (2) differentials in pool levels, indicating settlement of site;
  - (3) a leakage from the diving pool calculated by pool management to be in excess of 40 000 litres per day; and
  - (4) "lifting" of wall, floor and pool tiling.
- 2.3.42 Pool management advised audit they were not provided with detailed maintenance instructions or service manuals. In addition only limited details of warranties and guarantees were provided. This situation could result in inadequate maintenance of the pool and associated equipment, and failure to claim on defects recoverable under warranties or guarantees.

2.3.43 The high maintenance expenditure incurred by the centre can partly be attributed to design faults, examples of which are:

- (1) pool management advised audit in April 1983 that the solar heating system recommended by the consultants and designed by the Victorian Solar Energy Commission did not incorporate adequate provision for cooling when the pool temperature exceeded an acceptable limit of 28°C. In order to reduce the temperature the pool must be partially emptied and refilled, thus incurring excess water consumption and usage of pool chemicals; and
- (2) inadequate drainage of the concourse results in water used for washing down the concourse returning to the pool filtration system via the scum gutters. Consequently the pool filtration plant incurs abnormally high usage and resultant maintenance costs.

#### Post Contract

2.3.44 Audit was advised by the Public Works Department in May 1983 that action was being taken to effect repairs and to initiate claims against contractors and suppliers where warranted. However, in audit opinion, many problems are inherent in the design and as a result the centre will continue to incur high maintenance expenditure.

### **Response from Departments and Committee of Management**

2.3.45 Summarised hereunder are comments received by audit in respect of the detailed draft report on the project:

#### (1) Committee of Management

The chairman of the committee of management considered that inadequate recognition had been given by audit to the extensive conferences and detailed planning meetings held at state and national level between all interested parties. Comment was made that financial constraints severely restricted considerations on sites and the project fell far short of the ideal in scope and development, a fact which was accepted by the sports organisations and government. Despite this comment, the committee of management considers the complex to be "fully accepted by F.I.N.A. as an international standard Centre".

Apart from disagreeing with audit conclusions on a number of minor deficiencies, specific comment on the problems associated with the centre was not provided. However it was emphasised that the committee had consistently and frequently drawn the attention of the departments involved to the construction deficiencies. The committee further advised that the design and subsequent modifications were monitored and approved by the Victorian Amateur Swimming Association.

(2) Department of Youth, Sport and Recreation

The general context of the reply received was that the department was initially unsure of the basis of its involvement with the Public Works Department in the project, and as that organisation could be considered to have the required expertise in design and construction matters, additional input would be minimal. Departmental recommendations to the Public Works Department on various aspects were largely ignored and financial information was not provided.

The liaison on various matters that took place with the Victorian Amateur Swimming Association, a body which was considered representative of Victorian aquatic sports was emphasised. The department acknowledged that, from project conception, the swimming centre would not meet world championship competition standards but considered it was capable of meeting international competition standards.

Since the project, an officer with architectural training has been employed. It is considered by the department that this has contributed significantly to its understanding of its capital works program and the performance required from the Public Works Department.

(3) Public Works Department

The Director-General's comments on specific matters raised in the draft audit report were:

(i) Concept

"as decided by the Steering Committee which controlled all design functions, the centre was to include those facilities which individually complied with Olympic standards and only minor variances in the design were adopted where this design criteria could not be met"

"it provides an excellent training facility for Victoria's elite swimmers as well as a venue for selected important swimming events"

(ii) Site Supervision

"the Principal Consultants were appointed as the Superintendent to design, document, and supervise the project"

"duplication of services would have caused a considerable waste of taxpayers money as P.W.D. in this instance was a servicing and not a checking organisation"

(iii) Variations

"for a building of this size and complexity, the number of variations issued would not be unusual"

(iv) Completion of Works, Maintenance and Final Acceptance

"your draft report was prepared for some time before responsibility for rectification of defects could be ascertained"

"as a result of testing, research and investigation by the Principal Consultant and Public Works Department, the building contractor has rectified, or is in the process of rectifying, legitimate defects"

## **2.4 MELBOURNE AND METROPOLITAN BOARD OF WORKS**

### **Sewerage Reticulation Area No. 4501**

#### **Construction of Sewerage Reticulation**

##### Background to the Project

- 2.4.1 As part of the "sewerage backlog program" approved by the State government in 1974, approval was granted in April 1978 by the M.M.B.W. Sewerage Committee, which comprised certain board members, for the construction of sewerage reticulation services to 232 houses and a school located in the vicinity of Darebin Road and Buckley Avenue in the Shire of Whittlesea.
- 2.4.2 The lowest tender was accepted in December 1980, for a contract amount of \$454 660 together with an estimate of \$53 889 being provision for escalation (rise and fall) and provision money (contingencies). Based on these figures, the M.M.B.W., as constructing authority, estimated the total construction cost (including M.M.B.W. costs) would be \$680 522. Audit was unable to establish the final cost of the project due to delays in the settling of a damages claim.
- 2.4.3 The contract was of a "repetitive" type nature in that the design and construction was similar to most other sewerage reticulation works supervised by the board. Audit was advised that approximately 40 such contracts are undertaken each year.

##### **Summary of Audit Observations**

- 2.4.4 The major audit observation is summarised hereunder.
- 2.4.5 In audit opinion, certain of the control procedures adopted by the M.M.B.W. in relation to this project were unsatisfactory. These included certain aspects of:
- (1) the design of the sewerage reticulation area; and
  - (2) the contractual arrangements.

##### **Audit Observations and Comments**

###### Concept

###### Observation

There was no evidence of a sewerage committee review of the sewerage area boundaries having regard to the current criteria used in determining such boundaries or of the economies and finance associated with this project.

- 2.4.6 Although the criteria for selection of sewerage reticulation areas was set in November 1974, there was no standard itemised checklist to verify that these criteria continue to be satisfied nor was there evidence that authorised or appropriate personnel had reviewed the available data. A computer printout indicating the extent of development of a chosen sewerage reticulation area is the only supporting documentation.
- 2.4.7 In audit opinion, as both the sewerage area boundaries and the criteria used by the board to define those boundaries had been established some years previously, a review of the sewerage area boundaries in relation to this project was warranted before a decision to proceed with the project was made.

#### Documentation of the Brief

##### Observation

A specific design brief was not provided to the designers of the project. This was due to the practice of the M.M.B.W. in preparing specification briefs for repetitive contracts only in special circumstances.

- 2.4.8 The M.M.B.W. prepares standard specifications as an "area cover" comprising a plan delineating the boundaries of the area indicating a preliminary sewer layout and providing supporting detail. It is acknowledged that standards developed from experience by the M.M.B.W. may be considered as a form of criteria. However, for these repetitive type contracts there is no review of the appropriateness of the standards to the particular geographic/geological circumstances, nor a comparison of alternative methods of providing sewerage reticulation prior to completion of the design.

#### Pre-Tender Call Review and Tender Call

##### Observations

- (1) The board's detailed estimate of cost based on the amended quantities was prepared on the day tenders closed.
- (2) The duration and timing of the contract was specified by the successful tenderer rather than the board.

- 2.4.9 In audit opinion sound financial management requires preparation of cost estimates prior to the tender call and before taking a firm decision to proceed.
- 2.4.10 All tenders were submitted to the board together with financial and statistical analyses of the 2 lowest tenders. However, there was not submitted to the board a detailed technical, financial or competence analysis of the tenderers.



- 2.4.11 A letter of acceptance was sent to the contractor on 18 December 1980 confirming the date of commencement of works to be 2 February 1981 and completion to be effected before 11 January 1982.
- 2.4.12 The contractor signed the contract on 19 June 1981. The M.M.B.W's financial record of the contract was amended to show this date as being 19 January 1981. Audit was unable to establish reasons for the lateness in signing the contract or the amendment to the board's financial records.
- 2.4.13 Construction work actually commenced on 24 June 1981.

#### Construction of the Works

##### Observations

- (1) The delay in commencing work resulted in the M.M.B.W. incurring additional costs.
  - (2) The M.M.B.W. certified to completion of the sewerage works as at a date during construction.
- 2.4.14 The delay of over 4 months in commencement of construction allowed the invoking of cost escalation clauses in the contract. This increased the contract cost of construction of the sewerage works by 4.3 per cent. (approximately \$19 000).
- 2.4.15 The contractor was scheduled to commence works within 14 days of the specified commencement date (2 February 1981). On 6 April 1981 the M.M.B.W. sought explanation of the contractor for delayed start and was informed that completion of a previous contract was delayed due to inaccurate bores and delays in pipe supplies.
- 2.4.16 A completion certificate issued on 16 February 1982 stated the project had been completed on 11 January 1982, the date scheduled in the contract. The contractor claimed in writing that the works were completed on 11 February 1982. Available documentation supported the February completion date.
- 2.4.17 By issuing the incorrect completion certificate the required post completion maintenance period became one month shorter than provided for in the contract. No evidence was found that maintenance was required in the month immediately following expiry of the maintenance period however, had a dispute arisen, the contractor may have been under no contractual liability to remedy any fault that may have arisen.
- 2.4.18 In audit opinion this failure to follow the board's formal procedures can be described at best as expedient. Had the correct procedures been followed, the contractor should have been required to seek an extension of the contract.

2.4.19 During the performance of this contract damage was caused to various properties. Due to the reluctance of the contractor to effect repairs, this damage was eventually rectified by the M.M.B.W. at an advised cost of \$3 573. Failure by the contractor to repair damage resulted in significant delays, inconvenience to ratepayers and increased administrative costs to the board.

#### **Response by the Board**

2.4.20 The board's response to the matters raised by audit in the draft report with respect to the above project reads in part:

"....repetitive contracts are administered differently from individually unique and large construction contracts and the procedures have been developed through experience to deal with this particular industry in the most effective way. This type of contract work is carried out by an industry which is dependent principally on the Board for its existence and thus requires different management practices from other industries. The procedures used are therefore designed to enable the Board to obtain economic construction of its sewers by this specialist industry of relatively small firms ....."

"....If the contractor had started the works earlier due to his own initiative or pressure from the Board, it may have resulted in a more protracted construction period due to the deployment of a smaller workforce than he actually used."

"....The above contract is just one of many similar contracts which the Board has managed in the course of providing sewerage facilities to the large backlog of unsewered areas of the Metropolis. The continuous and repetitive nature of this type of work lends itself to the effective use of standard drawings, documents and procedures ....."