MINISTERIAL INQUIRY

Into INCIS

REPORT

Dated 13th day of October 2000

Ministerial Inquiry
into INCIS

Box 2884
Wellington

19 October 2000

The Hon Phil Goff
Minister of Justice
Parliament Buildings
WELLINGTON

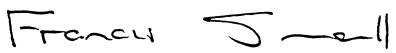
RE: MINISTERIAL INQUIRY INTO INCIS

I am pleased to advise that in accordance with the terms of reference I have inquired into and have prepared a report on the extent to which changes should be made in the management, development and implementation of major information technology projects by public agencies, based on lessons that can be learnt from the development, management and administration of the INCIS project by the police and the Departments (until the supplier indicated in May 1999 that it did not intend to complete the contract), and taking account of relevant work already undertaken or underway in the Police and Departments.

I now have pleasure in delivering to you the signed original of the report, which is dated the 13th day of October 2000.

The report makes suggestions as to the requirements that should be imposed by Cabinet and Ministers in an endeavour to ensure effective approval of a project and effective monitoring of a project. The report does not recommend how those requirements should be implemented as this was perceived to be beyond the terms of reference for the report. However, I consider that in delivering this report I should mention the desirability that Cabinet and Ministers, in implementing any recommendations relating to approval and monitoring, should establish procedures and structures where the responsibilities, accountabilities and reporting for approval and monitoring are clearly defined. This could be a new unit or the responsibilities and accountabilities could be allocated amongst the existing Monitoring agencies. Government may think that the unit established for the Y2K Project Office is a suitable model.

Yours faithfully



Francis Small

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1. EXECUTIVE SUMMARY

1.1 Introduction

The concept or vision of the Integrated National Crime Information System (INCIS) Project was sound and was consistent with Police strategy (that is, Community Oriented Policing (COP)). It was capable of achievement with conventional technology of the time and with appropriate governance, management, resources, skills and experience.

But INCIS had the potential to be a high risk project.

Elements of the Police and the Project team expended a huge amount of time and effort in an endeavour to implement the INCIS Project.

The INCIS Project achieved some of its objectives but did not achieve many of its primary objectives.

The reasons why the INCIS Project did not achieve its objectives were numerous, interrelated and complex but they were not unique to the Police and there were other examples both in Government and private enterprise business in New Zealand and overseas. No single cause resulted in the failure but the combined effect of the causes meant that INCIS would almost certainly fail.

1.2 Lessons Learnt

The lessons learnt from INCIS include:

- The Business Case needs to adequately address technology and risks.
- Over-ambitious technology should be avoided.
- Technology needs to be firmly fixed at the time of contract.
- An adequate Project Charter, Proof of Concept, Blueprint, Independent Quality Assurance (IQA) and change control are necessary.

- Business Process Re-engineering (BPR) should be completed before development.

- Adequate resources in terms of skilled and experienced governance and management are imperative.

- Appropriate governance and management structures should be in place.

- Parties should be prepared for contract and the form of the contract needs to be appropriate.

- Sound quality and risk management processes must be in place.

- Human resources problems and relationships are important and need to be addressed.

- An undue degree of reliance on the Contract should be avoided.

- An appropriate structure should be in place for effective approval or monitoring of the Project by the Government.

1.3 Recommendations Made

The lessons learnt from the INCIS Project have led the Inquiry to make the following main recommendations:

- The business case should reflect overall business strategy and should address technology resources and risks as well as financial issues.

- Projects should normally use proven technology. Where it is necessary to use unproven technology, this should be reflected in an increased risk management process.

- It is essential that a project be properly resourced in terms of skilled and experienced governance and management.

- Strategic consideration should be given to the form and nature of the contract. There should usually be separate contracts for infrastructure and applications which should be in modules to give delivery of specific business benefits.

- The appropriate form of contract should be signed only when the Government agency is satisfied that it has addressed and resolved all relevant issues including technology, resources and risks.

- There must be comprehensive quality and risk management processes, including IQA, in place.

- The appointment of key personnel is critical and care needs to be taken in the appointment process to minimise the risk of conflict and, if possible, a top down appointment process is desirable.

- Any conflict or dispute that adversely affects the project must be addressed promptly and in an effective way.

- To maximise the prospects of success, a project needs to have tight and effective management.

- The Government needs to define structure and role for approval and monitoring of large IT Projects.

- The procedure for making application for approval of the Cabinet or Minister should be strengthened and made more rigorous to ensure that Cabinet and Ministers receive sound information and appreciate the risks of the project.

- The approval by Cabinet or a Minister of a project should contain directions that ensure that the monitoring by the Monitoring agencies is as effective as practicable.

- The approval and monitoring structures need to be resourced to enable them to effectively meet the expectations of Government.

- The recommendations made by Government agencies and Police are supported by the Inquiry.

2. BACKGROUND TO THE MINISTERIAL INQUIRY

2.1 Terms of Reference

The terms of reference issued by the Minister of Justice are as set out in Schedule 1 to this report.

2.2 Outline of Procedure

The New Zealand Government commissioned Dr Francis Small to conduct an independent Inquiry into the INCIS Project so that experience gained from the Project could be independently analysed and published and used for the benefit of Government agencies to successfully manage information technology (IT) projects in the future.

The Inquiry was able to refer to information previously gathered by the Commission of Inquiry into the provision of the computer system known as the Integrated National Crime Information System (INCIS) which was appointed by Sir Michael Hardie Boys, Governor General, by Order in Council dated 4 November 1999. The Commission of Inquiry publicly advertised its terms of reference and held a preliminary hearing. A number of parties and interested persons were identified at the preliminary hearing and either asked to be heard, filed a submission or asked for a watching brief. The Commission received some submissions and other papers. The Commission obtained legal advice and some information technology advice. The Commission was discharged by Order in Council dated 31 January 2000.

This Ministerial Inquiry took over the documents filed with the Commission and the work done by the Commission. The Inquiry communicated with persons who had been identified by the Commission.

The Inquiry has met with and received submissions or material from the persons specified in Schedule 2. The Police demonstrated INCIS, as currently operated, to the Inquiry.

IBM declined the opportunity to participate in this Inquiry except that it made a written response to the final draft report. However, the Inquiry believes that, from material received, it has been able to draw certain inferences relating to IBM's involvement. The relationship with the prime contractor is addressed in Section 8.

In preparing this report, the Inquiry was also able to refer to information previously gathered by the Justice and Law Reform Committee outlined in their report, *Report of the Justice and Law Reform Committee: Inquiry into CARD and INCIS*.

The Inquiry records that it received assistance and co-operation from all persons who participated and that without their contributions this report would not have been possible.

2.3 Assistance

The Inquiry has been assisted by:

Dean Martin, Ministry of Justice.

Darryn Thorn, Ministry of Justice.

Pat Vallance, IT Advisor.

David Elms, Emeritus Professor, University of Canterbury.

John Stevenson, Legal Advisor.

Vivien Meek, Executive Officer.

Moire Morrison, Documents Management Officer.

2.4 Structure of Report

The Inquiry, while reviewing the reasons for the failure of the Project, has primarily focused on the lessons to be learnt and recommendations for the future.

This report provides an outline of the concept or vision of the INCIS infrastructure and application and then traces an historical outline of the development of the INCIS Project. A number of Commissioners, Sponsors, Project Directors and other individuals were involved in the INCIS Project and these persons are identified in Schedule 4A. Schedule 4B is a chronology of events.

The report then focuses on key issues, lessons and recommendations. Four key issues are identified: Technology and Architecture, Governance and Management, Risk Management and Change Control, (Sections 6.2 – 6.5).

The INCIS Project was undertaken over a significant period – from its early inception in 1991 through to its termination in 1999. The Inquiry has analysed the INCIS Project in four key stages: Project Formation, Project Approval, Contractual Issues and Project Implementation.

The Inquiry has also evaluated approval and monitoring of large government IT projects. This is covered in sections 7.0.

Relevant sections of the report contain recommendations that, in the Inquiry's opinion, should be of assistance to Cabinet, Ministers, Government agencies, Monitoring agencies, Chief Executives, expert advisers and others associated with large IT projects. A consolidation of all the lessons and recommendations is set out in Schedule 15.

A number of technical terms and abbreviations are used throughout this report. A list of these is provided in Schedule 3.

3. WHAT IS INCIS?

3.1 INCIS Concept and Vision

The Inquiry accepts that the concept or vision of INCIS was relevant to Police strategy and continues to be relevant today.

The concept or vision of the INCIS application remained substantially consistent throughout the eight-year history of the INCIS Project. However, many aspects of both the infrastructure and the application were significantly changed or were amended throughout the Project's development.

The origins of INCIS go back to 1985. Considerable work was done to develop the INCIS vision and concept. The INCIS concept and vision was consistent and integrated with the Police five-year Strategic Plan published in 1993 which was developed around Community Oriented Policing (COP).

In 1992 Police issued a Request for Information (RFI) which described the purpose of INCIS as:

> *The purpose of INCIS is to support operational Policing by providing improved information, investigation and analysis capabilities. This will contribute to the Police Mission Statement of minimising the incidence and effects of crime on the community through the detection and apprehension of offenders and by crime prevention strategies.*

The INCIS Business Case dated 12 May 1993 described the strategic goals of INCIS as:

> *The overall strategic goal of "reducing the incidence and effects of crime" transcends traditional crime prevention and seeks to stem and reverse crime trends. This is an ambitious goal and will not be achieved without significant*

changes in policies, processes and attitudes within the New Zealand Police.

and the scope, key functions and interfaces as:

The key functions are:

1. ***Criminal information*** *– this includes incident/offence information, subject of interest details (such as people, places and things), the roles subjects of interest play in incidents/offences (such as witness, scene and exhibit), warrants and court orders, movements (such as surveillance logs of targets and exhibit movements) and charge/criminal history information, such as diversion details.*

2. ***Case and investigation management*** *– this supports the processes involved in case and investigation management. Key facilities include:*

- *Electronic files, which embody the collection of structured information, text, images and imaged text (ie scanned documents) to form case files.*
- *Work flow management to enable core information systems to be fully integrated with the way Police work. These include support for remote supervision, work groups, automated production of material for complainants/victims/witnesses, grading of intelligence, automatic wording of charges and advising of victim support.*

Decision support such as case screening and early case closure.

3. ***Crime trend analysis*** *– the analysis of reported incidents and offences to identify patterns of activity, the "Who, why, what, when, where and how" of crime.*

4. ***Intelligence analysis*** *– this is a more specialised set of tools to enable intelligence analysts to identify common denominators amongst potentially crime related information to:*

- *Help direct and solve an investigation*
- *Identify the potential for a crime to be committed (pro-active analysis).*

5. ***Performance measurement*** *– the monitoring of achievement against target for specific key indicators. This enables greater accountability and comparative analyses of different approaches to solving crime problems.*

*6. **Special operations** – additional support is provided within INCIS for the needs of special operations groups such as surveillance units, Sexual Abuse Teams, Witness Protection Squads and VIP Protection Squads. This support includes;*

- *Surveillance logs – the recording of target movements*
- *Data security – all data will be available on a need-to-know basis*
- *Passive searching – the ability to set pre-defined queries so that any information about a specific subject that is subsequently entered will be advised to the user.*

*7. **Major Interfaces***

*1. **Justice** – the system will need to continue to interface with the current range of Justice systems at Wanganui. In addition, it may be necessary to interface with the proposed Courts Automated System Extension (CASE) system which is scheduled to be developed and roll-out over the next few years.*

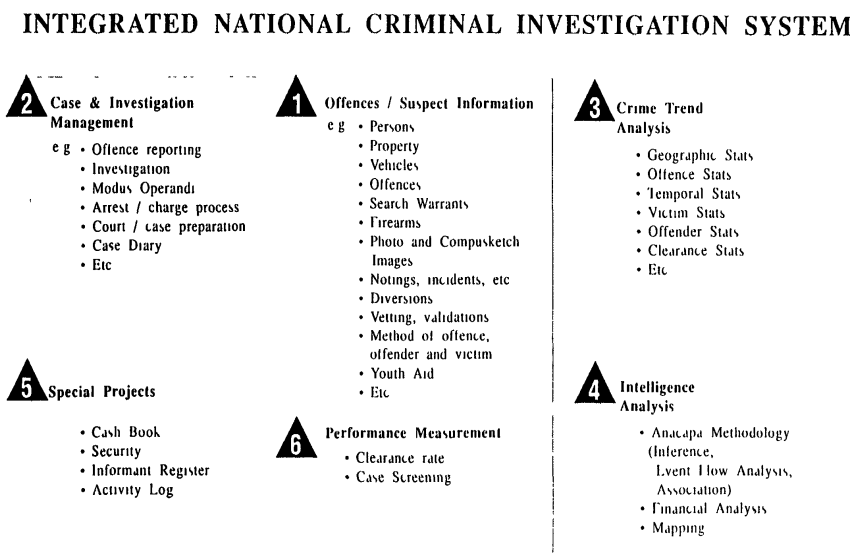
The CASE project covers the concept of electronic prosecution files, including imaging/document management – the introduction of INCIS would enable an automated interface between Police and the Courts with consequential savings for both organisations.

*2. **Land Transport** – INCIS will need to retain access to the systems at Wanganui.*

These are depicted in Diagram 1 which is shown in the Request for Tender (RFT):

Diagram 1:

Business Conceptual View of INCIS



The Inquiry considers that the underlying conceptual view of the INCIS Project as set out in the Business Case was sound and is still valid. However, there were flaws, as identified in this report, in the proposed implementation of INCIS.

3.2 Proposal to Cabinet

Later the Minister of Police on 5 August 1993 put a proposal to Cabinet that described INCIS:

> ***Proposal (Executive Summary)***
>
> *1. That the New Zealand Police develops and implements an Integrated National Crime Information System (INCIS) to provide improved crime related information, investigation and analysis capabilities and enhance the efficiency and effectiveness of operational policing in the:*
>
> *(i) Detection and apprehension of offenders*

(ii) Support of Police crime prevention and road safety strategies

(iii) Provision of enhanced management information to measure the effectiveness of Policing services

(iv) Support of Government criminal justice & crime prevention initiatives.

2. INCIS will be a front line, operational, computer-based information system, which recognises the critical nature of information to all Police functions by providing direct access by operational personnel and managers to a wide range of criminal and crime trend information, linked to intelligence analysis, case investigation management and performance measurement tools. Based on a network of 3125 personal computers linking all stations, and supported by a national crime database, the system will provide information from the most distanced crime scene or incident. INCIS will provide multiple methods of data entry and immediate retrieval of information in a range of presentation mediums. It will minimise paperwork, reduce administration and increase overall police capabilities by enabling police officers to spend more time on operational duties.

3. INCIS will provide total lifetime benefits of $533.7 million. These benefits will start to be achieved in Year 3 of the project (1995/96). Annually, this represents an estimated 1.9 million hours available for redeployment in programmes supporting the Police Strategic Plan, through reduced paperwork, a flatter hierarchy and improved workflows, worth $72.3 million. A further $1.8 million will be saved from other costs, for a total of $74.1 million. 1.9 million hours represents approximately 11% of the 17 million hours worked by Police staff over a twelve month period.

3.3 Changes

During its lifetime the Project underwent significant changes in emphasis. Its focus changed from Police strategy to financial objectives and then to a technology project. The original plan was to deliver INCIS by Releases One and Two. Release One and Two were described in the *INCIS Liaison Update* newsletter January 1995 as:

Release 1

By the end of 1996 install PC networks in all Police stations, replacing the Wanganui and National Information Systems with new Suspect and Offence Information System, Crime Trend Analysis, Intelligence Analysis and Mail facilities.

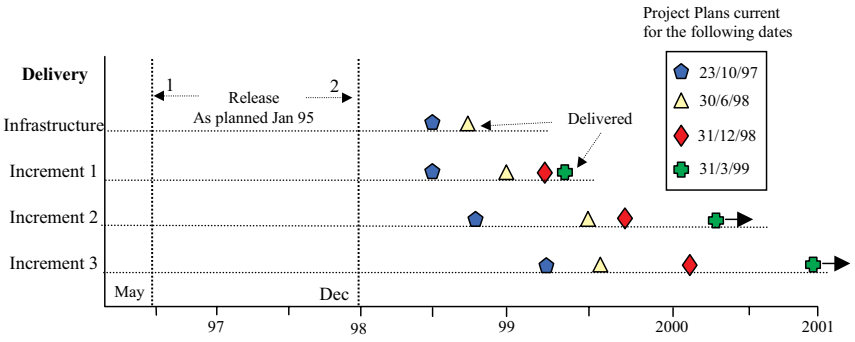
Release 2

Implement Case and Investigation System early 1997.

This changed to include Iterations One, Two and Three (within Release One) and changed finally to Increments One, Two and Three. Only Increment One and infrastructure was achieved. There were extensive changes and slippage in the timeline for delivery for infrastructure and applications. These are shown in Diagram 2.

Diagram 2:

Releases One and Two and Increments One to Three



The results were that in the report of 20 April 1999 from Treasury to Ms Patricia Schnauer MP, Deputy Chairperson, Justice and Law Reform Committee, INCIS was described by Treasury as:

Description of the Project

Since 1994 INCIS has been significantly revised, particularly in relation to the software development and the timing of the delivery of respective functions and features. While the project infrastructure (the network, PCs etc) is today largely in place and in use to some extent, the main software development is outstanding and has now been divided into three increments.

Increment One

Increment one will enable frontline police to enter "notings" (observations and information collected by Police) directly onto PCs which are linked to the national server. This has the benefit of greater consistency of recording information than the existing National Intelligence System (NIS) and other independent databases. There will, over time, be some efficiency gains because electronic entering of data will be quicker than the current paper based processes.

Increment Two

Increment two is the core INCIS application. It enables Police to exit from the LES system completely and interfaces with the rest of the Justice sector. All aspects of investigations into incidents and offences can be recorded on INCIS via increment two. Increment two also interfaces with the CARD system so that when an event has been entered on CARD and action taken, a file is automatically created in INCIS. The process for charging offenders will also be automated, with information passing electronically to Courts.

Increment Three

Increment three is intended to provide additional features over increment two. The main feature of increment three is "speedbooks". This is a specialised data entry system which enables high volume and low complexity transactions to be entered once on a single screen with all relevant files updated automatically and various documents produced.

Increments One and Two needed to be implemented before the Law Enforcement System (LES), previously known as the Wanganui Computer, could be decommissioned.

3.4 Business Process Re-engineering (BPR)

INCIS was originally envisaged as an intelligence analysis system. This grew in 1992 to a conceptual view incorporating the key processes of policing, namely offences and suspect information, case management and investigation management, crime trend analysis, intelligence analysis, performance measurement and special projects. INCIS was also to incorporate LES and a number of computer systems that had grown up in the various Police regions. The scope of INCIS was increased after the Contract to include traffic, firearms and justice interface.

Police recognised that significant changes to Police business processes would be necessary to achieve the business objectives.

This led to a need for extensive Business Process Re-Engineering (BPR) in order to achieve the business benefits associated with INCIS. These benefits would primarily occur from staff reductions.

3.5 High Risk Project

The INCIS Project was unique at the time. It appears that there was no similar project or software package anywhere in the world. In 1993 Police managers travelled overseas and Police indicated:

> *These visits, and other independent research over an extensive period, confirmed the view that the technology requirements for INCIS had not been designed or implemented as an integrated system of sufficient standard to meet the needs of Police, anywhere in the world.*

The Inquiry believes the fact that there were no existing packages that would meet the INCIS business specification should have been an early warning of the risks involved.

The Project was made more complex and with a higher risk by the decision to develop the INCIS application. The Inquiry considers that it was a very bold decision to develop a world-first application using ambitious and emerging technology in an unproven way.

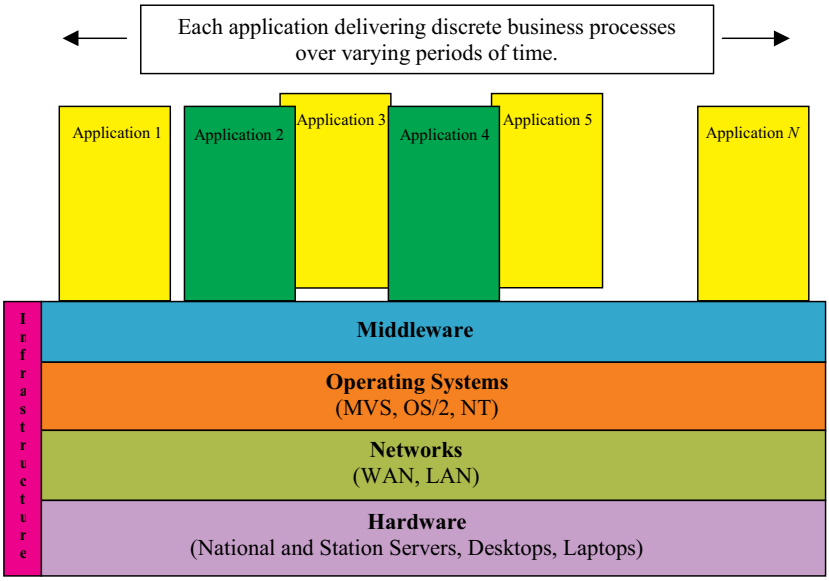
The Inquiry believes that, although the Project was of high risk, in 1993-94 the concept or vision of INCIS was sound and should have been capable of being achieved through:

- The use of conventional technology.
- Separating the infrastructure from the application.
- Adopting an appropriate form of contract with the delivery of business benefits in modules.
- Sound governance and management.
- Proper resources, skills and experience.
- Effective quality and risk management.
- Proper change control.

There are a number of references to modular delivery of business benefits (often referred to as chunking) throughout this report. The following diagram shows a large IT application broken down into a number of business function modules which are delivered separately over the period of the project but which depend on a common backbone of middleware, operating systems and hardware.

Diagram 3:

An Illustrative View of Modular Business Delivery



4. HISTORICAL OUTLINE OF THE INCIS PROJECT

The Inquiry has analysed the Project in terms of four chronological stages:

- Project Formation to December 1992.
- Project Approval to April 1994.
- Contract - September 1997.
- Project Implementation to May 1999.

The chronologies of roles and events are shown in Schedules 4A and 4B.

4.1 Project Formation

The origins of INCIS were in Project SICA (Serious Incident Computer Application) which began in April 1985.

In November 1990 Azimuth Consulting reported on functional requirements of a number of Police strategic systems including INCIS.

In January 1991, Police developed NIS (National Intelligence System) as an interim solution for their immediate requirements.

Considerable work was done by Police to develop the concept of INCIS. Price Waterhouse were commissioned by Police to report the then state of INCIS. Their report, dated 13 November 1991, identified a number of problems and stated the following:

> *2.2.1 The scope of INCIS has never been satisfactorily addressed in the documentation. In the initial Information Systems Planning exercise the scope was defined as "intelligence within the Police". At no time were the*

boundaries set, or the role if INCIS defined and set in context within the Police.

Subsequently, INCIS became an "information" rather than an "intelligence" system, radically affecting the scope of the project. There seems to be a great deal of confusion at even this broad-brush level of definition.

2.2.2 There was a very variable level in the documentation with hundreds of papers addressing trivial points with only cursory treatment of some of the required issues.

More importantly, the key points were inadequately addressed and will require considerable re-working.

2.2.3 There have been some significant changes in emphasis on the various roles of the Police, reflected in operational changes e.g. community policing, but not in the documentation.

2.2.4 There have been changes in legislation and organisational structure e.g. the planned merger with MOT, Data Privacy Legislation, etc. These are not reflected in the documentation.

2.3.1 Another important issue to address has been the adverse impact personality clashes have had on the project.

……..

The rationale for certain key decisions appears to be flawed ……..

Police looked to address the concerns expressed in the Price Waterhouse report by contracting Price Waterhouse to develop the Project. In October 1991 Price Waterhouse personnel, including Mr Carr as Project Manager, were appointed to the Project.

In December 1991 there was a scoping study which was a preliminary to the Business Case.

On 4 September 1992, the Project Manager stated that *the intention (of Police) is not to be the first on the block …… we will endeavour to select approaches which can be seen and touched elsewhere …….*

The Inquiry believes, it would have been a prudent course of action to use proven technology but the Project did not hold to this concept.

On 10 September 1992, a proposal was presented to the National System Steering Committee (NSSC) and shortly afterwards, the Police Executive Conference (PEC) authorised the Project team to:

- Issue a request for Information (RFI).
- Issue a Request for Tender (RFT) and project positions.
- Prepare a formal business plan for presentation to PEC and Cabinet.

Throughout this period of time the Commissioner briefed the Minister of Police on the project's progress.

In November 1992, the Police issued a RFI that outlined their requirements and sought information as to the capabilities of interested parties to meet the requirements of Police. The RFI was issued to 141 potential interested parties. Sixty-nine responses were received.

4.2 Project Approval

Out of the sixty-nine responses four were selected. In December 1992, a RFT was sent to the four selected organisations. In an attempt to minimise financial risk the RFT requested primary vendors to offer a fixed or capped price for the total contract. The RFT included very specific requirements including Object Oriented Technology (OOT), decision support technologies, portability and a process manager. There was also reference to client/server architecture.

The technology and architecture referred in the RFT was emerging and had not previously been used for a type of application similar to INCIS. It did not meet the stated intention of using proven technology. The Inquiry considers that the RFT should not have been so specific on prescribing the technology to be used to achieve the business objectives.

The Inquiry is also of the view that a fixed or capped price contract for the whole of INCIS was inappropriate for a project of such complexity and uncertainty and was not the best way of meeting requirements to minimise financial risk.

Two of the four interested parties selected elected not to participate further. Tenders were received from Andersen Consulting and IBM. In April 1993, an evaluation of tenders received from Andersen Consulting and IBM was completed. The evaluation of tenders favoured IBM rather than Andersen Consulting. The primary difficulty of Police about the Andersen Consulting tender was that it proposed a High Level Intergrated Design (HLID) or Blueprint before specifying the infrastructure and application. The HLID or Blueprint would have led to an understanding of the scope and requirements for INCIS and determined whether the technology proposed was capable of

meeting the requirements. The tender of Andersen Consulting did not therefore meet the Police requirement for a fixed price contract. Furthermore there was an apparent misunderstanding by Andersen Consulting about the stated preference that INCIS be managed by the Police. IBM and Andersen Consulting were asked to rebid.

By 12 May 1993, Police had developed the INCIS Business Case, which was presented to Government in July 1993. (For extracts see Schedule 5). The Inquiry considers that the Business Case was defective in a number of respects including a failure to:

- Address how the technology would deliver the business benefits.
- Outline the risks and how they would be managed.

In June 1993 Deputy Commissioner Doone was appointed Sponsor.

The INCIS Project Tender Rebid Evaluation Report of 12 July 1993 analysed the rebids received by Police from Andersen Consulting and IBM. The Rebid Evaluation assessed the Andersen Consulting bid as follows:

> *The Andersen Consortium's tender fails to meet several key partnership, technology and business requirements for INCIS. The bid was not a fixed price quote for the requirement specified by Police. The Andersens' approach is to perform a* ***High Level Integrated Design (HLID)*** *at the end of which Andersens were to provide a fixed price quote. However, this quote would not necessarily cover all of the requirements specified by the Police, nor would it cover all of the technology suggested by the consortium, just the "core components". Thus Police does not know what it is getting, when it will get it and how much it will cost.*

The Rebid Evaluation also reported that the Andersen Consulting bid:

- Identified the need for a Proof of Concept.
- Stated that they did not *buy in* on the technology.
- Suggested a High Level Integrated Design (HLID) or Blueprint.

Andersen Consulting were, in effect, referring to a process similar to Operation Discovery that was carried out after the Contract was signed and to which reference is made later.

The Rebid Evaluation referred to the IBM bid as follows.

> *The proposed architecture provides a platform to **satisfy current** business and technical requirements and has the necessary flexibility to **meet future** business and technical requirements.*
>
> *The proposal for Services and Business Management still **fails to meet** all of the partnership requirements required of a prime Contractor, but these short-comings are being actively addressed.*

Ernst & Young (Australia) was commissioned jointly by Police and Treasury to report on strategic considerations, the Business Case and the preferred bid (IBM). The report was dated 22 July 1993. and is set out in Schedule 6**.**

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Ernst & Young state:

- The report was a remarkably accurate and prescient document.
- The report was prepared for informed readers, was forthright and objective, and showed insight and objectivity.
- Ernst & Young was engaged to provide a high level report within specific terms of reference.
- The report was prepared within two weeks.
- It was not Ernst & Young's role to provide a report which could be relied on for a recommendation to proceed with INCIS or be relied on for a recommendation to enter into contract. If the report was used for those purposes, it was a misuse of the report. The report should not have played any significant part in the decision 14 months later to enter into contract.
- The report identified a number of areas of concern that needed to be addressed.
- Ernst & Young should have been asked to report again later.
- Many of the matters in the report were already known to Police.
- The report stated "*that many of the conclusions should be subject to very detailed work if absolute reliance is to be placed on them by the Police or Treasury*".

The Inquiry accepts that the Ernst Young report was in the circumstances of the time reasonably accurate and helpful. However,

the Inquiry is of the view that the Executive Summary is more positive or favourable to the INCIS Project than the report read as a whole and that a more balanced Executive Summary should have at least had a separate section outlining the concerns and reservations in the body of the report. In any event, the report should have been read in whole. Ernst & Young maintain that the Executive Summary is not more positive than the report read as a whole. They refer to the second paragraph of the Executive Summary.

The paragraphs in the report containing concerns or reservations expressed by Ernst & Young include 2, 4.1.4, 4.2.1, 4.2.2, 4.4.1, 4.4.3, 5.1.2, 5.1.4, 5.2.4, 6.1.5, 6.2.1, 6.2.2, 6.2.3 and 6.2.5.

Ernst & Young say that the report should never have been relied upon for approval or contract and did not contribute to the ill-fated decision to proceed with INCIS.

Care needs to be taken in applying the report to the INCIS Project as it developed as there are differences between the technology and architecture proposed at the date of the report and the technology and architecture contracted for. The differences are illustrated by the client server. At the time of the report the Police were referring to a conventional client/server. The report correctly refers to this as *good proven technology*. This was changed subsequently to a distributed OO client/server, which was emerging technology. The report, or its executive summary, was cited by the Police and others after the change to a distributed OO client/server without referring to this significant change in technology.

IBM was selected as the preferred bidder.

On 5 August 1993, the Minister of Police put a paper to the Cabinet Committee describing INCIS, together with benefits, costs and financial matters. The document recommends to Cabinet the development and implementation of INCIS. The paper included the Executive Summary from the Ernst & Young report and also referred to other aspects of the report.

Ernst and Young consider that the paper ignores and misrepresents the advice in the report including:

- Not making it clear that the report was a high-level review and that the report stated that the conclusions in the report should be subject to very detailed work if absolute reliance was to be placed on them.

- Selectively referring to positive comments in the report without referring to the areas of concern in the report.

- Asserting that the Ernst and Young report concluded "*the solution is technically feasible and proven*" when the report stated "*the solution is*

technically feasible and relies on proven technology" (ie. the report advised that the technical solution needed to be proved).

The Inquiry accepts that the paper put to Cabinet does not adequately refer to the circumstances of the Ernst and Young report or to the concerns expressed in the report.

On 23 September 1993, the Sponsor asked the INCIS Project team *would Police select another technology solution, other than that recommended, if it went to tender today?* The answer from the Project team was no. The answer included a statement that:

> *It is noted that negotiations to date have been on the basis that Police can substitute any component of the solution as and whenever they choose. The approach ensures that INCIS grows as technology changes and continues to be the best solution at that point in time.*

The answer articulates a technology substitution concept which assumed considerable significance with the Police and which is addressed in section 6.2.10. The Inquiry considers that before entering into the Contract a sound technical solution should have been in place and there should not have been such a degree of reliance on the technology substitution concept. The Inquiry acknowledges that technology substitution has some merit in terms of future proofing but the technology substitution concept adopted went beyond that and was incompatible with the proposed fixed or capped price contract. If future proofing was required to the extent envisaged, a different type of contract should have been negotiated.

On 3 December 1993, a Request for Proposal (RFP) was issued by Police to IBM. The RFP said that its functions were to:

- *State the terms and conditions of the RFP*
- *Provide additional information that fully describes the Police requirements for technology and services for INCIS, so that IBM may prepare a detailed and complete PROPOSAL response, which will form part of the contractual documentation between Police and IBM.*
- *Obtain definitive costs for developing, implementing and operating INCIS. The responses to the RFP must fully describe the products, tools, techniques, resources and infrastructure that the prime contractor will provide to meet the INCIS business, technology and service requirements.*
- *Confirm an INCIS management approach.*

Over a period of time IBM gave responses to the RFP. The RFP and the negotiated responses were subsequently included in the Contract documents.

In principle the Inquiry acknowledges that the RFI, RFT and RFP form of procedure leading to a contract was acceptable and appropriate. However, the Inquiry questions the degree to which the technical solution was specified rather than leaving it to the supplier to offer a technical solution. The requirements in the RFP and IBM's responses were to make up the main portion of the Contract documents. In fact, there were two main outstanding issues:

- Despite a belief to the contrary, there was insufficient detail to allow design of the applications to proceed.

- IBM did not respond to the satisfaction of Police to all the issues required in the RFP.

Issues had also been raised as to the suitability of OS/2 (Operating System 2) which was proposed under the RFP and responses from IBM.

Through to February 1994 issues continued to be raised in relation to the technology and architecture. A presentation was made in February 1994 to the Hon. Maurice Williamson, Minister for Information Technology, and Police by a senior technical architect from Microsoft. Mr Williamson told the Inquiry that he was of the view that the presentation showed that major aspects of the technology were not deliverable and that the Project should not have proceeded in that form at that time. There was a review made by Police of the presentation and they advised that these issues could be overcome and recommended that the Project proceed. In March 1994 the Police briefed their Minister, the Hon. John Luxton, in relation to INCIS risks and technology as follows:

> *Police have selected proven leading edge technology but will ensure that future risks in development and support are fully future proofed in contracts.*

In the view of the Inquiry it was not correct to refer to the technology proposed for the INCIS Project as proven. The application for approval of INCIS was referred by Cabinet back to Police on a number of occasions. Mr Luxton told the Inquiry that the normal rigorous and robust Cabinet procedures were followed.

On 31 January 1994, KMPG reported on a review of OS/2 and Windows NT and recommended continuation with OS/2. The Inquiry reads the report as being restricted to OS/2 and not to be a report on any of other aspect of INCIS. In addition, in January 1994 KPMG updated the ISSP and indicated that the INCIS Project would be consistent with Police Information Technology strategy.

In March and April 1994, various papers, including the Business Case, which had been presented to Government in July 1993, were submitted to the Government.

Cabinet, on 26 April 1994, approved the implementation of INCIS on terms and conditions (see Schedule 7). The Cabinet:

- Noted that expected benefits from efficiency gains were $517 million over eight years ($303 million net present value).
- Noted a required investment of $203 million over eight years ($141 million net present value).
- Approved expenditure by Government of $97.83 million through to 1999 (with the balance of expenditure being met from Police baseline budgets).
- Directed that the Police report to the Minister of Police quarterly with a copy to Treasury.
- Addressed human resource and industrial issues.

4.3 Contract

Although approval had been given by Cabinet, there were still a number of outstanding technical issues and risks to be resolved.

In the early part of 1994 issues continued to be raised in relation to OS/2. KPMG were asked by Police to advise again on OS/2 and on wider issues.

KPMG reassessed the technology risks of OS/2 and on 9 June 1994, advised that the strengths of OS/2 were still valid and that Police should keep abreast of developments. The report also assessed the *current state of play* regarding Police negotiations with IBM. The report said:

> *By any standards this represents an extremely large and complex undertaking, from both a technical and business perspective. Inevitably the project presents a wide variety of risks to Police which needs to be managed in a proactive manner…*

and asked the question:

> *Do police currently have the confidence and commitment to achieve the successful delivery of INCIS and its integration with other Police initiatives?*

The report posed further questions which:

> *highlight the current knowledge gap within Police at this relatively early stage of the INCIS project.*

The report also addressed ownership and commitment and asked the question:

> *Do Police have sufficient confidence in the key resources proposed by IBM/GCS.(page 4)*

Schedule 8 contains further extracts from the report.

The Inquiry considers that, in relation to the *state of play of INCIS* and ownership, this KPMG report raises as many questions as it answers and makes it clear that there were a wide variety of risks that needed to be addressed.

On 31 August 1994 Price Waterhouse ceased to be engaged and Mr Carr ceased to be the Project Manager. The Sponsor, requested Mr Carr to provide a handover report. Mr Doone told the Inquiry that his instructions were for a full and frank report with "warts and all". By this time Mr Carr and his associates had formed a company known as Sapphire Technology Limited. The handover report was from Sapphire Technology Limited (the Sapphire report).

The Sapphire report identified a number of significant business and technical risks with the Project and recommended that they be resolved or actively managed to ensure the successful implementation of the INCIS Project. The Sapphire report is referred to several times in the body of this report (see 6.2.4, 6.2.6, 6.3.4, 6.4.5 and Schedule 9).

Following receipt of the report, the Sponsor concluded that the issues raised in the report were ones which could be managed through the life of the Project and did not represent grounds to review the position. The Sponsor says that, following the appointment of the Director of I & T, he delegated to the Director of I & T the issues in the Sapphire report to address with the Project Director.

The Inquiry considers that the Sapphire report:

- Is a reasonable portrayal of the position of the INCIS Project in the August-September 1994 period.
- Shows that both Police and IBM knew of the serious difficulties with technology.
- Shows that there were so many unresolved issues that neither Police nor IBM were ready to proceed to contract.

- Raises matters in relation to technology, architecture, governance, management and risks that needed to be reviewed as a matter of urgency by governance, management and the INCIS Project team.

- Needed to be widely circulated within Police and to Treasury and the issues addressed and resolved.

On 23 September 1994, the Agreement for the provision of an Integrated National Crime Information System (the Contract) was signed between the Crown and IBM. IBM became the prime contractor.

The Inquiry considers that at the time of Contract too much was ill defined and there were too many outstanding issues. The scope of the Contract and the technology was not sufficiently defined. By entering into the Contract at that time and in the form they did, Police and IBM became exposed to significant risks. Neither party should have proceeded to contract until the issues in the Sapphire report were satisfactorily resolved.

The Contract was a fixed or capped price contract in respect of Release One and an indicative priced contract in relation to Release Two. A price was not agreed in respect of the work in Release Two until the Variation in December 1997, when the work in Release Two appears to have been included in pricing in the Variation. The Police represented the Contract as a fixed price Contract. Mr Carr told the Inquiry that the requirements for a fixed price contract had *come from on high*. Mr Doone agreed with this and said it came from Government, Treasury and Police. He said it was perceived as a necessary element of obtaining approval and as reducing risk. The Inquiry considers that a fixed price contract for the whole of the work of INCIS was inappropriate and, in fact, increased the risk. There should have been a contract or contracts that clearly provided for infrastructure and for the applications to be delivered in modules (that is, the incremental delivery of discreet useable business functions). The price for each module could be fixed (where appropriate).

There were issues relating to the estimation of the cost of conversion of Law Enforcement System (LES) to INCIS. It was found that there had been a significant underestimation of the volume and cost of this work The underestimation gave rise to a dispute.

4.4 Project Implementation

A partnering arrangement between Police and IBM was implemented for the joint management of the Contract.

INCIS involved significant Police business process changes in order to meet the objectives of the Project. This required substantial Business Process Re-engineering (BPR). Following signing of the Contract, Police began extensive BPR.

The Inquiry is of the view that BPR should have been completed or substantially completed before Contract and before completion of the design of applications.

Police said they had advice that:

- BPR should be performed contemporaneously after Contract with the design of applications and with the BPR and design teams working in close proximity.

- Significant BPR was not required for Release One and there was time after Contract to perform BPR for Release Two.

The Inquiry disagrees with such advice and believes that BPR requirements should have been known substantially before entering into the contract. Whilst there should be some interaction between BPR and the development of the contract there is a risk, if BPR is not done first, that the technology will drive the business requirements rather than the other way around.

In October 1994, Superintendent Tony Crewdson was appointed Project Director. The Police use the term "Project Director" but it has the same meaning as the more commonly used term of Project Manager. The Project Director was to report to Deputy Commissioner Doone, the Sponsor. Superintendent Crewdson was an experienced Police officer, was highly qualified and was highly regarded. He had extensive IT experience, but he did not have experience in managing large IT projects.

In November 1994, Mr Greg Batchelor was appointed Director of I&T. The Director of I & T reported to Deputy Commissioner Doone. The Director of I & T was given oversight of the INCIS Project and from that point, the Project Director was to report to the Director of I & T (instead of the Sponsor). The Director of I & T had considerable IT line management experience of large and complex IT projects.

The changes in responsibility and reporting contributed to a perception that INCIS was being downgraded from a business project to a technical project.

The Inquiry considers that:

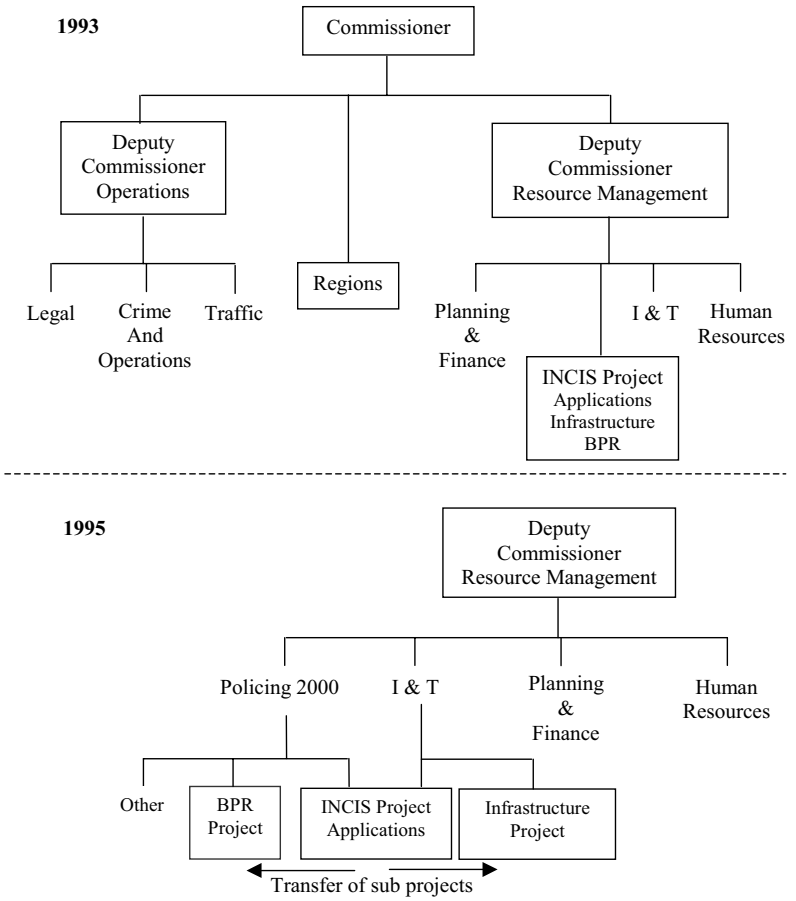
THE APPOINTMENT PROCESS NEEDS TO ENSURE THE APPOINTMENT OF PERSONS WITH SKILL AND EXPERIENCE IN THE MANAGEMENT OF LARGE IT PROJECTS.

- Given that the two positions were vacant, a process of appointment from the top down should have been adopted.

Diagram 4 shows the transition from before and after the appointment of the Director of I & T.

Diagram 4:

Police Organisation Chart - 4 July 1993 and 1995



The chart also shows the shift from the INCIS project in 1995 of BPR to Policing 2000 and of infrastructure to I & T.

In December 1994, the Police called for tenders for audit of the INCIS Project. Tenders were received from Deloitte Touche Tohmatsu, Ernst & Young and Price Waterhouse. Price Waterhouse was appointed and their

terms of reference were defined. They reported quarterly to the INCIS audit committee and the Sponsor. Copies of their reports were forwarded to Treasury and from March 1998 to SSC.

The Inquiry notes that the Price Waterhouse terms of reference were to review the Project's progress by auditing the Project Director's reports and verifying adherence to system control procedures. The scope included financial and systems aspects. No assessment was to be made as to the validity of any particular methodology. In the view of the Inquiry, their reports were not Independent Quality Assurance (IQA).

During February/March 1995, the INCIS Police Project team and IBM became aware that the business requirements, as defined in the Contract, were insufficient to commence detailed design of the first stage of INCIS - that is, Release One. The Contract documents included the Request for Proposal (RFP) and responses as negotiated from IBM. The Police considered these documents were adequate for commencement of detailed design of applications. IBM considered that the documents were not adequate for commencement of detailed design of applications. This matter was eventually resolved some time later through Discovery I and II and the Logica report.

The Inquiry considers that, if IBM had concerns as to the sufficiency of the description, these concerns should have been raised formally prior to contract. The matters raised as to insufficiency of the RFP would appear to vindicate the stand taken by Andersen Consulting at the Request for Tender (RFT) stage when they asked for a High Level Integrated Design (HLID) or Blueprint.

In March 1995 the Policing 2000 programme began. Policing 2000 was a restructuring of the Police organisation to meet future objectives and was based on the five-year strategic plan and Community Oriented Policing (COP) strategy. As a result, the BPR process was transferred from the INCIS Project to the Policing 2000 programme and the INCIS infrastructure was transferred to the I&T division. This is shown in Diagram 4. Although Police maintain that INCIS continued as a business project, the Inquiry considers that from this time INCIS was regarded as a technology project rather than a business project. Police say the change of BPR to Policing 2000 was made because Police were undertaking BPR across all its processes (not just for the INCIS application) and the general BPR work needed to be integrated with the INCIS BPR work. The Inquiry considers that, if BPR had been completed or substantially completed prior to contract, a number of problems would not have arisen.

Between March and October 1995 Operation Discovery I and Discovery II were carried out. Their purpose was to describe the work specified in the Contract in sufficient detail to enable commencement of detailed design of applications. Operation Discovery resulted in the work being identified

sufficiently to enable IBM to commence detailed design of applications. Operation Discovery also incorporated some matters arising from BPR.

In May 1995 partnering meetings between IBM and Police were abandoned and replaced by the Executive Control Group (ECG) comprising representatives of Police and IBM. This was supported by the Director of I & T who favoured keeping IBM at arm's length. He also favoured options to use multiple vendors and cost contestability. The Project Director favoured partnering with IBM. This was probably the first major dispute between them. Other disputes were to follow.

In June 1995 through to September 1996, Police initiated major changes, through technology substitution. Wide Area Network (WAN) was changed from IBM's System Network Architecture (SNA) to Transmission Contract Protocol /Internet Protocol (TCP/IP). This was a move away from the IBM proprietary network to an open system. This change had a significant impact on centralised systems management, security and other factors of the network.

The Local Area Network (LAN) was changed from Token Ring protocol to Ethernet. This resulted in substantial financial savings.

The operating system OS/2 for desktops was changed to Windows NT. This was to have a significant impact on the INCIS application design and implementation.

Overall, the Inquiry supports the technology substitution changes as moving towards a more open system. However, the Inquiry questions whether the changes should have been made during applications development and considers that it may have been preferable to wait until the Project had been completed before making these changes. The changes brought about delay and resulted in IBM being released from relevant performance warranties.

A significant factor in Police risk management was the Contract provision for an Off-Ramp. The Off-Ramp allowed Police to terminate the Contract on specified terms and conditions. The Off-Ramp could be exercised during a period of 90 days from a specified commencement date, which was changed from time to time. The first commencement date was 29 September 1995.

The Inquiry supports the Off-Ramp concept.

The last commencement date of the 90-day period for the Off-Ramp was 15 December 1995. Clear procedures should have been developed to ensure that the Off-Ramp was properly addressed. Police acknowledge that the Off-Ramp rights became *clouded* and *lost.* As a result Police lost a key right to control risk. Having entered into the Contract before it was ready and with many significant issues unresolved, Police should have exercised the Off-Ramp or, at least, tried to negotiate a Lay-by.

The October 1995 Price Waterhouse report to September 1995 refers to significant slippage in terms of interim deliverable dates being *of concern.*

On 21 February 1996, the Deputy Commissioner of Police and Secretary of Treasury wrote to the Ministers of Police and Finance seeking an extension of time for reporting and stated:

> *The reasons contributing to the delay are:*
>
> *(a) The later start-up of the INCIS project, due to Contractual negotiations (13 September 1994 instead of 1 July 1994).*
>
> *(b) The complexities inherent and the sequencing of events in applying business process re-engineering methodologies which are required to support new technology design.*
>
> *(c) The fact that Police have broadened the scope of their work from primarily an operational focus in an INCIS solution to an organisation-wide business process re-engineering and a number of business and technology project solutions including INCIS.*

In January/March 1996, there were problems with Object Oriented Analysis (OOA). In January 1996 the INCIS Police Project team raised with IBM concerns that the OOA methodology seemed to be resulting in system design that was not sufficiently closely related to the business functions of the Police.

The completion of Operation Discovery I and II defined the scope of the work required by Police under the Contract in sufficient detail to allow design of applications. The scope of INCIS had also been increased from the initial Contract to include traffic, firearms and justice interface. There was then disagreement between Police and IBM as to how much of the work defined in Operation Discovery and how much of the work for traffic etc was in scope or out of scope. IBM claimed 70% was out of scope and Police claimed that 30% was out of scope. The issue was referred to Logica, a computer specialist organisation, who were requested to report.

In May 1996 Logica issued a report which favoured the Police position and advised that 70% of the relevant work was within scope and 30% was out of scope.

On 13 June 1996 Price Waterhouse reported to 31 March 1996 and stated:

> *At its half way point the project faces a number of serious issues that may prevent its completion on time and within budget. Project management note that there is little or no contingency remaining and we believe that there is*

> *legitimate reason for concern at this point that the delivery dates will not be met.*
>
> *The key issue facing the project at present is the selection of the appropriate system architecture for the INCIS project and the impact this decision has on the project deadlines and on the overall Police I&T strategy. At that date of this report the review is still to be finalised.*

In the view of the Inquiry the above shows two very serious matters:

- A situation which can be directly attributable to contracting before Police were ready and before the technical solution had been finalised.

- A less favourable situation than that being reported by the Project Director in the status report.

In July 1996, Deputy Commissioner Peter Doone was appointed Commissioner and Assistant Commissioner Barry Matthews was appointed Deputy Commissioner. Deputy Commisioner Matthews then became Sponsor of the INCIS Project.

On 8 July 1996, there was a meeting between Treasury and Police. The Treasury file note records the Police assured Treasury that the product would be delivered as requested with increased functionality (that is, the system would do the same task, but better than scoped). A timetable to meet the rollout was noted.

On 30 August 1996 Price Waterhouse reported to June 1996 and stated:

> *The overall assessment would be that the project is high risk at this point in time. The risk however, relates, primarily to the achievement of the deadlines (and related benefit realisation at that time) rather than to non-delivery of required functionality.*

The Inquiry notes that the high risk relates to timeframe and costs rather than the ability to deliver. However, the ability to deliver was in fact an underlying risk.

Subsequent reports from Price Waterhouse continued to report INCIS as being categorised as *very high risk*.

On 11 March 1997, Treasury reported to the Treasurer, Rt Hon Winston Peters and the Minister of Finance Rt Hon William Birch:

> *1. This report is a preliminary notice to the Treasury Ministers that the new Police computer system (INCIS):*
>
> *(a) is now behind schedule by 9 months;*

(b) is currently forecast to cost $104 million, rather than the original budget of $97 million; and

(c) has the potential for additional cost overruns given that all risks associated with the project in the event of unsatisfactory performance now rest with Police due to the technical substitutions invoked by Police.

2. Police acknowledge that the INCIS project is experiencing significant difficulties and are endeavouring to manage risks.

3. Treasury is in the process of engaging independent consultants to gain assurances that the risks are being managed.

Andersen Consulting were commissioned by Police and Treasury to generally report on the Project. Andersen Consulting reported in May 1997. Andersen Consulting said that, by March 1997:

- Around $55 million had been expended or incurred out of the total budget of $95 million with a projected cost overrun of a further $8 million.
- The project was eight to twelve months behind schedule.
- The change from OS/2 to Windows NT had added cost and risk.
- Release 1 was about 30% through its critical path schedule.
- The proposed technology platform and development methodology were immature.
- The Contract did not address Police needs.

The report recommended a Blueprint and a review of technical architecture and risk management matters. A Blueprint was subsequently put in place.

The Treasury state that there was to be a second report from Andersen Consulting and this was to be received before Police proceeded to sign a Variation to the Contract, which was then under consideration. In the event, the follow-up report was commissioned several months after the Variation was signed.

In March 1997 Mr Greg Batchelor accepted an alternative position in Australia and resigned as Director of I & T.

On 4 June 1997 the Treasury reported to the Minister of Finance that significant risks had been identified. Treasury outlined three options available to Police. These were to:

- Continue with IBM subject to negotiation of an acceptable agreement with IBM.

- Terminate the IBM Contract and stop the Project.

- Terminate the IBM Contract and continue the Project with an alternative systems supplier.

The report noted that Police were pursuing the first option and had set themselves a target of achieving agreement with IBM on all outstanding issues within the next two months.

On 7 July 1997 Chapman Tripp, the solicitors for Police, gave an opinion advising that:

- Release Two had not been evolved sufficiently for the parties to be committed to Release Two.

- The Off-Ramp key milestone had been omitted from the Project Plan so that it would be dangerous for the Police to reply on the Off-Ramp regime.

- Delays and extra costs had been dealt with by agreement so that it would be difficult for either party to establish a breach justifying cancellation of the Contract.

In August 1997 Dr Jeffrey Soar was appointed by Police as General Manager of I & T.

About this time a preliminary Project Charter document emerged – some three years after contract. Police maintain that they prepared a Partnering Charter, a vision statement, a Project Control Book, a Quality Plan and other documents which were the equivalent of the Project Charter. The Inquiry considers that more was required to cover all aspects of a Project Charter and that the documents referred to by Police were not an adequate substitute.

In September 1997 there was a change in systems architecture with the distributed OO two tier client/server being replaced with a three tier client/server architecture, and the INCIS application developed and run on CICS/MVS platform.

The Inquiry notes that this is an example of a significant movement towards conventional technology and architecture for the scale of operation envisaged for INCIS. The change was very significant as it moved much of the application off the client to the mainframe. It went to the heart of the infrastructure supporting the application. It replaced the architecture with a conventional client/server architecture more familiar to IBM developers.

From 18 September 1997 to 31 November 1997, Operation Obstat was carried out. There was a negotiation between Police and IBM, resulting in agreement on the development work to complete the requirements. In general terms the requirements comprised the matters under the original Contract and matters such as traffic, firearms and justice interface which had been or were proposed to be added to the Contract.

Following Operation Obstat, IBM sought a new contract before proceeding further. Police insisted on a Variation of the Contract.

On 5 December 1997 Police and IBM signed a Deed of Variation. The Variation is referred to in more detail in Section 6.8.10. The effect of the Variation was to provide for the requirements to be performed by IBM on the terms specified in the Contract as amended by the Variation. The Variation added traffic, firearms and justice interfaces to the Project. Police and IBM acknowledged that the current planned cost for the development work to satisfy the requirements was $20 million. The amendments to the original Contract agreed in the Variation were major. The Inquiry notes that Police agreed to the Variation without obtaining the required authority from Cabinet for the increased expenditure.

There had also been a major time slippage - three years had elapsed since Contract. The Business Case had contemplated rollout by 31 July 1995. The Contract had contemplated an eighteen months contract period. By this time, little had been delivered and the Project was about eighteen months past the contemplated delivery dates for Release One including the replacement of LES. The slippage had a major impact on costs as well as on the credibility of the INCIS Project within Police.

In December 1997 INCIS agreed voluntarily to become subject to the IT monitoring regime then being conducted by the SSC.

From December 1997 to August 1998, there were rollouts of hardware – this included the installation of more than 3000 desktop computers in police stations, national and regional servers (rolled out by IBM) and WAN and LAN (rolled out by Police). From an IBM perspective this was delivery of a significant part of the value of the Contract.

On 15 May 1998 there was a Cabinet Office Summary attaching a report to the Prime Minister and Minister of State Services on matters concerning expenditure of approximately $20 million without prior Cabinet approval, that is, additional costs associated with the Variation.

On 18 May 1998, a Cabinet Minute directed the Treasury in consultation with the State Services Commission (SSC) to arrange for a review of the contractual arrangements between Police and IBM and to report to Cabinet. This review was subsequently conducted by Phillips Fox, Solicitors. Cabinet

also directed that officials *develop options for strengthening project management and report to Cabinet.* The Police were directed to report monthly to a sub-committee of Ministers and quarterly to the Cabinet Strategy Committee. Approval was granted for an increase in the overall INCIS cost of $20.17 million, from $97.83 million to $118 million to be funded within the vote Police existing capital contributions and balance sheet resources.

On 26 May 1998 the Treasurer, the Rt. Hon Winston Peters and the Secretary of the Treasury, Dr Alan Bollard, while on other business, visited IBM headquarters at Westchester, New York State. The Treasurer received assurances at a very high level of IBM's continuing commitment to the Project.

On 27 May 1998 the Cabinet Strategy Committee invited Police to recruit an external expert as the INCIS Project Director, referred to the appointment of an internal auditor and required further reports.

In May 1998 Cabinet directed that INCIS be subjected to the monitoring regime being conducted by the SSC.

On 5 June 1998, Andersen Consulting issued their second report, which reviewed progress against the recommendations made in their report of May 1997. The Treasury had originally planned to obtain this report before the Police agreed to the Variation. The report stated a change in the technical platform had reduced the risk, but expressed concern on other issues not being followed up.

In June 1998 Superintendent Crewdson resigned as INCIS Project Director and left the Police in October 1998. The position of Project Director remained vacant until October 1998.

On 23 June 1998, Phillips Fox reported to Treasury on contractual matters and advised *the varied contract looks robust by industry standards but also presents management challenges to Police.* The report states the belief that the level of sophistication in the Contract dictated a need for a formal, clear and separate contract management function within Police. This was subsequently provided by Chapman Tripp.

On 18 September 1998 the State Services Commission reported to the Treasurer and Minister of Finance, Minister of Police, Minister of State Services concerning the Variation and financial authorities. The report states:

> *However, the Police had in practical terms committed to various departures from the original INCIS specification at earlier times, simply by pursuing additional business requirements and technological changes not within the scope of INCIS as originally designed. The execution of*

> *the variation of the Contract in December 1997 formally recorded those variations and agreed expenditure at $118 million which both allowed for additions to the project, and capped other areas of expenditure.*

Cabinet subsequently directed that a letter of reprimand be sent to Police.

On 15 October 1998, the Minister of Police, Hon. Clem Simich, reported to the Cabinet Strategy Committee to the end of September 1998 as follows:

> *There are a number of risks surrounding the project. INCIS has been identified as high risk due to its complexity, size and cost.*
>
> *It is already behind schedule, and a number of mechanisms have been put in place to facilitate effective management of identified risk. .*
>
> *IBM signalled to Police that the cost to IBM of developing the application has risen by a further $14m. Police have attained agreement from IBM that Police will not be liable to additional charges due to this increase in IBM's cost estimates. This was no surprise to Police, who had estimated that the application would cost $35m, rather than the $20m brought about by the variation signed late last year.*
>
> *The cost to Police of the INCIS application is capped by the 1997 Deed of Variation. However, this cap is subject to Police restricting the scope of the application to that described in the agreed Statement of Work. A rigorous process of change management has been put in place and the continued close management of the scope of the application ensures Police compliance with the Statement of Work. The change management process was reviewed by Police legal advisers to ensure Contractual compliance, before being implemented.*
>
> *The main cost exposure to Police are:*
>
> *(a) the continuance of project overhead costs, due to the completion dates of Increment 3. Negotiation with IBM is in progress to transfer these costs to IBM.*
>
> *(b) The final configuration of the national mainframe complex.*
>
> *Although there are a number of significant risks in the implementation of INCIS, a number of steps have been taken to identify and manage those risks.*

The Inquiry notes that there is an apparent conflict between the $20 million agreed to by the Police in the Variation and the $35 million figure in the

report. Police say that the reference to the Police estimate of $35 million was at the date of the report and not at the date of the Variation. Whatever the date, the Inquiry considers the Police report significantly underestimated the risks to Police at that time.

In October 1998 Police appointed Mr Stewart Watson as INCIS Project Director. Mr Watson was an experienced and skilled manager of large IT projects. Mr Watson carried out an audit of the Project and the results are summarised as:

- Major improvement was needed in terms of management.
- The Project was lacking in terms of people – numbers and skills.
- The Project and, in particular the Police side of the Project, had no clear plan that was understood by all.
- There were different groups within the Project with their own views – many working to different timelines.
- There was a lack of planning both in the short and long term.
- IBM was ready to deliver Increment One but Police had no implementation plan, no training and no strategies in place.
- There were no clear plans for the long term.
- There was serious uncertainty surrounding capacity and performance.
- There was a huge concern over the stability of the mainframe.

On 3 November 1998 there was a first meeting of a reconvened Steering Committee. The membership comprised Commissioner Doone, Deputy Commissioner Matthews, Mr Watson and other police personnel.

In November 1998, IBM advised increased development costs and the INCIS Project team assessed whether the Project should be de-functioned by removing or simplifying Increment Three.

In March 1999 IBM indicated informally that development costs then exceeded $20 million.

On 1 March 1999, Treasury reported to the Treasurer, Rt. Hon. WF Birch, and Minister of Finance, Hon. Bill English. The report referred to slippage and said *Police appear to have no levers to manage the slippage.* The delays were assessed at $.510million per month, giving rise to an additional $8.6 million. The options listed for further examination included ceasing INCIS as soon as possible.

On 26 March 1999 an Andersen Consulting report to the SSC dealt with Government options and a package of alternatives. In general terms the options were:

- "Get comfortable" which probably meant a more modest outcome.
- Make a hard decision to continue with the INCIS Project and accept uncertainty and risk.
- Put the Project on hold and carry out a full investigation of options.

On 19 May 1999 Increment One officially went live. The applications comprising Increment One are shown in Section 5.

On 17 August 1999 IBM repudiated the Contract. The Crown and IBM made a decision to settle the legal proceedings against IBM and all outstanding claims relating to the INCIS Contract.

The Inquiry has had difficulty obtaining the relevant figures for the cost of the Contract. The following table based on the Project Director's reports, shows forecast expenditure for those items to be supplied by IBM. The table does not show internal Police costs.

Diagram 5:

Forecast Expenditure for Infrastructure, Applications and Data Conversion

Category	B/Case	Contract	31/12/96	31/3/97	30/9/97	31/3/98	30/9/98	31/3/99
Infrastructure	$78.90	$63.37	$64.61	$60.49	$65.61	$65.95	$70.02	$69.19
Data Conversion	$0.43	$3.55	$4.10	$3.91	$6.43	$6.62	$4.32	$4.34
Application Dev.	$5.53	$22.24	$17.07	$16.24	$21.79	$21.05	$19.90	$21.18
Total	**$84.86**	**$89.15**	**$85.78**	**$80.64**	**$93.83**	**$93.62**	**$94.24**	**$94.71**

5. PROJECT ACHIEVEMENTS

What the INCIS Project Did Achieve

5.1 General

5.2 Police Assessment

5.3 Inquiry's Assessment

What the INCIS Project Did Not Achieve

What the INCIS Project did Achieve

5.1 General

In spite of the problems with the project, INCIS did deliver a number of benefits to Police. The Project delivered a technical infrastructure, including approximately 3,000 desktops, but this technical infrastructure was significantly modified from that specified in the original Contract. The Project also delivered certain aspects of the INCIS application (Increment One) which was essentially a National Intelligence System (NIS) replacement. However, the Project did not achieve its intended Business Case financial or business benefits.

5.2 Police Assessment

Police told the Inquiry that the Project delivered:

- Modified technical infrastructure
- Operational support
- Intelligence analysis
- Increment One
- Online information
- Interface with the Justice Sector

- Administration support
- Training

Police maintain that they have benefited significantly from the introduction of INCIS technology. They perceive that *70% of the project was delivered for 70% of the cost* and that the refresh of technology with the networks and the new end-user devices provide a foundation for the future. Police say that, though the full benefits of the Business Case were not realised, significant technology advances in operational support were derived from the Project in terms of infrastructure, operational support and on-line information. Police cite the benefits as being:

Infrastructure

A nationwide infrastructure implemented via INCIS incorporating:

- *The Police Enterprise Communication Network (PECN); (an integrated industry standard electronic communication network).*
- *Local Area Networks at over 400 police stations including 3125 PCs and laptops, and 800 printers.*
- *A Systems Management Centre (SMC). The centralised systems management function which has the responsibility for:*
  - *Software distribution throughout every police station in New Zealand;*
  - *Administration of 3125 workstations and 400 + servers;*
  - *Server and desktops backup and restore functions;*
  - *Remote control of workstations and servers ie the SMC can remotely view what a user is doing to assist fault diagnostics;*
  - *Alert management to system and user difficulties and possible training requirements;*
  - *Problem recording and change management;*
  - *Network management;*
  - *Security management (logins, passwords and registration); and*
- *A sophisticated intelligence application that replaced NIS.*

Operational Support

General desktop applications:

- *Intelligence (12) for intelligence analysis;*
- *Other operation modules (Diversion, Youth Aid, Secure Info, Modus Operandi, Financial Transactions Reporting);*
- *Internet/Intranet capabilities;*
- *E-mail infrastructure;*
- *INCIS Increment One;*
- *Access to the Law Enforcement System (formerly Wanganui);*
- *Microsoft office tools (Word, Excel and PowerPoint);*
- *Office forms (templates);*
- *Computer based training applications.*

Other specific systems developed and implemented, or being implemented, during the INCIS Project, and utilising in part the INCIS infrastructure include:

- *Fingerprinting – (AFIS);*
- *Emergency Response – (CARD);*
- *Human Resources – PeopleSoft;*
- *Financial Management – SAP;*
- *Intelligence systems – MAPS.*

Intelligence Analysis

INCIS delivered 40 specially configured "Intelligence Analysis" workstations to Intelligence sections throughout Police Districts. These workstations were provided with:

- *A national digital map accurate up to half a metre in support of intelligence analysis.*
- *A geographic based crime trend analysis tool to support intelligence based policing.*
- *The intelligence linking application I2, is a quality analysis tool, that is currently being used by the Intelligence units to identify linkages between persons, objects, locations, organisations and vehicles. This is providing information for frontline police officers to*

assist with the targeting of criminals or other particular crime problems.

INCIS Application (Increment One)

The Project implemented the first of three intended increments in May 1999. Increment One provided an application for intelligence analysis and the replacement of the National Intelligence System (NIS). Increment One is interfaced to LES.

The INCIS settlement agreement also assigned Police with the rights to the case management facilities developed by IBM as part of Increment Two.

On Line Information

The On Line Library suite of applications make available to Police throughout the country, at their desks, information that was formerly only held on paper. This information was not always available, it was hard to search and not always up to date.

The On Line Library incorporates the following applications:

- *Law Library;*
- *Procedure Manuals;*
- *Policy Documents;*
- *Training Modules; and*
- *Police Library Catalogue.*

Justice Sector Interface

INCIS interfaces with other justice sector agencies. An INCIS LES interface has been used by Corrections since June 1998 to support the Integrated Offender Management System (IOMS) interfacing with LES.

Administrative Support

Lotus Notes applications have provided more efficient systems for use in handling urgent correspondence such as Parliamentary Questions. That application replaced the current system on Wanganui, provided full text search (across current and historical documents), gave notification of due dates for replies and provided tracking of questions/replies. Lotus Notes mail provided an interface to other government agencies via e-mail.

Administrative support is also provided through:

- *E-mail which is currently available to a limited audience, is being trialed for general implementation;*
- *Electronic Performance Support System (EPSS) – integrated online help for INCIS users;*
- *The standardisation of processes throughout the country has developed through the use of templates that are available on the enterprise desktop in the following areas:*
  - *Standardised police forms and procedures (Youth Aid, Coroners, search warrants etc).*
  - *Preformatted letters, memos and faxes.*
  - *Reports and statements.*

Training

Computer based training modules contain graphical and actual screens (INCIS GUI)) representations that guide users through a self-learning process. They utilise standard adult learning techniques of "tell, show and do". The modules contain self-evaluation tests.

With the PC rollout, 37 training sites were established throughout the Police districts, which were populated with approximately 280 training dedicated PCs. There were two phases to the training:

- *PC and laptop training;*
- *INCIS Increment One training.*

Two INCIS Increment One training databases or educational environments were established. One was established for the general Police audience at the training sites. The other environment was designed for the Royal New Zealand Police College (RNZPC).

Police maintain that INCIS delivered the objectives specified above and that the failure to achieve the full objectives was attributable to:

- Slippages and delays by IBM in not providing baselines and milestones in a reasonable way.
- IBM not abiding such baselines and milestones as provided.
- IBM not delivering in accordance with the Contract.
- IBM terminating application development work under the Contract.

5.3 Inquiry's Assessment

The Inquiry's assessment is the Project delivered Increment One of the INCIS application (which comprised NIS and which was part only of Release One plus a number of technical functions). It was not possible to decommission LES.

Increments Two and Three (which comprised part of Release One and all of Release Two) were not delivered.

Most of the business requirements, as set out in the Business Case, were not delivered.

If the original objective had been to achieve the functions of INCIS that were delivered by IBM, the infrastructure and systems software required could have been much less sophisticated and could have been achieved within a lower budget.

What the INCIS Project Did Not Achieve

The INCIS Project did not deliver significant business benefits including:

- the exiting from LES and most of the functionality supported by LES;
- the case and investigation management;
- interfaces to CARD; and
- speed-books.

6. KEY ISSUES, LESSONS AND RECOMMENDATIONS FROM INCIS

6.1.1 General

The reasons the INCIS Project failed to achieve all of its objectives are numerous, interrelated and complex. No single cause resulted in the failure but the combined effect all these causes significantly increased the potential for the Project to fail. The key issues and lessons are addressed in this section and other issues and lessons are referred to in other sections of the report. The issues and lessons are also interrelated and complex and cover technology, governance, management, personnel, form of the Contract, the relationship between Police and IBM, the standards for approval and monitoring and other factors. The recommendations derived from the lessons are itemised.

This section first addresses four main areas:

- Technology and Architecture
- Governance and Management
- Risk Management
- Change Control.

INCIS is then considered under the various stages of the Project:

- Project Formation

- Project Approval
- Contract and Variation
- Project Implementation

Some issues and lessons are common to more than one of the chronological stages.

The issues arising in the INCIS Project were not unique to Police. There are ample examples of similar issues in both the public and private sectors in New Zealand and overseas. The Inquiry considers the lessons and recommendations outlined in this report apply to both public and private sectors.

6.1.2 Strategic Assessment

At an early stage and throughout a large IT project, governance and management need to make sound strategic assessments as to the nature, structure and organisation of the project.

In the view of the Inquiry, at the heart of many strategic assessments should be:

- The concept of the separation of the infrastructure (backbone) from applications – in particular, where the infrastructure is to service significant functions for the business in addition to the applications for the particular project.
- The concept of modules (that is, the incremental delivery of discreet useable business functions).

The strategic assessment includes:

- An assessment of the scope project;
- Identification of discreet useable business functions that can be delivered in modules;
- The appropriate treatment of infrastructure and applications;
- A structure for governance and management and the appointment of appropriately skilled and experienced personnel;
- Integration of the total project or programme within the overall business – and who should perform this function;

- The selection of technology that will deliver the functions required – normally, proven technology;
- If unproven technology is chosen, deciding what new technology testing should be used to minimise risk;
- The management of risk;
- The procedure and timing leading to contract or contracts;
- The procedures for the business case, proof of concept (where required), blueprint, independent quality assurance (IQA), and other aspects of quality management;
- Relationship with Monitoring Agencies in relation to approval and monitoring.

In relation to INCIS the Inquiry considers that there were serious deficiencies or omissions in many aspects of the limited degree of strategic assessment made by Police. These are identified in the report and, in particular, in this section.

6.1.3 Lessons and Recommendations

Strategic Assessment

LESSON

The successful conception, implementation and completion of a large IT project requires a high degree of strategic assessment by governance and management.

RECOMMENDATION

Governance and management and Monitoring Agencies should ensure that proper strategic assessments are made as and when required during the conception and implementation of a large IT project.

Key Issues, Lessons and Recommendations from INCIS

6.2 Technology and Architecture

6.2.1 General

This section addresses the technology and architecture proposed or used in the INCIS Project. The technology and architecture impacts upon governance and management, the risk management process, contractual issues and other matters.

Police looked extensively for existing suitable packages but were unable to find anything that met the INCIS specification. This in itself should have been a warning of the complexity and magnitude of the problem. Police then sought a bespoke solution.

Deficiencies and problems relating to the technology and architecture chosen were amongst the key reasons why INCIS did not achieve its objectives.

6.2.2 Proposed Solution

The technical solutions proposed by the INCIS Project were encapsulated initially into two major streams of work - infrastructure and application development.

The technical infrastructure was required primarily to support the INCIS application. The infrastructure comprised of computer hardware (server), systems software, Systems Management Centre (SMC), Wide Area Network (WAN), Local Area Networks (LANs), and desktops.

Development of an INCIS application was required to capture most of the business functions envisaged by the INCIS vision and concept (see section 3.1).

Large IT projects will normally require both infrastructure (hardware, operating system, networks etc.) and applications. The two are separate but complementary. Usually, the infrastructure will be servicing other functions of the business which are beyond the applications being developed by the Project. This turned out to be the position in relation to INCIS.

Generally accepted practice requires that infrastructure and application are treated as separate but may be linked for contractual purposes. This recognises that the infrastructure will normally be servicing a broader set of requirements beyond the project. Where the infrastructure is serving a broader infrastructure separate contracts for infrastructure and applications are normally negotiated. However, a single contract may be used but it should provide clearly for the linked delivery of infrastructure and applications so as to deliver modules of discreet business functions.

In the INCIS Project, a single contract was let for the infrastructure and applications. In the view of the Inquiry, this:

- Increased risk.
- Allowed cross subsidisation of the applications development by the infrastructure.
- Did not achieve just in time delivery of the infrastructure components in the way the Police administered the Contract.

Separate but linked contractual arrangements for infrastructure and applications providing for delivery of the infrastructure and applications in modules, giving business benefits, would have been appropriate.

Where possible, the application should be unbundled into discrete modular business deliverables.

Chapman Tripp are of the opinion that, because of the poor contract management processes identified in this report, the result of INCIS would have been the same no matter what form of contract was used.

6.2.3 Core Architecture

The IT core architecture provides the overall umbrella across both infrastructure and application development. It defines the environment both live within, ensures compatibility and identifies specific key technologies to be used. The INCIS Project Technical Substitution Project Plan of 17 March 1995 defined the core architecture as:

> *The components of the "core architecture" are deemed to be technologies which provide the basis for the design of the system technical architecture. That is to say that replacing any of the core architecture components will require the entire system design to be re-addressed. This will have an impact on cost and delivery schedules of INCIS. The core technologies are not subject to Technology Substitution. These core architecture components are:*
>
> - *Host Operating System MVS;*
> - *Station Server Operating System – OS/2 & LAN Server;*
> - *Desktop Operating System – OS/2 & LAN Requestor;*
> - *Host Database - DB2;*
> - *Station Cabling – Token Ring; and*
> - *Network Protocol – SNA.*

The Inquiry considers that the above constitutes a sound statement, that the components are correctly described as *core architecture* and that the consequences arising from substitution are reasonably assessed. Core components should only be changed for compelling reasons. Notwithstanding the above, four of the core components were in fact substituted. The substitutions caused delays and other adverse consequences.

Significant changes in core architecture were not reported or adequately identified in the reports of the Project Director, referenced to the Business Case or reported to the Treasury.

The technology and architecture provided for in the Contract was, in the view of the Inquiry, over-ambitious and very difficult to achieve at that time.

High Risk Components in the Solution

The Police and IBM embarked on a large and complex project and specified unproven or emerging technologies and architectures to develop and deploy

INCIS. The high degree of technology risk impacted other areas of the Project and required a very high standard of governance and management.

New Technology Testing
The Inquiry acknowledges that there are instances in practice where emerging technologies are deliberately employed.

However, in these instances specific methodologies should be used to determine how the new technologies are to be used and what is required to ensure their effectiveness. A commitment to purchase should not be made until it has been proved that the new technologies will work under the proposed conditions and that skilled resources are available - and then only after the completion of a peer review.

This process is referred to in the report as New Technology Testing.

6.2.4 Maturity of Technology

Technology can be described as emerging, leading edge and bleeding edge. The meaning of these terms as used in this report is:

emerging, leading edge – the technologies have been defined, although the definitions might not be universally accepted and might still be evolving. A number of components are available. However, many aspects of the technology are still under development and key supporting and sustaining elements are not commonly available.

bleeding edge – emerging technologies that are at the initial stages of development. Some parts are still in the conceptual stages. While their use may lead to successful innovation, it is accompanied by a high risk of failure.

On 4 September 1992 it was recorded that, in respect of technology, Police did not to want to be *the first off the block* and would select *approaches which can be seen as touched elsewhere*. However, by the stage of Request for Tender (RFT) December 1992, specifications for INCIS required the use of emerging technologies that were mostly unproven in a development of this size and type and applications of this complexity. These included:

- The use of Object Oriented Technology for application, design and development.

- The decision to implement a distributed OO client/server application architecture.

- The commitment to decision support technologies including data mining for data analysis.

- The requirement for portability of the INCIS software across a number of operating system platforms.

Later the Sapphire report stated:

> *Proven: Police does not wish to be the proving ground for "bleeding edge" technology. All the components used in the final solution must have been used effectively elsewhere in the world. However, Police recognises that there may be no site anywhere in the world with the same combination of products and approaches that are required for the solution to is needs.*

Notwithstanding the statements relating to using technology that was in use elsewhere, the INCIS Project used emerging technologies that were mostly unproven for a large complex application.

6.2.5 Missing Blueprint

In major and complex IT projects, generally accepted practice would involve the production of a Blueprint at the start of the project.

A project Blueprint:

- Maps the future processes, technology, and organisational structures to the business. This can be considered a part of the project definition.

- Sets out the vision for the project including business models, operational performance measures, organisation, information systems, and support service requirements.

- Sets out how the system will operate when the programme has been completed.

- Sets out how to proceed, in an organised way, from zero functionality to full functionality.

The Blueprint must be refined and maintained through all stages of the project.

There was no Blueprint document for the INCIS Project. This meant there was no agreed consolidated view of what the Project was or any context as to how it was to be delivered. Not having a Blueprint meant that requirements could be changed without appropriate control or understanding of the impact on the INCIS Project or on the business benefits.

The Blueprint should have been in place and agreed by the Steering Committee before the signing of the Contract in September 1994.

6.2.6 Object Oriented Technology (OOT)

The adoption of Object Oriented Technology (OOT) for the development of the INCIS application created a major risk for the Project.

Essentially, OOT involves the encapsulation of computer instructions with the associated data enabling the resulting 'object' to perform a prescribed business or technical function. The object becomes a resilient entity capable of communicating with other objects which, when assembled as a group, form a complete application or process.

The claimed advantages of using OOT include:

- Faster development time.
- Re-use of previous work.
- The use of modular architecture to simplify design and construction.
- Simplified systems because the objects can parallel the businesses they are supporting.
- Reducing the complexity of the resulting systems.
- Better support for client/server applications.
- Simplified management of compound documents (incorporating image, text, and data).

The decision to use OOT made the implementation of the INCIS application high risk because it was very new technology and standards were immature. At the date of Contract, there were some specialised applications such as Graphical User Interfaces (GUI) using objects. However, at that stage, there were few commercial applications of the size and complexity of the planned INCIS application using an OOT, especially in a distributed OO client/server environment. The methodologies and support tools for designing and developing business systems using an OOT were not readily available nor was there a pool of experienced developers.

According to the Sapphire report IBM had made it clear that it considered that *"the concept of a distributed object computing environment was impossible to achieve"* and commented that *"this may be the case with today's technology but the Project Team felt that it was important to paint a picture of how INCIS would develop over the long-term rather than trying to develop and implement a snap-shot of today's technology"*.

The first document available to the Inquiry referring to OOT was the RFT. The requirements in the RFT added a large dimension of risk. This risk should have been identified in the Business Case and other relevant documents.

If OOT was to be used, New Technology Testing should have been completed before committing to OOT.

In the final event, IBM did deliver OOT as part of Increment One, but this was about four and a half years after the date of Contract, instead of the original 18 months specified. The Inquiry believes that the complexity of OOT, the lack of development tools and time needed for OOT to catch up to the requirements of the INCIS Project were significant factors in contributing to delay.

6.2.7 Distributed OO Two Tier Client/Server

The Contract was for a distributed OO two tier client/server application environment. In the 1994 to 1997 period, this was an emerging technology and subsequently has not fully met the claims originally made for it. The Inquiry is not aware of any successful examples of distributed OO two tier client/server architecture of the scale (3000 plus users) and geographical distribution when proposed initially in the INCIS Project. In 1994 it was too early to develop an application such as INCIS using a OO distributed client/server architecture.

In 1997 IBM and Police agreed to amend the architecture. The INCIS application (Increment One) would be developed and run within the CICS/MVS mainframe environment and three tier client/server architecture. The Variation provided that this would be delivered as part of Increment One. The intention was to extend this architecture to Increment Two and Three including using Image and Record Manager (IRM) and the Process Manager.

6.2.8 Process Manager

The process manager was the central core component of the INCIS application representing the integrating software that brought together all other elements within the system.

The Contract (Volume II para 2.1.6) specifies:

> *The term "Process Management" describes the system to store, process and management event-driven processing, referred to as "processes". These can either be system-driven events or user-driven events. An example of the use of Process Management could be to co-ordinate the completion of Case Processing steps*

The Sapphire report (Schedule 9) under the heading *Issues and Concerns – Technical* stated:

> *Process Manager: The Process Manager does not exist anywhere around the world and is perhaps the most complex part of INCIS. IBM was unable to demonstrate through the evaluation process how this would work or how it would build it. This is a major concern to the Project Team. A full re-evaluation of the Process Manager is required before Police can proceed any further. The Project Team believes that the Process Manager is the weakest technology link in the IBM proposal and represents high risk for Police*

The Contract stated that the process manager was to be *pervasive* to INCIS.

The Process Manager was originally scheduled to be delivered in Release Two but was found to be required for Release One. Subsequently the Process Manager was substituted by a new product called Flowmark.

The Inquiry believes the Contract should not have proceeded with knowledge of the above position in relation to the process manager.

6.2.9 Decision Support

In 1994, decision support technology of the type being proposed for the INCIS application was in its infancy. The tools required to capture, aggregate, summarise, and analyse the data, required specialised skills to operate. They also, at that time, tended to run on stand-alone systems (using their own separate databases). The approach Police were proposing for this type of facility was to be distributed to most Police stations and be available to a large number of staff. This would have required significant customisation of the packages available in the 1994 to 1997 period. It would also have required extensive specialised training for Police. To overcome this issue the INCIS application was to incorporate a process manager to facilitate many of the functions required for decision support and to simplify their use by the users. In addition, these systems required a high level of power and capacity to achieve an acceptable performance.

While the proposal was very ambitious at that time, this technology is now available and the Inquiry understands the Police have made significant advances in this area since Increment One was implemented in May 1999.

The Contract was terminated before decision support technology or data mining were to be delivered as part of Increment Three.

6.2.10 Portability

The Police required the INCIS application to be capable of running on a number of other computer operating systems. These systems were listed in the Contract. IBM then had 180 days to make the appropriate changes to allow this to happen when requested by Police. The reasoning was to future proof the INCIS Project, to ensure cost contestability, and to make the INCIS application more marketable to police forces throughout the world.

The multi-platform portability concept was flawed as:

- The Inquiry is of the view that the level of portability envisaged was at that time very difficult to achieve and a major distraction.

- Future proofing of INCIS could be achieved largely by a number of established means to convert INCIS to another platform. The portability across platforms envisaged was not necessary for future proofing. The move from OS/2 to Windows NT did not provide portability of the INCIS application.

The Contract was terminated before portability was to be delivered, although the move to the use of IBM's Visualage development tool in 1998 enables the regeneration of many of the INCIS application modules to run on other platforms.

6.2.11 Technology Substitution

The Sapphire report refers to Police wanting the best technology solution available anywhere in the world to fulfil the Police business requirements and, if worse-came-to-worst, that the technology substitution provisions in the Contract could be invoked.

From an early stage, the Police proceeded with the Contract in the belief that, if the technology or architecture specified in the Contract could not be delivered (or there were improvements), the technology substitution provisions of the Contract could be invoked to substitute the best technology solution then available (the Police concept of technology substitution).

(For discussion on the provisions in the Contract on technology substitution, and variation see section 6.8.7.)

Notwithstanding the possibility of a change to the Contract under the technology substitution regime or by way of an agreed variation, a more fundamental issue is that there was not the degree of certainty that there should have been that the technology and architecture under the Contract would deliver the functions required for Police business purposes.

Police were warned by Ernst & Young to be completely satisfied that IBM could deliver the applications. The Sapphire report states Police were told by

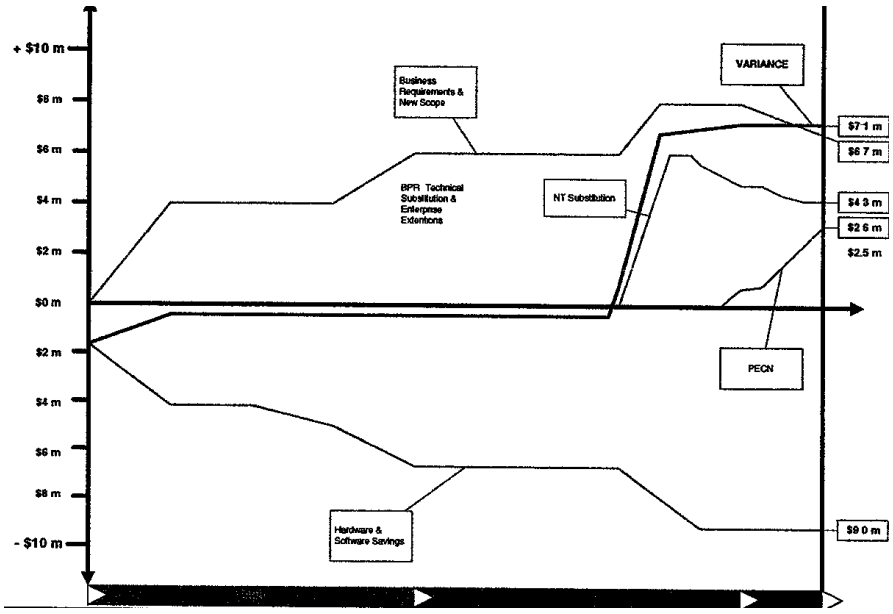
IBM prior to Contract that it was impossible to achieve the technology specified.

Neither party should have proceeded to Contract or continued on the basis that significant problems with the technology in the Contract could be remedied by invoking the technology substitution.

The effect of technology substitution actually made by Police is illustrated by Diagram 6 and the following quote which are taken from the Project Director's status report of 31 December 1996.

Diagram 6:

Impact of Technology Substitutions on the INCIS Project



In early 1995 project management recognised that significant work was required to develop the business requirements contained within the RFP to enable application development to commence.

Refinement of the business requirements identified requirements not included in the INCIS contract which were essential to cutover from the Wanganui computer systems (Traffic, Firearms etc).

At the time these decisions were made the project was forecasting significant savings though hardware cost reduction and a strategic account relationship with IBM to reduce software cost. It was decided to use the hardware and software savings to offset the cost of requirements definition exercise and the cost of building the software

> *outside of the INCIS contract but necessary to exit Wanganui.*

As the Inquiry reads Diagram 6, it shows that the net cost of substitution after savings was $7.1 million and the total cost before savings was $16.1 million.

6.2.12 Role of Systems Integration

Systems integration is the complex process of integrating a suite of applications (software), computer hardware, networks (often from multiple suppliers), infrastructure, and business process and operations into one efficient functional system. There are normally business process changes, human relations and workflow factors involved. In large projects, a specialist consulting organisation with considerable experience in systems integration is usually retained.

All the above considerations applied to the INCIS Project. In addition, integration or interfacing with Justice sector agencies and the emergency services was also required.

Systems integration for the INCIS Project was complex and required extensive planning, training and commitment from Police.

Ernst & Young indicated that they were comfortable with IBM's role as systems integrator and said:

> *In the preferred alternative proposal IBM has the experience and technical capability to take on the systems integration technical role….*

There was no provision in the Contract for systems integration other than that IBM would deliver the application and rollout the network and desktops.

The Police concept of systems integration appeared to have been restricted to integration of the technical modules within the INCIS applications and infrastructure.

Police did not have the requisite systems integration experience for an IT project of the size and complexity of INCIS. Mr Watson told the Inquiry that when he was appointed he carried out an audit of the Project. One of the matters he found was that there was no strategy and no dates to work to for systems integration. A detailed implementation plan was required. Mr Watson said senior Police had difficulty in understanding the need for the plan and the need to buy into it.

The Inquiry believes the roles, in the area of integration were not clearly defined and agreed to by both parties (IBM and Police). This added to the strained relations between the parties and led Police to believe they were taking on a greater responsibility for delivery of INCIS than they originally

contracted for. This meant planning, through to implementation, was not completed until the new Project Director identified and rectified the problem. The use of an experienced team was necessary to conduct the systems integration role beyond that contracted with IBM.

6.2.13 Overall Effect

The Police believed that the INCIS infrastructure and application was capable of being delivered by IBM. They assumed IBM's size, extensive research facilities and resources were sufficient to overcome the difficulties associated with emerging technologies and that IBM would deliver the INCIS infrastructure and application. This is at odds with advice given in the Ernst & Young and Sapphire reports.

Many aspects of the technology were unsuitable or not fully developed when the Contract was signed. This led to significant change through the life of the Project causing high risk, instability, delays and other problems.

To reduce the risk a proof of concept process should have been completed prior to Contract. This would have assured Police that the technologies would deliver. For further discussion see Section 6.6.7.

6.2.14 Lessons and Recommendations

Proposed Solution

LESSON:

The INCIS Project sought to achieve its objectives by implementing technology and architecture which was unproven in a system of the size, complexity and geographical distribution of INCIS.

RECOMMENDATION:

Normally it is desirable to use proven technology. Where it is necessary to depart from using proven technology, a New Technology Testing programme should be completed prior to contract and the Chief Executive and monitoring agencies should be satisfied the technologies will deliver the business benefits.

LESSON:

Large IT projects will normally change the technical infrastructure and applications. The two are separate, though complementary, and should be dealt with as such. The bundling of infrastructure and applications into a single contract (which does not provide clearly for the delivery of applications in modules of discreet useable business benefits) for a large IT project will significantly increase the project's complexity which will, in turn, increase the risk of serious problems.

RECOMMENDATION:

For large IT projects, the IT infrastructure should preferably be "unbundled" from the applications and, where possible, the applications should be modulated into discrete business deliverables.

Core Architecture

LESSON:

The extensive changes to core architecture adversely affected the INCIS Project.

RECOMMENDATION:

Core architecture should not be changed unless absolutely necessary. Any changes should be in strict compliance with change control, be referenced to the business case and be reported by the Project Manager and to the Monitoring agencies. Where possible changes should be delayed until after the application development has been completed.

LESSON:

The rate of change of technology over the life of the project can create significant pressures on project governance.

RECOMMENDATION:

The life of the project should normally be limited to not more than one year. Any project planned to take a longer time needs to be in modules and, on the completion of each module, a decision can be made to modify technology to meet the then position.

New Technology Testing

LESSON:

A contract requirement for emerging or unproven technology brings high risk. The normal approach, where emerging or unproven technology might be required would be to complete a New Technology Testing programme. In the absence of New Technology Testing, the risk is usually prohibitive.

RECOMMENDATION:

New Technology Testing should be used for emerging or unproven technologies and, even with New Technology Testing, emerging and unproven technologies should be used only after a careful assessment of risk.

Missing Blueprint

LESSON:

Without a Blueprint at an early stage, a large IT project will lack the essential and integrating focus required for guiding the detailed design, development and change process.

RECOMMENDATION:

Any large IT project should have developed an effective Blueprint prior to application design.

Technology Substitution

LESSON:

A large IT project must have a sound technical solution in place at the time of contract. A technology substitution regime should not be used instead of identifying sound technical solutions in the first place.

A technology substitution provision in a contract is in principle an appropriate approach, as it is a means of giving some of the technical flexibility necessarily required by a large IT project. There are other ways of providing flexibility, such as in the form of the contract itself. A danger inherent in a technology substitution provision is that it is open to misuse. It cannot be used as a means of making up for shortcomings in the contract, such as the lack of a clear technical specification, and its use as a mechanism for changing major technical components of the solution will lead to increased delay and risk.

RECOMMENDATION:

Large IT projects should have identified sound technical solutions at the time of contract and any technology substitution should be limited in scope to substitution of items or components within the existing technical solution. Technology substitution provisions should not be used as a primary means of managing a contract.

Police Role of Systems Integration

LESSON:

Systems Integration for large IT projects is a skilled operation which normally requires the engagement of a specialist organisation.

RECOMMENDATION:

Normally a large IT Project should engage a systems integration specialist.

Key Issues, Lessons and Recommendations from INCIS

6.3 Governance and Management

6.3.1 General Principles of Governance

Many organisations recognise the potential benefits that technology can yield. Successful organisations, however, understand and manage the risks associated with implementing new technologies. Thus governance and management needs to have an appreciation for and a basic understanding of the risks and constraints of IT in order to provide effective direction and control.

Governance and management should comprise an organisation of skilled and experienced personnel supported by a proper reporting regime.

Sound governance and management are vital to the successful implementation of a large IT project and this was even more essential for the INCIS Project by reason of its uniqueness, size and complexity.

The Inquiry believes that during the life of the Project there were serious deficiencies and shortcomings in governance and management from which lessons can be learnt.

6.3.2 *Governance and Management of the Project*

Generally accepted project governance and management practice should comprise:

- A Chief Executive who is committed to the project and who is responsible for acceptance of the project by the business as a whole. The Chief Executive also has overall responsibility for the project – notwithstanding any delegation.

- A Project Sponsor who reports to the Chief Executive and chairs the Steering Committee.

- A Project Manager who reports to the Sponsor.

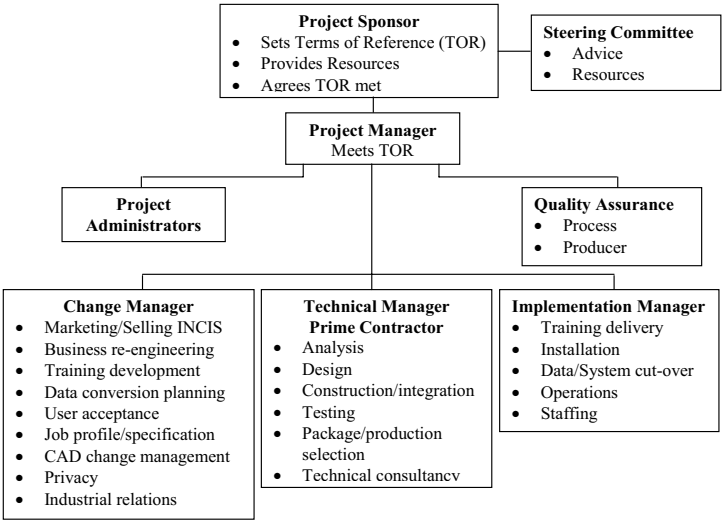
- A Risk Management Manager, a Contract Manager and other personnel with clearly defined responsibilities.

- A Steering Committee with an appropriate mix of internal and external personnel who have business and technical skills and experience.

The Business Case showed the structure proposed in Diagram 7.

Diagram 7:

Project Management Structure as shown in the Business Case

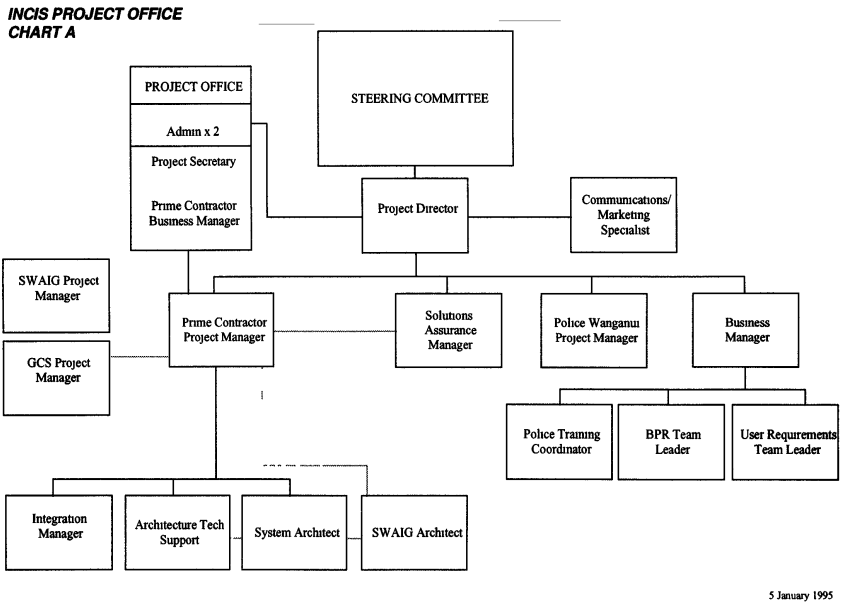


The structure for governance and management of the INCIS Project shown in the Business Case was in accord with generally accepted practice.

Diagram 8 shows the Project as initially established – including IBM's relationships.

Diagram 8:

INCIS Project structure



The above structure was also in accord with generally accepted practice.

The structure adopted by Police in 1995 (Diagram 4) departed from generally accepted practice in that:

- The Project Director was reporting to the Director of I&T and not to the Project Sponsor.

- Business Process Re-engineering (BPR) was transferred from INCIS to Policing 2000.

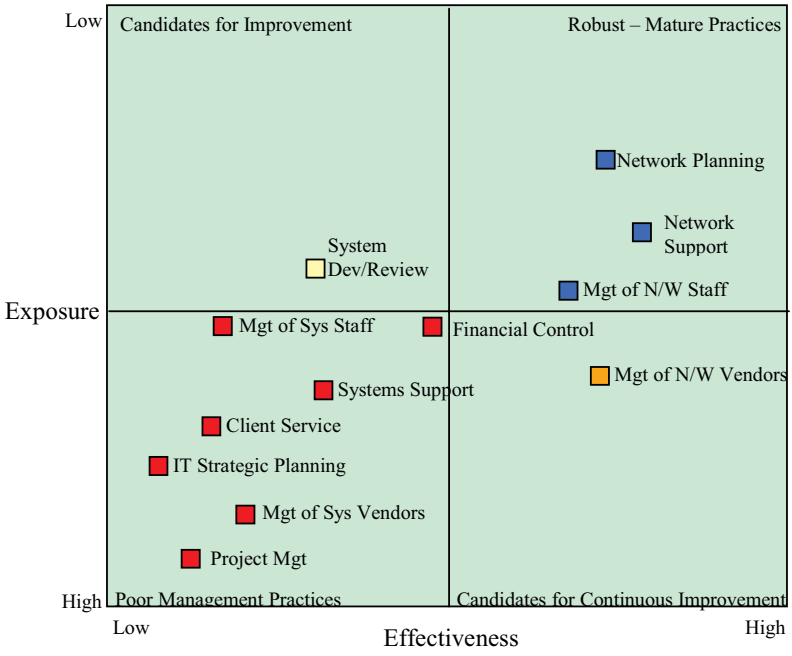
The structure adopted in 1995 impacted negatively on governance and management.

KPMG in their review of Police Information and Technology structures and strategies 15 December 1994 assessed Police management practices. The KPMG review clearly had concerns with management practices impacting the INCIS Project, namely project management, management of system

vendors and IT strategic planning. These concerns were identified in the following diagrams and text:

Diagram 9:

Management Practices



Police are about to enter a completely new era of the information and technology age This includes approaches which encompass modern concepts such as the object oriented paradigm, open systems. etc

In terms of the future staff skill sets being outlined for the INCIS project, these include high levels of skills required in object-oriented systems design and software development. None of these skills are currently embodied within Police, and in terms of the INCIS development activities, these may have to be outsourced.

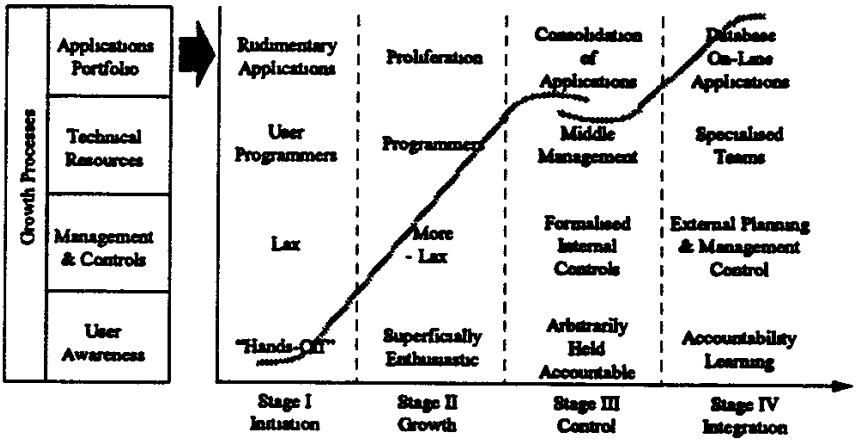
The application development and support resources currently employed by Police, will continue to be highly utilised for ongoing support and enhancement activities connected with the current application and technology portfolio. This is a potential constraint to dramatically re-skilling these resources in the short term.

KPMG's assessment conclusions were:

> *Based on industry research, the development or growth pattern of significant or complex information and technology users follows a defined path, through a number of stages - Initiation, Growth, Control, and Integration. This progression is particularly true of organisations who have had a long history of data processing.*

Diagram 10:

IT Stages of Growth



This diagram indicates the major activity areas within organisations which are the subject of ongoing growth and development. Coupled with aspects relating to User Awareness, these include three areas of strategic importance to Police.

Based on the results from the technology assessment, Police clearly fit within Stages I and 2, reflecting their use of an application portfolio that as largely made up of older legacy systems, utilising increasingly dated user interfaces and proprietary operating environments, coupled with the recent proliferation of local area networks, which while capable of satisfying specific information needs, are largely out of control.

The future vision for Police, as encompassed by the planned INCIS development (and associated technologies), indicates a strong move towards Stage 4 and beyond.

International experience indicates that it is not possible to miss out any of the stages illustrated above, and yet Police must implement INCIS and other advanced technology solutions to keep up with their stated policies and corporate strategies.

For this reason, the short term initiatives and recommendations, and the longer term guidelines and

> *strategies of the ISSP, reflect the need for Police to enter and accomplish the Control stage shown above, before they can reasonably expect to implement innovative and leading edge technologies successfully.*

The Inquiry considers that the above shows that at the commencement of the Project, Police were advised that in terms of governance and management they were not ready to proceed with the INCIS Project.

6.3.3 Role of Chief Executive

The Chief Executive - in the case of Police, the Commissioner - is responsible for the governance and management of a project through to a successful completion.

As stated in the paper from Treasury and State Services Commission (SSC) (Schedule 13), the Chief Executive normally has responsibility for the governance and management of a department or other Government organisation.

The report of the Controller and Auditor General on *Governance and Oversight of Large Information Technology Projects* describes the role of the Chief Executive for IT projects.

The Chief Executive will be responsible for the resourcing and appointment of key personnel for the project. The proper resourcing of and the appointment of key personnel for the project are amongst the decisions that are most critical to the project success. Normally the most significant appointments will be those of Sponsor (if not the Chief Executive) and that of Project Manager. Usually the earlier that the Sponsor and Project Manager can be appointed the better. The Chief Executive needs to be fully satisfied that the Sponsor and the Project Manager have the requisite skills and experience for the project.

The Chief Executive's contract of employment should include performance criteria relating to all large projects for which the Chief Executive is responsible.

The Commissioners were Commissioner Macdonald from January 1994 and Commissioner Doone from July 1996.

Project Formation
The Chief Executive needs to ensure there is:

- a sound business case, that:
  - Is linked to the strategic plan.

- Establishes the business benefits to be delivered.
- Identifies the proposed technology and how it will deliver the business benefits.
- Specifies the method of implementation, for example, usually to unbundle the infrastructure from applications and provide for delivery of business benefits in modules.
- Assesses any uncertainties in the financial estimates.
- Outlines the main risks and the proposed risk management process.
- Outlines the governance and management structure.

- If appropriate, a proof of concept.
- BPR, which should normally be completed or substantially completed prior to contract.
- If appropriate, a peer review or independent advice.

Project Approval
The Chief Executive is responsible for making an application to Cabinet or the Minister for approval of large projects. The basis of the application should be the business case. The Chief Executive should consult with the Monitoring agencies to ensure that the business case contains all information likely to be required by the Cabinet, the Minister or the Monitoring agencies. The Chief Executive should also consult with the Monitoring agencies on the monitoring regime, the risk management process, Independent Quality Assurance (IQA), and other factors.

Contractual Agreement
Prior to signing of the contract, the Chief Executive should obtain certification that the contract is suitable for execution from the lawyers, IT advisers or others engaged in the negotiation of the contract and from the Monitoring agencies.

Project Implementation
At the appropriate stage, the Chief Executive should put in place, a change control process. The concept being that change should be minimised until such time as the project, or the relevant module, is completed and signed off. No change should be allowed unless the change receives express approval under the change control process.

The Chief Executive should communicate with the Monitoring agencies in relation to IQA and the person or organisation to conduct and report on IQA. The Chief Executive has a responsibility to participate in and should be

completely satisfied with the appointment of an independent person or organisation to conduct and report on IQA.

The Chief Executive should take care to ensure that the terms of reference for IQA are comprehensive and that the person conducting the IQA is aware of the responsibility to report to the Chief Executive, the Sponsor and the Monitoring agencies.

The Chief Executive should ensure that there is a comprehensive internal audit of the project with the auditor reporting at least quarterly.

The Chief Executive should have a co-operative attitude towards the monitoring regime. He or she should appreciate that it is a process which should be integrated with the management of the project and which should provide early warning of problems for the Cabinet or the Minister. Likewise, it should also provide an early warning to the Chief Executive.

The Chief Executive should confirm that the Project Manager has put in place:

- A project charter, which should be approved by the Monitoring agencies.
- A Blueprint.
- Where appropriate, a Risk Manager or Contract Manager.

Participation of the Commissioners in the INCIS Project
In the opinion of the Inquiry, the lessons to be learnt, in respect of the INCIS Project and the Commissioners, include that the Commissioners:

- Ensured the Business Case reflected the business strategy of Police.
- Signed the Contract and signed off reports and communications to Government.
- Delegated sponsorship responsibility to the Deputy Commissioner.

In addition they should have:

- Ensured the Project was properly resourced in terms of governance and management with personnel having the required skill and experience in management of large IT projects.
- Ensured that there was proper quality control in place, including comprehensive risk management process and IQA.
- Required the Sponsor to resolve the relationship issues.

6.3.4 Project Sponsor

In the opinion of the Inquiry a large IT project must have a Sponsor. The Sponsor may be the Chief Executive but must, at least, be an executive manager senior enough to promote the interest of the project to the Chief Executive and other members of the senior management team.
In order to assure an appropriate level of engagement and commitment from the Sponsor, it is desirable that the project should reflect directly on the performance criteria of the Sponsor.

The Sponsor has delegated authority from the Chief Executive for sign-off of project deliverables and expenditure to agreed limits. It is also important that the Sponsor is not overburdened with other duties and can devote sufficient time to the role of Project Sponsor. The Sponsor should normally chair the Steering Committee.

The Sponsor's role is to promote the interests of the project, to monitor its progress, to ensure that it is appropriately resourced, to mediate its interests with any competing interests of other business units, and in general to facilitate achievement of the Chief Executive's interests in the project. However, the Sponsor's role is not to manage the project itself. That task belongs to the Project Manager, who is accountable to the Sponsor for the successful management and completion of the project.

In the case of the INCIS Project, the Sponsor had delegated responsibilities from the Commissioner to ensure that the INCIS Project achieved its objectives, contractual relations and other factors.

The Sponsor is primarily responsible for the appointment of the Project Manager.

The Sponsors of the INCIS Project were Deputy Commissioner Doone from June 1993 to August 1996 and Deputy Commissioner Matthews from August 1996 to 30 July 1999 and then Commissioner Doone until termination of the Contract.

Project Formation

The Sponsor should oversee the consideration and making of strategic decisions in relation to the Project including its vision or concept, the development of the business case and normally the substantial completion of BPR before contract.

The Sponsor should require a risk assessment, blueprint and where appropriate a proof of concept and a peer review or independent advice.

The Sponsor should be the chair of the Steering Committee and appoint its membership.

Project Approval

The Sponsor should oversee the completion of the business case and liaison between the project and the Monitoring agencies. The Sponsor should be satisfied that the business case correctly reflects business strategy, provides for business benefits, assesses the risks and establishes that the technology proposed will deliver the business benefits. Only then should the Sponsor recommend to the Chief Executive that the business case be adopted.

Contractual Agreement

The Sponsor needs to be satisfied that the Contract is giving effect to the business case and, in particular, that the technology contracted for will deliver the business benefits. The Sponsor should check that all certification is given. Only then should the Sponsor recommend to the Chief Executive to sign the contract.

Project Implementation

During the project implementation phase the Sponsor should:

- Chair the Steering Committee.
- Be primarily responsible for the appointment and performance of the Project Manager. This includes the procedure for appointment by the Project Manager.
- Determine or approve the senior management structure for the project including having the project Manager report to the Sponsor.
- Ensure quality management including proper reporting and Independent Quality Assurance (IQA).
- Ensure risks are being identified and addressed in a timely manner.
- Oversee the progress of the project.

Participation of the Sponsors in the INCIS Project

In the opinion of the Inquiry, the lessons to be learnt in respect of INCIS and the Sponsors were to:

- Ensure the Project is properly resourced with personnel of the required skills and experience.
- Ensure that the Director of I & T and the Project Director have skills and experience in management of large IT projects.

- Require the Project Director to report to the Sponsor. If the Project Director was to report to the Director of I & T, the Sponsor should have adopted a "from the top down" appointment process.

- Address and resolve the issues in the Sapphire report.

- Advise the Commissioner when to sign the Contract and to ensure that it was appropriate and that Police were ready to proceed.

- Resolve the relationship issues that arose between the Director of I&T and the Project Director.

- Ensure acceptable standards of quality management including proper reporting and IQA.

- Promote appropriate relations between the INCIS Project and the Police generally.

Mr Doone told the Inquiry that he was advised that there was no impediment to the signing of the Contract and that it was in the appropriate form. The Inquiry believes that Deputy Commissioner Doone was advised that the written form of the Contract had been agreed. However, if he did not know of the other significant issues raised in the Sapphire report prior to the Contract, he came to know shortly after the Contract was signed. These issues should then have been resolved prior to proceeding further with the Contract.

Mr Doone said that the hiring of the Director of I & T was handled not by one but by two specialist consulting firms and that Mr Batchelor had the requisite skills to do the job including overall management of the INCIS Project. The Inquiry accepts the qualifications of Mr Batchelor for line management of large IT projects. But subsequent events showed that there were short-comings in the project management of INCIS that were not supplemented by the skills and experience of Mr Batchelor.

6.3.5 Role of Project Directors and Director of I & T

Project Manager's Position

In a project of any size, the key role is that of the Project Manager. That person must have the appropriate skills and experience. The accountability of the Project Manager in the governance and management hierarchy is described in the report of the Controller and Auditor General, *Governance and Oversight of Large Information and Technology Projects* as:

- *The Project manager becomes accountable for a project after agreement with the Chief Executive (delegated to the Project Sponsor) that he or she will deliver the specified deliverables within the framework of the management strategies and taking account of the project risks.*

- *There are reciprocal responsibilities between the Project Manager and the Chief Executive.*
- *From the Chief Executive's perspective, the Project Manager is responsible for delivering the agreed project deliverables within time and budget unless variations are agreed to and approved by the Project Sponsor. The Chief Executive relies on the professional expertise of the Project Manager to achieve these outcomes.*
- *From the Project Manager's perspective, this assumes that the Chief Executive – through the Project Sponsor and his/her staff – has confidence that the specification of the new system and contracts with suppliers will deliver what the department wants. It also assumes that the Chief Executive will provide the framework and resources to enable delivery of the project outcomes.*

The Project Manager should report to the Sponsor and the Steering Committee. Copies of the report should be circulated to the Chief Executive and the Monitoring agencies.

The uniqueness, size and complexity of the INCIS Project meant that great care was needed in the selection and appointment of the Project Manager and that the person appointed needed to have significant management experience in large projects.

Project Directors

The Project Directors or Managers were:

Mr Martyn Carr	November 1991 – August 1994
Superintendent Crewdson	September 1994 – June 1998
Mr Stewart Watson	October 1998 onwards

Directors of I & T

The Directors of I & T were:

Mr Greg Batchelor	November 1994 – March 1999
Dr Jeffrey Soar	August 1997 onwards

Project Formation and Approval

The Project Manager was involved in project formation and approval phases in:

- The management of the INCIS Project strategic issues relating to the proposed contract.

- The preparation of the Business Case.

Contractual Issues

In relation to contractual issues:

- The Project Manager had a significant part in the specification in the RFT, RFP and the Contract and the technology provided for in the Contract.

- The Project Manager, as requested by the Sponsor, provided the Sapphire report.

- The Project Manager should have advised Police in strong terms that they were not ready to go to contract, and that to do so was fraught with risk – particularly having regard to the technology specified. The project Manager says he tendered that advice. The Sponsor says that no such advice was given. Whether or not the advice was given, the position and risks were known about the time of Contract and should have been addressed and resolved before the Contract proceeded.

Project Implementation

Following the resignation of the Project Manager in August 1994 and the position of the Director of I&T also becoming vacant, Police therefore needed to appoint both a new Director of I&T and a new Project Director.

In September 1994, the selection of the right person as Project Director was crucial. It was imperative that a person, very skilled in IT project management, be appointed. The new Project Director faced crucial and difficult decisions.

Police decided, for reasons referred to later, to change the initial structure (Diagram 8), which had the Project Director reporting to the Sponsor, to the structure in Diagram 4, which had the Project Director reporting to the Director of I & T. Given this change, the manner and sequence of making the appointments of the Director of I & T and the Project Director was important in human relations and business terms. The normal sequence would have been to make appointments from the top down – with the Sponsor appointing the Director of I & T and the Director of I & T appointing the Project Director.

The Sponsor appointed the Project Director, on the basis he was to report to the Sponsor. The Sponsor then appointed the Director of I & T and from that

point, then required the Project Director to report to the Director of I & T. The process adopted by Police for the appointment of the Director of I & T and the Project Director carried risks.

Police governance wanted a sworn officer for the position of Project Director. The Inquiry considers the concept of a sworn officer as Project Director was acceptable so long as the officer had skills and experience in the management of large IT projects

The Project Director appointed was an experienced police officer and was highly regarded. He had been awarded a Harkness Fellowship to study IT at Harvard and held a degree of Master of Public Administration. He had taken a large part in the preparation of the Business Case and supported the six business functions specified.

Project management skill and experience with large IT projects should have been the main selection criteria for the position of Project Director. However, while the Project Director appointed did have significant IT experience, he did not have experience in the management of large IT projects.

The Project Director says that, in discussions prior to his appointment, he was given to understand that INCIS was a Police business project and that he was to report to the Sponsor. This was consistent with the Business Case.

The Project Director says he did not receive the Sapphire report until he obtained a copy on an informal basis several years later. However, the Inquiry believes that his prior involvement with the Project should have meant that he knew of most of the issues in the report.

Police say that, whilst they recognised the capabilities of the Project Director, they were aware that he lacked skills and experience in managing large IT projects. Police say they sought to meet the risk by subsequently appointing a Director of I & T who would have skill and experience in managing large IT projects. It was perceived that the Director of I & T would support the Project Director.

Mr Crewdson says that he was very aware that he needed support to manage the projects and that he set out to surround himself with industry specialists. The Inquiry notes that all, or virtually all, specialists specified by Mr Crewdson were from within the Police.

Mr Crewdson told the Inquiry that he seriously doubted whether a person, even with project management experience, would have been willing to carry out the workload he did as INCIS Project Director, core member of the Policing 2000 team, senior member of the Police I & T Group, core member of the Justice Sector Information Strategy Team and Chair of the Data Definitions working party. The Inquiry considers that it is important that the

project manager of a large IT project is not given other responsibilities that distract from his or her ability to manage the project.

The Inquiry considers that the Project Director was faced with an extremely difficult situation and was asked to perform a task which was not possible without large IT project management experience. Police had proceeded to contract before they were ready, there were over-ambitious technology expectations, the Contract did not sufficiently describe the work to enable commencement of design of applications and many major risks were unresolved. An experienced Project Director would have quickly recognised the problems and would have taken appropriate action including assessing using the Off-Ramp provision of the Contract. Recognition of the situation and appropriate action could not be expected of a person who did not have large IT project management skills and experience.

The Director of I & T had been, prior to his appointment, Assistant Director General Corporate Support at CSIRO, Australia. He had been with CSIRO since 1980 in various positions. The Inquiry accepts that he had considerable line management experience with large complex projects such as:

- The replacement of the CSIRO mainframe (AUD$20 million).
- The replacement of the CSIRO supercomputer (AUD $15 million).
- The upgrading of CSIRO's Australian wide voice and data communications network (AUD $10 million).
- A number of in-house software development applications (AUD $15 million).

Whilst the Director of I & T had line management experience of large IT projects, he did not have direct experience in project management of large IT projects.

Prior to his appointment and prior to the signing of the Contract, the Director of I & T had meetings with Police. The position of the INCIS Project Director was discussed and a copy of the proposed Contract was supplied. The Director of I & T was concerned about the prevailing situation and says he advised the Sponsor that the Police were not ready to and should not proceed to contract. He says he was told of the Police concept of technology substitution and that he perceived this as a means of overcoming his concerns about the proposed Contract. The Director of I & T says he was told that the Contract was a fait accompli and that Police would proceed to contract. He stipulated that, as a condition of his appointment as Director of I & T, the INCIS Project should report to him and he should control the technology substitution. Mr Batchelor was appointed Director of I & T in November 1994. His responsibilities included the INCIS Project and the Project Director was to report to him and not to the Sponsor.

The Director of I & T believed he had skills and experience to manage the INCIS Project and that the position could be handled. The Inquiry acknowledges his line management skills but it questions whether he had the level of skills and experience in project management necessary to provide the project management skills that Police governance realised were needed to supplement the Project Director.

Mr Batchelor expressed the following views to the Inquiry:

- There should have been a proof of concept.
- An application should not dominate the composition of the infrastructure, that is, the INCIS application should have been in modules.
- The Contract should not have been signed in the form and at the time that it was.
- That there were management and governance issues.
- He was in general agreement with the contents of the Sapphire report.

The Inquiry agrees generally with these views.

The Project Director perceived his position had changed (as he was reporting to the Director of I & T and not to the Sponsor) and that INCIS had ceased to be a business project and had become a technology project (by being brought within the IT division and the removal of BPR).

The Police concept that the skills and experience of the Director of I & T would supplement the skills and experience of the Project Director, in relation to project management, was not realised.

The Director of I & T supported technology substitution for OS/2 desktops, LAN and WAN.The Project Director opposed the timing of the OS/2 decision and questioned the impact on the Project. He required the other technology substitutions to be actioned through standard and agreed change control.

The Director of I & T held views that the Contract was too favourable to IBM and that Police had been captured by IBM. He advocated abandoning the partnering with IBM in favour of the Executive Control Group (ECG), whereas the Project Director did not.

The above and other factors lead to a relationship of serious conflict between the Director of I&T and the Project Director.

The relationship issues were well known to Police governance. The Commissioner and the Sponsor spoke to the Director of I & T and the Project Director about the relationship on a number of occasions but without any satisfactory result.

The relationship issues had a negative effect on the INCIS Project team. The Police governance and management of the Project became to some degree dysfunctional.

The relationship between the Director of I & T and the Project Director was not resolved. In March 1997 the Director of I & T resigned to take up a new position in Australia.

Mr Batchelor said in his reports of August 1996 and March 1997 he had highlighted significant risks to the project and that he believed that, despite the risks, *the project could have been salvaged and ultimately been successful, if appropriate steps had been taken*. He pointed out that INCIS continued for a further twenty six months after he left.

Cabinet directed on 18 May 1998 that options for strengthening the management of the INCIS Project be developed and the Cabinet Strategy Committee on 27 May 1998 invited Police to recruit an external expert as the INCIS Project Director.

Superintendent Crewdson resigned in June 1998 or, as he put it "was no longer with the Project".

The position remained vacant until October 1998.

Mr Crewdson maintains that he was not provided with the degree of support that he was entitled to expect.

In the opinion of the Inquiry, the lack of skills and experience in large IT project management and the relationship were sigificant causes of the failure of the INCIS Project. Police governance should have heeded the many clear warnings signals relating to these factors and taken appropriate action to resolve the issues.

Dr Soar was appointed General Manager of I&T in August 1997.

Mr Stewart Watson was appointed Project Director by Police in October 1998 and reported to Dr Soar. Mr Watson had over 25 years experience in the IT and data processing industries. His experience included project management of a number of large IT projects.

Mr Watson commented favourably to the Inquiry on the support given by Deputy Commissioner Matthews and his commitment to the Project.

The Inquiry believes the new Project Director was also faced with an extremely difficult position. Mr Watson told to the Inquiry that the situation on his arrival at the Project was much more challenging than he had been initially lead by Police to believe. The Inquiry believes that he addressed the position in a professional way and brought proper management principles and practice to the Project.

Mr Watson's overall assessment was that the Project failed because:

- IBM did not understand at the outset what they were committing to and therefore took on too much.

- IBM did not make Police understand the issues as IBM saw them.

- Police took the view that they were protected by the fixed price Contract.

Mr Watson considered this combination forced the Project down a path of failure. Police did not understand that, if IBM failed, then Police would also fail. Mr Watson said that Police should have compromised more.

The Steering Committee was re-established after Mr Watson became Project Director.

Participation of the Project Manager and Project Directors in INCIS

The Inquiry considers that significant matters, in relation to INCIS and the Project Manager and the Project Directors were that:

- The Project Manager told the Inquiry that the strategic requirement for a fixed price contract came from *"on high"*.

- The Business Case was defective, in particular, in relation to how technology would deliver business benefits and on risk and how it would be managed.

- The RFT, RFP and the Contract provided for over-ambitious technology. However, in the Sapphire report, the Project Manager clearly advised Police of the risks.

- The procedure for the appointment of the Director of I & T and the Project Director and the requirement for the Project Director to report to the Director of I & T were factors which contributed to an unsatisfactory relationship.

- Police governance did not adequately address and resolve the relationship issue.

- At times, the project lacked skills and experience in relation to project directorship and this was not addressed and resolved by Police governance.

6.3.6 Steering Committee

The Inquiry considers a major and complex IT project must have a Steering Committee that is part of project governance and is responsible for an overview of the project. The membership of the Steering Committee should include:

- The Chief Executive.
- The Sponsor.
- The Project Manager.
- Representatives from the business.
- An internal audit representative.
- Such external support as may be appropriate.

The Steering Committee may invite the suppliers involved or other persons to attend part of a meeting. In the case of a large Government IT project consideration can be given to a representative of the Monitoring agencies attending the Steering Committee (or being supplied with the minutes). The Steering Committee should receive the Project Director's reports and the IQA reports monthly. The Steering Committee should meet monthly and keep comprehensive minutes of actions taken.

The Business Case provided, in general terms, for a Police Steering Committee as part of the structure of the INCIS Project.

In the initial stages there was a committee called "the Steering Committee" but it ceased to function.

Following the signing of the Contract in September 1994 there was a partnering arrangement between Police and IBM. As far as the Inquiry can ascertain, the partnering arrangement substituted for a Steering Committee and there was no effective Police Steering Committee. It seems that issues appropriate for a Steering Committee were dealt with at partnering meetings.

The partnering arrangement terminated and the Executive Control Group (ECG) was established. The ECG was referred to on occasions as the Steering Committee. The first ECG meeting was in August 1997. The membership was Police and IBM and, on occasions , others. The ECG continued to meet until the termination of the Project.

Matters relating to risk were discussed at the ECG. This was not an appropriate forum for frank and open discussion of risks relating to Police – as opposed to discussion of risks relating to the Project.

The minutes of an ECG (Steering Committee) meeting held on 24 March 1997 record that the risks at that time were addressed and that the Project Director advised …*the risks are internal project issues and only updates on timing need to be reported to the Steering Committee.* In the view of the Inquiry the above advice, even in the ECG environment, was unsatisfactory. The true risks at that time were much higher.

In November 1998, following the appointment of Mr Watson as Project Director, a Police Steering Committee was re-established. The membership of the Steering Committee was the Commissioner, the Deputy Commissioner, the project Director and others.

The lack of a Steering Committee was a material departure from the structure shown in the Business Case and a serious defect in the governance structure.

6.3.7 Partnering with IBM

In the initial stages of the Contract there was a partnering relationship between Police and IBM. This resulted in material from IBM which assisted reporting and in particular was helpful to Price Waterhouse in its auditing role. It became more difficult to obtain information from IBM after the partnering was terminated. Partnering can only work satisfactorily in certain conditions and when there are common objectives. It is essentially incompatible with a fixed price contract. Nevertheless the parties should work closely together in a complex IT project. The point is dealt with in more detail later in Section 6.4.

6.3.8 Reporting

Good reporting requires concise reports, at regular intervals, covering key risks, key issues, measurable progress against baselines, any variance to financials and IQA.

Reporting should be completely honest and frank, constitute part of the quality management process and convey in a clear way both good and bad news. The doctrine of no surprises should be followed.

The Project Director and IQA reports should be monthly. The audit report should be quarterly.

6.3.9 Baselines and Milestones

The business case should establish key baselines and milestones in relation to scope, financials, timing and other factors. These initial baselines and milestones need to be referenced when reporting on relevant topics.

Baselines and milestones should not be changed unless there are compelling reasons. Any material change should be referenced to the business case and reported to the Monitoring agencies.

The Business Case contained only a *Development and Implementation: Route Map* that, in the view of the Inquiry, was not sufficient to establish key milestones.

Shortcomings in respect of the scope and milestones were also reflected in the Contract.

The scope, financials and timing of INCIS changed materially throughout the Project. As no adequate baselines or milestones were in place, there was no criterion against which to measure the change. Accordingly, governance of the INCIS Project and the Monitoring agencies had no means of determining the effect of change on progress.

6.3.10 Project Director's Reports September 1994 to June 1998

A project manager's report should be monthly and include a report on risk management as against identified risks and initial baselines. The report should be sent to the Chief Executive, the Project Sponsor, the Steering Committee and the Monitoring agencies. The report needs to be concise, focused and properly directed.

This section addresses the Project Director's reports from September 1994 to June 1998.

Mr Crewdson told the Inquiry that it was not until after an Andersen Consulting report that there was any negative feedback to him in respect of the reports and that prior feedback had been positive. Mr Crewdson said that matters, in relation to the Contract, meant "*I had to be very careful as to how that was reflected in my project reports so as not to open Police up to litigation from IBM*". He also claimed there were other constraints on his reporting.

The reports were prepared monthly until July 1995 and thereafter were quarterly. Some reports were delivered late. The Price Waterhouse audit reports record that there were periods where they did not receive scheduled reports.

Police governance should have insisted on monthly reporting and should not have tolerated the quarterly reporting or late reporting. These factors of themselves indicated problems with the INCIS Project.

Few of the risks in the Sapphire report were referred to in the reports. This was a significant omission that very seriously distorted the true position of the Project. The Sponsor and the Director of I&T had knowledge of the Sapphire report and should have insisted that the risks were properly covered in the reports.

The commentary contained in the reports frequently refers to the Project being on time and within budget. Those statements were not in accord with initial baselines, such as they were. Possibly, the statement may have been correct in relation to the changed baselines adopted from time to time.

During the latter half of 1995 and into 1996, the reports were stating that the Project remained on time and within budget. The 30 September 1995 report stated that the INCIS Project *remains on time and within budget*. This statement is repeated in reports to March 1996 when it was also said the INCIS Project was half way there. At the same time, the Price Waterhouse audit reports were reporting delay, *major impact* with a *significant slippage*. The Price Waterhouse report to 31 March 1996 states

> *At its half way point the project faces a number of serious issues that may prevent its completion on time and within budget. Project management note that there is little or no contingency remaining and we believe that there is legitimate reason for concern at this point that the delivery dates will not be met.*
>
> *The key issue facing the project at present is the selection of the appropriate system architecture for the INCIS project and the impact this decision has on the project deadlines and on the overall Police I&T strategy. At the date of this report the review is still to be finalised.*

The statements that the Project remains on time and within budget in the reports cannot be justified. At that time no business deliverables had been supplied. The Logica report had been received but matters relating to scope and other issues had not been resolved. Little practical work had been done.

For discussion of the reports or in relation to the risk management process see Section 6.4.

The Inquiry considers that there were serious deficiencies in the reports which adversely affected the governance and management of the Project. These deficiencies should have been apparent to governance, management and Monitoring agencies, who should have required each month proper reports presented on time.

6.3.11 Audit Reports

The terms of reference of Price Waterhouse were to review the progress of the Project by auditing the Project Director's report and verifying adherence to system control procedures. The scope included financial and system aspects. The terms of reference did not extend to the assessment of the validity of particular technical methodologies. Price Waterhouse had a limited internal audit function. Their reports were not an IQA or something equivalent. However, the Price Waterhouse reports were treated by Police and others as being an IQA or something equivalent.

6.3.12 Oversight Within the Project

In the view of the Inquiry oversight within the Project was not effective as:

- The standard and frequency of the reports were not sufficient to enable effective monitoring.

- There was no IQA.

- There was no timely and adequate response to negative matters in reports – for example, the Sapphire report and the Price Waterhouse reports.

These factors should have been appreciated by the Sponsor and the Steering Committee and appropriate remedial action taken.

6.3.13 Police Culture

Police had a:

- Command-line culture – which, whilst suitable for line management of the Police, was not suitable for project management.

- Culture that mitigated against Police seeing the warning signs coupled with a tendency to view and report matters in a way favourable to the INCIS Project. Examples are, the treatment of the Ernst & Young report and the Sapphire report; inadequacies and irregularity in reporting; assessment of Price Waterhouse audit reports and; reporting too favourably to Monitoring agencies.

In the opinion of the Inquiry, there were clear signals throughout the Contract that there were serious problems with the INCIS Project.

INCIS was a business or commercial project rather than a policing operation. In the view of the Inquiry, a normal business and commercial culture, involving commitment, team work, and open and frank reporting, would have been more successful than the application of line culture as perceived by the Inquiry.

6.3.14 Experts' Reports

The value of an independent expert's report, particularly on IQA is immeasurable. Apart from the special skills necessary, it is very easy for those persons intimately involved within a project not to see where problems and risks are arising. Use of an independent expert also removes many of the agendas and inhibitions that inevitably occur within a culture and political environment of a large organisation. There is also, understandably, reluctance for internal staff to report negative results.

Experts should be used where internal skills are lacking or where there is need for independence, for example, legal, IQA or audit. Care needs to be taken:

- In the selection of an appropriately qualified organisation (or person within an organisation).
- In defining the instructions to or terms of reference of an expert.
- In assessing and using an expert's report.

As previously stated, the terms of reference of Price Waterhouse did not extend to the assessment of the validity of particular technical methodologies. Price Waterhouse did not undertake an IQA or something equivalent. However, the Price Waterhouse audit reports were treated by Police and others as being an IQA or something equivalent.

The warnings in the Ernst & Young report (Schedule 6), the KPMG report of 9 June 1994 (Schedule 8) and the Sapphire report (Schedule 9) were not heeded. The warnings should have been acted on.

Care needs to be exercised before adopting or reporting an executive summary from an expert's report. The full report should be considered with due weight being given to relevant reservations in the body of the report. Any report from the project should reference the reservations in an appropriate way.

The Inquiry considers that, given the size and complexity of the undertaking, the INCIS Project governance and management:

- Did not use well or heed much of the advice in the experts' reports received.
- Should have had an independent peer review before entering into contract.
- Should have had an independent expert conducting IQA.

The Inquiry believes that the contents of the Ernst & Young report, the KPMG report and some other documents were not adequately referred to in some reports to Government and Cabinet. In particular there were references only to the Executive Summaries of reports which did not fully encapsulate concerns expressed in the body of the report. The already overly positive Executive Summaries were then paraphrased even more positively, there was selective quotation, and reservations were not adequately addressed.

The Inquiry raises the general concern that critical issues can be overlooked if experts do not give full weight in the executive summary to negative and critical observations in the body of their reports.

6.3.15 Quality Management and Warnings

The Inquiry considers that there were clear warnings that the quality management of the INCIS Project was deficient. Improvement should have included:

- IQA
- Expanding the terms of the Price Waterhouse reports.
- Improving the September 1994 to June 1998 reports.
- Responding to warnings raised.

These improvements in quality management would have enabled improved governance by Police and improved monitoring.

6.3.16 Lessons and Recommendations

Governance and Management of the Project

LESSON:

Good governance and management structures and experienced and skilled personnel are essential for the success of a large IT project at the commencement and throughout the project.

RECOMMENDATION:

Government and Government agencies should ensure that large IT projects have sound organisation structure, adequate resources, and experienced and skilled personnel in terms of project governance and management.

Chief Executive

LESSON:

Projects are more likely to suffer unless the Chief Executive oversees the governance and management of the project.

RECOMMENDATION:

The Chief Executive should oversee the governance and management of a large IT project by:

- Ensuring the project and business case supports the overall strategy of the organisation.
- Ensuring acceptance and continued commitment by the whole of the organisation to the project.
- Ensuring adequate resourcing.
- Appointing a qualified Sponsor.
- Being fully briefed, at least monthly, on progress, major risks and resourcing issues.
- Receiving and acting on relevant reports and information.
- Ensuring achievement of objectives.

The Chief Executive should be aware of and resolve or require to be resolved any serious dispute between senior project personnel that impacts adversely on the Project.

Project Sponsor

LESSON:

The primary responsibility for the appointment of the Project Manager rests with the Sponsor. The appointment by the Sponsor of a person as Project Manager when that person lacks project management skills and experience carries with it a high risk.

The Project Manager should report to the Sponsor and departure from this carries increased risk.

Failure by the Sponsor to ensure good relationships within senior personnel can be detrimental to the project.

Lack of commitment of all personnel in the business can be detrimental to the success of the project.

RECOMMENDATION:

The Sponsor should be either a Chief Executive or a senior executive manager.

Sponsors should appoint a Project Manager who has the necessary project management skills and experience.

The Project Manager should report to the Sponsor.

The Sponsor should address and resolve any unsatisfactory relationship between senior personnel immediately.

The Sponsor should continually reinforce commitment to the project by the whole business.

Project Directors and Director of I&T

LESSON:

The success of a large IT project is critically dependent on the skills and experience of the Project Manager. For a project such as INCIS, it is far more important to get good IT project management skills than to appoint a Project Manager from within the organisation.

RECOMMENDATION:

The person appointed as Project Manager should have the appropriate skills and experience, particularly in the management of large IT projects.

LESSON:

Difficulties can arise in a large IT project if there is an inappropriate reporting structure. In particular, the Project Manager should report directly to the Project Sponsor. There are likely to be problems where this is not the case and, for example, the Project Manager has to report directly to a line manager.

RECOMMENDATION:

The Project Manager should report to the Sponsor.

LESSON:

There are serious risks to a project if proper procedures are not followed in the process for the appointment of key personnel.

RECOMMENDATION:

Governance and management should follow proper procedures, ie. A "from the top down" process, in relation to the appointment of key personnel and should be aware of the potential for human relations and other conflicts detrimental to the project.

LESSON:

Serious human relations or other disputes between or within governance or management of a project can be detrimental to a project.

RECOMMENDATION:

Governance and management should he aware of the potential for disputes between or within governance and management and should take action to avoid the potential. Where a serious dispute arises governance or management need to address and resolve the dispute promptly.

LESSON:

Poor or inadequate reporting inhibits proper governance and management and is prejudicial to the efficient operation of the project.

RECOMMENDATION:

In order to perform their functions, government and management must enforce timely, full and frank reporting at all levels and in particular by the Project Manager, IQA and audit.

Any departure from that standard should be heeded and acted upon by governance, management and Monitoring agencies.

Steering Committee

LESSON:

The lack of an effective Steering Committee as part of the project governance and management structure is detrimental to a project.

RECOMMENDATION:

It is essential that all large IT Projects have an effective Steering Committee. The membership should include senior line management. Monitoring agencies as part of monitoring should require a Steering Committee to be in place and may require to attend or receive minutes of meetings.

Baselines and Milestones

LESSON:

Proper baselines and milestones need to be established to enable effective management and monitoring.

RECOMMENDATION:

Cabinet, Ministers and Monitoring agencies should require that proper baselines and milestones be indicated in the business case and that material changes be referenced to the business case and be reported to the Monitoring agencies. Reports on project progress should reference the original business case baselines.

Project Manager's Reports

LESSON:

The lack of a timely and comprehensive Project Manager's reporting is detrimental to a project and to monitoring.

RECOMMENDATION:

Project Managers reports need to be at least monthly, address key risks and to be concise, focused and properly reflect the current project status.

Police Culture

LESSON:

Command-line cultures of governance and management, such as those in the Police, are not generally the most appropriate structures for the management of large IT projects.

RECOMMENDATIONS:

Police and organisations having a command-line culture should be aware of the adverse aspects of a command-line culture in relation to large IT or other projects.

Monitoring agencies should also be aware of the problems that might arise if a large IT project is being managed within a command-line culture.

Experts' Reports

LESSON:

There are many occasions when outside experts must be asked to review and report on aspects of a large IT project. However, the effectiveness of the process can be reduced for a number of reasons.

- Difficulties can arise if the terms of reference are not defined in clear terms.
- The report may be deficient in some way and not deal adequately with the issues it addresses.
- At times, reservations and negative comments in the body of the report are missing from the report's executive summary.
- Selective quotation from an expert's report can give a very wrong impression of its findings.
- A report can be used as a substitute for action. Reservations and negative findings in a report by outside experts often appear to be ignored or downplayed.

RECOMMENDATION:

Agencies, when considering an expert's report, should:

- Check the terms of reference of the report;
- Assure themselves of the adequacy of the report, use a peer review if needed; and
- Consider the whole of the report, particularly any reservations and negative comments.

Management needs to assure itself that an expert's report is adequate, accurate and balanced and should look for indicators to the contrary.

Quality Management and Warnings

LESSON:

Major problems in a large IT project do not arise suddenly. There are always prior warnings of trouble and indicators that all is not well. If the warnings and indicators are sought, seen and dealt with promptly, the risks to a project can be reduced and problems averted. On the other hand, to not heed warnings and to hope optimistically that all will be well is a sure path to disaster.

RECOMMENDATIONS:

Throughout large Government IT projects, policies and practices should be adopted that encourage an awareness of the need to heed and, where appropriate, to take immediate action on warnings and indicators of trouble.

Monitoring agencies in monitoring the project should be alert to any departure from this requirement and should pay particular attention to how, and how promptly, issues are resolved.

Key Issues, Lessons and Recommendations from INCIS

6.4 Risk Management Process

6.4.1 General

Risk management is essentially about controlling uncertainty and its consequences. It identifies the risks in a project and limits them so that the unexpected is unlikely to occur or the impact of unexpected events is reduced.

The Australian/New Zealand Risk Management Standard 4360:1999 has the following definitions:

> *Risk Management*
>
> *The culture, processes and structures that are directed towards the effective management of potential opportunities and adverse effects.*
>
> *Risk Management Process*
>
> *The systematic application of management policies, procedures and practices to the tasks of establishing the context, identifying, analysing, evaluating, treating, monitoring and communicating risk.*

In any project, process or organisation, it is essential that risk management is seen as both central and pervasive. It:

> *... is not a separate activity to be applied on top of or in parallel with everything else. It must be integrated into the activities and goals of the whole organisation. There are actually two ideas here: permeation and integration. Risk management must thoroughly permeate the organisation and involve management, legal, financial and safety issues as well as the organisation's response to its commercial, social and physical environment. Moreover, the responsibility for risk management must also permeate the organisation. It is not just the responsibility of a single risk manager: it must be widespread. However, it is not enough for risk management simply to be distributed across processes and people. It is also necessary for it to be integrated, so that all aspects of risk management work together. They must be connected and structured. The individual aspects of risk management are like the bricks of a house. A house is more than a pile of bricks: the bricks must be ordered and integrated, with each in its right place.*

(Elms. D.G. (ed) *Owning the Future: Integrated Risk, Management in Practice*: Centre of Advanced Engineering, 1998.)

Although the above quotes are from 1998/9, the principles were generally appropriate at the time of the development of the INCIS infrastructure and application.

Risk itself has two components: the likelihood of occurrence of an adverse result and its potential severity. Essentially, the risk management process will involve the following steps or components, either formally or informally:

- Understanding of the context or situation.
- Identification of risks; that is, what can go wrong.
- Assessment of risk, of both likelihood and consequence.
- Evaluation of risk, as to the relative severity of the different risks in a project.
- Treatment of risk, to ensure that every risk is understood and acceptable. Treatment options might be reduction, transference (by insurance or contract for example) or simply acceptance.
- Monitoring, to ensure the risk landscape of a project is at all times understood.

In addition, with a high-risk project, contingency plans should be in place to allow for the unexpected.

The Inquiry believes there was little risk management applied to the INCIS Project until the later stages. Uncertainty was neither understood nor addressed, and many of the changes and decisions made during the course of the Project added substantially to the risk. Lack of risk management contributed substantially to the Project's difficulties.

6.4.2 System Complexity

Careful risk management is particularly important for large, complex and novel projects. Complexity leads to greater uncertainty, and size means that the consequences when things go wrong are likely to be substantial. The INCIS Project was both particularly large and complex. Moreover, the size and complexity of the Project grew substantially from the initial intentions. The use of emerging technology added significantly to the uncertainties in the Project. It was therefore imperative that the INCIS Project should have had a sound risk management process in place at all levels, together with a risk aware culture. Unfortunately, the necessary focus on risk and the accompanying safeguards were largely absent from the INCIS Project.

The management of highly complex processes requires special system-related skills for risk to be successfully controlled. It is not clear that the INCIS Project governance and management possessed those skills and, even if they did, they did not exercise them.

6.4.3 Risk Manager

Because of the high risks involved in the INCIS Project, it would have been generally accepted practice to appoint a Risk Manager, whose role would have been to ensure the appropriateness and integrity of the risk management regime. No Risk Manager was appointed.

6.4.4 Governance

Deficient project governance played a crucial role in the INCIS Project with regard to uncertainty. Minimising uncertainty required:

- Tight management control throughout, particularly with respect to change control, but also to ensure the health of all aspects and components of the Project as a complex system.

- A tight control and auditing regime using internal and external auditing and Independent Quality Assurance (IQA).

- An attitude of wariness and a careful heeding of warning signals and indicators.

- A thorough and complete response to concerns and uncertainties which might be raised.

- An appropriate regime of approval, oversight, monitoring and advice.

- Appropriate contingency strategies.

In all these matters, there were deficiencies in the Project leading to high risk. There should have been a formal risk management process in place for the Project from an early stage. Its absence contributed materially to a loss of control and its attendant risks.

6.4.5 Sapphire Report and Risk Management

The outgoing Project Manager was responsible for the Sapphire report or handover document for the INCIS Project as of 31 August 1994 (Schedule 9).

The report lists 67 issues and concerns which are relevant to risk management. The issues and concerns included fifteen technical issues, fourteen process issues, and six issues concerning people:

Technical issues included:

- Reporting that IBM state that the Police requirements for a distributed Object Oriented computing environment was impossible to achieve.

- Reporting that IBM had *de-committed* from developing certain components of the technology.

- Reporting that IBM's systems did not meet Police's security requirements.

- Expressing reservations about IBM's ability to deliver core components of the system, in particular the Process Manager component. A full evaluation was recommended before proceeding further.

Process issues included:

- Concerns about project plan management.

- Concerns about IBM's inexperience in using the proposed Object Oriented Iterative Development Methodology.

- Concerns about the delay in starting BPR.

People issues included:

- Concerns about the skills and experience of the staff proposed by IBM; and

- Questioning whether IBM staff understood and shared the Police vision for INCIS.

The Inquiry considers that the risks and concerns identified in the Sapphire report should have been addressed and resolved before proceeding to contract. Having proceeded to contract the risks and concerns should have been reflected in the Project Director's reports.

The significance of the Sapphire report and the risks identified were not appreciated or properly dealt with in risk management terms.

6.4.6 Business Case and Risk Management

A business case should address risk management at a strategic level and should outline the main risks and the procedure for managing the risks – including contingency plans.

The business case should ideally address risk in three ways:

- By giving specific estimates of uncertainty when presenting financial estimates of costs and benefits.

- By stating and discussing the strategic risks facing the project; that is, what could go wrong (especially failure to deliver) and how likely that might be.

- By stating how the risks facing the project were to be managed.

The Business Case for INCIS asked *What are the key risks to manage?*. It then addressed risk management by stating that Police culture and work processes must continue to evolve; that Police were better prepared than ever before to undertake such a challenge; that the most critical element to success of the Project was to ensure that Police realised the benefits; and that a key part of realising benefits would be assumed by BPR. The right question was asked but the answer given was inadequate, vague and misdirected. No warning signals were seen or acted on. The Business Case then addressed cost containment in terms of:

- Scope/change control.

- Planning/monitoring/issue resolution.

- Quality assurance.

- Quality people.

There was insufficient material in the Business Case to enable a judgement to be made as to the soundness of the proposed technology and architecture. There was insufficient material (research and modelling) to demonstrate how the benefits of the INCIS infrastructure and application would be achievable. It was not demonstrated how the technology and architecture proposed could deliver; and how the technology was to release 1.9 million hours equating to the reduction of around 500 staff. The uncertainties resulting from the incompleteness and lack of clarity on these matters added significantly to risks facing the Project at that point in time. The Business Case also failed to address risk management in any effective way and fell far short of addressing risk management at a strategic level.

Government and persons to whom the Business Case was addressed had no means of being properly satisfied on the viability or risks of the INCIS Project.

6.4.7 Contract and Risk Management

A contract is a prime vehicle for defining risk between the parties or for moving risk from one party to another.

In negotiations leading to and on the signing of a contract, risk issues should therefore be borne in mind. Before a contract is signed, risk management matters should be specifically addressed. The Chief Executive should not proceed to contract, unless the risks, as negotiated in the proposed contract, are well understood, at an acceptable level, capable of management and in accordance with the risks identified in a business case. Moreover, the greater the uncertainty, the more the contractor will increase the price to allow for it. But there is a second and very major risk; that either party does not understand the risk uncertainty. If this is the case, then the contract may prove untenable and could lead to termination.

It is particularly easy for this situation to arise in a large and complex IT project, where a high degree of uncertainty or a poor understanding of uncertainty is the norm. If such is the case, then a fixed-price contract for the whole of the project is highly likely to lead to trouble as one or other party will come to believe it is being disadvantaged. A fixed-price contract is therefore inappropriate for the whole of a large IT project. Instead, a more flexible form of contract or contracts must be used which will allow both parties to work together, as they must, towards a satisfactory outcome. In this way, the risk of non-fulfilment and premature termination will be reduced.

If there is a material change in risk in the contract from the risk identified in the business case, the change should be referred back to the business case and be reported to Monitoring agencies.

A number of matters in the Contract impacted on Police and on risk management. These included:

- **The Off-Ramp.** This was a mechanism by which Police could control risk by terminating the Contract. The Off-Ramp should not have been allowed to become *clouded* and *lost* during the course of the Project without proper consideration by Police. A contingency option of a Lay-by was not considered.

- **The variation or technology substitution provisions.** The concept in relation to technology substitution was intended to reduce risk by introducing future proofing. However, it introduced significant delays and uncertainties into the Project process and so aggravated rather than mitigated risk. The technology substitution provisions were also intended to make up for the lack of a sound technical solution in the Contract and this increased uncertainty and risk.

- **The fixed or capped price characteristics of the Contract.** The fixed price or capped price element of the Contract was viewed by Police as a means of limiting the cost of over-runs. In the opinion of the Inquiry, the fixed price or capped element in the Contract for the whole of INCIS in fact increased risk and the INCIS Project carried with it the risk of non-fulfillment or termination.

6.4.8 Quality Management and IQA

An essential part of risk management is the maintenance of a high standard of quality management. An essential part of quality management is IQA. The INCIS Project had no IQA. This resulted in a serious deficiency in quality management and a significant increase in risk.

As part of risk quality management it is important that reports should be complete and give a full and balanced picture of the situation. It is imperative that governance, the Sponsor and the Monitoring agencies are satisfied that this is the case.

The reports made available to the Inquiry for the period September 1994 to January 1996 contained some limited references to risk but did not report risks in a manner that would be normal for a project such as INCIS. There were other major risk issues that were not adequately reported, including:

- No reference to problems arising from the risk associated with the work described in the RFP and the Contract being insufficient for the purposes of design;

- The reference to the loss of the Off-Ramp provision of the Contract as being *clouded*.

As initial key baselines or milestones had not been established, there was no reference in reports to them. The reports referred to re-baselined criteria (without specifying the date of re-baselining).

The format of reports was to have headings of:

- **Project Risks** – Previously identified items were brought forward under this heading. Sometimes extracts from the Price Waterhouse reports were quoted. Generally, items were *updated.*

- **Project risks – Current** – Under this heading there was discussion on matters which had not been raised previously.

In the view of the Inquiry the reports did not:

- Adequately identify and prioritise the risks.

- Assess the magnitude or significance of risks.

- Adequately address the means of managing the risks.

- Adequately deal with previously identified risks and issues.

The reports tended to deal with ongoing issues simply by saying they were being addressed, not what had been done to deal with them. Thus there was a misleading appearance that issues had been dealt with, when they had not.

The Inquiry's view is that the lack of proper risk reporting was a significant contribution to the failure of the INCIS Project.

6.4.9 Communication

A good communication structure is essential for the successful development of any project. Conversely, a poor communication structure adds substantially to the risk. Communication can be unsatisfactory in a number of ways. It can be inadequate if it is unclear, not balanced, incomplete or incorrect. There are many examples of all four inadequacies in the INCIS Project:

- The Business Case.

- The Sapphire report.

- Differences between the executive summary and body of reports.

- Lack of understanding of the risk management process.

6.4.10 Role of Advisers in Risk Management

Governance management and monitoring agencies must put considerable reliance on expert advice, particularly in projects such as INCIS where complex technology plays a major part.

There is always a risk that the advice given may be incorrect or in some way deficient. Therefore, to reduce the risk, it is prudent to seek a second opinion on crucial matters. A second point relevant to project risk is the use to which advice is put. Warnings and concerns must be heeded. It is most important that management should act on reports received. A mere receiving of them is not enough.

In risk management terms it would have been wise to have a peer review by an independent expert of the Project shortly before entering into the Contract. Likewise, before entering into the Variation. An independent expert should have been performing IQA throughout.

6.4.11 Risk Indicators

A somewhat different way of considering the reasons for the failure of the INCIS Project to fully achieve its objectives is to look at the situation from the perspective of indicators of heightened risk. There are certain warning factors that indicate an increased likelihood of difficulty.

The Inquiry used a number of indicators of heightened risk to evaluate the failure of the INCIS Project to fully achieve its objectives. The indicators of heightened risk relevant to the INCIS Project include:

- A high level of pressure.
- New technology.
- High complexity.
- Poor human relations.
- Poor quality management.
- Skilled management team required.
- Skilled technical team required.

6.4.12 High Level of Pressure

The Inquiry believes there was a high degree of pressure on the INCIS Police Project team to succeed and some are discussed in Section 6.9.11. High pressure on a project makes it highly likely that corners will be cut, and that the important is sacrificed for the urgent.

New Technology
Clearly, some of the technology required by the RFT, and Contract was very new and was unproven for an infrastructure and application similar to INCIS.

High Complexity
INCIS was a highly complex project. Not only was the proposed technological solution complex, but also the integration of the many different Police processes into a single system led to a highly interactive and complex whole.

Poor Quality Management
Risk management and quality management are closely related. A good quality management regime will automatically ensure that most sources of risk are covered. Conversely, a good risk management programme will result in good quality management. The two use different methods and approaches, but they are closely allied. Therefore, if the quality management of a large project is deficient, there will be an increased risk. In the case of the INCIS Project, quality management was deficient.

Skilled Management Team Required
It has been commented elsewhere that the size, complexity and novelty of the INCIS Project required very special management skills. Although the INCIS Project management had general management skills and experience and, indeed, a high degree of dedication, experience in the management of complex projects was lacking.

Skilled Technical Team Required
The Inquiry believes that the risks arising from technical inexperience was neither appreciated nor appropriately managed by Police.

6.4.13 Lessons and Recommendations

General

LESSON:

Typically, the risks in a large IT project are very high both because of its complexity and also because the context of rapidly-developing technology leads to a high degree of uncertainty. Without a pervasive and thorough quality management and risk management policies at all levels, there is a high likelihood of under-performance if not outright failure.

RECOMMENDATION:

Large IT projects should have comprehensive formal quality management and risk management processes that are fully integrated within all aspects of project management. All personnel should have an awareness of risk, and of the risk consequences of all their decisions and actions. Monitoring agencies should monitor the observance of and adherence to the formal risk management process.

System Complexity

LESSON:

Highly complex processes are difficult to manage successfully. They require special systems-related skills. The unexpected and often unpredictable interactions occurring within complex systems leads to counterintuitive consequences and to high uncertainty and risk.

RECOMMENDATION:

Large and complex IT projects should ensure that they have special system skills available to their management.

Risk Manager

LESSON:

It is difficult to manage the risk within a large IT project and to adhere to a formal risk management process without a Risk Manager, whose role should be to ensure the presence and continuing health of the risk management process.

RECOMMENDATION:

Large IT projects should have a Risk Manager.

Governance

LESSON:

Large IT projects are particularly vulnerable to increases in complexity and uncertainty arising from lack of a clear and central integration and focus. Too frequent changes of technology and direction will also increase the risk.

RECOMMENDATION:

Large IT projects must have tight management and control.

Sapphire Report

LESSON:

A major IT project requires full and frank reporting of both positive and negative information and assessment. Where problems and issues are known but information about them is not distributed either within governance and management or to monitoring bodies, serious trouble can be expected.

RECOMMENDATION:

The reporting mechanisms, communication channels and culture in large IT projects must both allow and encourage full dissemination of all relevant information, no matter how unpalatable it may be.

Business Case

LESSON:

It is imperative that a Business Case addresses all relevant issues to enable a sound business decision to be made. Business forecasts and financial estimates are worthless unless they are based on sound and well-understood technical and operational plans.

RECOMMENDATION:

Cabinet should prescribe a comprehensive specification for all relevant aspects that it requires to be addressed in a sound Business Case. These should include assurance of and evidence for the soundness of the technical and operational solutions underlying the business forecasts and financial estimates. The forecasts and financial estimates should address risk by including estimates of uncertainty. Government and Monitoring agencies should ensure that these aspects are covered effectively.

Contract

LESSON:

One of the major functions of a contract is to specify and manage risk. It specifies how risks are distributed between the parties. It follows that if this role is not well understood, and if the nature of the risks are not clear, then there will be trouble, particularly if the risks are later perceived to be unfairly distributed.

RECOMMENDATIONS:

In a large IT project, risk and risk management matters should be specifically addressed before a contract is signed.

Flexible forms of contract should be used for large IT projects.

If there is material change in risk from the risk identified in the business case, the change should be referenced to the business case and be reported including a report to the Monitoring agencies.

Government agencies contracting out large IT projects should monitor risk control mechanisms within the contract.

Government agencies should not sign a contract for a large IT project without first being assured that the risks inherent in the project are:

- Well understood.
- At an acceptable level.
- Capable of management in accordance with the risks identified in a business case.
- Fairly distributed between the parties.

Communication

LESSON:

Good communication is essential in a complex project. Good communication is clear, complete, balanced and accurate. Furthermore, good communication should be seen as a two-way process.

RECOMMENDATIONS:

The governance and management of a large and complex project should ensure that a good communication process is in place, where good

communication is characterised as being clear, complete, balanced and accurate.

Reports must have the above characteristics of good communication and must be delivered on time.

Role of Advisers

LESSON:

Independent expert advice is particularly important in projects with a high degree of complexity and with a major technological component. Two things follow: that there should be an assurance that the advice is sound, and that the advice should be acted on appropriately.

RECOMMENDATIONS:

The management of large and complex IT projects, and also Monitoring agencies involved with the approval and oversight of such projects, should seek independent expert advice where appropriate.

A peer review or second opinion on expert advice should normally be sought where there is doubt, or where the issues are critical.

Project management must deal promptly and thoroughly with issues raised by independent advisers.

Expert advisers must make every effort to ensure the advice contained in their reports is sound, and that their reporting of it is clear and well-balanced.

Risk Indicators

LESSONS:

A number of lessons arise from viewing the failure of the INCIS Project to fully achieve its objectives from the point of view of risk indicators. The main lesson is that indicators of potential trouble and increased risk are there to be seen well before difficulties arise. Priority must be given to looking for such indicators, and if they are found, then prompt action must be taken. More detailed lessons are:

- Pressure on a project to succeed can arise from a number of quarters. A high degree of pressure can lead to increased risk.

- New technology can bring high risk to a project.

- Lack of a skilled management team in a large IT project leads to increased risk.

- Major organisational change brings high risk.

- Human relations difficulties in a complex project leads to increased risk.

- The complexity inherent in large IT projects leads to increased risk.

- Lack of an experienced and skilled technical team in a large IT project brings about increased risks.

RECOMMENDATIONS:

Priority must be given to looking for risk indicators. If they are found, management must take prompt action.

Management must be aware of the danger that pressure on and within a project can lead to increased risk. It must therefore watch for symptoms of high pressure and take active steps to deal with its sources, which can be many. Where this is not possible, particular care must be taken with other aspects of the management of risk.

New or emerging technology should be avoided wherever possible. Where it is adopted, the high risk it brings must be managed very carefully. Wherever possible, proven technology and off-the-shelf packages should be used for large IT projects.

High priority must be given to the risk management of major organisational change.

Because complex projects bring high risk, complexity should be reduced wherever possible.

Human relations difficulties in a complex project must be dealt with promptly.

Because risk management and quality management are closely related, where there is high risk there must be thorough quality management.

Large and complex IT projects must have management with particular skills for dealing with complex systems.

The increased risks brought to a large IT project by lack of an experienced and skilled technical team must be appropriately guarded against and managed by bringing in external reviews and other means.

Project Manager

LESSON:

A project manager's reports to the project sponsor, IQA, auditors and oversight bodies provide a major means by which the health of the project can be assessed. It follows that where there are deficiencies in the reports, particularly with regard to project risk, the consequences can be serious. However, it is generally the case that deficiencies in the reporting process are indirectly signalled for all to see by, for instance, a lack of timeliness or a failure to report on risks.

RECOMMENDATION:

It is essential that a project manager should give full and timely reports, particularly with regard to project risk.

Monitoring agencies and others overseeing large projects should ensure there is comprehensive reporting of risk by the project manager.

Key Issues, Lessons and Recommendations from INCIS

6.5 Change Control

6.5.1 General

The objective of change control is normally to minimise scope creep changes to business process, applications and data until such time as the project or a relevant part is completed and delivered.

Change control ensures that changes made to the business processes, applications and data are planned, approved, and co-ordinated.

The change control process:

- Facilitates the implementation of controlled change.
- Ensures that all parties affected are informed of a planned change.
- Provides a record of changes for any subsequent problem tracking and resolution efforts.
- Analyses the impact of change on other aspects of the project.
- Ensures that risk analysis has been performed and that back-out plans exist.

Change control is achieved by:

- Freezing the business process, applications and data at an early stage until delivery of the relevant application.
- Adopting a structured procedure for reviewing proposed changes.
- Maintaining records to enable informed decision.

- Making future changes based on historical data.

- Instituting record keeping and communication procedures to aid in issue management and status reporting.

The change control process provides an audit trail between the change request, the tasks performed to implement the request and the items that were changed in performing these tasks.

6.5.2 INCIS Change Control Overview

Change control was critical to the INCIS Project primarily because of the complexity of the Project, the time the Project was scheduled to take and the extended time the Project actually took.

The highly integrated nature of this complex project meant that any change was likely to affect many other aspects of the project ie. change in scope and change out of scope.

The Inquiry believes there was an ineffective approach to change control. The approach only extended to a recording of change but did not effectively extend beyond that to the control stage.

Police had a change control book that was intended to define change control procedures. The book should have defined a procedure for determining whether or not a change was in or out of scope and the control changes to items in scope. There was significant change to items in scope and out of scope up to the Variation in 1997.

The book was written up and there was a clerical recording of changes proposed and agreed.

The book (or other procedures) should have provided for back-out plans for relevant changes. There was no provision for back out plans.

Problems with change control in INCIS included:

- There is no evidence of any attempt to freeze the business process. If anything, changes to business process were encouraged by the introduction of Policing 2000.

- There was no Blueprint so, whenever change came through, there was no reference point. The absence of a Blueprint allowed changes where it could not readily be determined whether or not the change was in scope. In effect a change became a matter of an individual's opinion in terms of scope.

- Late Business Process Re-engineering (BPR) introduced changes which, whilst not increasing scope, required more detailed work.

- There was a significant underestimation of work to convert the Law Enforcement System (LES) to the INCIS application and the increased work brought about change.

- There was inadequate detail in the Contract for design. This brought about change recorded in Operations Discovery I and II.

- The technology substitution concept held by Police was not consistent with change control which seeks to minimise technology change.

- The rescheduling of deliverables from Releases One and Two to Releases One, Two and Three and then to Increments One, Two and Three impacted on change control.

- The incorporation into INCIS of traffic, firearms and justice interface also created change control issues.

- The duration (5 plus years) of the project increased the pressure for change.

6.5.3 Summary

Change control was largely lacking, in the early stages of the Project, with the Project being allowed to grow in scope and complexity from its initial beginnings. Instead, all change should have been discouraged except at certain well-defined points at which the risk implications of change could have been carefully addressed and then the change should have been effected through a proper change control process.

6.5.4 Lessons and Recommendations

Change Control

LESSON:

An effective change control process is essential for a project of the size and complexity of INCIS. The process should reflect changes to the project budget and impacts on the business case.

The process should record both change in scope and change within scope.

RECOMMENDATION:

The governance and management of large IT projects should have in place and enforce a proper change control process. Monitoring agencies, as part of

monitoring of a project, should confirm that a proper change control process is in place and being observed.

The impact of changes should also be reflected in the project budget and on the business case.

Key Issues, Lessons and Recommendations from INCIS

6.6 Project Formation

6.6.1 General

The INCIS Project, as opposed to the concept, may be seen as coming into being as a consequence of a report from Price Waterhouse in November 1991. The report said the scope of INCIS needed development. Over time the original concept of INCIS developed from an intelligence system to an information system.

6.6.2 Project Scope

The Project then followed a number of paths, the main ones being a scoping study completed in March 1992, Business Requirements and definition in May 1992 followed by a feasibility study completed in October 1992. The INCIS Project team had now developed the INCIS concept and vision that remained substantially intact through all stages of the Project. They also had evaluated several technical architectures and were firming up in their minds specific technical solutions such as Object Oriented Technology (OOT) and client/server technology. An initial Business Case was developed and presented to Police Executive Conference (PEC) recommending the Project should proceed to tender. The recommendation was accepted.

6.6.3 External Advice

In the project formation phase it would have been appropriate to obtain independent advice or a review of strategic matters relating to the proposed contractual relationship.

Advice or a review should have questioned the proposed fixed price Contract for the whole of INCIS and should have raised alternatives.

6.6.4 Project Development (RFI, RFT and RFP)

The Inquiry believes the strategic formation of the INCIS infrastructure and application should have been considered in the early stages of the Project,that is, the way that the infrastructure and application would be handled and delivered. Whilst the detailed architecture had been considered in some detail, insufficient thought appears to have been given to the essential area of strategic formation. In the view of the Inquiry the infrastructure and the applications should have been dealt with by separate contracts providing for the delivery of business benefits in modules and not by a single contract (see Diagram 3).

A Request for Tender (RFT) and subsequent re-bid was issued and the process ran from October 1992 to April 1993. Although the technical requirements in the RFT referred to an *Open System*, there was a bias towards particular technologies and architectures. This is understandable given the work assessing various architectural approaches in the feasibility study. Open systems is a laudable direction where it can be practically applied. Open systems reduces exposure to one supplier, can lead to lower costs and, when it is fully accepted by the IT industry, provide access to a larger range of products and services. For an application of the size and complexity of INCIS it would have been very difficult to have implemented a complete open system solution. The RFT essentially sought a fixed price tender.

The Inquiry considers the RFI, RFT and RFP process Police followed met acceptable practice, and this view was also supported by the Ministry of Commerce. However, the Inquiry considers that the contents of the RFT and RFP, by specifying emerging technologies in the way they did, were a fundamental cause of many of the difficulties the INCIS Project encountered and started the Project on a risky course.

The Inquiry believes the Police were in an extremely vulnerable position prior to contract as they had not confirmed that IBM could deliver the application or the technical architecture capable of supporting the INCIS application. Two things should have taken place:

- A Blueprint should have been completed.

- A proof of concept process should have been completed to prove the proposed technology and that the concept proposed was capable of delivering Police requirements.

6.6.5 Project Growth through the Conceptual Stages

The INCIS concept and vision began as an intelligence system but grew significantly.

The Inquiry is left with the impression that the INCIS Project had captured and was trying to provide most, if not all, the Police computing requirements in one integrated whole. INCIS, therefore, grew into a very large and complex Project.

The original concept moved from a specific business function delivery to one that was almost a total re-engineering of Police process and systems. To some degree the growth was perceived to improve the ability of INCIS to comply with criteria for financial approval by Cabinet.

The growth was not necessarily good or bad. With proven technology and sound governance and management, the growth could have been accommodated.

6.6.6 Role of Advisers in Project Formation

General
The role of advisors during the project formation stage should be to assist with and advise on relevant aspects of the proposed project and, where appropriate, to carry out a peer review.

During the Project formation stage of a large IT project, expert advice should be obtained on the concept, strategic issues, the business benefits, the preferred technology and other relevant factors. The key decisions made by the project team should be subject to peer review. Independent advisers or experts should be used where appropriate to give advice and to conduct peer reviews.

Ernst & Young Report
The Ernst & Young report was commissioned by Treasury and Police following the completion of the Business Case. The report has been referred to in Section 4 at dates 22 July 1993 and 5 August 1993.

The report is high level, prepared in a short time frame (two weeks) and, when read as a whole, clearly contains significant reservations and warnings in relation to the INCIS Project (see Schedule 6).

Whilst Ernst & Young consider the Executive Summary not to be more positive or favourable to the INCIS Project than the report reads as a whole, the Inquiry is of the view that it was more positive or favourable.

When read as a whole the report raised significant issues that should have been resolved prior to contract.

Police and others when reporting to Government, quoted or paraphrased the Executive Summary without referring (or adequately referring) to the reservations in the report. This resulted in Ministers and Government receiving information that was more favourable to the INCIS Project proposal than the report as a whole.

The Ernst & Young report made it clear that there were issues and matters that Police needed to have resolved or be certain on before contract.

The report was dated 22 July 1993 and the Contract was signed on 23 September 1994. Generally acceptable practice would require that Ernst & Young be called back to check that the concerns in their report were resolved or that there be some independent check. Ernst & Young were not called back by Police or any Government agency and there was no independent check. Police say an internal check was made - but the Inquiry believes that events show that this was inadequate.

The Police used the Ernst & Young report through part of the formulation of the Project but made more use of it at the approval stage. Ernst & Young state that the report should not have been used for approval because "*it was not prepared for the purpose of recommending approval of the Project, especially in light of the warnings it contained in crucial areas*".

In the opinion of the Inquiry, more independent advice on the Project as a whole should have been obtained, particularly on the proposed technology and form of contract. A peer review of the whole project would also have been generally accepted practice.

6.6.7 No Proof of Concept

The proof of concept tests the planned approach on a limited scale. It tests the concept, size, and likelihood that the application will perform as expected. It provides an opportunity to test the areas that are identified as being particularly risky and to test on a smaller scale the proposed system. The results provide more detail, including refined functional requirements, a preliminary software development, an understanding of data issues, and more finely tuned cost/benefit projections.

Given the uncertainties surrounding the impact and implementation of the INCIS application, a proof of concept should have been developed. The knowledge derived from the proof of concept would have been a primary resource for the Business Case, the BPR, and the project scope documents. The proof of concept would have also given Police a feel as to how they were to implement the INCIS application and their approach to the Project in general.

Andersen Consulting in their tender rebid, said they needed to carry out an HLID or Blueprint and a proof of concept in relation to technology to determine whether they could do the job.

Police say that the same prescribed benefits that would have been provided by a proof of concept were supplied by:

- The Police concept that the Off-Ramp was linked to Iteration One with the result that, if IBM could not deliver Iteration One, Police would activate the Off-Ramp.

- A proof of concept was used during project implementation when practicable eg. Operation Obstat.

In the opinion of the Inquiry neither of these constituted a proper proof of concept or an adequate substitute for a proof of concept.

There was no comprehensive proof of concept early in the Project and this was a significant factor in the Project failing to fully achieve its objectives.

6.6.8 Business Process Re-engineering (BPR)

During the formation of the Project, Business Process Re-engineering (BPR) should be planned in detail.

Generally accepted practice is for BPR to be performed prior to contract.

The Business Case showed that Police expected extensive changes in the way they worked.

The timing of BPR effectively delayed development of the INCIS application by around eight months and also resulted in uncertainty and changes to the scope of the application.

If BPR had been substantially completed before Contract, the work would have been better defined and significant delay and other adverse consequences would have been avoided.

6.6.9 Lessons and Recommendations

Project Development (RFI, RFT and RFP)

LESSON:

Unless care is taken in the strategic formation of a large IT project risks can be increased and this was apparent in the INCIS Project by the adoption of a fixed or capped price contract for the whole of the project including infrastructure and application development.

RECOMMENDATION:

The Chief Executive should ensure that adequate resources are committed to the consideration of strategic formation and that decisions in accordance with generally accepted practice are made on relevant issues including the nature and type of the contracts for infrastructure and applications. A fixed or capped price contract for the whole of a large IT Project should normally be avoided.

LESSON:

The RFT and RFP should not have had such an emphasis on the technical solution and in particular on unproven technology and architecture.

RECOMMENDATION:

In large IT projects the tender documents should normally specify the business objectives required, state a preference for proven technology, state any conditions regarding existing installed technology and require the tenderer to specify the technical solution.

Today the Inquiry would recommend obtaining the maximum flexibility through an open system.

A large IT project should have an Blueprint and a proof of concept.

Role of Advisers

LESSON:

The lack of a peer review shortly prior to contract meant increased risk for the INCIS Project. This was particularly so given the complexity of the Project and the unproven technology proposed.

RECOMMENDATION:

Normally the Chief Executive and the monitoring agencies should require an independent peer review of the Project and the proposed contract before proceeding to contract.

No Proof of Concept

LESSON:

The lack of a proof of concept results in increased risks and this is particularly so where unproven technology or architecture are proposed.

RECOMMENDATION:

Large IT projects should perform a proof of concept before contract and this is particularly so if unproven technology is proposed or when the credentials of the supplier are in doubt.

Business Process Re-engineering (BPR)

LESSON:

BPR should be completed or substantially completed prior to contract or application development as the information from BPR is necessary to define the scope of the Contract. If this is not done, then subsequent variations to the contract are inevitable.

RECOMMENDATION:

A failure to complete or substantially complete BPR prior to contract is usually detrimental to the Project and carries a risk that the BPR will result in an increase in scope not provided for in the contract.

Key Issues, Lessons and Recommendations from INCIS

6.7 Project Approval

6.7.1 General

In order to implement the Project, it was necessary for Police to obtain Cabinet approval for funding. Approval would have to be governed particularly by the financial case to be made. In the early 1990s government finances were under pressure. Without an adequate return on investment, approval would not be given.

At the time of seeking approval, Government policy, in the then economic circumstances, was to cut expenditure. Thus the process of requesting Cabinet approval meant that the focus of the Project changed from the initial goal of achieving better policing to a means of attaining approval which, in turn, required a satisfactory financial return. As there was not a favourable financial benefit to Government deriving from better and more effective policing, the necessary case could only be made on the basis of savings resulting from more efficient procedures made possible by the proposed new IT system.

A number of papers were presented to Cabinet between July 1993 and April 1994, and the Business Case gave heavy emphasis to the financial case for the INCIS Project.

The Cabinet needs to know that the project is functionally and technically sound as well as financially sound. This would have presumably been left to the relevant officials to check. Technical soundness is vital to financial success. The problem perhaps stems from the deterministic framework within which Cabinet viewed financial estimates. The Inquiry believes that Cabinet

viewed the financial estimates with no accompanying estimate of uncertainty. While deterministic figures are entirely appropriate for budget allocations, they are inappropriate for estimates where uncertainty and risk is involved.

6.7.2 Business Case

An absolutely essential element of large IT projects is the business case. It is the document which records the business benefits to be achieved, how it is to be done, the financials, the main risks and outlines how they will be managed. The Chief Executive is responsible for the preparation of the business case and should approve and sign it. The business case of the project is the document against which the progress and outcome of the project is assessed.

The business case should cover:

1) The linkage to the business strategy.

2) The justification of the business benefits.

3) The key business delivery baselines and milestones.

4) Details on the proposed technology and architecture (including whether the technology is packaged or will be developed).

5) How the technology will deliver the business benefits.

6) The key risks, their magnitude and management.

7) The uncertainty of achieving financial and business benefits.

8) The method of implementation, for example, modules.

9) The proposed structure for governance and management (including the Sponsor and Project Manager, where appointed).

10) The position in relation to Business Process Re-engineering (BPR) (which should be completed or substantially completed before contract).

11) The skills of the provider.

12) The position in respect of proof of concept.

13) The position in relation to Blueprint.

14) The position in relation to independent reviews.

15) A contingency plan.

The Inquiry believes that there were a number of deficiencies in the Business Case in relation to the points listed above:

- there was no adequate case in relation to technology and architecture;
- there was only passing reference to the BPR;
- there were not adequate baselines or milestones;
- there was no reference to the skills required of the provider;
- there was not proof of concept, Blueprint or independent reviewing;
- there was no adequate treatment of risk.

The question is, given its inadequacies, why was it accepted? Presumably neither the Cabinet nor its advisers queried it sufficiently. The key questions would have been:

- Is the proposal technically sound?
- Has sufficient information been given from which to judge its soundness?
- What are the risks?

Because of the highly technical nature of the Project, it would have been essential to have sought expert advice. The Inquiry notes that the Ernst & Young report was dated 22 July 1993 and was close, in time, to the Business Case. Cabinet approval was not granted until 26 April 1994. The Business Case was not updated. No update of the Ernst & Young was sought – nor was any other independent advice sought at the time of Cabinet approval.

It would seem, however, that searching questions were not asked with regard to risks, despite the awareness of some elements of risk evidenced by the Cabinet minute approving the INCIS Project.

A significant problem with the Business Case was its lack of completeness on the major issues that would be needed for the successful implementation of the INCIS application.

6.7.3 Blueprint

A particular lack, both in the Business Case and in the Project as a whole, was that there was no Blueprint. Its absence can be seen to have contributed to Operation Discovery I and II that was a means of filling a gap resulting from the lack of a Blueprint.

6.7.4 The Role of Advisers in Project Approval

Independent advice is essential where approval is sought for a highly technical project.

In the case of the INCIS Project, there were three main advisers in the process leading up to project approval.

The first adviser was Price Waterhouse. The firm was initially engaged by Police to write a report on the early concept of INCIS. Police contracted outside personnel and relied heavily on them for ensuring that a technically sound proposal was being developed. As it happened, the requirements in the RFP documents for Object Oriented Technology (OOT) development and a distributed OO client/server architecture were both inappropriate and also technically unsound. It is not clear from the material before the Inquiry why this choice was advised or made.

Treasury and Police sought a report from Ernst & Young. This was a prudent and appropriate move at the time the report was commissioned. The report required updating by the time of Cabinet approval.

KPMG were contracted to upgrade the Information Systems Strategic Plan (ISSP) to reflect current thinking and the requirements of INCIS. Also KPMG were requested to review OS/2 as a suitable platform in light of the increase of market profile of Windows NT. They confirmed OS/2 as a suitable platform.

6.7.5 The Role of Monitoring Agencies

Monitoring agencies have an essential role in the approval and subsequent monitoring of major projects carried out by Government departments.

At the time of the Business Case, Treasury together with Police commissioned the Ernst & Young report.

Treasury did not seem to have questioned the technical feasibility of the proposal, nor to have examined it using a risk framework.

The Cabinet minute requiring Police to report quarterly on how some risks were being managed indicates an awareness of risk.

Treasury seems to have not recognised that BPR was not to be carried out until after contract. Likewise they did not recognise the consequences of the lack of a Blueprint and a proof of concept.

From December 1997 (voluntarily) and from May 1998 (by direction of Cabinet), INCIS became subject to monitoring by the SSC.

The Inquiry has received information that approval and monitoring procedures have been improved since the commencement of INCIS – but the Inquiry considers that there is still a need for further improvement.

6.7.6 Financial Return

The approval process appeared to focus on financial return and Government participation rather than on non-financial benefits to the community that would have followed from better and more effective policing.

The expectation of the Police that the application would be considered predominantly in financial terms caused undue emphasis on financial aspects.

6.7.7 Application as a Whole

Police application for approval of INCIS was unduly favourable and had a positive slant to help gain approval of the Project. No effective counter arguments were advanced.

6.7.8 Lessons and Recommendations

General and Business Case

LESSON:

Operational and financial risk attending a proposed project must be included in an application for project funding and approval and the technical and functional soundness of the proposal should also be established. Otherwise, a project should not be approved.

RECOMMENDATION:

Cabinet should specify the components required for a sound business case so that operational, technical and financial information establishing the soundness of the business case is disclosed.

The Chief Executive is responsible for the preparation of the business case and should approve and sign it to acknowledge that responsibility.

Cabinet should be assured by the monitoring agencies that a proposed project is technically, functionally and financially sound.

Role of Advisers

LESSON:

The terms of reference of an expert adviser need to be carefully defined and carefully considered by any person relying on advice. Any person relying on the advice should:

- Check that the advice is timely and accurate
- Study the whole of the advice and not just an executive summary.

RECOMMENDATION:

The terms of reference of experts, the timeliness and applicability of advice and the advice of an expert included in an application for approval should be critically reviewed in total by Monitoring agencies and any uncertainties or contradictions resolved.

The Role of Monitoring Agencies

LESSON:

Unless the actions of the Monitoring agencies are effective, Cabinet may be requested to approve a large IT project without having sound information.

RECOMMENDATION:

The Monitoring agencies should be sufficiently resourced, skilled and experienced to effectively advise Cabinet on large IT Projects.

Financial Return

LESSON:

The Inquiry believes the focus on financial return and Government participation caused a distortion to the application to Cabinet for approval for the INCIS project. Furthermore, the financial estimates gave no indication of the degree of uncertainty underlying the figures.

RECOMMENDATION:

Government should specify that non-financial matters can properly be put forward in support of an application and give them due weight.

Government should require an explicit assessment of the uncertainty underlying financial estimates put forward in applications for funding.

Application as a Whole

LESSON:

Any application for funding is likely to be couched in the most favourable terms possible. It will therefore contain a certain degree of bias and distortion. Care needs to be taken to detect any unduly favourable presentation.

RECOMMENDATION:

Monitoring agencies should be aware of any tendency to present an application in a too favourable way and should adopt a critical appraisal.

Key Issues, Lessons and Recommendations from INCIS

6.8 The Contract and Deed of Variation

6.8.1 General

It is necessary to have a contract or contracts to define the rights of the parties on what is to be delivered.

In most successful projects, limited reference only is normally made to the contract during the currency of the contract. However, in this case it is perceived that the Police were too assiduous and used the Contract to manage the Project.

The Contract was signed 3 September 1994. At that date the position was generally as described in the Sapphire report.

Mr Carr told the Inquiry that, in his view, the Contract contained agreement in *word* but that there was not agreement in *mind and heart*.

In the assessment of the Inquiry the Contract did not start in auspicious circumstances.

6.8.2 Form of Contract

The Contract is dated 23 September 1994 and comprises a lengthy agreement. Volumes I to IX set out the RFP issued by the Police and responses from IBM, as modified by negotiation. The Contract also has a number of schedules relating to pricing and other matters.

On the face of it, the Contract set out clearly the rights of the parties and appears to correctly represent what was negotiated between them. There has been no serious challenge as to the meaning or effect of the Contract itself except that there were disputes as to:

- Whether the Request for Proposal (RFP) and the response of IBM as negotiated were sufficient to allow commencement of design of applications. Contrary to Police belief at time of Contract, the RFP and responses were not sufficient to allow design of applications.

- Whether certain work (primarily data modeling) was in scope or out of scope in terms of the Contract. This was resolved largely in favour of Police.

The Police and others have referred to the Contract as being *fixed price* or *capped price*. It is now generally accepted that the Contract is more correctly described as a fixed or capped price contract for Release One with indicative pricing for Release Two.

The Inquiry considers the Contract aimed to deliver the Project in large chunks, ie. as a series of big bangs. The concept was a big roll out in relation to Release 1 and the subsequent delivery of Release 2. It did not provide for modulation of the applications (that is, the incremental delivery of discreet useable business functions).

Chapman Tripp maintain the Contract was of an essentially modular nature as –

- The Contract provided for the deliverables to be grouped for the purpose of the performance of services, the delivery and installation of deliverables and the acceptance and testing of those deliverables;

- The delivery and payment was staged and grouped;

- There were a number of other factors.

Chapman Tripp say that the separation of the delivery of infrastructure from the delivery of application that occurred during the life of INCIS was because of lack of formal Contract management by Police.

In the view of the Inquiry, the Contract as written was not sufficiently directed to modulisation (ie. incremental delivery of discreet useable business functions). Release 1 was intended to include the replacement of the Law Enforcement System (LES) but some of the technology scheduled to achieve this was in Release 2. As events developed, the position in relation to modulisation deteriorated so that at the date of the roll of the bulk of hardware (December 1997 to August 1998) virtually no applications were deliverable and Increment One did not go officially live until 19 May 1999.

Modules are used as part of the risk management process. The Inquiry is of the view that a fixed price contract for the whole was not appropriate for a project of the size and complexity of INCIS. A fixed price was also inadvisable because of the length of time required for the Project. The fixed price Contract also increased risk when compared with some other forms of contract, for example, a contract with modulisation or several contracts in which a business benefit or benefits are delivered in modules.

A contract or contracts involving modulisation would have been more appropriate.

The minutes of a Steering Committee held on August 1994, only six weeks prior to the Contract, under the headings *Off-Ramp* and *Police Position* record:

> *Police remains unconvinced that the proposed IBM team is capable of delivering all of Police's requirements on time, on budget. It has therefore proposed a two-stage contract, the first stage taking the project to the end of the Pre-Iterative stage, when the high-level analysis and design is completed. At that point, Police wishes to review the deliverables from stage 1 and determine whether or not to proceed to stage 2. It would be Police's intention that, if everything went well in stage 1, that IBM would be asked to proceed with stage 2. However, it does not wish to make this decision contestable by IBM as it considers that there is a significant possibility that Police may decide to end its association with IBM at that point and does not wish to have to go to Court to do so.*

The Inquiry believes that the above shows that:

- Neither of the parties were ready to enter into contract or to deliver on time or on budget. The inference may be drawn that at this date Police also knew that IBM were not capable of delivering the proposed distributed OO client/server, or the process manager and that there were real difficulties in relation to Object Oriented Technology (OOT) development and portability.

- A two stage contract with the first contract being to the end of the Pre-Iterative stage was considered and this should have been extended so that infrastructure and applications were separated and the delivery of business benefits was in modules.

- It seems that the Police were discussing the ability to exit on completion of the Pre-Iterative stage by use of the Off-Ramp. The Off-Ramp was a sound provision, which was included in the Contract. Unfortunately, the Off-Ramp in the Contract was not able to be exercised at the end of the Pre-Iterative stage as the due date for exercise had passed before the completion of the Pre-Iterative stage.

The proposed time for completion of the Contract was 31 December 1997, being extended from the Business Case date of 31 July 1997.

6.8.3 Infrastructure

The Contract provided for the delivery of the infrastructure and the delivery of the applications. The cost of infrastructure appeared to be the full retail price without any significant reduction for bulk or other factors. It is perceived that the pricing of hardware cross subsidised, to some degree, IBM software costs. The Inquiry considers that generally accepted practice would have had a separate contract for the infrastructure and for this to be delivered just in time for applications in modules of business benefits.

This was particularly important in the INCIS Project as the infrastructure was the component of the Contract that had the highest value to IBM.

6.8.4 Off-Ramp

The Contract provided an Off-Ramp provision that gave the Police a unilateral right to terminate the Contract. It was an important aspect of risk management. The Off-Ramp was not used. To be effective the Off-Ramp needed constant assessment by Police governance and management. The Off-Ramp could be exercised by notice during a 90-day period following the Off-Ramp Key Milestone to be specified in the Project Plan. The Project Director's reports of 30 September 1995 and 31 December 1995 state:

> *The Off-Ramp issue has been clouded due to a number of factors and project management is now considering alternative approaches.*

There was no reference to the Off-Ramp Key Milestone in any later Project Plan or Project Director's report. It appears that the Off-Ramp Key Milestone date was omitted from the Project Plan without any specific consideration being given by Police to its omission or the consequences of its omission.

The report of Chapman Tripp dated 7 July 1997 reviewed the position and stated:

> *We therefore consider it would be dangerous for Police to rely on the off-ramp regime, as:*
>
> - *Its enforcement in the courts or in arbitration would be fraught with difficulties; and*
> - *The consequences of wrongfully invoking the regime would be severe.)*

The report of Phillips Fox dated 23 June 1998 refers to:

> *The loss of the "off ramp" through ad hoc variation to the key milestones so that the trigger point was lost.*

The Off-Ramp issue was clearly not properly addressed and it became *clouded* and was *lost.*

Mr Doone says that at least on two occasions before the Off-Ramp lapsed he received an assurance that it was no longer required. No documentation can be located. The Inquiry considers that the state of the Project, at that time, was that no such assurances should have been given or have been accepted.

If the Off-Ramp position had been properly addressed and the INCIS Project critically assessed by Police at the relevant time, a decision should have been made to exercise the Off-Ramp (or, alternatively, to endeavour to negotiate an extension of time for the Off-Ramp or a Lay-by without penalty).

The Inquiry believes that the Off-Ramp should have been kept at the forefront of Police assessment of the Project and that it was lost without a conscious decision being made.

Consideration should have been given to a Lay-by to allow the Project to be parked whilst issues were resolved.

6.8.5 Time Not of Essence

Police, in negotiating the Contract, endeavoured to make time of the essence. The Contract provided that time was not of the essence, (except for some provision relating to the re-running of acceptance tests, which is not material to this report). As far as the Inquiry is aware, no other document made time of the essence but Police say that time was of the essence in respect of the key milestones. Time should have been of the essence in relation to key milestones. The result was that IBM were able to legitimately avail themselves of all time delays in order to give extra time to create the application and/or for technology to develop, including development tools.

6.8.6 Warranties

The Contract provided for what may be termed warranties in respect of:

- Performance.
- Availability of system.
- Operation in combination with all deliverables.

The Contract provided that some aspects of the warranties remained for agreement between the Police and IBM or for resolution under the provision of the Contract.

Police perceived that they had seamless end-to-end warranties.

The seamless end-to-end warranties were lost or impaired on items for which there was technology substitution. Police maintain that a satisfactory result was obtained as the substituted technology performed to acceptance standards stipulated by Police.

6.8.7 Technology Substitution and Variation

The Contract provided for technology substitution and for variations as separate regimes. Under the technology substitution regime either party could request the substitution of any:

> *... item or module of Equipment or Software.*

If a substitution was agreed, the Police paid the cost to IBM of the substituted deliverable plus the margin on the original deliverable.

As a legal matter, the scope of the technology substitution provision was restricted to an *item or module* and it is unlikely that technology substitution extended beyond that.

Police had a concept that the technology substitution provisions of the Contract could be used in a very wide way to future proof the INCIS infrastructure, application development tools and packages. For further discussion on the Police concept of technology substitution see section 6.2.10

Under the variation regime all variations had to be agreed in writing and the price had to be agreed.

The Inquiry believes the Police concept of technology substitution was flawed. Police should have had a sound technology in place at the time of contract and should have made only limited use of technology substitution.

The concept of technology substitution was incompatible with a fixed price or capped price contract. Normally in a fixed or capped price contract the purchaser endeavours to keep changes to a minimum.

The concept of technology substitution was also in conflict with proper change control which should also endeavour to keep changes to a minimum.

The Police informed the Inquiry that the changes purported to be made by way of technology substitutions were in fact legally variations of the Contract.

6.8.8 Other Contract Issues

There were a number of contractual issues which taken together contributed to delay.

Operations Discovery I and II
There was a dispute relating to the inadequacy of the description of work to enable design of applications. This gave rise to Operations Discovery I and II which resulted in the work being sufficiently described to enable design of applications.

Logica
Following Operations Discovery I and II there was a dispute between the Police and IBM about scope creep and whether certain work was in scope or out of scope in terms of the Contract. The dispute was referred to Logica.

In general terms, the Police maintained that about 30% of the work shown by Operations Discovery I and II was out of scope, being mainly traffic, firearms, justice sector interface and infrastructure which had been added to the Contract. IBM maintained that about 70% of the work was out of scope. The general effect of the findings of Logica was that about 30% of the work was out of scope. The findings of Logica were accepted by Police and IBM.

The findings in the Logica report were generally favourable to Police. However, the negative aspect of the Discovery process and the reference to Logica was lengthy delay.

Operation Obstat
Operation Obstat was an exercise that resulted in Police and IBM agreeing on documentation which defined the development work (i.e. remaining development work for software) required to complete the INCIS Project in its format at that stage and on redefined baselines.

6.8.9 No Breach of Contract

Chapman Tripp, in their opinion 7 July 1997 advised that delays and extra costs had been dealt with by agreement so that it would be difficult for either party to establish a breach justifying cancellation of the Contract.

On 13 May 1998 Deputy Commissioner Matthews advised the SSC that there was no prospect of IBM being found to be in breach of the Contract.

The material before the Inquiry does not show any breach of Contract by either party. Some procedures may not have been followed but any irregularity was waived.

6.8.10 Deed of Variation

Following the Logica report, IBM wished to terminate the Contract and enter into a new Contract. Police considered that the existing Contract should remain in place and insisted that there should be a variation of the Contract. The parties entered into negotiations that resulted in a Deed of Variation dated 5 December 1997.

The main relevant provisions of the Variation were to define the development work.

It is stated that:

> *The parties acknowledge that the current planned cost to IBM for the Development Work to satisfy the Requirements, therefore, in accordance with the Baselines is $20 million ……;*
>
> *The parties agree to use their best endeavours to limit the cost of the said Development Work from the effective date to $20 million.*

IBM subsequently supplied information stating that the $20 million cost estimate had or would be exceeded.

The Contract as varied by the Variation was reviewed by Phillips Fox, solicitors, on instructions from Treasury and Police following a Cabinet directive. The opinion of Phillips Fox is dated 23 June 1998 made an overall finding that:

> *the varied contract looks robust by industry standards….*

6.8.11 Police Attitude to IBM and the Contract

Police had an attitude that they held a strong contract and that IBM had an obligation to deliver and would not walk away from the Contract. This attitude was held notwithstanding the reservations expressed by IBM in relation to the complex and specialised technology. Police relied to a very high degree on the terms of the Contract – particularly so after the partnering arrangement terminated.

6.8.12 Lessons and Recommendations

Form of Contract

LESSON:

A fixed price contract for the whole of a large IT project has a high level of risk - a more flexible form should be used, requiring delivery in stages.

RECOMMENDATION:

A flexible form of contract or contracts should be used for large IT projects, normally with separate contracts for infrastructure and applications with delivery in modules of business benefits and infrastructure being just in time for delivery of applications.

Off-Ramp and Lay-By

LESSON:

Off-ramp and lay-by provisions are important means of risk control. Where they are in a contract, they must not be forgotten and instead be kept under proper assessment.

RECOMMENDATION:

Governance, management and Monitoring agencies should require that procedures are in place to ensure that critical issues such as the Contract Off-Ramp are properly assessed.

Time Not of Essence

LESSON:

In a large IT project where time of delivery is always critical and delays are costly, time should be of the essence in relation to key milestones.

RECOMMENDATION:

The Chief Executive should not agree to a contract in which time is not of the essence in respect of key milestones unless the time issue is specifically addressed and there are compelling reasons for taking such a course.

Warranties

LESSON:

The warranties and end-to-end guarantees in a contract are an important means of risk control. Therefore any decision that affects warranties or guarantees needs to be carefully assessed in relation to the risks of the project.

RECOMMENDATION:

In large IT projects any decision that affects warranties or guarantees should be carefully assessed by the sponsor, project manager and contract manager in relation to risks of the project.

Technology Substitution

LESSON:

A provision for technology substitution in a contract can be worthwhile. However, it is not a surrogate for having a sound technology solution in place.

There are risks if the effect of a technology substitution clause is perceived to be wider than a correct interpretation of the clause.

RECOMMENDATION:

Care needs to be taken in interpreting and assessing the effect of a technology substitution clause, it should not be used beyond its scope and should not be a surrogate for a sound technology solution.

Significant technology substitution should be avoided whilst the application is being developed.

Key Issues, Lessons and Recommendations from INCIS

6.9 Project Implementation

6.9.1 General

The implementation of the INCIS Project after the signing of the Contract was fraught with difficulties that arose from:

- The fact that the parties had entered the Contract before they were ready.
- The technology and architecture contracted for could not be delivered.
- There was not sufficiently skilled and experienced personnel.
- A dispute as to whether the Contract was sufficient for design of applications.
- Business Process Re-engineering (BPR) not being commenced until after Contract.
- Requirement for extensive changes.
- Other factors.

6.9.2 Business Process Re-engineering (BPR)

Following the signing of the Contract, Police embarked on BPR. BPR should have been completed or substantially completed prior to Contract. This would have enabled matters identified in BPR to be incorporated in the Contract. BPR initiated significant changes impacting the way the INCIS application supported the Police business. The changes (although most were in scope) resulted in a material increase in the work to be done.

BPR was transferred from the INCIS Project to Policing 2000. Although Police maintain that INCIS continued as a business project, the Inquiry considers that the transfer of BPR and the change in the reporting structure were perceived to change INCIS from a business project to a narrow technology project. This sent the wrong signals to Police as a whole and to the INCIS Police Project team. The INCIS Project team had thought they were involved in a strategic business process.

6.9.3 Independent Quality Assurance (IQA)

An essential element of Independent Quality Analysis (IQA) is that it is independent. It should cover all aspects of the project. The IQA report should be monthly. The IQA report should be circulated to the Chief Executive, the Sponsor, the Project Director, the Steering Committee and Monitoring agencies. It is a key mechanism to identifying the risks and it is an essential tool for the governance and management of any large IT project.

The terms of reference for IQA needs to be comprehensive and should be determined or, at least, approved by the Monitoring agencies as part of the monitoring regime.

The relationship of IQA to the financial position of a project warrants comment. Normally, the IQA report will not deal in any detail with the financial position of the project as this should be shown in the Project Manager's report and the financial audit.

Police appear to have issued tenders for something akin to IQA. An Ernst & Young response of 9 December 1994 for a *Quality Management Assurance Overview* comes close to being an IQA proposal.

Police preferred the response of PriceWaterhouse for an *INCIS project internal audit*. The terms of reference were to review the Project's progress by auditing the Project Director's reports and verifying adherence to system control procedures. The scope included the financial and systems aspects. The first report under the heading *Methodologies: Audit Scope* recorded:

> *The scope of this section is to evaluate adherence to the chosen methodologies (NB No assessment will be made as to the validity of a particular methodology and ....)*

Accordingly, the PriceWaterhouse reports are constrained by their terms of reference. The PriceWaterhouse reports did not constitute IQA. However, Police and some others appear to have perceived the PriceWaterhouse reports as constituting IQA.

Notwithstanding that they were not IQA reports, Price Waterhouse reports referred to elements of risk, for example, October 1995 *of concern*, August 1996 *high risk* and December 1996 and subsequently as *very high risk*.

The INCIS Project should have had comprehensive IQA as part of a risk management process. In fact, the Project had no IQA. The failure to have comprehensive IQA was a material factor in significant risks not being identified and acted upon in the manner they should have been.

6.9.4 Project Charter

A project charter:

- gives a project scope;
- specifies the project plan, duration and deliverables;
- outlines the project structure and the roles of those involved;
- identifies the risks and the risk management process;
- details the quality assurance program; and
- includes the communication plans.

The Project Charter is usually produced immediately after the Project approval has been obtained.

Police maintain that the effect of a Project Charter was achieved in a number of documents. An initial project charter consolidating a number of documents was created in 1997. The documents and the initial charter fell short of a proper Project Charter.

A Project Charter should have been in place throughout the Project, and would have facilitated better governance and management within Police, improved monitoring agencies and reduced risk.

6.9.5 Partnering and Executive Control Group (ECG)

Partnering only works if there is a common objective and an appropriate contract. The INCIS Project started with a partnering relationship between Police and IBM. Although the partnering relationship appeared to be reasonably close there were inherent difficulties arising from the parties

entering into the Contact when they were not ready, from the fixed price nature of the Contract and from other factors. The Director of I & T favoured keeping IBM *at arms length*. In May 1995 partnering was terminated and was replaced with the Executive Control Group (ECG) which was also subject to inherent difficulties. The Inquiry considers that both partnering and the Executive Control Group were acceptable ways of managing the relationship but neither were successfully implemented.

Following the establishment of the Executive Control Group it became more difficult to obtain information from IBM.

6.9.6 Difficulties with Contract

The difficulties inherent with the Contract led to:

- Operations Discovery I and II which resulted in a description sufficient to enable design.

- The referral to Logica that resulted in a report that was accepted by the parties. The report determined what work was in scope and out of scope under the Contract.

- Operation Obstat which resulted in the compilation of all relevant documentation – most of which were incorporated into the Variation.

Whilst most of the difficulties with the Contract were resolved by the Variation, the difficulties caused delays that were damaging to the INCIS Project and very costly to the parties. The difficulties also increased uncertainties and, hence, risk.

6.9.7 Technology Substitution

Police entered into the Contract with the Police concept of technology substitution that they perceived could be used to effect substantial technology and architectural changes. For discussion see Section 6.2.10.

6.9.8 Variation

Following Operations Discovery I & II, Logica and Operation Obstat, Police and IBM entered into negotiations that led to the Variation.

At the date of the Variation, little had been delivered under the Project.

The Variation provided for the work to be done by IBM in relation to the INCIS application. It took into account changes, increases in scope, technology substitution and other factors to that date.

Following the Variation, Police instituted a strict contract control regime and considered Chapman Tripp provided a contract management function. However, Chapman Tripp say that this puts their involvement too high. Chapman Tripp say they were involved when requested in various meetings relating to risk assessment and reaction in terms of contract structures.

The Variation involved expenditure in excess of that authorised by Cabinet.

6.9.9 Personnel and Resource Issues

Neither the Police nor IBM, at that time, had the resources, skills and experience needed to successfully deliver the INCIS application.

6.9.10 Outline of Position October 1998

Mr Watson says that before his appointment in October 1998 as Project Director he was led to believe that the INCIS Project was under control, that the issues had been dealt with and that it would be smooth sailing from then on.

He conducted his own audit of the Project which in his view showed:

- IBM and Police were running two different projects and that the contractual relationship meant huge bureaucracy on both sides that caused delay and was confrontational at times.

- It was very difficult for auditors, who visited the Project only every three months, to identify and understand all the issues. His perception was that Police, prior to his appointment, had taken at face value what IBM said it could do. The auditors really had no ability to dispute what was in IBM's plans (any more than Police were able). The relationship with IBM and the fixed price nature of the Contract meant that Police and Price Waterhouse had difficulty in obtaining information into plans or issues within the INCIS/IBM team.

- He was told that planning had been actively discouraged.

- Poor financial management. Team leaders were not accountable and there was insufficient monitoring of budgets. His perception was that every quarter prior to the Price Waterhouse audit there was a process that involved going through the budget in order to keep it under the projected costs of the Project.

- Due to slippages with the IBM plans, coupled with the need for additional Police personnel etc. and other factors, the budget was insufficient and that additional funding of the Project would be required.

Mr Watson told the Inquiry that options were not pursued because Police believed they were in a strong position and did not want to impact on IBM's accountability.

The Inquiry considers the above to be a reasonable summary of the matters specified.

6.9.11 Pressure

Throughout the INCIS Project and particularly through its implementation, the Police were under pressure from:

- The need to implement policies announced to Government, the public and Police personnel.
- The fact that the INCIS application was perceived as necessary to the five-year Police Strategic Plan, Community Oriented Policing (COP) and Policing 2000 strategies.
- Deficiencies in the Business Case and the presentation of business benefits that were unlikely to be achieved.
- The complexity of the Project.
- Contracting for over-ambitious technology.
- Entering into a contract before being ready.
- The consequences of an inappropriate form of contract, that is, a fixed or capped price contract for the whole of the Project.
- Personnel and staffing issues within Police and IBM.
- Disputes between Police I&T Division and the INCIS Project.
- Skepticism from within Police as to whether the INCIS infrastructure and application were the right options and whether the INCIS Project would deliver.
- Issues between the Police and IBM as to the scope of the Contract.
- Requirements to keep within Cabinet approval and budgetary constraints.
- IBM having seriously under-priced development required under the Contract and the work to convert LES to INCIS.

- IBM development being sited outside New Zealand.
- The Project slipping behind time with pressure increasing as slippage increased.
- Government, Cabinet and Government agencies – especially in the later stages.
- Lack of the resources with appropriate governance, management and technical skills and experience.

Aspects of pressure, in relation to risk, are discussed in Section 6.4.12.

The pressure increased as the INCIS Project failed to progress as planned.

6.9.12 Lessons and Recommendations

Business Process Re-engineering (BPR)

LESSON:

There is an interaction between the business changes and technology associated with a large IT project. The business changes should drive the technology and not vice versa. If BPR is not carried out till after the technical solution has become fixed (normally at the latest at the time of the signing of the contract), there is an increased risk that technology will drive the business changes. There can then be an underground function creep that is hard for management to detect.

RECOMMENDATION:

In large Government IT projects BPR should be completed or substantially completed prior to contract in order to stabilise the level of change impacting application design and development.

Furthermore, during the course of a BPR, every effort should be made to ensure acceptance and buy-in throughout the organisation of the whole project, including both organisational and technical changes

Project Charter

LESSON:

A project charter is the project's management and governance 'glue'. Without a charter or where the contents are spread over a number of documents and where these documents are not maintained throughout the life of the project to reflect change, especially when the project lasts longer than one year, there is a high risk of governance and management of the project becoming unstuck.

RECOMMENDATION:

A project charter should be completed and agreed to by all the major stakeholders, including the Monitoring agencies, immediately following project initiations. The charter should be maintained throughout the life of the project. The charter should be readily accessible to all interested parties.

Personnel and Resource Issues

LESSON:

For a large IT project to be successful it must be adequately resourced, particularly in terms of skilled and experienced personnel and governance and management at all levels.

RECOMMENDATION:

In large and complex Government IT Projects, there should be appropriate resourcing particularly in terms of skilled and experienced personnel at governance and management levels and that the Monitoring agencies should monitor the proposed resourcing and the actual resourcing throughout the project.

Pressure

LESSON:

Many large IT projects are likely to be subjected to pressure from many sources.

RECOMMENDATION:

Governance and management should be aware of and guard against negative aspects of pressure.

7. APPROVAL AND MONITORING

7.1 Relationship with Government

7.1.1 General

The relationship between Government, departments and agencies is in part provided for by statute, common law and practice, as outlined in the paper from the Treasury and State Services Commission (SSC) (for extracts see Schedule 13).

The relationships involve:

- The requirements of the general budgeting and financial regimes.
- The requirement for approval for large capital expenditure and delegated authority.
- Terms and conditions of approvals by Cabinet and Ministers.
- The responsibility of the Chief Executive (or the Commissioner).
- A monitoring regime by Government agencies.

It is a neat equation as to where responsibilities should lie and how they should inter-relate.

The Treasury and SSC paper says

> *The State Sector Act 1988 and the Public Finance Act 1989 are the cornerstone of New Zealand's public sector management system. For 10 years they have provided the basic legal framework that governs how public service*

departments and departmental chief executives relate to the Executive and Parliament.

The Public Finance Act 1989 applies to the Police in the same way as it does to other departments, but most State Sector Act provisions do not apply because the Police are not and have never been part of the public service. There are special provisions in the Police Act 1958, and in Regulations made under that Act, that govern the appointment and responsibilities of the Police Commissioner.

The Treasury and SSC paper describes the reporting of financial and performance information under the Public Finance Act 1989 as follows:

The Act provides for financial and other performance information to be reported to Parliament on a basis consistent with that used for appropriations and for financial reporting in the private sector by:

- *Requiring that appropriation requests in an Appropriation Bill are accompanied by supporting information in the Estimates [s.9];*

- *Requiring departments to report their service performance intentions and results to Parliament in accordance with GAAP [s.34A(3)(d), s.35(3)(e)].*

The department is responsible to one or more Vote Ministers for the production of different outputs to the performance standards agreed with each relevant Minister. The information provided to Parliament on service performance will normally include a description of the quantity, quality, time, location and cost of delivering each class of outputs.

- *Requiring departments to report their financial performance intentions and results to Parliament in accordance with GAAP [s.34A, s.35].*

Departments must provide forecast and audited annual financial statements to Parliament. Among other things these statements provide information about departmental assets and liabilities, and changes in their composition and value, that would not be shown in cash-based accounts. The forecast financial statements produced at the start of a financial year provide Parliament and the Responsible Minister with a base against which to assess actual departmental performance at the end of the financial year.

The normal budgeting and financial regimes did not alert Government to the failure or the magnitude of the failure of the INCIS Project.

The New Zealand Police Annual Reports and accounts to Parliament provided under usual budget and reporting regimes for the years 1993 and 1994 do not contain any reference to the INCIS Project except that the reports and accounts to:

30 June 1995	show work in progress for INCIS at $6,559,000.00
30 June 1996	show work in progress for INCIS at $33,108,000.00
30 June 1997	show work in progress for INCIS at $56,887,000.00
30 June 1998	show work in progress for INCIS at $70,783,000.00

and the 1998 report under the *Statement of Commitments* show a commitment to INCIS in the figure of $24,047,000.00.

The Commissioner's overview for 1998 said:

> *The delay in the implementation of the INCIS (Integrated National Crime Information System) project has been a source of frustration for both the staff working on the project, police staff in general, and the public. However, as the project is deployed within Police Districts during the coming year, the benefits of this technology will become apparent. It is expected that project costs will be within the revised budget that allowed for alterations to the original scope of the project.*

An unqualified audit certificate was given in each year by the Office of the Controller and Auditor General.

Police advise that, as the Contract was executory and no special risks were identified, there was no need under Generally Accepted Accounting Practice (GAAP) to make any further provision.

7.1.2 Process for Public Sector Investment Proposals

The Treasury and SSC paper describes how Ministers and departments process a proposal (Schedule 13) and makes reference to the requirement for a *sound business case*, which was introduced in July 1994.

7.1.3 Financial Delegations

The financial delegations approved by Cabinet are:

Diagram 11:
Financial Delegations

	Chief Executive less than	**Minister** less than
From June 1989 to June 1999	$5m	$10m
From June 1999	$7m	$7m to $15m

The above financial delegations are shown in the Treasury and SSC paper (Schedule 13)

Where an approval is likely to be over-expended in terms of the authority granted, a further approval has to be obtained before liability for expenditure is incurred. In the INCIS Project, Police failed to obtain authority in relation to the expenditure associated with the Variation. De-functioning can alter the scope of what is approved. The monitoring regime should provide that any material de-functioning should be referenced to the business case and be reported to the Government agencies.

7.1.4 Chief Executive

The Treasury and SSC paper (Schedule 13) sets out the responsibilities of Chief Executives as follows:

> *Under the State Sector Act, public service department chief executives are responsible to their Ministers for the performance of the department. Section 32 of the Act states that chief executives are "responsible to the appropriate Minister for:*
>
> *(a) the carrying out the functions and duties of the Department;*
>
> *(b) the tendering of advice to the appropriate Minister and other Ministers of the Crown;*
>
> *(c) the general conduct of the Department; and*
>
> *(d) the efficient, effective and economical management of the activities of the Department."*
>
> *The State Sector Act also allows Ministers to delegate their powers and functions to the chief executive of the relevant department .*

> *In order to discharge their responsibilities, the State Sector Act gives chief executives the full rights, duties and powers of an employer in respect of all departmental staff.*
>
> *A departmental chief executive is thus responsible, and accountable to the appropriate Minister, for the management of any project (including information technology projects) in the department.*

The paper also records:

> *Also arising from the 1991 review, public service chief executives were required by their performance agreements (from 1992) to ensure that information systems assurance arrangements were implemented. The chief executives of the Police and Defence Force, who are not subject to the same performance agreement requirements, were required to provide their Ministers with a similar level of assurance.*

The Chief Executive has the primary responsibility for the governance, management and performance of a major and complex IT project. In the case of the INCIS Project the Commissioner had the primary responsibility.

Matters relating to how the Chief Executive should normally discharge his primary responsibilities have been addressed in section 6.3.3. The Government agencies should co-operate in providing advice to Chief Executives on:

- What is generally required to successfully govern and manage an IT project.

- Specific advice on what the Government and Government agencies require of the Chief Executive in relation to the approval and monitoring regimes.

The Government agencies involved in approval and monitoring should co-operate in having a single point of reference for the Chief Executive.

7.2 Approval and Monitoring Regimes

7.2.1 General

The regimes for the approval by Cabinet or a Minister and monitoring of large IT projects involve some complexity and require a degree of sophistication.

The Government agencies deal with and have experience of a considerable number of large IT projects, whereas the applicant is likely to have much less experience. The regimes should allow advantage to be taken by Cabinet,

Ministers and the applicant of the knowledge and experience of the Government agencies.

The Government agencies need to be adequately resourced and to have or have available skills and experience to advise and monitor.

The skills and experience held by the Government agencies are a significant factor in the approval and monitoring regime. Their skill and experience should be available to advise, monitor and report to the Government and Ministers and to advise the applicant.

The primary functions of the Government agencies should be:

- To add value by advising Cabinet, Ministers and the project.
- To report to Cabinet or Ministers in relation to the business case.
- To confirm that the contract will give effect to the business case.
- To monitor in an effective way so as to advise the Cabinet or the Minister of adverse developments as soon as practicable.

Monitoring agencies should exercise discretion and flexibility in determining what level of monitoring is appropriate for a particular project and what increased monitoring may become necessary if a project is not performing to criteria.

At present, Treasury and SSC both participate in the monitoring process. There needs to be co-operation between Treasury and SSC to ensure that one or both of them are covering off all aspects of monitoring – but that they are not duplicating effort.

The regimes for approvals and monitoring need to have flexibility to cope with the efficient discharge of government business, varied circumstances of applicants and rapid changes in technology. The regimes should be able to cater for the assessment of projects which may involve a very high risk, a big-bang delivery, use of emerging technology or other unusual characteristics, if that is the correct course of action based on solid evidence that the project is achievable.

7.2.2 Expectations of Cabinet and Ministers

Cabinet and Ministers are entitled to expect that the regimes will:

- Provide a basis on which an informed decision can be made on whether or not to approve the expenditure of public money on a project.
- Ensure that the project proceeds in accordance with any approval.

- Ensure that the project is effectively monitored so that the Cabinet or the Minister is advised, as soon as is reasonably practicable, if a project is not performing (when measured against established criteria).

7.2.3 Expectations of Monitoring Agencies

The Monitoring agencies are entitled to expect:

- Sufficient resourcing to enable them to have or have available sufficient skills and experience to perform their advisory and monitoring functions.

- Projects should have a reporting structure that should generate information that will enable them to advise and monitor a project in an effective way.

7.2.4 Monitoring and Independent Quality Assurance (IQA)

An important factor, if not the most important, relating to the monitoring regime is Independent Quality Assurance (IQA). To endeavour to ensure effective IQA, Cabinet or a Minister should give consideration to directing that the Monitoring agencies:

- In consultation with the Chief Executive establish the criteria against which IQA is to be measured.

- Endeavour to arrange, through the applicant's contract with the provider, for the person or organization conducting IQA to have access to the relevant records of the provider.

- In consultation with the Chief Executive, settle the terms of reference and appointment of the person or organisation who is to conduct the IQA.

- Require the person or organisation conducting the IQA to report to the Monitoring agencies and to the governance and management of the project.

7.2.5 Approval and Monitoring of the INCIS Project

The Inquiry believes the approval and monitoring regimes in respect of the INCIS Project:

- Were defective in relation to approval as they did not supply Cabinet with material information particularly on risk and technology.

- Failed in relation to monitoring as they did not give a warning early enough.

- Failed (until a late stage in the Project) to inform Cabinet or Ministers in any realistic way of the risks or true position of the INCIS Project.

7.2.6 Use of Experts

The Government agencies should maintain and develop skills in using experts as part of approval and monitoring.

Government agencies should maintain and develop skills that enable them to make a realistic assessment of experts' reports as part of the approval and monitoring regimes.

7.2.7 The INCIS Approval

In all probability, the intention of the Cabinet was to approve only the INCIS Project described in the Business Case. However, there were major changes between the Business Case and the Contract (for example, the introduction of the distributed OO client/server and the changes in scope) so that the INCIS Project became something other than that approved. During the implementation of the INCIS Project there were further changes (for example, the additional development work reflected in the Variation) so that the INCIS Project further departed from what was approved.

The Inquiry considers that the approval should contain directions to ensure that any material changes are reported to the Monitoring agencies.

7.2.8 Monitoring of the INCIS Project

The monitoring of the INCIS Project did not detect the problems with the Project at a sufficiently early stage. Lack of a proper monitoring regime and lack of IQA were significant to monitoring not achieving its objectives.

The Inquiry recommends that Cabinet and Ministers, as a condition of approval, stipulate certain minimum standards that should result in effective monitoring.

7.2.9 Requirements for an Application for Approval

The Cabinet or Minister should require the application to include a business case from the applicant and reports from the Government agencies.

Cabinet and Ministers may wish to issue a requirement that an application shall include a business case signed by the Chief Executive that shall specify:

- Linkage to the business strategies.

- The business benefits.

- Key business delivery milestones.
- The proposed technology (including whether it is packaged or to be developed).
- How the technology will deliver the business benefits.
- Key risks, their magnitude and how they are proposed to be managed.
- The method of implementation, for example, by modules.
- The proposed structure for governance and management of the project (including the qualifications of the Sponsor and Project Manager, where appointed).
- Whether or not BPR has been completed.
- The skills and experience of the provider of technology to deliver.
- Whether there has or will be a proof of concept.
- Whether there has been any independent review.

The Cabinet or Minister may also require the application to include reports from the Monitoring agencies in relation to the business case and also outline their requirements for an effective monitoring regime – including the criteria against which monitoring will be measured and the arrangement for IQA.

7.2.10 Directions Attached to any Approval

Cabinet may consider that the following directions should be attached to any approval:

- Prior to the contract being signed, the Monitoring agencies should confirm in writing that they are reasonably satisfied that the proposed contract is consistent with and should give effect to relevant matters specified in the business case and, in particular, should implement the technology solutions proposed in the business case.
- The project must have or put in place a formal risk management process approved by the Monitoring agencies. The formal risk management process should specify criteria against which reporting should be made and contingency plans to deal with risks.

- An IQA system must be implemented in respect of the project. The Monitoring agencies should, in consultation, with the Chief Executive:

    - Establish the criteria against which IQA is to be measured.

    - Endeavour to arrange, through the applicant's contract with the provider, for the person or organisation conducting IQA to have access to the relevant records of the provider.

    - Settle terms of reference of and appointment of the person or organisation who is to conduct the IQA.

    - Require the person or organisation conducting IQA to report to the Monitoring agencies as well as to the governance and management of the project.

    - Require the applicant (outside of the project management) to pay the person or organisation conducting the IQA.

- Where the role of systems integration is significant to the project, there must be an intergration plan approved by the Monitoring agencies for systems integration.

- On any significant change to the initial or a re-baselined criteria, the change shall reference to the business case and shall report to the Monitoring agencies.

- Any significant change to the governance and structure shall be referenced to the business case and be reported to the Monitoring agencies.

- There must be a comprehensive project charter approved by the Monitoring agencies.

- Any change to the project, including any material de-functioning, must be referenced to the business case and be reported to the Government agencies.

- Reporting by the project to the Government agencies should be monthly for the Project Manager and IQA and quarterly for audit, unless the Government agencies otherwise authorise in writing.

- The project should comply with monitoring as approved by Cabinet and any further requirements of Government agencies that may be reasonable to facilitate effective monitoring of the project.

- The Government agencies should report to Cabinet or the Minister any material adverse developments.

7.2.11 Improvements to Monitoring

Monitoring by the Monitoring agencies is necessary to ensure that the project is implemented in the form approved, that any material change is properly considered and assessed and that Cabinet and Ministers are given timely warning of material negative developments.

Currently there is no clear definition of minimum standards and methodologies required for the approval and monitoring regimes for the IT aspects of large projects. Most of the information supplied is broad brush. Although this approach may have been satisfactory when INCIS was contracted to IBM in 1994, improved standards and methodology have now been universally accepted and should be applied consistently. The approval and monitoring regimes should require compliance with such improved standards and methodologies.

The Monitoring agencies should ensure that there is compliance with any directions attaching to the approval of the Cabinet or Ministers. Efficient monitoring by the Monitoring agencies should include compliance with the directions suggested in Section 7.2.10.

7.2.12 LESSONS AND RECOMMENDATIONS

General

LESSON:

Annual accounts and reports to Parliament will not, under GAAP, disclose contingent liabilities in respect of contracts for large IT projects unless special risks are identified.

RECOMMENDATION:

Government agencies and their auditors should ensure that there is enquiry and investigation of the issue of special risks in relation to large IT projects and that any special risk is reported in the annual accounts and reports.

Approval and Monitoring Regimes

LESSON:

The approval and monitoring regime (until a late stage) in place at the time of INCIS did not provide sufficient information on which Cabinet and Ministers could base decisions.

RECOMMENDATION:

The approval and monitoring regimes should be made more robust by:

- Cabinet and Ministers specifying the requirements for an application and attaching directions to any approval.

- The Monitoring agencies being sufficiently resourced to enable them to participate effectively in the approval and monitoring regimes.

LESSON:

Without compliance with improved IT project standards and methodologies the measurement and monitoring of project performance is subjective and open to error.

RECOMMENDATION:

The approval and monitoring regimes should require compliance with new and improved standards and methodologies.

Use of Experts

LESSON:

In the approval and monitoring regimes care needs to be taken in the instruction and use of experts and the assessment of their reports. Failure to do so can lead to adverse consequences for Government and the Project.

RECOMMENDATION:

Monitoring agencies should develop skills in instructing and using experts and the assessment of their reports.

Improvements to Monitoring

LESSON:

Defects in the business case and lack of proper baselines, milestones and measurements inhibit or preclude effective monitoring. Likewise the lack of an effective change control process can result in material changes or de-functioning not being properly recorded or reported to the detriment effective monitoring.

RECOMMENDATION:

Cabinet, Ministers and the Monitoring agencies should require a proper business case, baselines and milestones that provide a base from which effective monitoring can be performed. Monitoring agencies should identify specific measurements and reporting they require of the project and IQA. Likewise there should be a direction that should be an effective change control process be implemented, and that any material change or de-functioning be referenced to the business case and be reported to the Monitoring agencies.

7.3 THE TREASURY

Prior to 1997 the primary responsibility of Treasury in relation to IT projects, which required Government approval, was to assess the validity of the economic and financial analysis presented to Cabinet and to identify, assess and manage financial risk rather than technical risk.

In 1993, a department proposing a capital investment in excess of delegations had to justify the need for any new investment and outline the expected benefits of the proposal. There had been few large capital injection requests made by departments. Treasury acknowledges that in 1993 there was little internal guidance readily available to them when assessing business cases. Detailed knowledge of capital investment assessment techniques was held by a small number of experts within Treasury. They also say that, in 1993, there was very little guidance relating to IT available for vote teams. The main avenue open to Treasury at the inception of the INCIS Project to assess technical aspects of an IT proposal was to contract external consultants.

A significant change was made in mid-1994, when Cabinet required any request for increased capital investment to be supported by a sound business case and that the business case should be developed in the context of a strategic multi-year business analysis for the department. Treasury developed some criteria for assessing a sound business case.

While Treasury had the skills to monitor the progress of a project in fiscal terms, the monitoring skills tended not to include IT specialties. The Treasury monitoring was not itself able to make extensive comment on the technical aspects, or the likelihood of certain technical risks materialising. Where external reviewers are appointed to advise on the Project, Treasury can draw, as appropriate, on that advice. Where there are very serious concerns about significant fiscal risks associated with a project, Treasury would now consider bringing in its own external reviewer to assist in the ongoing monitoring.

In relation to the INCIS Project the Treasury advised that they first became involved at the end of 1992 when advice was given to the Associate Minister of Finance. Treasury received and commented on the draft Business Case. Treasury decided it needed professional advice and agreed with Police on the appointment of Ernst & Young, who reported on 22 July 1993. Treasury worked on various papers to Cabinet, communicated with Police, made further comment on the Business Case, and briefed the Minister of Finance through to Cabinet approval on 26 April 1994. Some issues remained unresolved (for example, split of benefits) and Treasury participated in resolving these.

In relation to the approval process Treasury considered that:

- Treasury's participation was an example of practice at that time.

- When first referred to Treasury, much of the structure of the INCIS Project was in place and it would have been difficult to effect material change.

- In retrospect, the Project was too large and to complex to be approved as a single development.

- With hindsight, more could have been done to assess the resoluteness of the Business Case by way of sensitivity and risk analysis.

- The calculation or justification of savings in the Business Case was weak.

- While the Ernst & Young report was positive, it was high level and undertaken in a short time frame. There were limitations on how much reliance could be placed on the report.

The Inquiry considers that, when the Ernst & Young report is read as a whole, there were warnings in relation to technology, architecture, development and other factors.

Treasury has carried out two internal reviews which identified lack of a Blueprint, timing of Business Process Engineering (BPR), caveats in the Ernst & Young report and financial implications not picked up in the Business Case (capital charge and depreciation) as matters of concern.

Treasury says the monitoring regime applied to the INCIS Project changed over the period April 1994 to May 1999, but the fundamental situation throughout was that:

- Police had full management responsibility for the Project, including its own project management and monitoring regime.

- Treasury (and later SSC) would monitor the position of the Project at arm's length, based on information provided by Police and their project auditors.

Treasury is of the view that the reports from Police were generally over optimistic and were not timely and that, with the benefit of hindsight, these weaknesses were not sufficiently recognised or addressed.

From early 1995 Treasury started to be concerned that reports from Police or the auditors did not contain sufficient information to satisfy Cabinet reporting requirements. Treasury also had concerns as to the status of the Project.

In March 1997, the latest project status and audit reports confirmed for Treasury that concerns it had raised with the Police, over the previous year, had not been resolved. Treasury advised the Treasury Ministers. Treasury, with Police, engaged Andersen Consulting to report to report on the Project's health

Treasury continued to actively monitor, raise concerns and to seek briefings on the contract variation negotiations. Treasury became aware from the press of the signing of the Variation. Treasury took up with Police relevant issues – including possible excess of financial delegation by the signing of the Variation.

In February 1998 Treasury advised that it could not confirm Police's assertion the Project was *back on track.*

In May 1998 Treasury and the SSC advised Cabinet to obtain an opinion on the robustness of the Variation and on matters relating to project management. This resulted in the Phillips Fox report and other action. Treasury also participated in advice to Government concerning the strengthening of the management of the INCIS Project.

On 1 March 1999 Treasury reported to the Treasurer and Minister of Finance. INCIS capital slippage was addressed. The report said:

> *Police appear to have no levers to manage the slippage.*

Delays were assessed at $.510 million per month giving rise to an additional $8.6 million. Additional capital costs of $4.8 million were referenced. A risk of a further $8 million capital expenditure to upgrade servers and network was identified. Ceasing the INCIS Project and increased monitoring were mentioned. Recommendations were made that the Treasury and SSC should report on options of continuing, reducing or ceasing INCIS.

Treasury reported to the Ad Hoc Officials IT Committee and to the Ad Hoc Ministers IT Committee on matters leading to the repudiation of the Contract by IBM.

Since 1993 there have been significant changes by Government and the Government agencies in relation to the monitoring of IT projects. Treasury has participated in these.

During the INCIS Project, Treasury identified a number of financial and other risks relating to the INCIS Project. These were largely the symptoms or manifestation of more deep fundamental problems that were not identified.

Treasury of its own initiative has critically assessed its performance in relation to the INCIS Project, has acknowledged shortcomings and has addressed and adopted remedies to make their monitoring more effective.

The Inquiry supports the steps Treasury have taken to improve the monitoring of IT projects.

For the future the Treasury needs to maintain and develop skills and experiences in assessing large IT projects so that it has the capability to give sound advice to Cabinet and Ministers on matters within its expertise.

7.4 State Services Commission (SSC)

The State Services Commission (SSC) is a department of State under the State Sector Act 1988.

The principal functions of the State Services Commissioner prescribed by s 6 relate to the public service which, by virtue of the definition in s 27 of the State Sector Act, comprises the departments specified in the First Schedule to the Act. The Police are not included in the list of departments in the First Schedule. The State Services Commissioner therefore has no direct statutory responsibility for the Police under the State Sector Act.

The Commissioner of Police is required under the Police Act 1958 to consult the State Services Commissioner in respect of conditions of employment for members of the Police.

The SSC was aware of the INCIS Project from August 1993 when the Commissioner of Police sent a draft Cabinet paper concerning approval and funding to the State Services Commissioner for comment.

The SSC says it received information about the Project because of its industrial relations responsibilities under the Police Act, responsibilities in relation to Cabinet Committees, involvement in the Justice Sector Information Strategy, and overall responsibility to ensure co-operation between departments and other agencies in the public sector.

Although the SSC had no direct responsibility in respect of the INCIS Project during this period, there is evidence that in the latter part of the period 1996-97 the SSC did develop concerns about the overdue reporting by Police on the Project. These concerns were conveyed to the Chair of the relevant Cabinet committee.

In July 1997 Cabinet, on the recommendation of the then Minister of State Services, established a new regime for monitoring major information technology projects in the public service. SSC say Police were not initially covered by the new regime that applied only to departments in the public service.

The Inquiry notes that the Police seemed to regard themselves as subject to direction from the Minister of Police in relation to the Project. Police state:

The constitutional independence of the Commissioner of Police with respect to law enforcement decision making did not extend to INCIS project issues. The scope of that independent role was summarised in a memorandum from the Solicitor-General dated 8 March 1993 as follows:

a) The Minister may not direct the Commissioner in the latter's duty to enforce the criminal law either in particular cases or classes of case.

b) The Minister may however impose binding requirements in respect of matters of administration not directly affecting the Commissioner's duty to enforce the criminal law, (eg. imposing staff ceilings, approving spending proposals in non law enforcement functions etc.)

The Commissioner of Police was responsible to the Minister of Police for the INCIS project in much the same way as any other chief executive in the state sector would have been. This responsibility is reflected in regulation 3 of the Police Regulations 1992 as follows:

(1) The Commissioner shall be responsible to the Minister for-

(a) The general administration and control of the Police; and

(b) The financial management and performance of the Police.

(2) The Commissioner shall take all reasonable steps to ensure that all members of the Police discharge their duties to the Government and the public satisfactorily, efficiently, and effectively.

The INCIS Project was subject to the usual state sector reporting and approval processes.

In December 1997, at the request of the SSC Chair of the Ad Hoc Officials IT Committee, established by the Cabinet decisions of July 1997, the Police agreed to comply voluntarily with the monitoring regime. The Police sent copies of their internal and independent audit reports to the SSC for the December 1997 and March 1998 quarters. While these reports continued to categorise the INCIS Project as *high risk*, they were read by the SSC as showing that significant progress was being made and as not identifying cause for major concern.

The SSC were aware of failures by Police to report in accordance with the requirements of Cabinet. This knowledge was acquired from SSC

participation in the building of a sector-wide information management system.

In February 1998 SSC received advice that the INCIS Project might not be able to meet the time frame for conversion from LES to INCIS. SSC also obtained other information.

On 12 May 1998, the SSC advised the Minister of State Services of slippage in the INCIS Project, of significant risks and that the Project was high risk.

On 13 May 1998 SSC was advised by Deputy Commissioner Matthews that there was no prospect of IBM being found to be in breach of the Contract.

SSC joined others in recommending to Government that INCIS be subjected to the monitoring regime. In May 1998, Cabinet directed that Police comply with the monitoring regime established in July 1997.

On 12 June 1998, SSC wrote to Police setting out requirements for the monitoring regime.

Following the May 1998 Cabinet directive, the SSC had a direct role in monitoring the Police management and administration of the INCIS Project. SSC say that initially it took some months to piece together information and that this was not helped by lack of systems within Police and the unsatisfactory quality of the information supplied. SSC say that the quality of the information improved following the appointment of Stewart Watson.

By February 1999 the stage was reached where the SSC convened a meeting to hold Police governance directly accountable.

On 1 March 1999 SSC briefed the Minister of State Services that the INCIS Project continued to slip and there were cost concerns. The briefing also reviewed the issue of the termination of the INCIS Project.

SSC participated in discussions on a deferral of Increment One and a review to ascertain whether there were any alternatives.

SSC continued to receive information and report to Ministers.

For the future the Inquiry supports the SSC's need to improve their monitoring methodology and maintain and develop skills and experiences in assessing large IT projects so that it has the capability to give sound advice to Cabinet and Ministers.

7.5 The Office of the Controller and Auditor General

The Office of the Controller and Auditor General audits the accounts of Police including the INCIS Project.

The Office did not note the accounts of Police presented to Parliament see Section 7.1.1 in relation to the INCIS Project. It appears that INCIS was reflected in the accounts in accordance with generally accepted accountancy practice (GAAP).

In discussions with the Inquiry the Office of the Controller and Auditor General:

- Advocated the maintenance and development of IT advisory and monitoring skills by Treasury and SSC with specialised help contracted in where necessary.

- Considered the Monitoring agencies should not be held directly responsible if the IT project goes wrong but should be held responsible if the advice or monitoring regime processes are not followed properly. If the monitoring regime has not detected a material problem in a timely manner, the Monitoring agencies should be asked to explain.

- Was in strong support of a two-step process. The first step being of a design and scope phase. The second being of the IT project itself. They also agreed to separating the infrastructure from the application and "chunking" the application into modules. This was perceived to reduce the risk of a Government agency contracting before it is ready.

- Considered that IQA was of enormous value to large Government IT projects. IQA should be involved from the earliest practical stage and continuously throughout the project. It is appropriate to expend *high power money* to ensure high quality IQA. The cost of IQA should be provided by the Government agency rather than by the project.

- Highlighted the need for clear, concise and plain English reporting throughout the project to and by the Monitoring agencies.

The Auditor General has produced a report *Governance and Oversight of large Information Technology Projects* and other material which addresses some of the problems identified in relation to the INCIS Project. These publications and other material are valuable resources that should be consulted in relation to large Government IT Projects.

The Inquiry agrees with the approach taken by the Controller and Auditor General.

8.0 RELATIONSHIP WITH PRIME CONTRACTOR

8.1 General

The prime contractor for the INCIS project was IBM.

IBM appeared before the Commission of Inquiry and sought a watching brief under which it would be supplied with the transcript and have the right to appear.

The Ministerial Inquiry communicated with IBM and invited it to meet with the Inquiry and/or to supply information. IBM has elected not to meet with the Ministerial Inquiry. The Inquiry, in accordance with natural justice, has supplied material to IBM and sent to IBM, on a confidential basis, a copy of the final draft report.

IBM made the following written response to the final draft report:

> *Thank you for your letter of 28 July 2000 and the opportunity to respond to the draft report of the Ministerial Inquiry into INCIS.*
>
> *IBM has consistently taken the view that as the Ministerial Inquiry relates to the relationship between public agencies an active involvement would be inappropriate. Therefore, although IBM believes that a number of the assertions in the draft report which relate to IBM inevitably lack balance, it does not wish to become substantively involved at this stage. IBM therefore declines the opportunity to comment on the contents of the draft report.*

The Inquiry considers that on the basis of material received and reasonable inferences, it is able to assess the position of IBM to the extent set out in this report and that some lessons can be learnt and recommendations made in respect of the relationship between Government agencies and the prime contractor for a large IT project.

8.2 Pre-Contract

IBM appears to have accepted and proceeded within the limits of the technology and architecture specified in the Request for Tender (RFT) and Request for Proposal (RFP). However, in particular, having regard to the Sapphire report, it is reasonable to assume that IBM should have known that key elements of the technology and architecture were unproven in an application of this size and complexity. The Sapphire report indicates that IBM advised that a distributed object computing environment was impossible to achieve and admitted that, in respect of its Object Oriented Iterative Development Methodology, it had very little practical experience on any project, let alone one the size and complexity of the INCIS Project. IBM was also unable to demonstrate the process manager.

It appears that IBM:

- Thought that the development of the description of work in the Contract to enable design of applications (primarily data modeling) was outside scope and, therefore, was to be paid as an extra. IBM accepted the Logica view that development to enable design was in scope.

- Underestimated the volume and complexity of data to be converted from the law Enforcement System (LES) to the INCIS application.

IBM insisted on the provision in the Contract that time should not be of the essence. The Inquiry believes this was consistent with IBM appreciating that it needed time for development or for technology to develop.

8.3 Contract

In the view of the Inquiry, at the time of Contract, IBM, like Police, was not ready to enter into contract and should not have done so. The Quadrant report of 25 November 1996, which was commissioned by Police, reports the lack of detail for design for applications, and says, *Moreover there is anecdotal evidence to suggest that within IBM this was discussed and the advice not to sign the Contract was ignored*.

8.4 Implementation of Contract

In the initial stages of the Contract there was a partnering arrangement with Police. The Inquiry believes, whilst a partnering arrangement is acceptable in some circumstances, in this case the partnering arrangement was unlikely to work because the parties had different objectives, they were not ready to enter into contract, there were difficulties in relation to the fixed price nature of the Contract, and other factors. The partnering arrangement was terminated by Police.

The turnover of personnel within IBM was excessive and the location of work outside of New Zealand had significant risks.

The following table contrasts the number of IBM personnel filling each role with the Police involved in the Project over the period from 1994 to 1999 and provides a graphic picture of the risk staff turnover placed on the INCIS application development.

Diagram 12:

IBM and Police Personnel Turnover

Police	Police	Police	IBM	IBM	IBM
Project Sponsor	Project Director	Director / GM of IT	IBM Project Director	IBM Applications Development Mgr	IBM Technical Designer
2	2	2	5	6	8

In addition, the IBM /INCIS Development Team changed locations three times (Texas, Sacramento, Sydney and New Zealand). Disruption and delays to the project are inevitable from such moves.

The actions of IBM were also influenced by:

- The fact that it had recently gone through restructuring and did not have the degree of expertise in development of the applications it had had previously.

- The need for time to develop the applications or for technology to develop.

Police requested various technology substitutions. IBM agreed on condition it was released from relevant warranties. It is likely that IBM agreed to the technology substitutions as it would be seen as reducing its risks and releasing it from any end-to-end warranty.

The risk to IBM was reduced by the change of the architecture from a distributed OO two tier client/server to a conventional three tier client/server in system performance terms and resulted in an architecture more familiar to IBM developers.

The provision of the Variation whereby the parties acknowledged that the current planned cost to IBM for the development work to satisfy the requirements in accordance with the baselines to be $20 million is of interest. The provision relating to the current planned cost to IBM being $20.0 million was not necessary to price or provide for payment of the development work. The issue of what would happen if the cost exceeded $20.0 million was not fully addressed in the Variation. If the cost to IBM to complete the

development work significantly exceeded the $20.0 million IBM had, at the least, a basis on which to argue.

IBM delivered the hardware and systems software which was remunerative to IBM and also delivered Increment One.

The legal advice to Police and statements made by the Police at various times indicates that IBM were not in breach of the Contract prior to IBM repudiating the Contract on 17 August 1999.

8.5 Lessons and Recommendations

Pre-Contract

LESSON:

There can be difficulties if a prime contractor proceeds with Request for Tender (RFT) and/or a Request for Proposals (RFP) for a large IT project if the contractor has knowledge that key elements of the technology or architecture are unproven.

RECOMMENDATION:

Normally it is desirable to use proven technology. Where the prime contractor expresses reservations in relation to technology or architecture for a large IT project, the Chief Executive and the monitoring agencies need to review the position and should not proceed with the project until they are satisfied that the technology and architecture to be contracted for can be delivered and will provide the required business benefits.

LESSON:

Difficulties are likely to arise if the Government agency and the prime contractor do not have a correct and common understanding of the scope, volume and complexity of the work to be provided for a large IT contract.

RECOMMENDATION:

The Chief Executive and the monitoring agencies should take reasonable steps to satisfy themselves that they and the prime contractor have a correct and common understanding of the scope, volume and complexity of the work to be provided for in the proposed large IT contract.

Contract

LESSON:

There are significant risks to all parties if they or any of them enter into contract before they are ready to do so.

RECOMMENDATION:

The Chief Executive and the monitoring agencies should take all reasonable action to ensure that all parties to a contract for a large IT project are in fact ready to enter into contract at the date of the contract.

Implementation of Contract

LESSON:

Whilst a partnering arrangement can be acceptable in some circumstances, in the present case it was unlikely to work in the INCIS project as the parties had different objectives and the form of the Contract was not appropriate for partnering.

RECOMMENDATION:

Care needs to be taken in implementing and committing to a partnering arrangement.

LESSON:

Excessive turnover of prime contractor key personnel and locations can be disruptive to a large IT project.

RECOMMENDATION:

All reasonable steps should be taken by all parties to minimise turnover of key personnel and locations that may impact adversely on a large IT project.

LESSON:

There are risks if the prime contractor has restructured or downsized in terms of expertise or capacity required for a large IT project.

RECOMMENDATION:

Chief Executives and monitoring agencies should have a sound knowledge of the expertise and capability of the prime contractor and should satisfy themselves that, notwithstanding any restructuring or downsizing, the prime contractor will be in a position to deliver the expertise and capacity required to complete contractual commitments relating to a large IT project.

9.0 WAY FORWARD

9.1 General

The track record for the successful completion of large IT projects has been poor. The Simpl report shows only 38% of projects were successfully completed in New Zealand in terms of time and dollars, only slightly better than the experience overseas. When wider criteria than those in the Simpl report are applied, the success rate rises to about 88%. Whilst the New Zealand success rates are consistent with overseas experience, these are still unacceptably low.

The many problems arising throughout the life of the INCIS Project were similar in nature to the factors identified as having contributed to large IT Project failure elsewhere. Most problems are well documented and awareness of them has led to significant improvements in IT governance, risk management and project management since the INCIS Project began in 1991. Many education programmes now include project management in their curriculum.

Whilst there has been significant improvement to the approval and monitoring regimes, the Inquiry believes that further improvements can be made to reduce the risk of another failure such as that experienced with the INCIS Project. There are several good examples, where governments overseas have tackled the problems and the Treasury, SSC and Office of the Controller and Auditor General have already taken some of these solutions on board.

Risk cannot be eliminated altogether. Large IT projects can be extremely complex and, whilst generally accepted practice may be followed, some will continue to fail. Discretion and flexibility will be needed to ensure that the depth to which a business case is probed, and project performance is managed and monitored, is broadly related to the specific risks identified, and the potential costs if a project fails. It is hoped the lessons learnt from the INCIS Project and the implementation of the Inquiry's recommendations will go a long way to ensure that effort is well directed to improve New Zealand's IT project performance and to reduce project failure rates in both the public and private sectors.

9.2 Cabinet and Ministers

Prior to approval, Cabinet and Ministers need to be fully satisfied they have a complete business case showing a clear linkage to the approved business strategy.

They should also have the opinions and concerns (if any) of the Monitoring agencies in relation to the Project, including the technology proposed and the identification and management of the key risks associated with the project.

Cabinet and Ministers will need to be satisfied that the key risks are of an acceptable level and can be managed.

If Cabinet and Ministers are satisfied the project should proceed, then directions should be imposed that:

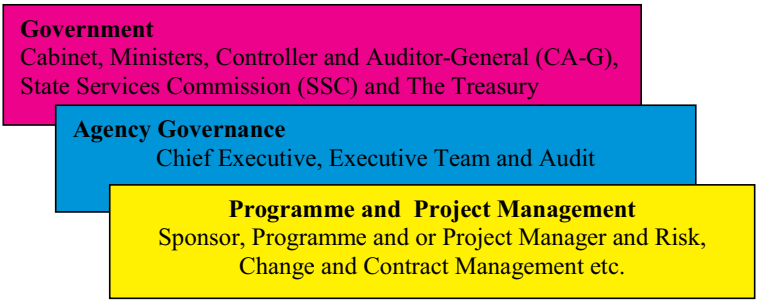
- Ensure that the contract gives effect to what has been approved.
- Facilitate effective monitoring.
- Encourage acceptable risk management practices to be applied.
- Require regular reporting and that there be no surprises.
- Establish clear initial baselines showing business deliverables occurring over the life of the project.
- Require that changes including changes to baselines be referenced to the business case and be reported to the Monitoring agencies.

9.3 Governance and Management

There are three overlapping levels involved in the management of large IT projects run by Government agencies.

Diagram 13:

Levels Involved in Management of large IT Projects



The Controller and Auditor General's report, *Governance and Oversight of Large Information Technology Projects* provides a good overview of governance at the Government level. Whenever a new project is being planned it is important the various participants know and understand what is required of them to meet each others expectations. It is incumbent on the Monitoring agencies to communicate their requirements to agencies planning large IT projects. There are a number of examples overseas where central agencies have researched the issues causing project failure and have introduced schemes to reduce the number of incidences through:

- Education.
- Information exchange.
- Standards.
- Monitoring framework and measurements.
- Project management methodology.

Two examples of internet sites outlining standards and a providing a best practice guide to IT project management in Government are:

- The UK Central IT Unit (CITU) in the Cabinet Office. www.citu.gov.uk.

- The Canadian Treasury Board Secretariat. www.cio-dpi.gc.ca.

The UK central IT unit (CITU), in their research, identified the following ten broad areas where they believe significant improvements are needed. They are very similar to the Inquiry's findings.

- ***Business Change***. *Too often organisations look only at new technology and do not integrate the IT with other aspects like cultural change. Organisations must address the overall way they manage programmes and projects before they can improve the way they do business.*

- ***Responsibility and Leadership***. *There must be structures in place that allow individuals to take responsibility for delivering a project or programme throughout its lifetime.*

- ***Project Management***. *Recommendations:*

  - *Take a formal approach to project management.*

  - *Provide training and mentoring of staff.*

  - *Match the abilities of managers to the difficulties of projects.*

- ***Risk Management***. *Appreciating business risk management at all levels helps to ensure that the impact of a project is fully understood and monitored. Recommendations:*

  - *Ensure upward referral of risks.*

  - *Provide the skills and mechanisms for reporting and managing risks.*

- ***Modular Development***. *Risks can be managed better by dividing complex programmes into smaller sections that can be delivered independently.*

- ***Benefit Realisation.*** *Departments and agencies need formal processes of determining benefits and reviewing their progress. Recommendations:*

  - *Make the Senior Responsible Owner (SRO) responsible for reviewing benefits.*

  - *Reinforce systems for reviewing and monitoring benefits.*

- *Share experience more widely across Government.*

- ***Procurement and Supplier Relationships**. It is impossible to improve public services if relationships with suppliers are poor or procurement is done badly. Recommendations:*

  - *Establish better relationships.*

  - *Gather information about top ten IT suppliers.*

  - *Audit existing procurement guidance.*

- ***Cross-cutting Initiatives**. Cross-cutting projects are those with objectives that require contributions from more than one department or agency. Recommendations:*

  - *Establish clearly where responsibility for projects lies by giving cross-cutting initiatives an SRO.*

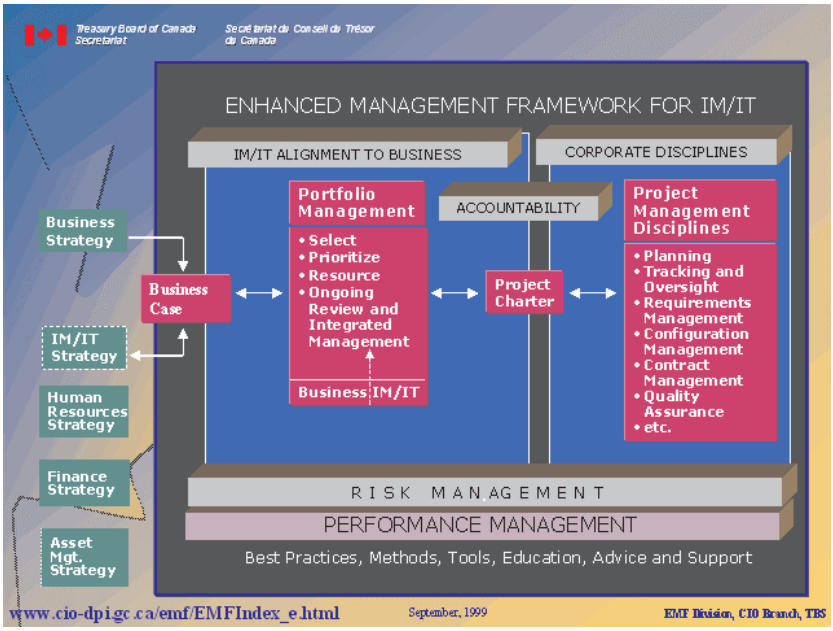
- ***People and Skills**. Modernising the public sector demands that departments, agencies and suppliers expand their skills to deliver successful business change. Government must identify and measure these skills and provide ways of acquiring them quickly, as required by e-government strategy.*

- ***Learning Lessons**. Learning and sharing the lessons from past experiences should be part of everything the Government does, and is particularly important for IT projects. We will not achieve long-term improvement unless the Government sets up a constant process of learning and evaluation.*

The Canadian Government has come to similar conclusions and are using the Internet to communicate policy, strategy, standards and best practice to their agencies contemplating IT projects. Refer to diagram 14.

Diagram 14:
Canadian Treasury Board Secretariat Home Page.

(www.cio-dpi.gc.ca/emf/EMFIndex_e.html)



The diagram is an example of what can be done using the Internet to help agencies plan and implement large IT projects. It shows the Canadian Treasury Board Secretariat home page for 'Enhanced Management Framework for IM/IT'. Behind the 'buttons' are best practice, standards, definitions, Government reporting requirements, project management methodology and 'how to' help facilities plus a lot more.

The Inquiry believes the provision of a service such as that provided by the Canadian Treasury Board Secretariat, would go a long way to meet the findings of the CITU and recommendations of this Inquiry. The Inquiry recommends the Government explore ways to provide a similar service in New Zealand, possibly via a joint exercise with private enterprise as the service is as important to private enterprise as it is to Government.

9.4 Project Manager

A skilled and experienced project manager is essential for a large IT projects. There are a limited number of good project managers in the New Zealand market place, hence in some instances an agency may have to recruit overseas. Whilst a Government agency may think the price of a good project manager is too high, project failure is a far more expensive proposition.

Project management frameworks and processes are now well understood and a number of educational institutions include project management in their curriculum. For example many project managers are taking advantage of the Project Management Institute's (PMI) training and certification program. The following is an extract for PMI's website referring to information available to Project Managers:

> **Body of Knowledge:** *The "Project Management Body of Knowledge" (PMBOK®) is an inclusive term that describes the sum of knowledge within the profession of project management. This full body of knowledge includes knowledge of proven, traditional practices, which are widely applied, as well as knowledge of innovative and advanced practices, which may have seen more limited use. The full body of knowledge concerning project management is that which resides with the practitioners and academics that apply and advance it.*

The Inquiry recommends that Chief Executives and Sponsors appoint appropriately qualified and experienced project managers for large IT projects.

9.5 Appropriate Forms of Contract

Because of the high degree of uncertainty involved in large IT projects, it is necessary to use a flexible form of contract which breaks down the work, pricing and payment into stages of business benefits (by modules), each one of which has a lower uncertainty than the whole. In this way, better decisions can be made by either party. The uncertainties of IT also make it important that the parties to a contract are able to work closely together. A fixed price contract for the whole of the work of a large IT project results in a high risk for both parties. It inhibits the ability of the parties to work together, encouraging an adversarial situation which in turn further increases the risk of failure. Thus a fixed price contract is usually inappropriate for the whole of a large IT project.

Guidance on possible forms of contract can be found in *The Engineering and Construction Contract: Guidance Notes* issued by the Institution of Civil Engineers. The form of contract suggested depends on the degree of uncertainty, but in any case involves formal interaction between the parties during the course of the contract allowing for staged payment and, in effect, an evolution of the contract as the work progresses. The two principles on which the Engineering and Construction Contract (ECC) is based are:

- Foresight applied collaboratively mitigates problems and reduces risk.

- Clear division of function and responsibility helps accountability and motivates people to play their part.

> *The ECC allocates clearly the risks… however, its main task is to reduce the incidence of those risks by application of collaborative foresight.*
>
> *A principle of the ECC is that the Project Manager… should be presented with options for dealing with the problem from which he can choose… The Contractor should be unaffected by the choice made. To achieve this the value of the compensation events is based upon a forecast of the impact which the change or problem will have on the cost to the Contractor.*

The Engineering and Construction Contract gives various options as to form of contract, depending on the degree of uncertainty. The most appropriate contracts for large IT projects are probably the target contracts. There are two forms of target contract, the first based on an activity schedule and the second on a bill of quantities. An activity schedule is a list of activities prepared by the contractor, and a bill of quantities comprises a list of work items and quantities. To quote the *Guidance Notes*:

> *Target contracts are sometimes used where the extent of work to be done is not fully defined or where anticipated risks are greater. The financial risk is shared between the Employer and the Contractor in the following way:*
>
> - *The Contractor tenders a target price in the form of the Prices using either an activity schedule or a bill of quantities. The target price includes the Contractor's estimate of Actual Cost plus other costs, overheads and profit to be covered by his Fee.*
> - *The Contractor tenders his fee in terms of a fee percentage to be applied to the Actual Cost.*
> - *During the course of the contract, the Contractor is paid Actual Cost plus the Fee. This is defined as the Price for Work Done to Date (PWDD). The Prices are adjusted for the effects of compensation events and [where appropriate] for inflation.*
> - *At the end of the contract, the Contractor is paid (or pays) his share of the difference between the final total of the Prices and the final PWDD according to a formula stated in the Contract Data. If the final PWDD is greater than the final total of the Prices, the Contractor pays his share of the difference.*

Other even more flexible forms of contract are possible, namely a cost reimbursable contract or even, where uncertainty is greatest, a management

contract. The Inquiry believes the target contract concept warrants consideration for appropriate large IT projects.

9.6 Monitoring Agencies

There have been significant changes in the way the Monitoring agencies have monitored large IT projects since the INCIS Project began in 1991.

Many of the signs of problems arising in the INCIS Project, particularly in the initial stages, were not followed up for a number of reasons. The Inquiry believes further improvement to the monitoring regime are required to ensure risks associated with large IT projects are monitored appropriately, and early warning of problems are reported to Government (and the Chief Executive).

The governance as described in the Controller and Auditor General's report *Governance and Oversight of large IT projects* should be adopted. Although the report refers to the requirements for IT project monitoring it does not describe how these requirements should be provided e.g. by an IT monitoring unit or by defined functions being clearly allocated to specific Monitoring agencies. The Inquiry recommends that this be addressed by Government and take into account the recommendations in this report which go some way to define the requirements of an effective IT monitoring regime. The approach taken and lessons learnt by the SSC Y2K Project Office, which monitored and reported to Ministers on the agencies Y2K programme progress and compliance, will also provide valuable insight into the structure and performance of an IT monitoring regime.

The relationship between Monitoring agencies and agencies planning large IT projects should, in the first instance, be advisory, such as:

- Identifying acceptable practice associated with the project.
- Specifying standards that should apply.
- Specifying IT governance.
- Pointing the agency to experts in government and the private sector.
- Stating what is required for approval and monitoring.

From a monitoring perspective, the Inquiry believes that the current financial assessment and tracking processes followed by Treasury are acceptable practice.

The practice of using an Independent Quality Assurance (IQA) is a significant step forward in the current monitoring process. The Inquiry recommends the Monitoring agencies:

- Participate in the appointment of the person who is to conduct IQA.

- Be assured that there are no conflicts of interest associated with the appointment.

- Ensure that the terms of reference of IQA cover the needs of the Monitoring agencies.

- Ensure the costs of an IQA are borne by the Government agency but be outside the control of the Project Manager.

- Ensure contracts with vendors supplying the project enable the person performing IQA to have access to information required by them to fulfil their IQA duties.

Monitoring agencies will need to be involved with a project at early stages - around the time the business case is being developed. This provides the Monitoring agencies with the opportunity to advise on the planned business case, how the project is to be implemented and the proposed technology.

Following this approach the Monitoring agencies should, when the business case goes before Cabinet, be well informed and able to provide a considered opinion to accompany the proposal.

The monitoring regime should be one of support for the agencies as well as assurance to Government that IT projects are being monitored and are being reported accurately. The monitoring regime should also be able to advise Chief Executives where to obtain specialist IT expertise. The monitoring regime will need either to hire or contract people with the appropriate knowledge and experience to perform this role.

The monitoring regime should evaluate the various approaches taken by other governments to project management and apply the most appropriate methodologies to the New Zealand environment.

Some examples are:

- The Central Communications and Telecommunications Agency in the United Kingdom.

- Treasury Board of the Canada Secretariat.

- Information Systems Audit and Control Foundation.

These organisations provide guidance and standards on line for interested parties to follow.

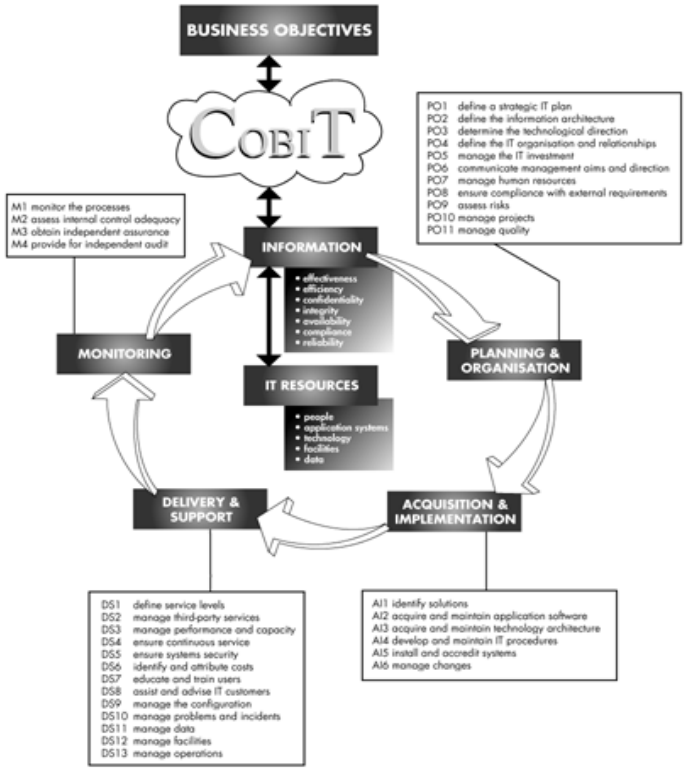
IT governance within the Government agency is an area that tends to be neglected. For a large IT project to function properly it needs to be nested in a supportive, whilst risk sensitive, environment. Guidelines are available for agencies to follow. One that fits well with internal audit processes is the Information Systems Audit and Control Foundation (ISACF) CoBiT model for IT governance. This approach will go some way to formalise risk management and measurements of IT change within an agency and provide a link with the Monitoring agencies. The following extract is from ISACF CoBiT Executive Summary document:

> *CoBiT has been developed as a generally applicable and accepted standard for good Information Technology (IT) security and control practices . CoBiT is based on the Information Systems Audit and Control Foundation's (ISACF) Control Objectives, enhanced with existing and emerging international technical, professional, regulatory and industry-specific standards. The resulting Control Objectives have been developed for application to organisation-wide information systems.*

The following diagram shows the CoBiT governance model.

Diagram 15:

CoBiT IT Governance Model



9.7 Risk Management

The cornerstone of risk management for major IT projects must be the Risk Management Standard, AS/NZS 4360:1999 *Risk Management*. The Standard is a set of guidelines rather than a prescriptive series of rules. It outlines risk management as a process based in general terms on a series of steps, namely:

- Establish the context.
- Identify risks.
- Analyse risks.
- Evaluate risks.
- Treat risks.

Both during the course of these steps and following them, two further tasks are required to knit the whole together and place them in the context of their environment. They are:

- Monitor and review.
- Communicate and consult.

The generic nature of the Standard has two main significant implications in this context. Firstly, because risk management is not a simple set of prescribed tasks, it should not be applied without an underlying understanding of the principles. Secondly, the actual form of the different steps will depend on the job, project or organisation within which risk management is being used.

The book *Owning the Future: Integrated Risk Management in Practice* (Centre for Advanced Engineering, University of Canterbury, 1998) gives an outline of some of the principles and underlying ideas of risk management in the New Zealand context.

The systematic complexity of large IT projects can lead to difficulties in risk management. A useful method of dealing with complexity of this nature is to use the Healthy-System (H-S) approach. This uses a metaphor of health and sees a project as a series of interacting systems. If all systems are healthy, the project will proceed well, but a lack of health may lead to reduced functionality and failure. For a system to be healthy, five criteria must apply, and failure of one or more can lead to problems with the system. The criteria are:

- Balance.
- Completeness.
- Coherence.

- Clarity.
- Consistency.

The *balance* criterion requires that all components of a system must have the right balance with regard to each other and relative to the purpose the system is attempting to achieve. The *completeness* criterion requires that all components a system requires for achieving its purpose should be present. *Coherence* has to do with the structure of a system and with the way its components relate to each other. In a process, coherence also relates to correct ordering. *Clarity* in a system has to do with, among other things, specification and communication. The *consistency* criterion requires that relating elements in a system are consistent with each other – that is, that they match – and also that they are consistent with the purpose of the system.

9.8 Way Ahead for Police

Over nine years have passed since the inception of the INCIS Project. The Police needs that gave rise to the INCIS vision and concept are as relevant now as they were then. Following the Project's termination in 1999 the SSC commissioned an investigation to find a way forward for Police. The findings are documented in what has been commonly referred to as the *Hood report*. The report recommended a number of tasks for Police to follow including exiting the mainframe replacing the three applications ASIM, Increment One and CLI/TDDS and replacing the OS/2 server operating system with Microsoft NT. The report recommended the de-commissioning of INCIS Increment One and associated mainframe hardware and systems software.

The Inquiry understands the Police have accepted and are actively addressing most of the recommendations in the Hood report.

The directions set out by the Hood Report for Police to follow were:

> *"Task 1* *Develop an integrated planning process incorporating strategies for information technology and information management with strategies for business initiatives and operations - and accord priority to the completion of the Police Strategic Business Plan.*
>
> *Task 2* *Complete a Technical and Applications Architecture, which will provide the overview of the business functionality and the technology, required to implement that functionality.*
>
> *Task 3* *Achieve Infrastructure separation and the creation of the Technology Infrastructure Business Unit, which will maintain the computer and telecommunications network base, which will support the business applications.*

There are four tasks related to the IBM environment:

Task 4 *Sale of the IBM Mainframe*

Task 5 *Replace the 3 IBM Applications (ASIM, Increment 1 and CLI/TDDS)*

Task 6 *Replace the OS/2 Server Operating System with Microsoft Server NT.*

Task 7 *Review the intention to provide Email facilities using Lotus Notes.*

There are two tasks recommended as new initiatives for Police in the new environment:

Task 8 *Establish an Enterprise Information Store.*

Task 9 *Coordinate Prototyping.*

It is possible that there are significant savings to be achieved – such that not only should the essential modifications of infrastructure be largely, or totally funded from within the savings, but it can reasonably be expected that funds already allocated for expenditure in 1999/2000 can be applied to these priority tasks including the necessary new system development initiatives.

A fourth set of tasks is being developed within Police to address their specific business needs such as that arising from the change in Firearms legislation. Other specific needs are identified in the Police Strategic Business Plan and will in due course, lead to the development of business cases."

The Inquiry also believes the Police have a significant task ahead of them to determine how they are to progress with the INCIS vision and concept and overcome the political (internal and external) resistance to anything related to INCIS, good or bad.

A key concern of the Inquiry is Police governance. To move forward they will probably need to initiate a number of projects which when combined will represent a large IT programme. Before Police move forward with any large IT initiative the Inquiry recommends the issues around governance and management raised in this report be addressed. The Inquiry suggests a sound IT governance and management methodology be implemented - one that fits into their internal audit process and meets standards such as those established by the Information Systems Audit and Control Association (ISACA) (refer to the CoBiT model diagram.) This approach will go some way to formalise risk management and measurements of IT change.

Police need to review their staff selection procedures for major projects. Individuals appointed to key positions need to have the requisite skills and experience.

IT architecture also played a significant part in the failure of the INCIS Project. Police need to review this area of IT to assure themselves they have the skills and appropriate cross checks in place to move forward with an acceptable level of assurance. Where appropriate, a proof of concept process should be followed, particularly when emerging or unproven technologies are being contemplated. This process will also provide valuable insight as to the most appropriate deployment strategies to follow.

Large applications should be divided into modules of business deliverables. The INCIS application was of such a size and level of integration that it dictated the Police computing infrastructure. Had the application been divided into modules of business functions and the modules loosely coupled, delivery could have been achieved progressively and change to any infrastructure component would have had a less dramatic effect on the overall application development programme. The Inquiry was shown many modular initiatives taken by the Police since the implementation of Increment One.

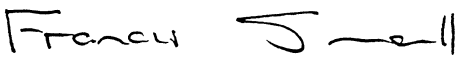
The Inquiry believes that there was considerable room for improvement in the respect of the commissioning, assessment and use of independent advice by Police, in relation to the INCIS Project. The terms of reference for experts need to be carefully drafted. The selection process should assess the skills of the actual person or persons to carry out the work defined in the terms of reference. The possibility of conflicts of interest that may colour an expert's report should be eliminated. The advice received needs to be critically assessed and, where appropriate, heeded and acted upon.

The Police have already taken some steps to address these issues and the Inquiry suggests Police governance should take on board the lessons and recommendations in this Report.

9.9 Conclusion

INCIS was a large and complex IT project. The vision and concept of INCIS and how it would assist policing is as sound now as when it was conceived in the late 1980s. The INCIS Project failed to achieve the objectives set for it. The Inquiry believes it has identified major lessons arising from the project and it is hoped that this report may assist in their avoidance in the future. Finally, the Inquiry hopes that the recommendations made will assist Cabinet, Ministers, Monitoring agencies and Government agencies in approving, monitoring and bring to a successful conclusion future large IT projects.

Dated 13th day of October 2000



Francis Small
Ministerial Inquiry into INCIS

SCHEDULE 1

MINISTERIAL INQUIRY INTO INCIS

TERMS OF REFERENCE

1.0 To inquire into and report on the extent to which changes should be made in the management, development and implementation of major information technology projects by public agencies, based on lessons that can be learned from the development, management and administration of the INCIS project by the Police and departments (until the supplier indicated in May 1999 that it did not intend to complete the Contract), and taking account of relevant work already undertaken or underway in the Police and departments.

2.0 Provided that the Inquiry is not to inquire into:

a. the merits of either –

i the decision of the Crown to commence legal proceedings against IBM; or

ii the decision of the Crown and IBM to settle the legal proceedings against IBM and all outstanding claims relating to the INCIS Contract; or

b. the conduct of the negotiations between the Crown and IBM that were for the purpose of the settlement of the legal proceedings against IBM and of all outstanding claims relating to the INCIS Contract.

3.0 The Inquiry may convene, where appropriate, meetings of the Acting Commissioner of Police or his deputy, and chief executives or deputies of the Treasury, State Services Commission, Ministry of Commerce and other agencies as necessary to assist in preparing this review.

4.0 The Commissioner of Police and chief executives of the departments referred to above must ensure that the Inquiry receives prompt and full provision of departmental information and analysis.

5.0 The Inquiry is to be conducted in confidence until the time when the appointing Minister decides to publish the report, subject to the Inquiry providing relevant information in confidence and for comment to any other interested party (as identified to the earlier Commission of Inquiry), if it intends to make any adverse comment in its report on that party's role in the INCIS project, or to rely on adverse comment made to it by the Police or departments."

SCHEDULE 2

Persons Heard or Making Submissions to the Ministerial Inquiry

Persons Heard

1. NZ Police
2. State Services Commission (SSC)
3. The Treasury
4. Office of the Controller and Auditor General
5. Price Waterhouse Coopers
6. Andersen Consulting
7. Mr Tony Crewdson
8. Mr Greg Batchelor
9. Mr Martyn Carr
10. Mr Tony Hood
11. Mr Don Gray
12. Mr Stewart Watson
13. Hon. Maurice Williamson
14. Hon. John Luxton

Submissions Received

1. Ernst & Young (Australia)
2. Ministry of Economic Development

Response

IBM in relation to the final draft report

SCHEDULE 3

List of Terms and Abbreviations

BPR	Business Process Re-engineering
CAD	Computer Assisted Dispatch
CMT	Change Management Team
COP	Community Oriented Policing
ECG	Executive Control Group
EPSS	Electronic Performance Support System
GUI	Graphical User Interface
HLID	High Level Integrated Design or Blueprint
IBM	International Business Machines (IBM New Zealand Limited and IBM Corporation)
INCIS	Integrated National Crime Information System
IOMS	Integrated Offender Management System
IQA	Independent Quality Assurance
IP	Internet Protocol
IRM	Image and Record Management
ISSP	Information Systems Strategic Plan
IT	Information Technology
LAN	Local Area Network
LEDA	Law Enforcement Data Access
LES	Law Enforcement System
LTSA	Land Transport Safety Authority
MVS	Multiple Virtual System
NIS	National Intelligence System
OS/2	Operating System 2
OOT	Object Oriented Technology
PC	Personal Computer
PECN	Police Enterprise Communication Network

Project SICA	Serious Incident Computer Application
SMC	System Management Centre
RFI	Request for Information
RFT	Request for Tender
RFP	Request for Proposal
SNA	Systems Network Architecture
TCP/IP	Transmission Control Protocol/Internet Protocol
WAN	Wide Area Network

SCHEDULE 4

4A INCIS Chronology of Roles

Year	Minister of Police	Commissioner of Police	Deputy Commissioner (Project Sponsor)	Director of IT	Police Project Director	IBM Project Director	IBM Application Development Manager
1988		**Jan:** John Jamieson					
1989							
1990							
1991				**Feb:** Alan Emmersen appointed Mgr, Computer Services	**Oct:** Price Waterhouse (Martyn Carr) appointed		
1992			**Jan:** INCIS Steering Com. chaired by Don Gray				

1993	**Nov:** Hon John Banks resigns **Nov:** Hon John Luxton appointed		**Jun:** Peter Doone appointed Sponsor	Barry Clarke then Jane Rouse Acting Mgr of Computer Services			
1994		**Jan:** Richard Macdonald		**Nov:** Greg Batchelor appointed Director of IT	**Sep:** Superintendent Tony Crewdson appointed	**Nov:** Cliff Williams appointed	**Sep:** Patrick Williams appointed
1995						**Feb:** Denise Lee replaces Cliff Williams	**Jan:** Hayden Innes replaces Patrick Williams **May:** Brian Jenkins (replaces Hayden Innes)
1996		**Jul:** Peter Doone appointed	**Aug:** Deputy Commissioner Barry Matthews appointed Project Sponsor			**Mar:** Denise Lee replaces Cliff Williams	**Jun:** Shelley Lazanoff replaces Brian Jenkins
1997	**Oct:** Hon John Luxton resigns **Dec:** Hon Jack Elder appointed			**Jan:** Greg Batchelor, Director of IT resigns **Aug:** Dr. Jeffrey Soar appointed GM, IT		**Jun:** Mark Hartmann appointed	**Apr:** Jim Dishun (replaces Brian Jenkins) **Jun/Oct:** Denise Lee (replaces Jim Dishun)

1998	**Aug:** Hon Jack Elder resigns **Aug:** Hon Clem Simich appointed				**Jun:** Tony Crewdson resigns **Oct:** Stewart Watson appointed		
1999			**Jun:** Deputy Commissioner Barry Matthews resigns from Police			**May:** Jerry Brammer/Fern McGuire replace Mark Hartmann	

4B Chronology of Events

Year	Life Cycle Events	External Reports, Audits & Reviews	Organisational Events
1988	**Apr:** Unisys Strategic Information Systems Planning review		
1989			**Aug:** Community Policing Strategy announced
1990	**Nov:** Azimuth Functional Requirements for NIS, CTA, SCI, & IAS systems tabled **Dec:** First INCIS Request for Information (RFI) issued to 141 parties (49 responded).		
1991	**Jan:** NIS interim solution implemented **Aug:** RFP for consulting firm to manage INCIS.	**Nov:** Price Waterhouse INCIS Project Review	**Feb:** Alan Emmersen appointed Manager, Computer Services **Oct:** Price Waterhouse (Martyn Carr) appointed to manage the INCIS project
1992	**Jan:** Price Waterhouse INCIS Scoping Study **Mar:** Final Price Waterhouse Scoping Study **Nov:** Second INCIS Request for Information (RFI) issued to 141 parties (62 responded). **Dec:** INCIS Request for Tender (RFT) issued to Andersen's, GCS/IBM, Marconi, & McDonnell Douglas	**Oct:** INCIS proposal, including business case presented to Police Executive Conference (PEC)	**Jan:** INCIS Steering Committee chaired by Don Gray

1993	**Mar:** Rebids requested for INCIS RFT from GCS/IBM and Andersens. **Mar:** INCIS Business Case approved by PEC **Apr:** Tenders evaluated and IBM recommended **May:** INCIS Executive Summary & Business Case completed **May:** INCIS Executive Summary & Business Case proposes Phase 1 delivery in Apr 1995, Phase 2 delivery in Jul 1995 **Sep:** IBM appointed preferred supplier **Dec:** INCIS Request for Proposal (RFP) issued	**Jul:** Ernst Young Report on Review of INCIS Project **Sep:** Briefing to Hon Maurice Williamson on tender issues	**Feb:** Tony Crewdson joins the project team as Change Manager. **??:** Barry Clarke then Jane Rouse Acting Managers of Computer Services **Apr:** Colin Jacobs appointed as Independent Contract Negotiator **May:** Paul Barnett (Chapman Tripp) appointed Contract Solicitor **Jun:** Peter Doone is Executive Sponsor **Nov:** Hon John Banks ceases as Minister of Police **Nov:** Hon John Luxton appointed Minister of Police

Year	Life Cycle Events	External Reports, Audits & Reviews	Organisational Events
1994	**Apr:** Cabinet approves $97m for project **Sep:** IBM/Police INCIS Contract Signed	**Jan:** KPMG Review OS/2 vs NT **Jan:** Updated Information Systems Strategic Plan (ISSP) published **Feb:** Briefing to Hon Maurice Williamson on OS/2 vs NT **Mar:** Briefing to Hon John Luxton **Apr:** KPMG Review of IT Structures & Strategies Phase I "Understanding the Business Environment" **Jul:** KPMG Review of IT Structures & Strategies Phase II "Baseline Assessment of Technology" **Aug:** SAPPHIRE Handover Report **Jul:** KPMG Review of IT Structures & Strategies Phase III "Framework for the Future"	**??:** Richard Macdonald is Commissioner of Police **Aug:** Price Waterhouse appointed Project Auditors **Sep:** Superintendent Tony Crewdson appointed INCIS Project Director **Sep:** Patrick Williams appointed IBM Applications Development Manager (ADM) (#1) **Nov:** C&L BPR Methodology selected **Nov:** Cliff Williams appointed as IBM Project Manager (PM) (#1) **Nov:** INCIS IBM/Police Partnering Charter signed **Nov:** Greg Batchelor appointed Director of IT (#4)

1995	**Jan:** Cabinet papers report Release 1 delivery in Mar 1997, and Release 2 in Dec 1997 **Feb-Mar:** Police/IBM Joint Requirements Planning Workshop completed **Apr-May:** Police Operation "Discovery I" (Iteration 1 Business Requirements definition) **May:** Design & build of Iteration 1 commences **Sep:** Decision to change Local Area Networks (LANs) from Token Ring to Ethernet **Mar-Oct:** Police Operation "Discovery II" (Iteration 2 & 3 Business Requirements definition) **Dec:** Decision to change Wide Area Network (WAN) from SNA to TCP/IP **Dec:** Iteration 1 delivered by IBM **Dec:** Iteration 1 rejected by Police	**Jan:** Price Waterhouse Quarterly Audit **Apr:** Price Waterhouse Quarterly Audit **Jul:** Price Waterhouse Quarterly Audit **Sep:** Price Waterhouse Quarterly Audit **Dec:** Price Waterhouse Quarterly Audit	**Jan:** Hayden Innes replaces Patrick Williams as IBM ADM (#2) **Feb:** Denise Lee replaces Cliff Williams as IBM PM (#2) **Mar:** INCIS BPR Team absorbed into Policing 2000 Programme, & C&L involvement ceases **May:** Brian Jenkins (replaces Hayden Innes) appointed as IBM ADM (#2) **May:** INCIS IBM/Police Partnering process abandoned (why?) **Dec:** IBM close SouthWest Area Integration Group (SWAIG) Why?

Year	Life Cycle Events	External Reports, Audits & Reviews	Organisational Events
1996	Feb: Business requirements for Release 1 consolidated (includes Iteration 1, 2, 3, & Traffic) May: Decision to change from OS/2 to Windows NT **May:** High Level Business Process Analysis	**Mar:** Price Waterhouse Quarterly Audit **May:** Logica Report on Requirements Scope **Jun:** Price Waterhouse Quarterly Audit **Sep:** Price Waterhouse Quarterly Audit **Nov:** Quadrant Associates review IBM development plan **Dec:** Price Waterhouse Quarterly Audit	**Feb**: Police INCIS Project Team restructured **Mar:** Denise Lee replaces Cliff Williams as IBM PM **Jun:** Shelley Lazanoff replaces Brian Jenkins as IBM ADM **Jul:** Peter Doone appointed Commissioner of Police **Aug:** Deputy Commissioner Barry Matthews becomes Project Sponsor **Oct:** Hon John Luxton ceases as Minister of Police **Dec:** Hon Jack Elder appointed as Minister of Police

1997			**Jan:** Greg Batchelor, Director of IT resigns
		Mar: Price Waterhouse Quarterly Audit	
		Apr: Justice and Law Reform Inquiry into CARD and INCIS initiated	**Apr:** Jim Dishun (replaces Brian Jenkins) appointed as IBM ADM
		May: Andersen Consulting – Review of Project Status and Plans	
		Jun: Price Waterhouse Quarterly Audit	**Jun:** Mark Hartmann appointed IBM PM
	Jul: Burma Lodge Police/IBM baselining workshop	**Jul:** Chapman Tripp review the INCIS contract	**Jun/Oct:** Denise Lee (replaces Jim Dishun) appointed IBM ADM
			Aug: Joint IBM/Police Executive Control Group established
	Sep: Training PCs rolled out		**Aug:** Dr. Jeffrey Soar appointed General Manager, IT
	Nov: Operation "Obstat" produces Statement of Work reflecting Burma Lodge workshop		
	Dec: Deed of Variation between Police and IBM signed	**Dec:** Price Waterhouse Quarterly Audit	
	Dec: Original INCIS implementation date		

Year	Life Cycle Events	External Reports, Audits & Reviews	Organisational Events
1998	**Mar:** Enterprise PC rollout halted due to PC LAN infrastructure faults **May:** Cabinet increases project approval by $20m to accommodate Deed of Variation **Jun:** Increment 1 User Specifications completed **Jul:** New INCIS project plan approved by Police, with Increment 1 scheduled for 30 Nov 1998 **Aug:** Enterprise PC rollout completed **Sep:** Increment 2 User Specifications completed **Nov:** Cabinet papers report Increment 1 delivery in Dec 1998, Increment 2 in Jul 1999, and Increment 3 in Dec 1999	**May:** Price Waterhouse Quarterly Audit **Jun:** Andersen Consulting Review update **Jun:** Cabinet requests an Ad Hoc Officials Committee on IT to monitor the project and evaluate future options **Jul:** Phillips Fox INCIS Project Contract Review **Aug:** PriceWaterhouseCoopers Quarterly Audit **Aug:** Chapman Tripp Comments on Phillips Fox Review **Nov:** PriceWaterhouseCoopers Quarterly Audit	**Jun:** Treasurer, Rt Hon Winston Peters, and Secretary to the Treasury, Dr Alan Bollard, visit IBM Headquarters **Jun:** Tony Crewdson ceases as INCIS Project Director (who was acting?) **Aug:** Hon Jack Elder ceases as Minister of Police **Aug:** Hon Clem Simich appointed as Minister of Police **Oct:** Stewart Watson appointed as INCIS Project Director

1999	**Feb:** IBM advise Increment 2 delivery in May 2000, and Increment 3 in November 2000 **Apr:** IBM advise that Increment 2 delivery in Sep 2000 **Apr:** Police and IBM agree to defer Increment 1 until 19 May 1999 **May:** Increment 1 implemented **May:** Cabinet papers report Increment 2 delivery in Mar 2001, and Increment 3 has no delivery date **Aug:** IBM announces it is pulling out of the project **Aug:** Crown commences legal proceedings against IBM **Sep:** IBM files statement of defence and counterclaim against the Police **Oct:** INCIS project disestablished **Oct:** Crown & IBM reach termination agreement	**Feb:** PriceWaterhouseCoopers Quarterly Audit **May:** PriceWaterhouseCoopers Quarterly Audit **May:** KPMG Increment 2 Plan Review **Jun:** Ministerial Group of Ministers and senior officials established to control the project, led by Minister of Finance, Rt Hon Sir William Birch **Aug:** PriceWaterhouseCoopers Quarterly Audit **Oct:** Justice and Law Reform Committee Inquiry into CARD and INCIS Report published **Dec:** Police Draft Chronology of Events	**May:** Jerry Brammer/Fern McGuire replace Mark Hartmann as IBM PM **Jun:** Barry Matthews resigns from Police

SCHEDULE 5

BUSINESS CASE 12 May 1993 - Extracts

1. EXECUTIVE SUMMARY

1.1 What is INCIS?

1.1.1 Purpose Statement

The purpose of the Integrated National Crime Information System (INCIS) is to support operational Policing by providing improved crime-related information, investigation and analysis capabilities to help:

- Detect and apprehend offenders
- Reduce crime

1.1.2 Key Functions

Criminal Information – Provides key crime-related information on incidents/offences, the subjects of interest involved in crime and the roles that these subjects of interest play in incidents/offences.

Case and Investigation Management – Support for the key management processes during criminal investigations, including access to an electronic version of the file, decision support tools and messaging support.

Crime Trend Analysis – Tools to extract, analyse, present and disseminate crime-related information, including who, where, what, how and when.

Intelligence Analysis – Tools to extract, analyse, present and disseminate "soft" data from serious criminal investigations.

Performance Measurement – A series of measures to show how police have performed against key operational indicators.

Special Operations – Further support to meet the security need of special operations groups.

1.2 What will INCIS Cost?

1.2.1 Opportunity Cost

INCIS is a major financial investment. There are insufficient funds to implement all worthwhile programmes and hard decisions will need to be taken as to which worthy programmes and projects are shelved.

1.2.2 Summary of Major Costs

Capital	$88.0 million
Police development & implementation costs	$4.1 million
Police training costs	$10.4 million
Annual operating costs	$13.1 million
LIFETIME COSTS	**$188.5 MILLION**
Net Present Value as at 1/7/93 (discount rate 10%)	**$135.4 million**

1.2.3 The "Do Nothing" Option

The alternative to the INCIS project is to continue with our current systems and replace these as they gradually wear out. The current Wanganui computer systems will need to be replaced during the proposed lifetime of INCIS and the PRECIS net work will require substantial modification and extension.

The costs of this approach through the lifetime of the INCIS project are at least **$105.1 million**. Police would receive **no additional benefits** for this spending.

1.3 Why have INCIS?

1.3.1 Support for the Corporate Strategy

INCIS provides the necessary criminal information infrastructure to enable Police to implement the Corporate Strategy.

1.3.2 Summary of Key Benefits

INCIS will:

1. Free up $1.9 million hours annually for redeployment worth $74.1 million through reduced paperwork, a flatter hierarchy and improved workflows.
2. Save approximately $14.2 million per year on current systems (Wanganui and NIS).

3. Reduce prosecution costs for Justice.

4. Save other government departments from developing, implementing and operating INCIS-like systems by using INCIS on a "user pays" basis.

5. Generate overseas sales revenue worth $45 million over the life of the project.

6. Increase officer safety and empower individuals by providing timely and relevant criminal information and make them more accountable through performance measurement.

7. Improve crime prevention capabilities and speed up the detection and apprehension of offenders.

8. Provide key operational information to support both Strategic and Operational Planning through crime trend analysis and performance measurement.

9. Above all, improve relationships with the community through the above changes.

These benefits have been valued at approximately **$566.1 million**, with a **net present value as at 1/7/93** (using a discount rate of 10%) of **$336.0 million** over the lifetime of the project.

1.4 Summary

INCIS will provide a **net present value benefit of $200.6 million** over the lifetime of the project.

2. INTRODUCTION

2.1 Purpose of the Document

This document sets out:

1. The business case for INCIS so that Police management and executives, Treasury officials and the Government can make an informed investment decision regarding the project.

2. The way forward to develop and roll-out the project, subject to funding approval.

3. THE BUSINESS CASE:

3.1 What is INCIS?

3.1.1 The Purpose of INCIS

INCIS is designed to: "support **operational** policing by providing improved information, investigation and analysis capabilities. This will contribute to the Police Mission Statement of minimising the incidence and effects of crime on the community through the detection and apprehension of offenders and by crime prevention strategies".

The overall strategic goal of "reducing the incidence and effects of crime" transcends traditional crime prevention and seeks to stem and reverse crime trends. This is an ambitious goal and will not be achieved without significant changes in policies, processes and attitudes within the New Zealand Police.

3.1.2 Scope

The key functions and interfaces are depicted on the diagram overleaf. The key functions are:

1. **Criminal information** - this includes incident / offence information, subject of interest details (such as people, places and things), the roles subjects of interest play in incidents / offences (such as witness, scene and exhibit), warrants and court orders, movements (such as surveillance logs of targets and exhibit movements) and charge / criminal history information, such as diversion details.

2. **Case and investigation management** - this supports the processes involved in case and investigation management. Key facilities include:

- Electronic files, which embody the collection of structured information, text, images and imaged text (ie scanned documents) to form case files.
- Work flow management to enable core information systems to be fully integrated with the way Police work. These include support for remote supervision, work groups, automated production of material for complainants / victims / witnesses, grading of intelligence, automatic wording of charges and advising of victim support.
- Decision support such as case screening and early case closure.

3. **Crime trend analysis** – the analysis of reported incidents

and offences to identify patterns of activity, the "Who, why, what, when, where and how" of crime.

4. **Intelligence analysis –** this is a more specialised set of tools to enable intelligence analysts to identify common denominators amongst potentially crime related information to:

- Help direct and solve an investigation
- Identify the potential for a crime to be committed (proactive analysis).

5. **Performance measurement** – the monitoring of achievement against target for specific key indicators. This enables greater accountability and comparative analyses of different approaches to solving crime problems.

6. **Special operations** - additional support is provided within INCIS for the needs of special operations groups such as surveillance units, Sexual Abuse Teams, Witness Protection Squads and VIP Protection Squads. This support includes:

- Surveillance logs – the recording of target movements
- Data security – all data will be available on a need-to-know basis
- Passive searching – the ability to set pre-defined queries so that any information about a specific subject that is subsequently entered will be advised to the user.

3.1.3 Major Interfaces

1. **Justice** – the system will need to continue to interface with the current range of Justice systems at Wanganui. In addition, it may be necessary to interface with the proposed Courts Automated system Extension (CASE) system which is scheduled to be developed and roll-out over the next few years.

   The CASE project coves the concept of electronic prosecution files, including imaging/document management – the introduction of INCIS would enable an automated interface between Police and the Courts with consequential savings for both organisations.

2. **Land Transport** – INCIS will need to retain access to the systems at Wanganui

3. **Computer Aided Dispatch (CAD)** – INCIS will need to be tightly integrated with the proposed CAD system; CAD will be a prime source of initial job information and INCIS

will provide CAD with historical information essential for prioritising jobs and advising attending officers.

4. **Human Resources** – INCIS will need access to personnel information for resourcing cases and performance measurement, and will need to provide job details to the Activity Management system (AMS) for time recording.

5. **Financial** – INCIS will need access to accounting systems to manage the cost of handling specific cases.

6. **Fingerprints** – INCIS will need to know whether there is a set of fingerprints for a specific individual on file.

3.2 How will INCIS Work?

The diagrams overleaf show the proposed architecture and a schematic showing how information is managed by the system. The key components are listed below.

3.2.1 Data Capture

INCIS will capture the following types of information:

1. Structured information identifying and describing incidents/offences, people, places and things; typically these will be entered via office-based work-stations.

2. Text information entered free-format through word-processing capabilities; these can be entered both in the field and in the office and will be indexed to structured information.

3. Images of people, places and things (ie photographs) which are captured centrally via the Photographic Image Management System (PIMS); the images will be indexed to the structured information.

4. Images of documents which will be scanned in office-based scanners and then indexed to structured information.

3.2.2 Data Storage

The above information will be stored:

1. Structured information, photographic images and the indexes for text, photographic images and imaged documents will be stored in central host sites; there will be two host sites to provide back-up in the event of a disaster and each site will be highly resilient to provide a very high system availability. This will permit national access to all criminal information.

2. Text and document images, which comprise the bulk of case files will be stored in the station where the officer-in-charge of the case is based.

3.2.3 Data Retrieval and Analysis

Querying the Database – INCIS will support a wide variety of queries including:

1. Answering specific questions eg, what do we know about Mr Harry Jones or what has happened at 110 Church Street in the last three months.

2. Answering generic questions such as who has been noted in downtown Hamilton driving a Holden Commodore after 1 am weekdays during March or which sex offenders live within a ten kilometre radius of Masterton and sport a tattoo on their right forearm?

3. Passive searching facilities such that a Witness Protection squad, for example, could request to be advised whenever anything has come to the notice of Police regarding both the accused and the witness.

4. Providing multi-stage queries such that an original board query can be further refined based on that particular sub-set of the database eg the first pass may identify sex offenders living within 10 kilometres of Masterton, the second pass may identify a small proportion of these with tattoos and a third pass identify those with tattoos of snakes on their right forearms.

Working with a Case File – The case will appear as a "folder" on the "desktop" representation on the user's work-station. Within the folder the user can access all of the documents typed or scanned in, together with the relevant structured information. The folder will contain a number of "tabs" which help structure the file eg witnesses, victim, suspects, offender and exhibits. All of the relevant documents will be available within each of these sections, but where, for example, someone starts as a witness, becomes a suspect and is eventually identified as the offender, only one copy of each document is required with access to it from each of the relevant sections of the folder.

The details of the vast majority of cases is relevant only to the investigators on that particular case and these are generally located in the station where the information was originally captured. This system will permit very high performance access to case details in these stations; in other words, the system will be much quicker to access information than the current manual system in the vast majority of cases and at least as quick in all other cases ie it will be comparable to turning the pages of a book.

However, the system also enables case files to be copied or transferred to another station. In this case there will be an appreciable delay in the case being available for perusal (several minutes) but substantially less than the days or even weeks using the current system. Again, when the case has been copied to the user's local system, the response time will be very rapid.

In the event that an investigator wishes to interview in the field, there will be a facility to "check out" some or all of the documents in a case file on to a portable machine and these will be available to consult in the field.

Crime Trend Analysis intelligence Analysis and Performance Measurement – INCIS will support the abstraction and manipulation of criminal information to provide crime trends, performance analysis and intelligence leads.

3.2.4 Presentation

INCIS will support a variety of complex presentation media:

1. "Desktop" representation using graphic user interfaces (GUIs) which provide a view of the automated facilities and information similar to the familiar desktop environment many of us work in today.
2. Graphs, including bar graphs, pie charts and line graphs.
3. Map representations using geographical information systems (GIS) which enable information to be viewed spatially as points on a map; a further refinement enables the information behind each of these points to be queries as the user "drills down" into the map.

3.2.5 Dissemination

INCIS supports work groups such as investigators working as a team, supervisors being able to remotely supervise workloads and crime analysts able to analyse crime trends and then present their results to a geographically diverse audience. The key facilities to do this are based on electronic mail and work flow support.

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3.5 What are the Key Risks to Manage?

3.5.1 Ability to Absorb Change

The Police culture and work processes must continue to evolve for a project of the scope and vision of INCIS to be successful. Police has to predict and prepare for the changes to the organisation; to be proactive, not reactive. The integrity and standard of professional research and development devoted to the project to date need to continue and expand to encompass all the key areas of change.

As an organisation, Police is better prepared now than ever before to undertake such a challenge. Part of this readiness is reflected by the appointment of a change Manager to the project "to sell INCIS both internally and externally and to prepare the organisation for change". Police has already identified many of the issues likely to be faced throughout the project and is actively planning to meet and address each and every one of those issues.

The most critical element to the success of the project is to ensure that Police realises the benefits identified above. If this is achieved, the project will be successful. A key part of realising the benefits will be assumed by the business process re-engineering project which will change the way Police works to encompass the aims of the Corporate Strategy using the information management tools provided by INCIS.

3.5.2 Cost Containment

Large projects generally do not fail because of cost overruns. However, a significant proportion do fail and the key way of ensuring that projects remain on budget is through project management. The chief mechanisms available to the project manager to do this are:

1. Scope / Change Control – INCIS has been subject to formal change control since the original scope was set and agreed to in February 1992. The only change since then has been to extend the use to Traffic Offices following the merger. Change control ensures that no extension (and therefore blow-out of budget) of the project is allowed until the impacts of that change are known and understood and the benefits far outweigh the cost.

2. Planning / Monitoring / Issue Resolution – each phase and each stage within a phase has to be carefully planned to ensure that all parties know what is expected from the phase going in, what resources are required, when they are required and what constitutes successful completion of the phase/stage. The monitoring element is essential to identify exceptions from plan and to raise these as issues as soon as possible for early resolution. INCIS has followed this from the beginning of the project which has ensured that issues have not been left to grow and add substantially to cost.

3. Quality assurance – it is essential that the approach used in each phase/stage and the products of each phase/stage are subject to quality assurance to ensure that we are "doing the right things right". To that end, the Police project managers will be responsible for ensuring quality products from Police's contractors.

4. Quality people – the core project team does not require a large number of programmers cutting millions of lines of code; it requires a small number of highly skilled people. This ensures that lines of communication are short and that people know what is going on and the impact of any decisions they make. It also ensures that the overall cost of the project is substantially reduced and the quality of the product substantially increase. However, the core teams needs to be supplemented with broad-based user involvement in the form of focus groups who will come together to review and confirm approaches, test useability and functionality and identify and prepare data for cut-over.

3.6 Where Next?

3.6.1 Proposed Development and Implementation Schedule

The proposed implementation schedule is shown in the three diagrams overleaf. The key points to note are the intention to complete a full roll-out of INCIS in just over two years from commencement of the project. Phase I encompasses the development and roll-out of the core Criminal Information database, Crime Trend Analysis, Intelligence analysis and Performance Measurement. Phase II involves the full roll-out of the Case and Investigation Management processes.

3.6.2 Proposed Project Structure

The structure identified represents the balance be a full consultative approach using prototyping and broad-based user involvement, with a small core project team. The diagrams over the next few pages set out the indicative project structure, roles and responsibilities. These will be finalised following the selection of a preferred solution and prime contractor.

Project Management Structure – The senior management layer of the project ensures that a quality product is delivered on time on budget.

Change Management Structure – This focuses on the activities essential in readying the organisation for change.

Technical Management Structure – this addresses the development of the solution.

Implementation Management Structure – This addresses the roll-out and operation of the final solution.

4. CONCLUSION

In summary, the preceding business case has shown that INCIS:

- Is a key operational tool for Police
- Provides significant strategic and tactical management information capabilities
- Is very cost effective at around $10,000 per user
- Will provide significant efficiency and effectiveness gains together with hard dollar savings and revenue streams worth in excess of $200 million in net present value terms
- Has a short implementation time frame to bring the benefits on stream as soon as possible
- Will continue to be professionally managed and implemented to world class standards
- Will position Police to take advantage of future technological improvements
- Will provide a "one stop shop" data entry process aimed at reducing paperwork, eliminating unnecessary work and minimising duplication
- Will provide multiple methods of data entry, immediate information retrieval, and a wide range of presentation media
- Will enable front line officers to spend more time on the streets
- Will provide a communication link to all stations through a network of 3125 computers
- Will facilitate the sharing of quality information with the community and other police customers

SCHEDULE 6

Ernst & Young Report (see next page)

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1.0 TERMS OF REFERENCE

The terms of reference for the assignment are:

1.1 Strategic Considerations

Provide an evaluation of the INCIS project on its merits and in terms of its relevance to the 1993/1998 Police Strategic Plan, with particular reference to the issues or problems that INCIS is meant to address. Review the main alternatives for achieving the objectives that INCIS is intended to achieve, should INCIS not proceed. This would involve the evaluation of the business case for INCIS.

1.2 Evaluation of the Business Case for INCIS

Review the business case for the INCIS project, including the robustness of the forecast costs and benefits. The assessment of the costs and benefits should involve appropriate consideration of, amongst other things:

- technological issues, such as the number of sites and capacity of the proposed system, and in particular, the relationship between the costs and benefits of the different functions proposed for INCIS. In addition, an assessment of the appropriateness of the hardware platform(s) and direction proposed is required;
- project management, including the scope and quality of project management methodologies.

1.3 Preferred Bid Alternative

After extensive examination of proposals received in response to the Request for Tender, Police have preference for an IBM dominated consortium as the Preferred Bid Alternative. The scope of this consultancy is limited to assessing the feasibility of this Preferred Bid Alternative.

2.0 APPROACH TO THE CONSULTANCY

Our proposed approach to the assignment is tailored from the Ernst & Young Navigator System Series[SM] methodology (E&Y/NSS).

This Consultancy has been conducted using Ernst & Young's Navigator Systems Series[SM] methodology. E&Y/NSS is a comprehensive set of methods and techniques for planing, developing and implementing systems. It provides a methods framework to each phase of the lifecycle which integrates the methodology with techniques and guidelines into a single project planning and management work breakdown structure.

The Ernst & Young approach to systems reviews is based on the fundamental precept that the most appropriate information technology for an organisation is that which inherently supports the achievement of its objectives and critical success factors.

The approach taken to the Consultancy was to interview key personnel associated with the preparation of Requests for Tender documents and evaluation of proposals. The history of the project was reviewed and various internal management papers in respect of project scope and benefits analysis were made available to support the major directions and assumptions of the project.

Sections of the Request for Tender document and vendor proposals were reviewed to identify technical specifications, costs, implementation plans and specific terms and conditions attaching to the project.

Interviews were conducted with both Treasury and Police representatives and where possible, considering the limited time of this assignment, observations and conclusions were identified by reference to internal documents.

In accordance with the terms of reference all evaluation processes and conclusions are documented in this report. In addition an Executive Summary has been produced which summaries the overall conclusions of the consultancy. It should be noted that many of the matters raised were already known to Police and are the subject of current review plans and action.

This consultancy has been conducted at a high level and, whilst we believe the conclusions are accurate, we would qualify this statement by saying that many of the conclusions should be subject to very detailed work if absolute reliance is to be placed on them by either Police or Treasury. We also provide the qualification that the contents of this report are for the exclusive use of New Zealand Police and Treasury and are not available for review or reliance by any other party.

3.0 EXECUTIVE SUMMARY

The terms of reference for the consultancy required three issues to be reviewed in respect to the feasibility of the INCIS project for New Zealand Police. The results are summarised below and are discussed at length in the detailed consultancy report.

The consultancy has confirmed the viability of the preferred bid alternative for INCIS and has also identified a number of areas of concern which need to be addressed as they directly affect the overall deliverability of the project and the integrity of the investment decision to be made. These relate to proof of the technical solution, skills transfer and project management and are described in the detailed consultancy report.

How well does the INCIS project support the corporate strategy?

The corporate strategy of Police is clear, logical and well documented. Police have clearly related this document to business critical functions of INCIS and have developed a clear vision of how Information Technology will be used to support the Corporate Strategy of Police. The preferred tenderer's bid is totally compliant with this vision.

Does the Business Case for INCIS stand up to scrutiny?

Police have conducted an exhaustive tender request and evaluation process. The preferred bid alternative is a feasible option for Police from both business functional and technically feasible points of view.

On the basis of the identified costs and benefits, it represents a good business investment. With prudent planning and management the project will be delivered and the benefits will be realised.

The preferred bid alternative is presently the most feasible option. The alternative bid is a higher risk option, the price quotation is not fixed and the data base approach needs proof of concept. Other alternatives such as de-scoping, partitioning and do-nothing are not cost beneficial to Police and rely on ageing technology.

Will the preferred solution deliver these benefits?

Almost all of the potential benefits derive from labour efficiencies and are well documented and defensible and relate directly to new technology and systems. The nature of Police work and culture is such that they will adapt naturally and willingly to new systems which replace ageing technology and the benefits should be readily achieved.

Benefits have been calculated at direct labour cost and an appropriate level of sensitivity has been applied and overall the estimates appear to be weighted on the conservative side.

The corporate planning and performance reporting processes of Police facilities accounting of benefits and results will be highly visible.

Concluding comment

As a result of our analysis, Ernst & Young have concluded that the preferred bid alternative for INCIS:

- is based on a sound technical solution;
- is consistent with the corporate strategy of Police; and
- has a well argued business case for an affirmative investment decision.

The review team from Ernst & Young was impressed with the amount and complexity of work carried out on the technical side of this project as well as in the preparation of the business case. The degree of professionalism and commitment apparent in the project personnel is to be commended.

4.0 TECHNICAL PERSPECTIVE

4.1 Technical Feasibility of Project

4.1.1 Client Server Architecture

IBM has proposed a client server architecture to support INCIS that consists of the following components:

Server	MVS/ESA
	DB2 CICS
Client	OS/2 Token Ring

This architecture is sound, flexible and represents current industry trends and directions.

4.1.2 Hardware, Network & Software

The Preferred Bid Alternative solution is technically feasible and relies on proven technology. The components of

IBM/MVS/ESA, DB2, CICS represent world leading technology for large mainframe processing.

Police have conducted a very detailed capacity planning exercise and have built significant contingency into the final estimates. As part of the final evaluation and prior to contract completion, Police need to conduct appropriate benchmarks to provide assurance that IBM's sizing is in line with their capacity plans. We understand this process is underway.

4.1.3 Local Area Networks & Workstations

The local area networks and work station environment is considered technically feasible and uses proven technology. The OS/2 IBM Token Ring environment is a reasonably mature, robust and secure technical solution. Police, in estimating capacity, have provided contingency and flexibility for growth and have ensured that the technology is leading but not bleeding edge and is suitable to the organisation hierarchical structure of Police in New Zealand.

4.1.4 Applications Development Environment

The applications development environment centres on using a collection of utilities contained in an IBM proprietary tool kit product titled Image and Records Management (IRM).

The installed base of IRM is small in comparison to other components of the technical platform and the technical viability of this product needs a total health check. Police have reviewed this technical component in detail, however, we emphasise the crucial importance of this component being totally deliverable.

In moving to IBM/MVS/DB2 and IRM Police have to import very considerable skills. Building of an IBM infrastructure is a major project in itself and will require upwards to forty staff to support this environment. In making this statement, both Police and Ernst & Young recognise that they must achieve self support if the project is to be a success.

Proposal for offshore development is a major component of the delivery of application systems and is seen as a significant risk. The IBM skills to support IRM in the DB2/MVS/ESA environment is an area where there must be total skills and technology transfer to Police. We believe this should happen in New Zealand with Police managing the process. We

appreciate that some offshore activity is warranted, however, we emphasise the need for Police to strongly position themselves to migrate to total support of the end product.

IRM does not support the proposed client server architecture and as such should operate efficiently.

Many of the remaining individual components of the applications development environment are technically feasible and represent proven technology. The choice of Applications Development Workbench (ADW), DB2, SQL, C++ represents a development platform which has a high level of industry compliance to standards and excellence portability for the client server components. Except for the IBM products the other development products are essentially non proprietary. This will provide Police with future flexibility in moving to new products and other platforms. The choice of the CASE tool ADW represents the selection of a world leading product.

In making these comments we have conducted a fairly limited exercise reviewing the technical feasibility of the IBM applications product. Considerably more work would be required to reach a totally substantial conclusion.

4.1.5 User Interface

Within the Preferred Bid Alternative solution, it is proposed that users interact with the INCIS applications via a graphical user inferface (GUI). Generally, GUI based applications are ergonomically pleasing and facilitate ease of use.

4.2 Capability of Providing Future Technology Benefits

The technical platform provides sufficient flexibility for Police to achieve the benefits from the implementation of new technology. The benefits are achieved in the following areas:

- Data capture
- Workflow improvement
- Data handling
- Better case and investigation management

The technology allows better case and investigation management through the utilisation of relational database technology. The benefit of data capture is achieved by the utilisation of technology to record data once and only once and to capture data through electronic copying and scanning techniques. The workflow benefits result from technology providing new tools for locating and associating data which reflects in reduction of basic case management and investigation time. The document handling benefits arise from the technologies supplied to reduce the time of staff spent in dealing with correspondence which is currently estimated at approximately 20% of their time. More explanation of these benefits is contained in Section 5.0 of the report.

4.2.1 Deliverability

The deliverability of the benefits arising from technology is significantly dependent on the proven technical capability of the systems integrator and his/her desire and willingness to efficiently plan and make the project happen.

In the preferred alternative IBM is positioned as the prime systems integrator. In this role there is no question that IBM has a proven track record in implementing MVS/ESA/DB2 type infrastructures. In our view IBM does not have the same level of capability to as effectively design and implement application systems. This is not a criticism of the IBM proposal but a statement as to its general relative capabilities.

With this risk in mind, Police are currently in preliminary contract negotiations with final short listed tenderers. These negotiations are incomplete at the time of this review. However, we note that the application area of the IRM system and DB2 development requires extensive review of project plans and absolute proof of the technical viability and deliverability of this project.

Whilst Police are negotiating the contract which will commit IBM to the INCIS project, it should be noted that a perfect contract will not necessarily commit the contractor to deliver. The contract needs to be negotiated in such a way that the contractor is totally committed to deliver, otherwise there should be no payment for goods or services. We perceive that if the delivery of the application system is closely linked to the delivery of the IBM infrastructure, in terms of combined terms and conditions, this may add additional financing cost to the project. In considering the total

investment cost this additional financing cost needs to be considered.

4.2.2 Leading Edge

The client server technology proposed in the preferred alternative is considered good proven technology. The platform of components of the local area network in C++ and SQL are considered leading edge but certainly not bleeding edge. The object oriented technique that is proposed to deliver the applications is still considered an emerging technology and must be managed accordingly. We are in agreement with the technologies proposed by Police and the Preferred Bid Alternative.

4.2.3 Capacity

Police have undertaken an extensive survey of transaction volumes and data storage requirements as a basis for estimating the capacity requirements over the five year project implementation time frame. From our brief review we have concluded that this process has been well undertaken and that sufficient contingencies have been included to produce a reliable document. The results show good appreciation of the sensitivity analysis in reaching final conclusions.

Police are now in the process of comparing capacity planning requirements to the capacity offered in the Preferred Bid Alternative. Before any final conclusion can be made on the investment cost this exercise will need to be completed. However IBM have proposed on the basis of Police's capacity requirements projections and Police need to carefully benchmark and test these claims.

4.3 Appropriateness of Technology Platform

4.3.1 Compliance to Industry Standards

The Preferred Bid Alternative consists of an IBM/MVS central architecture and an OS/2 distributed architecture. The OS/2 environment is particularly compliant to present industry standards. The MVS environment is compliant to the standards of a very wide installed base of MVS base computers throughout the world, although in a strict sense this would not be considered compliant to current industry standards. Overall, we believe the Preferred Bid Alternative sufficiently complies with standards and is commercially

suitable to the organisational structure and operations of Police.

4.3.2 Data Base Management Systems

The Preferred Bid Alternative includes DB2 as its database management system. Generally DB2 would no longer be considered as the leading database management system however it has a very large installed base and IBM has a total strategic commitment to DB2. In the IBM/MVS environment it is the most suitable choice for Police. In the local area network environment the choice of standard SQL database is compliant to industry standards and a sensible choice for Police from the point of view of performance, portability, flexibility and future development.

4.3.3 Communications Network

Although not part of our evaluation it should be noted that Police have their own X.25 communications network which we understand is totally functional for their day to day physical operations. We understand the network provides high performance, has considerable excess capacity and is capable of being upgraded to Frame Relay and enhanced by satellite communications. The choice of Police to use this communications network is sensible and requires no further review on our part.

We also note from our review that Police plan to use ISDN to handle overload situations from local area networks where they require communication to central databases. We agree that this is a sensible alternative communications strategy.

4.4 Soundness of Technical Implementation Proposal

4.4.1 Systems Integration Technical Capability

In the preferred alternative proposal IBM has the experience and technical capability to take on the systems integration technical role. As stated earlier, IBM has not been as successful in the applications delivery role as in the delivery of the IBM infrastructure and Police need to pay particular attention to the effective project management and the necessary transfer of skills to in-house staff. Police are well aware of this requirement and are currently in the process of formulating detailed project plans as a necessary component of completing the contract negotiation.

4.4.2 Technical Implementation Plan

In the preferred alternative IBM have submitted a recommended technical implementation plan. This is currently being reviewed by Police as part of the final tender evaluation and is an area which must be finalised before completion of contract negotiations. We note that the ultimate role of prime contractor has not yet been decided and that this whole area is the subject of final contract negotiation. Whilst the technical implementation plans seem feasible to us, they are not complete at this time.

4.4.3 Implementation Constraints

During the course of our review we have become aware of a number of problem areas which will impose constraints on the ease and smoothness of the proposed technical implementation.

The proposed offshore development to obtain the necessary development and production support skills in the IRM and DB2 development areas of the project represent an avoidable risk in the overall project. In our view this overseas secondment should be reduced to necessary familiarisation requirements and the IBM technical development team should be relocated to Wellington. We appreciate that this will impose additional cost, however, it is necessary to develop proper skills in these vital areas, effect the necessary technology transfer and place Police in a position where it can effectively support the future production systems.

The project is based on a series of iterations of system designs. The CASE tool, ADW has been chosen to document these designs. Police will need to carefully control these design documents as they represent the translation of the logical system design to full physical system design. Historically, this is an area of project dispute and blow-out. There is no suggestion at this point that this will occur as IBM has responded with total compliance to the business specifications, however, Police should carefully prepare for and manage the potential situation.

The design of the hardware and network is such that redundancy has been built in to allow a practical level of disaster recovery. However, it should be noted that should a disaster occur Police should be able to continue

with degraded performance. This is considered to be a reasonably acceptable risk.

The final contract will not be completed until the technical implementation proposal is agreed. This requirement is well understood by Police.

In the finalisation of the contracts it is necessary to ensure that all activities associated with the technical implementation are understood and receive consideration in the completion of the contract. For example, implementation plans should be complete to the activity level and payment plans linking vital milestones for hardware network and applications development should be resolved and agreed. Before contract completion the final check of all relative aspects of this nature should be carried out.

It is not evident from the preferred alternative bid that a single user interface will be provided for access security for registered users of the system. Police should ensure that the security proposal includes secure encrypted access and a single sign-on from local area network to mainframe databases.

The response time agreement is not complete at this point and is a necessary component of the technical implementation proposal as a pre-requisite to completion of contract.

All of the above items relate to the soundness and feasibility of the technical implementation proposal. Police are conscious of these and many items of similar relevance and have engaged external assistance where appropriate. We recommend that all of the issues raised in this report receive a final review prior to contract signing.

5.0 BUSINESS PERSPECTIVE

5.1 Basis for Forecasting Costs and Benefits

In examining the methodology for calculating benefits and reviewing the reliability of estimates, consideration was also given to possibilities for changing the delivery time frames so as to achieve early realisation of the benefits. With predicted benefits of over $70 million annually, labour cost savings from early achievement of benefits would be a bonus.

The design of central and distributed components of the system were examined. It was concluded that the

present design is the most reasonable option and that this subject has received much discussion and analysis by Police. It was concluded that the tightly coupled relationship in the central and the local databases left little ground for early achievement of benefits through re-design or rescheduling of delivery.

5.1.1 Business Case – Key Findings & Methodology

The key business document is the Executive Summary and Business Case, dated 4 June 1993. This document formed the basis of the benefit part of the review and was supported by interviews carried out with key operational and project personnel. The document consists of:

- Executive Summary
- Business Case – Summary
- A Sensitivity Analysis
- Business Case – Operational Impact

The document addresses the following key benefit areas:

Environment

The INCIS proposal is viewed as an integral part of the current New Zealand policing and political environment. Factors addressed in some detail, in the business case, include the future direction of policing and its relationship to Information Technology and issues of personal privacy and information sharing.

The Police view INCIS as an essential part of their strategies to deal with the escalating costs and effects of crime and not simply an information technology project. The Police are also aware that there may be flow on effects to other public sector agencies as a result of the introduction of INCIS and that these effects, should they transpire, must be identified and managed.

Attention to the environmental factors has provided a solid and logical context within which benefits should be achieved.

Service Delivery

The point to be made here is that the Police have expressed a commitment, continually emphasised in strategic documents, to improving their service delivery. The remainder of the business case whether expressed in cost benefits terms or practical delivery of operational services is underpinned by this commitment. The Police has made significant structural and organisational changes over the last decade and now argue in a compelling manner that any further advance must be as a result of the business process re-engineering that will accompany the introduction of INCIS.

Operations

INCIS is an operational tool and Police have therefore concentrated on assessing the operational impact of the technology. The method for the calculation of benefits is essentially a case by case analysis of work practice situations with computation of resulting resource savings as a result of implementation of INCIS.

The paper "INCIS Business Case – Operational Impact" included as part of the business case summarises the operational perspective. The case studies can be divided into those which deliver hard benefits and those which deliver soft benefits. The project team have not attempted to calculate, in a quantitative manner, the benefits accruing from the latter category but have included case studies for indicative purposes. For example, it is submitted that reduced paperwork and administration will lead to improved morale which should raise overall productivity and enhance client relationships. Such improvement in morale cannot be readily measured but it is logical to assume that such benefits will accrue from improved work conditions and technology. In respect of the hard benefits, the approach of the project team to conducting the cost benefit analysis has been to apply a business perspective, validate and test that perspective with field personnel and then apply a sensitivity analysis to the results. Ernst & Young believe this approach is sensible and that the estimated benefits are achievable.

The key finding of the business case is that INCIS will free up approximately 1.8 million hours annually for redeployment through reduced paperwork, a flatter hierarchy and improved workflows, worth $71.0 million, and a further $3.1 million from other costs saved, for a total of $74.1 million.

The major components of these benefits are:

Operational Impact	**Basis of Benefit Calculation**	**$ Million Per Annum**
Case & Investigation Management	30% saving of time currently spent on "Enquiries & Investigation"	20.4
Data Capture	75% reduction in the time to process an offender	13.1
Work Flows	10% productivity gain of investigation time by non supervisory investigators	18.3
Document Handling	30% reduction of time of sworn staff on correspondence	19.2
Total Annual Benefits		$71.0 million

The cost savings through each of the major components have been calculated at a marginal hourly rate of $39.38 which is based on salary rates plus direct salary related overheads. This rate is based on the 1993/94 budgets which provide for an establishment of 6,738 sworn members and 1,625 non-sworn members. Considering a sworn officer receives an annual salary of approximately $50,000 and that no fixed overheads or other related overheads such as occupancy are included, this figure seems reasonable.

Should the fully costed alternative of $60 per hour be applied, then the potential benefits would be understandably greater.

The Activity Management System (AMS), which has been operating for three years, provides the principal data to determine how the operational time of sworn personnel is currently used. Ernst & Young accept that the AMS meets an acceptable degree of accuracy for the sample period used and that validation of the figures by experienced operational personnel is a reasonable approach to adopt.

Case & Investigation Management

It is proposed that efficiency gains in the investigation management process, the information used to support that process and the handling of correspondence will result in a savings of 518,120 hours annually, worth $20.4 million.

The Operational Impact case, which was prepared by operationally experienced senior sworn managers from the three branches, provides a useful and informative picture of the investigation process. Ernst & Young accept that the investigation process follows a standard pattern and that the cases used, by way of example, can be replicated repeatedly throughout the country. It is also accepted that the process lends itself to significant efficiency gains following the introduction of new technology and the reduction or removal of manual processes. The extrapolation of benefits is therefore logical and well founded.

Data Capture

It is proposed that INCIS will eliminate repetitive data capture and validation and replace paper forms with electronic versions and that the annual data capture savings will amount to 332,925 hours worth $13.1 million.

Operational examples in the Impact study show that a standard arrest situation can result in the use of approximately twenty different forms. The INCIS solution aims to reduce this data input to a minimum number of screens which generate other related file documents. As Police currently use 350 different forms, it is not unreasonable to expect some significant efficiencies in this area. It must also be taken into consideration that the

average correspondence time for serious offences is 37%, dropping to an overall average of 19.80% for all offences. To illustrate the potential impact of the savings, it takes approximately one hour ($39.38) to compile a burglary file with offender.

Using INCIS it is projected that it will take 15 minutes to complete the same file at a cost of $9.84. Bearing in mind that there were 9,340 charges of burglary laid before the courts in 1992, the potential for cost savings is substantial.

Workflow & Document Handling

It is proposed that INCIS will result in work flow efficiencies on an annual basis of 465,520 hours worth $18.3 million within general policing areas and a further 487,350 hours worth 19.2 million in investigation areas. The background to this finding is that policing is essentially a labour intensive occupation which will respond well to the automation of work practices. Police is aware that to achieve the sort of savings projected will require substantial business process re-engineering. There is evidence that the Police is committed to that degree of change particularly when one considers the strong relationship between the Strategic Plan and INCIS. The preliminary work flow analyses which were carried in the early stages of the project indicate that efficiencies will be readily achievable, particularly in the investigative area.

Overall, the benefit estimates have been reviewed to determine whether there has been double counting and no incidence of this has been found.

The benefit estimates appear to be conservative. The very nature and culture of Police relate well to the INCIS requirement to populate the data bases with Case, Offender and Suspect Information. This will be done because present repetition in form filling will be avoided and relevant investigation information will be easier to obtain and will be more accurate. The system is highly compliant to this cultural work environment.

The benefits should be both achievable and realisable.

5.1.2 Accounting for Benefits

At present, Police have no formal method of accounting for benefits of INCIS.

This is understandable considering the project has not been formally approved. However, early consideration

should be given as to how this can be achieved and compliance with this process should be a requirement of the business decision to approve the capital expenditure for the project.

For Police the real corporate plans are prepared and approved at the District level and then aggregated and supplemented to form the overall corporate level plan. Benefits accounting for INCIS similarly will need to be planned at the District level and then aggregated to show overall impact. The 1994/95 plans for each District should clearly reflect the arrival of INCIS as this is the first year in which anticipated savings are realised.

The nature of benefits to be achieved are essentially:

- Reduction of crime and incidents;
- Management of resources to particular objectives.

The first is statistical by nature and is easily manageable in a monthly statistical reporting package. The second is accounting by nature and is easily managed in the analysis of labour resource utilisation which is already a feature of the monthly accounting process.

Police should have little difficulty in accounting for the benefits of INCIS although early planning is advisable as the measurement is an integral component of the Corporate Planning and Accounting process.

5.1.3 Sensitivity of Estimates

The sensitivity of estimates has been tested by the detailed evaluation of particular cases to determine errors in the overall logic and variations which may occur because of such events as high volume repetitive transactions which may not warrant sophisticated computing.

The sensitivity analysis relates to the many time consuming aspects of Police work and includes time taken to:

- Deal with serious and non serious crimes and incidents
- Deal with high volume and low volume crimes & incidents
- Locate manual files
- Transfer files

- Perform repetitious completion of many forms with the same data
- Copy data electronically
- Associate case files
- File and locate manual file documents

All of these are labour intensive tasks that have very significant potential for saving through responsible introduction of new technology.

Police have taken a conservative position in preparing estimates of benefits and in one scenario have included a 25% error factor.

Overall we believe the benefits estimates to be well formulated although this statement is qualified to the extent that this consultancy does not require extensive investigation review of operations.

5.1.4 Preferred Alternative

The basis for costing INCIS against benefits to be achieved has been to review the costs of the preferred bid alternative over the eight year project cycle proposed by Police. We have identified the costs in the preferred tender, however the consultancy has not required a detailed audit of tenders.

The Police have prepared an eight year summary of the costs and benefits on the basis that this life cycle is more realistic and includes the opportunity cost of not substantially upgrading the present systems if INCIS does not proceed. Also the benefits of INCIS do not substantially accrue until Year Three and the impact of these are more relevant in an eight year life cycle.

The benefits from sale of the software should be excluded from the analysis as we believe these are somewhat arbitrary given the pace of Information Technology, the long lead time for system maturity and the whole new price cost structure that is evolving in the Information Technology industry at present.

The eight year costs also need to be adjusted for any additional costs arising during contract negotiation such as the full cost of the Training and Conversion projects and any additional financing costs to accommodate revised payment terms.

5.1.5 Other Alternatives

There are theoretically a number of alternative approaches that Police could take to Information Technology support for operations. These are summarised below in our perceived order of priority.

5.1.5.1 Second Bid Alternative to INCIS Tender

This alternative involves detailed technical systems design and then confirmation of proposal costing and use of proprietary products for systems development. This approach places a significant future risk on Police in that the final tendered price will not be determined until after the project

commences. In our view Police have provided sufficient information for fixed price quotation. The overall business systems requirement is of medium degree of difficulty. Unless price can be fixed and particular proprietary software components be replaced this alternative is not relevant for the consideration.

5.1.5.2 Other Bid Alternatives for INCIS Tender

The other bids for INCIS have not been reviewed by Ernst & Young as they were outside the terms of reference of this consultancy.

5.1.5.3 Partitioning

The partitioning of INCIS to prove technical feasibility and accuracy of costs and benefits is not a realistic option because most of the benefits from INCIS come from sharing of data and improvement in work flows. True evaluation of these factors is not possible in reality until full system functionality is achieved.

5.1.5.4 Phased Approach

This alternative addresses the option of phasing the implementation so that costs are contained to either the physical components of the application system or the hardware and communications network.

The achievement of benefits in INCIS is related to almost equal distribution of cost savings in relation to data entry, data sharing, data transfer, data management and data handling. It is almost impossible to phase these functions except on a site by site basis and certainly not concurrently. Phasing would split benefits achievement and disintegrate development.

On the other hand, the 320 Police stations could achieve some immediate benefits from fast deployment of the Case Management system together with early implementation of the network concurrently with the IBM MVS environment. Earlier savings are achievable for data entry, data sharing, data transfer, data handling, data management and will substantially evolve with the completion of the centralised IBM/MVS/DB2 applications in year 3. We believe the project can be phased to achieve earlier achievement of some benefits, however, the scope of this review does not allow us to explore this option in detail.

5.1.5.5 Do Nothing

This is not a realistic alternative considering the well documented cost and benefits analysis of the implementation of INCIS. The "Do Nothing" alternative fails to address the documented corporate plan of Police and results in continuing an operation which is strategically non-compliant and is cost inefficient through not adopting current technology.

As a further alternative, if Police decide to "Do Nothing" and supplement this with stand alone Case Management systems such as the National Crime Investigation Database, only marginal savings will be made and the full benefits of data sharing, data entry, data transfer, data management and data handling will not be achieved. This is at best a hybrid approach which has limited strategic vision.

5.2 Business Linkage to 1993/1998 Police Strategic Plan

5.2.1 Strategic Plan Objectives

The Strategic Plan 1993-1998 clearly documents the Goals, Objectives, Strategies and programs of New Zealand Police.

The Strategic Goals of Police are:

- Crime Reduction
- Community Oriented Policing
- Public Protection & Policing
- Public Confidence
- Offender Apprehension
- Management Excellence
- Road Safety

5.2.2 Business Critical Functions of INCIS

The business functions of INCIS which are critical to the achievement of these goals are:

Offence and Suspect Information Management

This function will accumulate all information required by Police to successfully complete their investigations. It will act as a central pool of knowledge to be used by the other functions within INCIS. The focus of this function is the gathering of accurate information of interest to the Police, in a timely manner.

Case and Investigation Management

The purpose of this function is to control the overall process of case management and investigation, from the original report of an offence through to preparation of evidence for Court. This will involve managing the flow of information between the interested parties and initiating the processes within INCIS where necessary. This will handle all types of investigations.

Crime Trend Analysis

This function will provide one of the principal reporting mechanisms. It will manipulate the Offence and Suspect Information to identify crime trends. This will assist the

Police in directed patrolling and the effective management of operational resources. The community will also benefit by information passed through local community groups.

Intelligence Analysis

This function will provide Police with analysis tools, which can be used to interrogate all the information gathered. It will help intelligence analysts using the Anacapa methodology by supporting event flow analysis, inference analysis, etc.

Special Projects Management

A specialist function will be provided to assist in the management of special projects. These facilities will include the management of financial transactions. The principal areas this will cover are:

- Undercover operations
- Electronic
- Witness Protection
- Surveillance
- Informants
- Sexual Abuse Teams

Performance Measurement

This function will provide a reporting capability on overall performance of the Police in the crime detection and prevention area based on both qualitative and quantitative measures. These will include clearance rate and measures to determine how effectively Police time is being utilised.

Single Integrated National System

It is imperative that a single, integrated system be adopted nationally to:

- Reduce training costs
- Improve support

- Ease staff movement
- Improve ease of use

The relationship between these critical business functions and the Strategic Planning Objectives of Police has been clearly documented in the "INCIS Scoping Study March 1992".

5.2.3 Information Technology Vision

The Information Technology Vision of Police has been captured in the INCIS Project Request for Tender document dated 11 December 1992.

The following volumes document in detail the business requirements of Police:

Volume III - Suspect & Offence Information

Volume IV - Case & Investigation Management

Volume V - Crime Trend Analysis

Volume VI - Intelligence Analysis

The documentation has been presented in terms of a detailed logical data model including entity analysis to data item level and data flow diagrams of all relevant business processes.

This documentation is of a high standard and well presented and is consistent with the delivery of the Critical Business Functions outlined in 5.2.2 and hence the overall Police Strategic Plan.

5.2.4 Correlation of Preferred Bid Alternative

The Preferred Bid Alternative acknowledges the businesses functionality in Volumes III to VI of the Request for Tender as the deliverable of their tender proposal. Therefore the tendered solution is theoretically totally compliant to the business critical functions of INCIS.

This level of compliance will ultimately be confirmed after the project commences and the detailed technical design is documented using the Applications Development Workbench (ADW). This is a software tool used to rapidly design and document application systems during the detailed design stages of development.

In conclusion, whilst the degree of correlation of the preferred alternative is apparently very high, the

completion and sign-off of the detailed technical design is an area where Police will need to carefully manage IBM and to cap any potential project cost increase or area of dispute. This is an area where contract negotiation must be conclusive.

6.0 PROJECT MANAGEMENT

6.1 Implementation Process

6.1.1 Police Project Management Structures

At present Police are considering project management structures appropriate to the delivery of INCIS. At the Executive Steering Committee level the most favoured approach is to have an entire Police Executive Management structure with attendance by appropriate contractor project management on a request basis. We do not agree with this structure for a project of the scale of INCIS and from experience believe that it is necessary to have a jointly represented Executive Steering Committee.

In addition it is advisable to have a top level Steering Committee consisting of the most senior executives of each of the preferred contractor and Police, and the two most senior hands-on project managers from each organisation. This is an essential formula for mobilising resources to getting things completed on time.

It is also advisable to set up separate committees for problem resolution, quality management and project audit and have the necessary administrative systems such as project accounting, issue logs and resolution as required by the project management methodology. It is appreciated that Police are addressing many of these issues at the present time as a corresponding activity to finalisation of contract.

6.1.2 Prime Contract Management & Systems Integration

At the present time Police are finalising responsibilities for prime contract management and various system integration activities. From our observation there is a need for the party supplying most of the products and the expertise to be the prime contractor and to accept total contractual responsibility for the project. Police should

avoid any Government versus Government disputes in making this decision.

Many staff within Police will be allocated to important project team roles. It is necessary that these roles and responsibilities be adequately defined so that they clearly understand their role and responsibilities when they work as part of project teams with external contractors. There are many elements of training, team building, reward determination, and acceptance of responsibility which need to be considered. Police are aware of this and are undertaking the necessary planning.

6.1.3 Accounting for Work in Progress

In planning the project structures and processes it is necessary for a project of the scale of INCIS that a detailed project accounting system be put in place to record all hours and dollars for both Police and contractor personnel engaged on the project.

At this stage Police have not developed plans and systems for project time and cost accounting which need to be carried out on a monthly budget and performance basis. Police have implemented the CHAIRMAN Financial Accounting Software for the normal set of financial management applications. This allows for accounting right down to the project level. The project account structure is six digits and can be organised to provide all of the project and sub-project accounting that is necessary for INCIS.

Project software also provides for purchase commitments and payments against contracts and projects. This can also be used in the INCIS project.

In addition to CHAIRMAN Police also have a capital expenditure control system which can be used for capital expenditure reporting against project fund allocations.

The financial accounting facilities within Police are adequate for control of all project expenditure and reporting against budget. Early attention should be given to setting these up as standard financial management monthly reporting requirements.

6.1.4 Specifications for Deliverables

The Request for Tender document issued by Police has a high standard of logical systems design specification. The systems development methodologies to be used by Police will include a number of deliverables which

require precise technical documentation as they are required for sign-off.

This report has already highlighted the requirement for the detailed technical specification to be documented using ADW. It is important that in documenting detailed project plans precise definitions of documentation are made for all important deliverables. At the time of our review Police were not at the point of finalising project implementation strategies and we were not able to conclude on the adequacy of these document specifications. Further comment on these items is made in relation to Systems development methodology of section 6.2 of the report.

6.1.5 Conversion Plans

In the Preferred Bid Alternative the tenderer has presented a discussion proposal on the nature of the conversion process. Police recognise that the conversion plan is a variable component of the bid at this point and that a final conversion plan will need to be produced and that the bid will need to be capped in dollar terms during final contract negotiations. We are not able to make any further evaluation of the conversion plan at this point however we would comment the plan submitted in the tender will require considerable work break-down and that there will be a major resource contribution component by Police. As a ballpark estimate we believe that this would not add more than $2 million to the overall investment cost.

6.1.6 Training Plans

The training plan requirement has been clearly set out in the Request for Tender document. The tenderer in the preferred alternative has responded adequately although a detailed training plan is not included. Police intend to take the leading role in the training program and need to break down the work of the Training Plan.

The training program needs to be supplemented with an organisational change management component which is necessary to prepare Police for the new systems and to effect the necessary organisational structural changes to maximise the potential for the project to succeed. Police recognise this requirement and are currently reviewing plans to incorporate the necessary organisational change management.

We recommend that expert external assistance be obtained to effect this necessary change. In our view it is critical to the success of the project. From our experience and considering the size of the INCIS project we believe this external assistance would add up to $1 million of additional cost to the project. The present training budget of $10.6 million is substantial and on the surface seems very adequate, however, there are over 6,000 sworn officers to be trained and there are many areas of new technology and work practice to be covered in the training program.

6.2 Systems Development & Project Management Methodology

6.2.1 Review of Approach

In the Request for Tender documents the Police indicated their preference for using Hoskyns Professional Information Systems Management (PRISM) methodology for managing the development, implementation and ongoing operation of INCIS. The Preferred Bid Alternative tenderer proposes to use this methodology in conjunction with a series of other methodologies. Specifically, these are:

Purpose	Methodology
Project Management	Kepner-Tregoe
	PRISM
Change Management	Multiples
Systems Development Methodology	Wirfs-Brock
	Lorenz
	PRISM

No clear indication as to how these methodologies would work in harmony with one another has been provided in the tender material. Ernst & Young have a concern over the feasibility of effectively and seamlessly integrating these methodologies and applying them practically to the project. The concept of applying "bits and pieces" of the PRISM methodology potentially compromises the integrity and effectiveness of that methodology.

It is unclear from the information provided as to which methodology "Wirfs-Brock or Lorenz" will be used for the development of the application software and how these methodologies support the IRM toolset and ADW. Ernst

& Young are unable to assess the adequacies of the methodologies since they were not described in detail in the tender document. It is imperative that Police thoroughly investigate systems development methodology since it is centred on object-oriented techniques which are considered as emerging technologies.

The familiarity and expertise of the project team with the proposed methodologies also needs to be explored.

The Police have issued a series of questions to the Preferred bid alternative tenderer to clarify these matters.

At the time of this review the systems development project management methodology, the quality management plan, the change management plan, the risk management plan and acceptance testing plan were still being refined by the Police and IBM. Once finalised and prior to contract completion, it is recommended that the resolution to these outstanding methodological and planning issues be monitored as they are critical to the delivery of INCIS.

6.2.2 Project Management Approach

Elements of the proposed project management structure are scattered throughout the tender material and need to be consolidated so that they can be evaluated effectively. The Preferred Bid Alternative contains a high number of generic statements regarding project management principles and techniques. Work is needed to customise these concepts to the project.

Police identified several areas of improvement in the project plan that was submitted in the Preferred Bid Alternative. The Preferred bid alternative tenderer is currently in the process of re-drafting the project plan. It is essential to the success of this project that the project plan accurately reflects project timings, deliverables, quality review points, work approval points and resource requirements prior to the completion of contract negotiations. Additionally, the project plan should be produced to a level that enables effective management of the project while requiring minimal administrative effort to maintain its currency and accuracy.

Project Management Workbench is proposed as the project management tool. If used by a trained resource, Ernst & Young are confident in the ability of this tool to monitor project activity and to produce all necessary project plan reports such as GANTT charts.

6.2.3 Quality Management

A comprehensive Quality Management plan must be produced prior to the completion of contract negotiations and included in the final tender document. The Preferred Bid Alternative discusses Quality Management processes and indicates international standards to which software will be produced. While providing a good basis for understanding the preferred tenderer's approach to quality, this information needs to be elaborated on.

6.2.4 Change Management

Police acknowledge the importance of developing and executing a Change Management program in order to ensure acceptance and effective use of INCIS. The methodology proposed by the preferred alternative bid, MULTIPLES appears to be suitable for the task and was used effectively in a recent IT project for New Zealand Post.

6.2.5 Risk Management

The Preferred Bid Alternative contained a broad plan that identified eleven high risk areas. Prior to completion of contract negotiations, this plan must be refined to another level of detail in order to permit effective management of risk.

6.2.6 Acceptance Testing

An appropriate plan for acceptance testing has not been developed. Police are currently discussing this matter with the preferred tenderer.

SCHEDULE 7

CABINET MINUTE APPROVING INCIS - 26 APRIL 1994

The relevant parts of The Cabinet Minute approving INCIS are:

"a. approved the development and implementation of the Integrated National Crime Information System (INCIS) by the New Zealand Police;

b noted that the Police executive and senior management recognise the magnitude of organisational change which will accompany the implementation of INCIS and are committed to managing that change, in consultation with the Government, in the most effective manner;

c noted that the INCIS is expected to realise benefits from efficiency gains ($380 million), export sales ($45 million) and stationery ($7 million), and to help avoid expenditure on system redevelopment of $30 million and on operating expenses of $55 million, a total of $517 million over 8 years, ($303 million in Net Present Value (NPV) terms @ 10%);

j noted that the Government can seek a financial return expressed as a specific reduction in Revenue Crown from an investment in INCIS, consistent with its view on an acceptable level of attrition of police staff;

k approved the expenditure of $97.83 million as follows to meet the capital costs of INCIS (in $million):

1994/95	1995/96	1996/97	1997/98	1998/99
25.30	27.57	23.56	11.15	10.25

l noted that officials agree that there is a certain level of indivisibility inherent in the project at this stage. Accordingly, New Zealand Police are concerned about the sustainability of a higher than 50% return to Government, whereas Treasury believes that a higher level of return is achievable;

m agreed that in implementing the Integrated National Crime information System, New Zealand Police should commit to a minimum 30% return to the Government in the form of reduced Revenue Crown ($114 million) while absorbing a $10 million wage claim within baseline and phasing in staff cuts over the course of the project;

n noted that the expenditure approved in paragraph (k) above can be met from within the baseline budgets for capital expenditure in 1993/94, 1994/95 and 1995/96 in the September 1993 baselines, and, by the extension of those baselines for 1996/97 as follows: $million):

1993/94	1994/95	1995/96	1996/97
72.741	74.054	74.054	72.754

o agreed that the baselines be amended for the re-investment of total operating savings of $5.4 million over 1996/97 and 1997/98 as capital injections;

p agreed that any overruns on capital or operating costs are to be met from within the Vote : Police baseline budgets;

t directed the New Zealand Police, as part of its report on ownership performance in its quarterly performance report, to report to the Minister of Police, with copies to the Treasury, with the following information on the management of INCIS:

(i) actual costs (including capital and one-time operating eg training) as compared to budgeted costs for the period;

(ii) progress on INCIS against the timetable;

(iii) explanations for significant variances in costs or the timetable;

(iv) measures to be taken to offset the effects of significant unfavourable variances;

(v) actual resource mix (external consultants, internal staff and other costs) against budget;

(vi) indicators of productivity;

u (i) noted that the New Zealand Police intends to move towards measurement of performance against "service and hours delivered" rather than "police per head of population";

(ii) directed the New Zealand Police to report back to the Cabinet Strategy Committee with a preliminary plan in six weeks;"

SCHEDULE 8

KPMG REPORT - 9 JUNE 1994

"INCIS Contract

Since announcing the IBM/GCS as a preferred vendor for INCIS various negotiations have taken place with a view to establishing a detailed contract for the proposed solution. We understand the current situation to be as follows:

- The legal framework (terms and conditions) has been drafted and is still subject to negotiation.
- The revised proposal, which is subject to detailed evaluation, has yet to be accepted and incorporated as a schedule to the contract.
- Most other schedules to the contract, including the project plan, have yet to be accepted and incorporated as part of the contract.
- Various matters, such as key resources and the development approach proposed by IBM, are of concern to the project team.

The project team hopes to progress these issues over the next month in order to establish a contractual agreement by July 1994.

Police will then be in a position where they essentially will be asked to sign a $90m contract with IBM as part of a $200m Police INCIS initiative.

By any standards this represents an extremely large and complex undertaking, from both a technical and business perspective. Inevitably the project presents a wide variety of risks to Police which need to be managed in a proactive manner.

We have not been asked to perform a detailed risk assessment and therefore our comments reflect a "macro" view of the context of INCIS within the Police organisation and its relationship with other initiatives.

The INCIS project team and IBM/GCS have done considerable work to get to the stage where a contractual agreement is currently being drafted.

We believe that as the "moment of truth" draws near, any external view on the signing of a contract for a project of this size, will naturally tend towards risk aversion. This is not to say that we do not wholeheartedly support the need for INCIS and better access to quality information. In fact, there is little doubt that a requirement exists.

The INCIS Project seeks to change the way in which Police conduct their business and therefore the contract with IBM/GCS is but one element of this. While the contract may be thorough and tight from a commercial viewpoint, there is a more important criteria that Police should apply before signing a contract. That is:

Do police currently have the confidence and commitment to achieve the successful delivery of INCIS and its integration with other Police initiatives?

While this may appear subjective, Police should consider the following factors which reflect our concerns over Police's readiness to commit to the contract.

Ownership and Commitment

Who currently "owns" the INCIS project?

What awareness is there within Police of what INCIS will deliver?

Is it considered by the wider organisation to be a business change or technology project?

Is the executive group fully aware and supportive of INCIS and its implications?

Resourcing and Delivery

Has adequate consideration been given to the resources Police need to commit to INCIS?

Bearing in mind other concurrent initiatives within Police, can the required resources devote sufficient time to the project?

Has enough emphasis been placed on the delivery mechanism for INCIS as opposed to the technical solution?

Do Police have sufficient confidence in the key resources proposed by IBM/GCS?

Resource Management Strategy (RMS) Integration

Do Police have a clear understanding of the various components of RMS and their impact on resourcing and timescales for INCIS?

Have Police determined the integration of RMS components with INCIS to ensure that productivity benefits are achieved?"

Essentially the above questions highlight the current knowledge gap within Police at this relatively early stage of the INCIS project.

One could claim that in signing the contract, project establishment and management of change activities could commence which provide Police with more of an insight into some of the above factors. However, the pace is likely to be dictated by IBM/GCS due to milestones embodied within the contract and therefore Police "ownership" of the project may not be achieved.

While sensitivity exists over the position of IBM/GCS and Police contractors in the event that further delays occur, we believe that this is a situation that can be managed and, in any event, is to sufficient reason for signing a full delivery contract.

In this respect, it is not a matter of whether Police sign a contract or not but rather what they sign a contract for at this point in the project life cycle. For example, Police may choose to engage IBM/GCS to assist with the project

establishment/planning and elements of the Business Simplification exercise. As such, this would represent a sensible risk minimisation strategy. It would provide an opportunity for Police to assess the IBM resources, style and commitment and may assist in giving Police a greater degree of comfort in tackling the significant task ahead.

SCHEDULE 9

SAPPHIRE REPORT AS AT 31 AUGUST 1994

1.3 Terms of Reference

The Project Team documented over 1500 issues and concerns as part of its review of the latest IBM proposal. In addition, other issues have been raised within the Evaluation Report dated 25 July 1994 and other documentation, and which are identified within this document. These have been grouped within the following categories within Section 6 below:

- Technical
- Processes
- People
- Off-Ramp
- Future Proofing
- Contract
- Solutions Assurance
- Marketing
- Price
- Accommodation

1.4 Conclusion

All of the issues identified need to be actively managed to ensure the successful implementation of INCIS, a $200 million lifetime investment for Police.

3.1 Previous Projects

INCIS has had a number of predecessors over the last 10-12 years including the Serious Investigation of Crime Application (SICA), the National Information System (NIS), the National Investigation of Crime Database (NICD) and two earlier versions of the INCIS project, although the first incarnation was called the Integrated National Criminal Intelligence System. Some of these forerunners, such as NIS and NICD, enabled Police to prototype its requirements and to evolve towards the solution detailed in the Request For Proposal (see below). Most, however, were projects which failed to progress to implementation for a variety of reasons, including a lack of support from the organisation.

3.2 CURRENT PROJECT – ANALYSIS AND HIGH LEVEL DESIGN

After reviewing work to October 1992 the report reads:

A consistent picture emerged in that INCIS represented a significant investment opportunity for Police and government but only if the entire system were to be deployed. In addition, the minimum cost of such a system was $67 million with a likely cost for a fully distributed system of around $85 million ($5 million less than the final tendered price); in other words, the largest single capital investment by Police.

TENDER MANAGEMENT

An additional 1500 issues and points were raised (by David Cittadini, Martyn Carr, Robin Newton and Ken Burt) with the IBM proposal many of which will need to be addressed during the next phases of the project. At this stage, Tony Crewdson became involved and undertook to resolve outstanding issues at IBM's request. Whilst IBM conceded that most of the points raised were valid, IBM had become concerned that its team did not have the time and knowledge to answer the questions raised, it believed that many of the points raised "questioned" its solution and it felt that is shouldn't address these questions until after the contract was signed.

CHANGE MANAGEMENT

Tony Crewdson, assisted by Robin Newton and Martyn Carr, then compiled the Business Case from the above. Tony and Martyn also lobbied numerous government departments including Treasury, Justice, Customs, MAF, LTSA, Internal Affairs, Social Welfare, State Services, Privacy Commissioner, Health and Serious Fraud. They also formed part of the Police team which lobbied the Police Minister for support.

In March, the Minister decided that the time was inappropriate to pursue the case through Cabinet until further support from his colleagues was forthcoming. He further placed an embargo on the project being discussed widely within Police as he did not wish there to be a demand for the project which he was unable to fulfil. This embargo placed the Project Team in the unenviable position of being unable to sell the solution and advise the organisation regarding the project's progress, which created an information vacuum.

Marketing INCIS (April 1993 – August 1993): the Business Case was further refined by Tony Crewdson, Robin Newton and Martyn Carr to include comments from other departments, especially Treasury, comments from independent reviewers and amendments due to refinements in the proposals.

Various Ministers were briefed on the project by Martyn Carr and Tony Crewdson, including the Jim Bolger, Bill Birch, John Banks, Wyatt Creech and Maurice Williamson (in conjunction with David Cittadini), together with the Prime Minister's Office and other official committees.

CONTRACTUAL AND COMMERCIAL NEGOTIATIONS

Key issues during this process had included the "buy back" provision, the "off-ramp" provision, intellectual property rights and patents, limits to liability, data loss protection, IBM Corporate acting as the principal obligor to the contract, confidentiality, portability, performance, availability, marketability, dispute resolution, technology substitution and optional deliverables, project plans and other schedules, and change control mechanisms.

Independent Review

- Police Quality Assurance (November 1991 onwards): Throughout the project, all deliverables from the Project Team have been reviewed independently by the Project Steering Committee, specially convened panels, the National Systems Steering Committee and/or regional representatives.
- Ernst Young (Sydney) Review (June 1933): Ernst & Young were commissioned by the Treasury and the Minister of Police (in part in response to criticisms from Eagle Technology) to perform an independent review of the project, focussing on the business case, the preferred solution and the process. The review concluded that INCIS:
  - Was "based on sound technical solution".
  - Was "consistent with the Corporate Strategy of Police".
  - Had "as well argued business case for an affirmative investment decision".

  It went on further to state, "The review team from Ernst & Young was impressed with the amount and complexity of the work carried out on the technical side of the project as well as in the preparation of the business case. The degree of professionalism and commitment apparent in the project personnel is to be commended."
- KPMG Review (December 1993 – January 1994): In response to specific criticisms by Maurice Williamson, the Minister for IT, Police retained KPMG to review the procurement process (as a result of still further criticisms by Eagle Technology) and the use of OS/2 on the desktop rather than Windows/NT. KPMG concluded that the procurement process had been conducted according to Industry best practice and that the decision to use a solution which included OS/2 was sustainable and the best solution under the circumstances.
- Questions to the Deputy Commissioner (May – July 1994): Detective Inspector Cam Ronald, Dave Warner, Ian McRae and Janice Mockridge raised a series of queries and concerns regarding the INCIS Project. These were formally addressed at a meeting on 13 July 1994 where the complainants stated that they were satisfied that their concerns were being addressed.

3.4 RESULTS TO DATE

- The contract is arguably the most comprehensive IT contract world-wide and has achieved a number of "firsts" for the New Zealand Government, such as data loss protection and the "Buy Back" provision.
- The Project Team reduced the price of INCIS from in excess of $160 million (including discount) to $90 million while significantly increasing the systems functionality, integration, standards compliance and consistency, and significantly reducing the overall complexity of the solution.
- The Business Case was one of the most complete and professionally produced business cases presented to Government and has been held up by Treasury as a model Business Case for other departments to follow.

4.2 TECHNICAL REQUIREMENTS

Proven: Police does not wish to be the proving ground for "bleeding edge" technology. All the components used in the final solution must have been used effectively elsewhere in the world. However, Police recognises that there may be no site anywhere in the world with the same combination of products and approaches that are required for the solution to its needs.

Portable: Police wishes to be able to protect its investment in IT. As technologies develop or become obsolete, Police may wish to change components of the system. INCIS must be architected to enable this to happen. Police also wishes to market INCIS to law enforcement agencies worldwide, many of whom will be unwilling or unable to implement the same technology set as Police. For these potential customers, Police must be able to port the INCIS solution to their preferred platform.

THE VISION

5.1 Introduction

The overall technology goal is to produce a system that works. Police wanted to this my developing the best technology solution available anywhere in the world to fulfil the Police business requirements. INCIS must continue to evolve and provide consistent integrated services as Police business requirements evolve so that Police would not need to develop both an overall infrastructure and a comprehensive business solution in one project ever again.

The Project Team conceived of a standards compliant software solution based on discrete intelligent distributed objects collaborating in a co-operative way to fulfil the INCIS information and processing requirements. These objects could collaborate via user or agent events. In order to provide additional functionality, existing objects could be easily and quickly modified or the object interaction structures could be reorganised to enable new collaborations. This approach is quite different from the existing application-

centric approach and would provide Police with a very powerful, extensible approach to developing software.

The vision outlined in this document was part of the Police INCIS Project Team. It is important that the new Police INCIS Project Team understands and propagates this vision into the future. This is particularly important as the new Police Project Team will be under pressure from IBM and politically-motivated groups within Police to alter these visions.

5.8 Produce Substitution

The proposal provided by IBM was viewed as being the base INCIS solution. Police expects to develop and implement a better solution than the one documented in the IBM Proposal. However, of worse-came-to-worst the documented IBM proposal would fulfil the Police requirements. This approach means that all components of the IBM solution are available for review and that Police would actively evaluate the substitution of products through the development and implementation process.

Technical

i. Overall Architecture: It is clear during the evaluation process that IBM struggled to come to grips with the Police vision for the overall architecture. The approach taken by IBM is one of coercing together disparate applications to form the INCIS application. IBM continued to state that the concept of a distributed object computing environment was impossible to achieve. This may be the case with today's technology but the Project Team felt that it was important to paint a picture of how INCIS would develop over the long-term rather than trying to develop and implement a snap-shot of today's technology.

   Police is willing to accept the proposal by IBM as the base solution but IBM must share the overall vision held by Police. IBM has not provided resources on the project familiar with a distributed computing environment. It will be important to manage IBM to ensure that its staff understands and shares the vision or Police will end up with a system which is based on early 1990s knowledge when INCIS will actually be implemented in the mid 1990s.

   Over the last few months of the project, IBM has continued to de-commit from developing certain components of the proposed technology solution. Police must be vigilant to ensure that this does not continue to happen.

viii. Portability: IBM made considerable advances in providing a portable solution to Police. However, Police needs to be highly focused on ensuring that IBM meets this requirement. This is an area where IBM will find it difficult to meet the requirements.

ix. Process Manager: The Process Manager does not exist anywhere around the world and is perhaps the most complex part of INCIS. IBM was unable to demonstrate through the evaluation process

how this would work or how it would build it. This is a major concern to the Project Team. A full re-evaluation of the Process Manager is required before Police can proceed any further. The Project Team believes that the Process Manager is the weakest technology link in the IBM proposal and represents high risk for Police.

6.2 Processes

ii SDLC Methodology: IBM has proposed the use of the Object Oriented Iterative Development Methodology (OIDP) which, it freely admits, it has very little practical experience in using on any projects, let alone one of the size and complexity of INCIS. There is a significant likelihood that the methodology may lack the rigour, applicability and support necessary if IBM is to overcome any significant difficulties encountered in implementing INCIS. This represents a significant exposure to Police and increases the risk of failure for the project.

vi. BPR: A critical aspect of the Resource Management Strategy is the radical redesign of business processes, including the investigation process. The INCIS BPR project is responsible for this aspect of the RMS and needs to be closely integrated with the technology project to ensure that the technology project is delivering the kind of solution envisaged by the BPR project and that the BPR project is aware of the capabilities of the technology so that it is able to "blue sky" effectively and is not too hide-bound in its thinking.

A key point to note is that the output from BPR is required for both Releases 1 and 2 of INCIS. To date, Police has yet to commence detailed work in this area.

xiv. Decision-making process / issue resolution: To date Police has been very slow in making decisions. This appears to be worsening, rather than improving, as evidenced by the lack of pro-activity surrounding the commencement of the next phases of the project, including the BPR activities. Part of this problem stems from a lack of understanding of the issues involved, particularly the judgment required to select a direction based on a number of grey alternatives rather than clear black/white decisions, part from a lack of focus by senior management engendered by the vacancies for IT Director and O/C Computer Services.

iv. Police lack of suitably qualified staff: To date Police has not started compiling its Project Team for the next phase, again in breach of the contract. When it does do so, it will need to determine where it is to get the additional staff. Most of the sworn positions can be covered from within the existing complement. However, all of the technical positions are over-and-above the current establishment positions. Some of these could be filled internally so long as the resulting vacancies were back-filled. However, there will still be a need to recruit approximately 20 highly skilled technical staff, otherwise Police will be in substantial breach of the contract.

One specific concern must be the lack of continuity in the project. Police will be commencing this next phase with minimal knowledge and understanding of the project. In addition to the usual problems this causes on major projects, it also significantly increases Police's exposure to prime contractor and sub-contractor management risks.

Another key risk is that Police tends to underestimate the skills required to perform certain tasks. Police officers tend to be "jacks-of-all-trades", with a pragmatic approach to solving issues as they arise during day-to-day operations. This is not an effective approach to addressing highly specialised areas, such a leading edge IT. Police needs to appreciate the need for such skills and their application on the INCIS project. Without this appreciation, it is likely that the Police team will be light in both numbers and skills.

6.3 Off-Ramp

i. Reasons for Off-Ramp: A consistent concern has been raised by the Project Team regarding the personnel proposed by IBM to fulfil its contractual obligations. This has translated into the need for the Off-Ramp which is a mechanism to limit Police's liability in the event that this particular team cannot use the proposed technology to meet Police's requirements. It provides Police with absolute discretion in determining whether it wishes to proceed with the project beyond the Off-Ramp with IBM. This means that Police will not be tied up in a legal wrangle with IBM in the event that it elects to take the Off-Ramp and can get on with the job of implementing INCIS.

ii. The Project Team recommended that the Off-Ramp be available at the end of the Pre-Iteration phase or, at the latest, the Analysis and design stage of Iteration One. Police, however, has agreed with IBM to position the Off-Ramp at the end of Iteration One.

xii OS/2: The Minister for IT is adamant that OS/2 has a limited lifespan and expects that Police will implement a different desktop operating system. Police will need to ensure that the solution is portable to other desktop operating systems and that, should it eventually implement OS/2 on the desktop, it will need to demonstrate why it remains the premier choice for Police.

xiii Other technologies: Each and every technology, including development tools, should be subjected to an appropriate level of scrutiny based on the likely benefits to Police of an improved solution.

SCHEDULE 10

QUADRANT REPORT

RELEVANT EXTRACTS

25 NOVEMBER 1996

An overview of the plan would have been valuable showing the overall cost for the number of resources, the key milestones, deliverables, the application test and acceptance plans. It would also have been useful to understand the wider context of the operational and production environment into which the developed application will ultimately migrate.

2. Areas of simplification

The over-riding consideration is that the applications effort, standing at 342,000 resource hours, is too large in the context of one contracted deliverable. The development effort needs to be segmented into core tasks eg database, core objects etc and business functions re-grouped into satellite development teams. Current thinking is that the scope of the requirements makes this difficult but it would be well worth the effort to look more closely at the options for re-working the development plan.

3. Areas of risk

The risks relate to size, complex dependencies, management, testing and implementation.

The risk is in the size of this project and the fact that it is viewed as the minimum key deliverable without an off ramp in the event that development does not go to plan.

The size also means time and committed cost. Increasingly unique projects that span more than 6 months without measurable and quantifiable corporate return of benefit are at risk of the technology overtaking them. The risk is reduced if the system can be designed as discrete components conforming to a wider architecture. This gives the opportunity to substitute components as technologies and new products develop and thus reducing obsolescence.

The detail of the plan should show the numerous and complex dependencies. These dependencies within the project and the dependencies on other external activities need to be identified.

From the outset Police passed wide ranging responsibilities for the project to IBM in the name of partnering. As the project progressed Police have had a high expectation that IBM should and would manage the entire effort. However in the final analysis the Customer must always take responsibility for the success or failure of the project. To hand to any supplier under the guise of partnering, outsourcing, or any packaging of services, such wide

ranging responsibilities without retaining both the management and technical skills to manage the relationship is to open the risk of being a captive customer and placed in the single supplier bind.

Even when there is agreement on the current issues of OOS and complexity there is still the absence of defined specification for acceptance testing and implementation.

4. Logica Review

With regard to the applications development Logica particularly makes reference to the data model which was couched in terms of workflow, not elements of data, and states that IBM should have known there would be considerably more work necessary and with more complexities to turn it into a data model.

Logica makes the point in several places that the position in which IBM now finds itself is due to the lack of detail in the original RFP *not the fact that there is now more detail in the discovery documents.* And further that if the analysis of the RFP had been more rigorous IBM would not have the current problem.

5. Position of IBM

IBM now finds that the cost to deliver this project is considerably more than in contracted for. Simply put it IBM's argument is to show how much this contract has cost, and will cost, to complete and seek Police to meet it half way. The history as to why IBM is in this position is set out in the negotiation papers produced during week commencing November 18.

The primary reason for IBM's exposure is the lack of detail in the initial RFP. The issue is very adequately described in the Logica Review. In short there was not sufficient detail on which to fix price such as a bid and that fact would have been evident to IBM at that time.

IBM bought the business. Using its knowledge of falling hardware and licensing costs in the industry IBM covered its exposure on the application development with this profit protection clause. This guaranteed the original profit margins on high priced mainframe technology where the profit margins are >3 times that on server technology and server licensing. Apart from the right to audit Police have no knowledge or right to know the margin dollar value of IBM NZ's original landed cost. Given the time that has past this may now be difficult to assess.

……..

Whilst Logica make the point that in a tender position the onus is on the bidder to determine whether there is enough detail on which to offer a price, perhaps the experienced Police IT Management of the day should also have known and advised that it was imprudent to accept such an offer.

The relationship between Police and IBM needs to change for there to be long term success. The issues associated with the project will continue into the build and implementation phases unless Police take unto themselves the

ultimate responsibility and control of this project. This change needs to take place gradually and within the context of the contract negotiations. Above all the change in relationship must not absolve IBM from the responsibility of Police requirements according to the contract pricing structure. There are agreed mechanisms for varying both the contract and the development effort. These should be reaffirmed with IBM.

Without having done a review of the management arrangements it would seem that Police would benefit from an experienced development manager reporting to the Project Director.

IBM's perspective

IBM almost certainly believe that if they can show there has been a considerable blow out in costs they can prevail upon Police to be reasonable and at least meet them half way. (There is a concern that Police may have either directly or by inference led IBM to believe that they are willing to negotiate a price outside the terms of the agreement.)

If IBM were to believe it is politically impossible for Police to walk away , it will be difficult to dissuade them from the current ploy of seeking to pass on a proportion of actual cost as opposed to negotiating from the fixed price contract.

……..

IBM are seeking to work from their own internal financial position back. Their financial management will be looking at their project statements to date and seeking to recover at least their outlay to date. This is to change the paradigm. There is a contract in force and the way forward is to build from the contract through change control and subsequent agreements forward.

……..

(Remember IBM's argument on additional effort will be compelling. They are putting their case from a position of knowledge and Police will have to defend it with independent assessments, which could be expensive and time consuming.)

……..

The best option is to pursue the current negotiation strategy above and scale back the IBM deliverables to Release 1. Contingent upon the success of Release 1 continue with IBM for Release 2.

SCHEDULE 11

ANDERSEN CONSULTING

RELEVANT EXTRACTS

MAY 1997

"At the commencement of this review (April 1997) the planned conversion date was December 1997, or 8 months later. This is less than the estimated minimum time which would indicate that it is unlikely to be achieved. During the course of the review IBM released a revised end date of March '98. At 11 months this is right on the minimum boundary and may therefore be achievable, given a sufficient level of development productivity.

Nevertheless, we believe there is considerable risk that further schedule slippage will occur for a number of reasons including:

- the proposed technology platform and development methodology is immature and unproven;
- current project work plans do not include all critical tasks required to complete the project;
- the estimated effort to complete is not based on proven estimating methodology or metrics (ie development productivity measures); and
- very little, if any, contingency has been included in the work plans.

A further difficulty is that the solution which IBM is currently contracted to deliver does not meet all Police needs. It falls short in the following important ways:

- it does not encompass all functionality required to exit Wanganui;
- it does not include responsibility for end-to-end system performance; and
- it does not easily allow Police to recover the cost of project delays as it does not specify liquidated damages for delayed delivery.

This must be addressed as a matter of urgency. This requires the project deliverables and plans to be aligned with the business

needs, and the Contractual arrangement adjusted accordingly, so as to deliver a complete business solution for Police.

The arrangement for Release 2 is even looser. The $2.2M budgeted for the development of Release 2 application is indicative only, and will only be confirmed when detailed analysis has been completed. Given the degree to which the cost to deliver Release 1 was underestimated, there is a high probability that the cost of delivering Release 2 will significantly exceed the budgeted amount. This is a concern given that a substantial portion, if not the majority, of INCIS benefits will not be realised until Release 2 is completed.

At page 8:

High risk and complex project

The project is complex and high risk in terms of breadth and depth of scope, the use of new technologies and an immature development methodology. This increases the risk of delays due to unpredictable technical problems and reduces the reliability of development estimates. This continues to remain a concern, although these factors are now better understood by the team…

No high level definition of business architecture

On a project like this we would expect to find a high level conceptual definition of the technology and business process architecture. Often called a High Level Integrated Design (HLID) this decomposes the overall system into functional groupings, which are linked to high level business changes and resulting tangible and intangible benefits. This helps to understand the deliverable/benefit relationship and thereby allows focus on high-value activities.

It is our belief that the absence of an HLID led to the difficulties encountered when commencing application development. It has also led to difficulties in managing the business case and scoping and prioritising application functions. Finally, as an HLID establishes a framework which holds the various sub-projects (application development, testing, business process design, training etc.) together, its absence thereby increases the risk that these sub-projects fail to properly integrate."

5 JUNE 1998

"Since our last review the project has fundamentally changed its technical platform and implementation approach which has reduced the overall risk profile associated with the project. The team is better resourced and better positioned to complete the project. Notwithstanding this, it is our view that in terms of overall percentage complete through the critical path schedule, the project has not progressed significantly since the time of our last review. In addition, we consider it highly likely that further slippages will occur against the current project schedule.

Our overall assessment can be summarised as follows:

- The application technical infrastructure has been substantially revised since our last review and is now consistent with industry norms for large scale, high volume, high throughput transaction processing systems.
- The revised release packaging which has INCIS rolled out in 4 releases (now called "Increments") has reduced the risk of simultaneously bringing up the new system and converting all LES functions. This appears to be a sound strategy. However, it also increases the complexity of managing multiple releases and has the potential to delay exit from Wanganui.
- Estimates for application development for Increment 1 have been developed using a rigorous methodology and provide a sound basis for managing progress of the application development effort from here forward. A similarly rigorous approach now needs to be applied to the other critical path activities for the project.
- Given the current scope and approach, the revised timetable is unlikely to be achieved. …
- …
- At this point it would appear that the ultimate risk of end-to-end system performance remains with Police. Police can probably hold IBM accountable for the components of the architecture and should look to minimising this risk by agreeing performance levels for these components. Police should also be rigorous in testing end-to-end performance and allowing adequate time for tuning.
- …
- Although some progress has been made in progress management and reporting, this is still not sufficiently robust for a project of this nature.
- Police project management capability at a senior level should be strengthened."

Government's options

Before getting into the detail, let me reiterate the point that I have made verbally on a number of occasions, namely, that if the Government can get comfortable with moving forward with INCIS in some form or another then this is what it should do. In these terms, "getting comfortable" probably means establishing and agreeing on an outcome (which may be more modest than the original intent/scope) that can be achieved with a reasonable level of predictability, and can be used to declare victory.

On the other hand, if this cannot be done, then the Government is faced with a very hard decision – to continue with INCIS and accept the level of uncertainty and risk associated with it, or to put the project "on hold", and carry out a full investigation of options. This investigation would look at:

whether the required level of comfort can be established. If so, what needs to be done to secure this, and if not; more specific and detailed alternative options which might provide a greater level of certainty in terms of the outcome.

SCHEDULE 12

PHILLIPS FOX REPORT

RELEVANT EXTRACTS

23 JUNE 1998

5. It was reasonable for Police to instruct Chapman Tripp Sheffield Young ("CTSY") as they did in mid-1997, but Police should have been seeking such advice throughout the time leading up to that.

7. Police's reactions to the advice provided appear to be appropriate in the context of the varied Contract but it should have also addressed ongoing legal management issues at the same time.

13. The Contract is complex and therefore requires a lot of legal input in its ongoing management.

14. Whilst instructing CTSY was appropriate and reasonable (subject to clarification in the area of the Cabinet decision on Crown requirements for legal services), we think Police should have sought advice on the exercise to be carried out by Logica. We also think Police should have been more pro-actively consulting advisors during the course of the Contract in 1995 and 1996.

17. The actions of Police following on from the opinion of CTSY on 7 July 1997 included seeking further advice from them on the issue of claims against IBM for specific performance and then proceeding with negotiations with IBM in reliance on that advice together with the report prepared by Andersen Consulting. We believe this was appropriate.

18. We also think the lessons learned through what led to the need for the Logica intervention should have been taken on board and reacted to in a pro-active way after the variation was signed. Whilst technical issues seem to have been addressed, Contract management issues do not.

16. A lot of valuable ground has been gained by Police through the variation process in the area of added certainty and security. It goes a long way towards establishing benchmarks against which IBM's performance and delivery are to be measured."

The report states a belief that the level of sophistication in the Contract dictates a need for a formal, clear and separate Contract management function within Police, that no evidence of such management had been seen and, if there had been, some issues would have been avoided or their impact lessened (paras 26 to 28).

SCHEDULE 13

TREASURY AND SSC REPORT

21 DECEMBER 1999

The Broad Framework for Public Sector Management

3. The State Sector Act 1988 and the Public Finance Act 1989 are the cornerstone of New Zealand's public sector management system. For 10 years they have provided the basic legal framework that governs how public service departments and departmental chief executives relate to the Executive and Parliament.

4. The Public Finance Act 1989 applies to the Police in the same way as it does to other departments, but most State Sector Act provisions do not apply because the Police are not and have never been part of the public service. There are special provisions in the Police Act 1958, and in Regulations made under that Act, that govern the appointment and responsibilities of the Police Commissioner.

THE STATE SECTOR ACT 1988

5. The State Sector Act establishes the office of State Services Commissioner, and provides for the administration of the State Services Commission and of "Departments" and the "Public Service". The focus of the Act is on departments and departmental chief executives. It defines the public service by reference to the First Schedule to the Act that lists public service departments. The Police is not included on that schedule, and is thus not part of the public service.

Responsibilities of Chief Executives

6. Under the State Sector Act, public service department chief executives are responsible to their Ministers for the performance of the department. Section 32 of the Act states that chief executives are "responsible to the appropriate Minister for:

   (a) the carrying out the functions and duties of the Department;

   (b) the tendering of advice to the appropriate Minister and other Ministers of the Crown;

   (c) the general conduct of the Department; and

   (d) the efficient, effective and economical management of the activities of the Department.

7. The State Sector Act also allows Ministers to delegate their powers and functions to the chief executive of the relevant department (section 28).

8. In order to discharge their responsibilities, the State Sector Act gives chief executives the full rights, duties and powers of an employer in respect of all departmental staff (section 59(2)).

9. A departmental chief executive is thus responsible, and accountable to the appropriate Minister, for the management of any project (including information technology projects) in the department.

Employment of Chief Executives and Chief Executives' Performance Agreements

10. Departmental chief executives are employed on fixed term contracts of up to five years. The State Services Commissioner appoints them but Cabinet has the right to accept or decline the Commissioner's recommendation and to direct the Commissioner to appoint someone else (section 35). The Minister has an early opportunity to outline to the Commissioner any matters the Minister believes should be taken into account in making the appointment. The Prime Minister and Minister of State Services must approve the chief executive's conditions of employment (though not in the case of the Government Statistician).

11. The functions and duties of the State Services Commissioner are set out in section 6 of the State Sector Act. One of his principal functions is to review the performance of each department, including the discharge by the chief executive of his or her functions (section 6(b)). Consistent with this role, the State Services Commissioner is responsible to the appropriate Minister for reviewing the performance of the chief executive, and for reporting to the Minister on the manner and extent to which the chief executive is fulfilling his or her obligations (section 43). The State Services Commissioner also determines the appropriate rewards or sanctions based on the results of the performance review.

12. The State Services Commissioner reviews each public service chief executive's performance annually. The appropriate Minister and the chief executive enter into an annual performance agreement, which is the main basis of the accountability relationship between the Minister and the chief executive. The performance agreement records the chief executive's obligation to ensure that:

- the department delivers the outputs set out in the purchase agreement the chief executive has made with the Vote Minister(s), under the Public Finance Act, to the specified standards, including quantity, quality and cost;
- the department achieves the "key results" aligned to the Government's goals as agreed between the chief executive and the appropriate Minister; and

- the actions of the department are in accord with the collective ownership interests of the government, as set out in an annex to the performance agreement; - these interests include maintaining appropriate management control and reporting systems, and systems of self-review in order to identify and respond to risks to performance.

13. The State Services Commissioner does not review the performance of the Commissioner of Police because the Commissioner of Police is not the chief executive of a public service department under the State Sector Act.

Other functions

14. Another principal function of the State Services Commissioner is the provision of advice on "management systems, structures and organisations" (section 6(i) of the State Sector Act). That function is discharged, in conjunction with the review of machinery of government (the function set out in section 6(a)) in advising departments on their appropriate systems and structures - but in the form of "best practice" guidance. The Commission has published best practice advice on IT systems.

15. The State Services Commissioner has never interpreted the function set out in section 6(i) as requiring or empowering him to advise on computer systems or structures. Although the Commissioner may advise on such matters, the chief executive is responsible for the actual management systems and structures in his or her department.

THE POLICE

17. The Police is governed by the Police Act 1958. The Commissioner of Police is appointed by the Governor-General, and holds office at the pleasure of the Governor-General (Police Act, section 3).

18. The Police Act invests the Commissioner of Police with "the general control of the Police" (section 3(1)). The Police Regulations 1992 further specify that the Commissioner of Police is "responsible to the Minister of Police for -

    (a) the general administration and control of the Police; and

    (b) the financial management and performance of the Police." (regulation 3)

19. There is no formal performance agreement between the Commissioner of Police and the Minister of Police as the Minister responsible, but there is a Memorandum of Understanding between the Commissioner and the Minister.

20. The Police is “part of the state services as an instrument of the Crown in respect of the Government of New Zealand. However, it

is not, and never has been a part of or a department of the public service. Accordingly, it is not subject to the routine administrative oversight of the State Services Commission."

PUBLIC FINANCE ACT 1989

27. The Public Finance Act governs the use of Crown financial resources. Its purpose is to ensure that Parliament, on behalf of the taxpayer, has adequate control and scrutiny over:

- what public resources are to be used for; and
- how public resources are in fact used.

28. The Public Finance Act flows on from the State Sector Act, which clarifies the relationship between departmental chief executives and Ministers. The Public Finance Act seeks to establish clear lines of financial accountability, and a managerial climate that encourages good financial management practice in the public sector.

Parliamentary control over use of public resources

29. The Act provides for Parliamentary control over the Government's use of public resources by:

- reaffirming the constitutional principle that the Crown cannot spend public money without the approval of Parliament [s.4(1)];

An appropriation is Parliament's authorisation (not a direction) for a Minister to spend public money up to a certain limit for a given purpose and usually within a defined period.

- extending this principle to provide that the Crown cannot generally incur expenses or liabilities without the approval of Parliament [s.4(2)].

30. Expenses and liabilities are accrual accounting concepts measured in accordance with generally accepted accounting practice (GAAP). They attempt to recognise any consumption or loss of service potential or future economic benefit. Accrual appropriations were introduced to avoid some of the incentives for inefficient management practices provided by solely cash-based appropriations.

Reporting of financial and performance information

33. The Act provides for financial and other performance information to be reported to Parliament on a basis consistent with that used for appropriations and for financial reporting in the private sector by:

- requiring that appropriation requests in an Appropriation Bill are accompanied by supporting information in the Estimates [s.9];

- requiring departments to report their service performance intentions and results to Parliament in accordance with GAAP [s.34A(3)(d), s.35(3)(e)].

The department is responsible to one or more Vote Ministers for the production of different outputs to the performance standards agreed with each relevant Minister. The information provided to Parliament on service performance will normally include a description of the quantity, quality, time, location and cost of delivering each class of outputs:

- requiring departments to report their financial performance intentions and results to Parliament in accordance with GAAP [s.34A, s.35].

Departments must provide forecast and audited annual financial statements to Parliament. Among other things these statements provide information about departmental assets and liabilities, and changes in their composition and value, that would not be shown in cash-based accounts. The forecast financial statements produced at the start of a financial year provide Parliament and the Responsible Minister with a base against which to assess actual departmental performance at the end of the financial year.

Flexibility of financial management

34. The Act provides financial management flexibility to departments by:

- not placing controls on the nature or composition of resources a department can utilise in the production of its agreed outputs, or on how those outputs are to be produced;
- allowing a department to purchase or develop new assets, or pay their liabilities, from their working capital or the proceeds from sale of any of their capital assets, without further approval from Parliament [s.11]; and
- allowing a department to operate its own bank account, and manage its cash receipts and payments to and from that bank account [s.19].

35. However, the Act does not allow a department to borrow, invest, or give guarantees to other parties in its own right [ss.23, 46, 52A, 58, 58A].

Role of the Treasury and the Audit Office

36. The Act allows the Treasury to request information from a department in order to prepare the consolidated Crown financial statements [s.29A]. This is to ensure that the Secretary to the Treasury can sign the statement of responsibility that accompanies the annual Crown financial statements.

37. The Act also allows Treasury to request information from a department about the financial management, performance or control of the department, or about any Crown asset or liability that the department administers [s.79]. This reserve power enables the Treasury to offer advice to Ministers on proposals or risks with financial implications for the Crown.

38. Under the Public Finance Act 1977, the Audit Office has the right to investigate and report to Parliament on the use and application of departmental resources, including the adequacy of internal controls for the effective control of departmental expenditure and the management of departmental assets and liabilities. The Office is also responsible for providing an audit opinion on the department's annual financial statements.

Managing the Governments Ownership of Interests

52. Cabinet has not imposed any general reporting requirements on Responsible Ministers or departments for ownership matters in addition to those required by Parliament, other than the expectation that:

- the department will provide monthly financial reports to their Responsible Minister; and
- any request to Cabinet for additional capital will be accompanied by a sound business case and a copy of the department's strategic business plan.

53. However, Treasury requires a department's monthly financial statements for Crown financial reporting purposes, and has the opportunity to discuss with the department any major issues identified.

54. The performance agreement for public service departmental chief executives also contains some requirements to report to the State Services Commissioner on non-financial performance matters that relate to the Crown's ownership responsibilities. In either case, if the Treasury or State Services Commission have any significant ongoing concerns, they would be expected to brief their respective Ministers.

Processes for Public Sector Investment Proposals (including IT projects)

55. This section describes how Ministers and departments process a proposal for the purchase or development of a fixed asset, such as the development of a computer system or the building of a prison. Such fixed asset development projects are often loosely termed capital projects.

Possible Funding Sources

56. Departments can finance the purchase or development of fixed assets from two possible sources:

- their existing baselines; or
- a successful bid for new money in the Initiatives phase of the Budget.

57. Ministers and departments are expected to work, as far as possible, within existing funding levels, or baselines, previously approved by Cabinet for current and future years. The baseline appropriations for the initial year ahead are included in the Estimates presented to Parliament.

58. Departments may purchase fixed assets with existing funds within their baselines, as authorised by section 11 of the Public Finance Act 1989. This allows the department to use:

- working capital (cash held or obtained from revenues paid to compensate the department for non-cash expenses such as the costs of 'wear and tear', or depreciation, of assets), or
- the proceeds from the sale of other assets;

to purchase or develop fixed assets (capital expenses), so long as the total investment (or net assets) in that department remains the same. This is colloquially referred to as 'funding from within the balance sheet'.

59. However, departments do not usually have enough resources in their balance sheets to meet entirely the costs of a significant capital investment. Departments are not permitted to borrow, or retain any annual operating surpluses, to fund any investment in fixed assets.

60. Therefore, the more common method of funding substantial increased fixed asset developments is through the Initiatives phase of the budget process. Outlined below is the way in which new initiatives pass through the four Budget phases described earlier in this paper. An investment proposal must be processed through these phases before final implementation.

Strategic Phase

61. Each year, during the strategic phase of the budget, Ministers as a collective agree on budget strategy and priorities for spending. Cabinet requires departmental investment proposals increasing a department's capital base to be consistent with the Government's Budget priorities.

Initiatives Phase

62. Investment proposals from Ministers and departments may be accompanied by requests for increased costs (such as staff costs, or

depreciation) for operating the fixed asset once it is developed. These increase the cost of services (outputs) of the department.

63. Cabinet sets annual rules for each year's Budget. The requirements on a department to provide evidence in support of requests for capital injections have increased over the last seven years. In 1993, when the INCIS proposal was being formulated, Cabinet required departments to justify the need for any new investment and outline the expected benefits of the proposal. The Government needs to be convinced that further investment in a department will add value and result in reduced costs.

64. If an investment were proposed to increase operating efficiency, then the capital costs of the investment would be expected to be recouped through lower operating costs in the future.

65. The major change was in 1994. In July 1994 Cabinet commissioned Treasury to report on the criteria that would define a "sound business case" to support a department's request for capital. Cabinet formally disseminated information on the new criteria for assessing capital injections to departments in September 1994. These were applied in assessing capital injections for the Supplementary Estimates of 1994/95. Annex A of Cabinet Office circular CO(94)18 lists the information that was required to satisfy a "sound business case".

66. Since 1998, Cabinet has required that requests for capital investment by the Crown should include information on how this will impact on the entity's current structure and operations on other entities; and is to be supported by a risk management strategy.

67. Annex 2 gives examples of guidance material provided to departments to assist with satisfying Cabinet requirements. In particular, this includes the Cabinet Office Manual and Cabinet circulars, Treasury Instructions, and Treasury circulars, and a variety of guidance material issued by the State Services and the Treasury, including:

> *A Guide to the Management of Departmental Fixed Assets (Published by the Treasury 1991);*
>
> *"Getting the Bits Right – A Guide to Best Practice in the Provision of Information Systems in the State Sector – 1992". This includes a section on system development and acquisition; (by the State Services Commission);*
>
> *"Principles and Good Practices for Selecting and Managing Information Technology Projects –1998" (by the State Services Commission);*
>
> *The Role of Capital Contributions in the Public Sector Management System – (Between August and December 1994 by the Treasury).*

68. In addition, in 1997, the Treasury commissioned a study by Innovus Limited entitled Assessment and Monitoring Process Descriptions, and this was made available to departments.

69. Ministers and departments then negotiate proposed increases in appropriations for output classes and investments, prior to seeking Cabinet approval. A department is also required to seek approval for all expenditure associated with the investment, such as the cost of depreciation and of staff required running a new capital project. This may require increases to output class funding and their appropriation particularly where increases in quality (rather than efficiency) are involved. These increases are termed 'new initiatives' (operating), and are assessed by Cabinet in a separate process under this phase.

Parliamentary Phase

70. Once Cabinet approves a request for additional capital investment and any additional operating costs, the capital and any operating appropriations required for the project are incorporated into the Estimates and approved by Parliament in the Parliamentary phase through an Appropriation Act for that financial year.

Implementation Phase

71. When a department is about to incur expenditure on, for example, the purchase of an asset, it is required to ensure that the department complies with a separate administrative check required by Cabinet. This is set out in a Cabinet circular on financial delegations, which is updated on a regular basis. In practice, this step can occur at the same time as a department seeks approval for a Parliamentary appropriation (during the Initiatives phase).

(a) Ministerial approval of the original application for purchasing or developing a fixed asset

72. While departmental chief executives have a certain level of freedom to determine how their resources will be used or applied, Cabinet has issued a set of general limits to the delegated financial authorities set for departmental chief executives and Ministers responsible for a department. These cover four categories of expenses or expenditure, including notably the purchase or development of fixed assets.

73. The financial delegation limits that Cabinet has approved for the purchase, development, or lease of departmental fixed assets are set out in the schedule attached to Cabinet Office Circular CO(99)7 The limit for financial authority for the original or first application is $7 million (or under) for departmental chief executives (the limit was $ 5 million from 1989 to June 1999). The Minister responsible for the department has a delegated authority in his/her individual

capacity for a first application for projects that are over $7 million but do not exceed $15 million (the limit was $10 million from 1989 to June 1999).

74. Where the project is over $15 million, the department must seek financial authority from Cabinet:

- at the time of seeking approval for a proposed appropriation; or
- just before the capital project is ready to commence (whether funded from new capital or from the departmental balance sheet).

Expectations of Applications for Financial Authority

75. All applications for financial authority for the purchase or development of fixed assets should include a full description of the work to be done or asset to be purchased, in addition to a total (and breakdown where relevant) for all the proposed capital costs and cost components.

76. The chief executive of a department is responsible for seeking financial authority once the stated delegation limits are likely to be exceeded. Cabinet also issues department-specific delegated authority limits that could be lower than the standard delegation limits, when it has concerns over certain areas of expenditure (for example, over increases in a particular category of asset).

(b) Administrative check for subsequent variations to the cost of developing an asset or investment project.

77. The same Cabinet financial delegation rules require a financial authority from Cabinet to be sought by a department, promptly, where it becomes obvious to the department that the current delegated financial authority is likely to be over-expended or there is a change to the scope of work. Variations are to be:

- approved by the Responsible Minister where these exceed the chief executive's authority for variations; and
- approved by Cabinet where they exceed the Responsible Minister's limit for variations.

78. The delegation limits to approving capital project variations depend on the magnitude of variations. The rules around calculating cumulative variations to capital projects are complex. The original cost and all additional amounts to the original application request should be aggregated when determining whether the dollar value exceeds the Cabinet delegation limit for variations to capital expenses or project/fixed asset development.

79. Departments can only increase expenditure on developing projects within its delegated financial authority from Ministers. Ministers and departments must seek funding through the Cabinet process and secure a new appropriation where the proposed increases in

expenditure exceed departmental appropriations. Once appropriations are obtained, departments may then seek approval for delegated financial authority under Cabinet's financial delegation process.

Special Oversight Arrangements for IT Investments

82. Also arising from the 1991 review, public service chief executives were required by their performance agreements (from 1992) to ensure that information systems assurance arrangements were implemented. The chief executives of the Police and Defence Force, who are not subject to the same performance agreement requirements, were required to provide their Ministers with a similar level of assurance.

86. In July 1997, Cabinet adopted a range of measures, consistent with the devolved system of Government administration, designed to strengthen the monitoring of major information technology projects in the public service. Those measures are set out in Cab(97) M25/13 (copy attached) and include:

- placing a requirement on departments to provide regular, independent quality assurance reports to the chief executive on key issues and risks;
- placing a requirement on departments to forward a higher level version of the independent assurance reports to the State Services Commission and Treasury for monitoring purposes [(b) (ii) of CAB(97)25/13];

88. Thus State Services Commission's and the Treasury's responsibility for the direct monitoring of information technology projects commenced in July 1997, by virtue of the establishment of the ad hoc officials committee on information technology. However, the committee's role then applied only to public service departments and did not cover the Police. The information technology monitoring regime was extended to the Police by Cabinet decision in May 1998 [CAB (98) M 17/11].

SCHEDULE 14

14a Recommendations from Treasury

PART 4: LESSONS LEARNED TO DATE FROM INCIS for future management of major IT projects in the public sector

170. We set out in the table below the main lessons Treasury has identified to date from its review of involvement in the INCIS project, backed up by experience in other projects and drawing as appropriate on the report of the Justice and Law Reform Committee Inquiry into CARD and INCIS, and on the work of the Crown Negotiating Team in connection with the settlement of the dispute with IBM. Treasury would welcome the opportunity to discuss these with the Inquiry team.

Lesson	Comment
APPROVAL	
	These 4 recommendations of the Select Committee reflect comments made by Treasury in its submission to the Committee of 20 April 1999. They are also reflected in the guidance provided to Treasury analysts since 1997. More detailed comments on each are set out below.
Government departments should make every possible effort to undertake smaller and less complex information technology projects (Select Committee: 8).	We agree with the Select Committee that the project was too large, complex and ambitious; and that neither the Police nor IBM realised at the outset what the project would entail when the contract was signed (page 73, last paragraph, Select Committee report). This contributed significantly to the difficulty Treasury faced in monitoring the project, and to the fact that the original costs and benefit calculations eventually proved unrealistic.
In the future, large-scale public sector information technology projects should be broken down into more discrete parts, which should then be approved individually by Cabinet on a part-by-part basis (Select Committee: 10)	We agree that in future, major IT projects should be broken down into component parts. We would expect these to be undertaken as phased, successive chunks as narrow in scope and brief in duration as practicable, each of which would solve a specific part of an overall business problem and deliver a measurable net benefit independent of future chunks. Each chunk would form part of an overall programme of work identified at the outset, and that programme would be reviewed as each successive chunk was completed and each new chunk came up for authorisation to proceed. It would have to be recognised, however, that there are likely to be some costs as well as significant benefits in this approach. It could affect some project proposals quite dramatically, and could prove contentious and difficult to apply in some cases.

Tighter specification of deliverables should be required for public sector information technology projects (Select Committee: 11)	The key deliverables identified to Treasury from INCIS were all due at the end of the project. This meant that it was not possible to know the true extent of delays and cost over-runs until very late in the process. While complete contracting (complete specification of deliverables at the contract stage) will not be possible, a requirement for tighter specification of deliverables should apply at all planning and reporting levels. Treasury now seeks assurances that this point is covered in the business case, but focuses on key milestones for its subsequent monitoring activity. It should, however, be noted that there are likely to remain difficulties in the close specification of deliverables in some cases as the nature of IT contracting and supply changes; and that while better specification and management of projects will help reduce risks, this is not an area capable of complete certainty.
Government departments should always attempt to favour "off-the-shelf" software applications (packages) where possible (Select Committee: 9).	We agree but note that while a package solution should always be considered (since it will provide greater certainty of what is being purchased and the requirements to implement it), it will not always provide the answer. Departments need to identify core and non-core requirements when reviewing packages, looking for closeness of fit with core requirements, and to trade off the risks of a custom-built solution against the receipt of a sub-optimal package-based solution.

Review of the INCIS approval process confirms the need for Treasury to be involved at an early stage in preparation of the business case to help ensure that all the points it will need to assess in the final document are fully covered, and confirms the need for both the business case and the financial implications to be rigorously assessed, however strong the case may seem to be.	If Treasury is not involved early on in the development of the business case and if the points Treasury wants to be considered are not covered, it may be difficult to secure the revisions and new work needed to test the case thoroughly. This is particularly so when the financial case is apparently very strong. The INCIS business case was in near final form when it first reached Treasury, and reflected a great deal of work by Police. In retrospect it is clear, however, that the INCIS business case was incomplete and overstated, and that it would not have been approved as submitted if assessed by current standards. This is not to say that there was not a case for a new system, but current processes would test more thoroughly the likelihood that the proposed system and benefits would be delivered as planned. In 1993/4 Treasury did not fully appreciate the complications and issues associated with IT projects and there was no specific guidance for vote teams handling IT proposals. Best practice at the time was to seek external advice where necessary. The need for guidance and standards was recognised and material has been issued and progressively developed in light of experience from 1994 onwards, including experience with INCIS. The current guidance now available to analysts assessing a business case requires them to: • identify the key components of the proposed investment • evaluate the investment decision • evaluate the investment options • evaluate the return on the investment • identify the risks associated with the proposal

	• evaluate the project management practices proposed • evaluate the financing decision For IT proposals, this is backed up with specific IT guidelines which set out the process relevant to each stage of an IT project and include: • what to look for in a department's IT strategic plan • guidelines for assessing an IT business case • best practice in project set up and infrastructure • likely generic risks with IT projects and best practice strategies for departments to manage these risks • project milestone indicators for monitoring • the potential need to seek expert advice. • Tighter procedures now ensure that business cases are fully tested. It may now be appropriate to supplement this guidance with some additional information to help distinguish the different issues likely to arise with different types of IT project.

When the investment decision is large enough, Treasury should seek expert opinion to review the technology, risk assessment, business and cost components of the business case. When Treasury seeks expert advice on a project, it should ensure that it makes clear arrangements with the department for all relevant expert comments and recommendations to be followed through.	While it was best practice for Treasury and Police to commission external expert opinion when Ernst Young was brought in to review the business case in 1993, and when Police commissioned a further review of the proposed technology from KPMG, the terms of reference should have included a risk assessment and recommendations on how these risks could be managed or mitigated. This issue would be covered in the terms of reference for comparable advice commissioned now. Police followed up the Ernst and Young recommendations (see above) and reported back to Treasury. However, it is not clear from the file how thoroughly Treasury tested the completeness or adequacy of the response. In future, Treasury could keep a close check on the departmental response to expert advice while remaining at arm's length by requiring the project auditors to provide explicit advice on the position, or, where the cost is justified, by Treasury appointing its own advisor. There needs to be further consideration whether the independent auditors should be jointly appointed by the department and Treasury (or other central agency) as a matter of course, to ensure central agencies can rely on their reports and advice.

Project Governance and Project Management	
Effective governance and project management is crucial to the success of an IT project.	Treasury's awareness and experience of project management issues relating to IT – including the complexity of business transformation projects, the need to manage risk and the need for effective scope management - has increased markedly since 1994. The requirement (mentioned above) for full information to be given in the business case of the

The larger and more complex the project, the more important it is to ensure that: • there are appropriate departmental structures and mechanisms to oversee and control the project • the project is suitably located within the general departmental management structure • there is sufficient relevant experience in the project management team • there is full project control of risks, plans, progress, documents, costs, contractual commitments etc • control mechanisms provide tight management of the project, but incorporate sufficient delegated authority to allow for prompt deployment of the resources needed to deliver	proposed project management arrangements ensures that departments give these arrangements early detailed, consideration and that the proposed arrangements can also be reviewed by central departments. Once the project is approved, however, governance and project management are the department's responsibility. Project management proved to be a significant issue for INCIS as the size and complexity of the project became apparent, with additional project management measures still being needed in 1998. Problems within the project also seem to have contributed to a high staff turnover which itself created further difficulties.

Contract and Financial Management	
Both Department and vendor should understand what a project will entail before the contract is signed. A fixed price contract will provide only limited protection if the product is not deliverable for the price agreed. It is, however, very difficult to cost an IT project accurately and scientific methods provide a false sense of security. It is highly likely that there will be some variation in the price to secure the desired end product.	It is now clear that the requirements included in the Request for Proposals for INCIS were not sufficiently detailed for the parties to be able to enter into a fixed price contract, despite the view expressed by Ernst Young at the time that Police had 'sufficient information for fixed price quotation'. It should be noted that Police excluded the alternative tender on the grounds that it was not a fixed price bid. The vendor (Andersen Consulting) considered that, without a High Level Integrated Design (HLID) they had insufficient information to make a fixed price bid.
The contract needs to be carefully managed and day-to-day project activities and decision-making need to have regard to possible implications for the contract. Issues to be covered include: • securing the completion of all documents referred to in the contract and which form the basis of the contractual understanding; • ensuring that all decisions with	When the Crown was preparing for negotiations with IBM in 1999 it became clear there were weaknesses in the area of contract management. For instance, not all collateral contracts were passed through the external legal advisors and finalised, and the Deed of Variation referred to documents which could not subsequently be found. In general, invoices were not well controlled and record keeping was not always sufficient to allow for easy identification of source documents. In addition the project's financial management system was not well integrated with the Police-wide system, causing the external audit reports to refer to reconciliation problems. The project team was remedying this in 1999.

possible contractual implications are properly considered; • ensuring that all changes to the project are formalised; • establishing and maintaining systems to ensure that there is close oversight of costs and contractual issues, and provide a clear audit trail. A tight contract will not replace the need for a good working relationship and management practices between the Department and vendor. A good relationship will encourage essential but effective compromise when issues of scope creep emerge.	The Police focus on the fixed price nature of the contract and the enforceability of remedies may have prevented compromises on scope being made and contributed to a difficult relationship with IBM.

MONITORING	
The proposed division of major projects into component chunks should have beneficial implications for the monitoring of these projects by central agencies.	The proposed requirement that major IT projects in future be broken down into smaller chunks would have a significant impact on the requirements for monitoring by central agencies. Under this arrangement, monitoring would essentially comprise advice on the approval of each chunk, confirmation that it is completed and the final time, scope and cost. This would mean that the role to be played by the central agencies would fit closely with their core responsibilities and that full management responsibility for projects could rest with Chief Executives without Government being exposed to any unacceptable degree of risk.
Under the current arrangements: • The monitoring framework should be agreed as part of the project initiation phase. It is too late to attempt to change the required contents of the reports once reporting systems are put in place.	While the broad reporting framework was agreed in the late stages of the approval process, it was not worked through in detail beforehand. The reporting process proved inadequate and Treasury's ability to monitor the project was much reduced as a result. The requirement (mentioned above) for information to be given in the business case of the proposed monitoring arrangements ensures that departments give early detailed, consideration to this issue and agree them with central agencies. This should help to ensure that central departments receive the information they need, at minimal compliance cost and inconvenience to the project team. The Innovus guidelines set out the type of information that should be included in the project status reports. In addition, best practice is being identified and applied, based on effective models that have been used in various departmental projects.

• The monitoring framework must include an independent audit/quality assurance function to provide assurance to the Chief Executive and central agencies as to the accuracy of the project status reports, to confirm progress in relation to key milestones and to ensure risk is being adequately managed. Both status and audit reports must be received promptly.	While it was best practice for Police to engage an independent auditor, late production of status reports limited the usefulness of these reports much of the time. Nevertheless, Treasury relied on the reports wherever possible for objective information about the project and the auditors also attended meetings of Treasury and Police where appropriate. The auditor appointed was also IBM's auditor: a potential conflict of interest which both Police and the auditor should probably have avoided. Treasury should make full use of the project auditors to ensure that it is fully informed. It may also wish to appoint its own independent auditor for some projects but this is only likely to be appropriate in extreme circumstances.
• The monitoring framework should also include a clear requirement for sponsor departments to inform departmental Ministers and Cabinet as appropriate (or any other committee of Ministers charged with oversight of IT) of likely variations to the scope of a project and/or likely cost over-runs outside the delegated authority of the Chief Executive.	This would back up the revised guidance issued to Chief Executives in 1999 and would ensure no recurrence of the situation in 1997 when Treasury did not give definitive advice on the fact that the emerging cost over-run exceeded the delegated authority of both the Police Commissioner and Minister.

As a project proceeds:	
• Any significant agreement reached between Treasury and the department on issues arising, particularly agreement on how to proceed with any intervention, should be clearly recorded and confirmed in writing to the department.	There was a serious breakdown in process, due to an apparent misunderstanding, when Police signed the Deed of Variation without Andersen Consulting completing its second review and without Cabinet's agreement to the change in project scope and cost increase. In retrospect, this could have been avoided by Treasury and Police agreeing the process at an early stage and confirming this in writing.
• Whatever the basis of Treasury involvement in departmental IT projects, Treasury should keep a basic audit trail of its activities and processes, and ensure that as full a file record is maintained as is reasonably practical. Good practice would also include noting the authorship and dates of receipt on all documents where this will not be obvious.	It was difficult to piece together a complete picture of Treasury's involvement in the INCIS project from the file. Having contacted those involved, we know that many interventions were not recorded. It also seems likely that some paperwork and e-mails did not reach the file. Files will never provide a perfect record, but some adjustments to paper keeping practices would ensure that a much fuller record is maintained.

We note the recommendations of the Select Committee, which aim to improve the current arrangements for monitoring IT projects, and comment opposite	
The monitoring of public sector information technology projects should be more transparent (Select Committee: 12).	We agree to the need for transparent reporting/monitoring mechanisms. The better the information received by the central agencies as a matter of course and the easier it is to resolve any queries, the more effectively the central agencies can perform the task required. We also note that the monitoring regime now in place is a marked improvement on that applying for most of the INCIS project. However, there may be significant risks if Treasury were to be routinely involved in projects to the extent apparently envisaged by the Select Committee. Treasury staff are not IT experts, and they add most value when providing an objective, arm's-length perspective on departmental projects. If departments need additional expertise in the project team or in the departmental project management structure, this should generally be found elsewhere both to meet their need more exactly and to enhance the proper lines of accountability.

The monitoring of public sector information technology projects should be strengthened and [we] consider that monitoring would be improved by the inclusion of specific milestones with time-lines in reports (Select Committee: 13)	We agree that project reports must include milestones with timelines. We also note that vote teams needs to have a basic understanding of the system development lifecycle to appreciate when a missed milestone impacts on the critical path of the project. In very complicated projects, with multiple interdependencies, they should seek external advice.

The role of the State Services Commission should be enhanced in relation to large and complex public sector information technology projects, including the participation of officials from the central agencies in information technology project teams (Select Committee: 14)	Departments are responsible for the delivery of their IT projects and, depending on the scale and complexity of the work to be undertaken, may need additional support to bolster their IT capabilities. Central agencies may be able to help them identify the areas of weakness and how to address them to secure the additional capabilities needed, but in developing any enhanced role care will be needed to not to detract from the responsibility of the departmental Chief Executive. Accountability arrangements could be put at risk if central agency staff participate in the department's project management arrangements.
The Treasury should be more closely involved with large and complex public sector information technology projects, including participation by officials from central agencies in project teams (Select Committee: 15).	A major problem for Treasury in the earlier stages of the INCIS project was the failure of Police to supply the reports required of them, and the lack of useful information in the reports received. While Treasury attempted to remedy this, they were not able to do so, despite Police acknowledgement of the issue. Treasury was therefore unable to monitor the project as effectively as it could have. The Treasury monitoring regime for more recent major projects seems to have introduced more effective arrangements for projects still underway and the arrangements for monitoring off-track projects by the Ad Hoc Officials Committee should ensure that

	problems of this sort don't happen again and, if they do, that they can be more readily resolved. This paves the way for timely intervention by the central agencies if the need arises, and we would consider this preferable to their close involvement in the project throughout. The Select Committee report notes the IBM suggestion that Treasury should have engaged with them in the course of the project. The Treasury did intervene at high level with the visit to IBM in New York in May 1998. We do not, however, consider greater level of involvement would have been compatible with the fact that the Police were ultimately responsible for the project.

14b Recommendations from Police

LESSONS LEARNED FROM INCIS OUTCOMES

INCIS was a complex undertaking. An assessment made early in the life of the project did not identify existing applications that could provide the functionality required – a situation that remained unchanged several years later. Whilst the implementation of a project that required significant application development carried a number of risks, steps were taken across the project to minimise those risks. Ultimately, the failure to complete the project could not be ascribed to any single issue.

The recent report of the Controller and Auditor General on "Governance and Oversight of Large Information Technology Projects" identified many lessons that have been learned from the implementation of State Sector IT projects. The Police endorse the guidance contained in that report. In terms of the INCIS project we summarise the principal lessons learned as follows:

1 Contractor Performance

In its report reviewing the early stages of the INCIS Project Ernst and Young noted that a "perfect contract will not necessarily commit the contractor to deliver." While steps were taken in structuring the INCIS contract to secure that commitment, in the final analysis the contractor failed to deliver for a variety of reasons, principally when it realised that the cost to it to complete its contractual obligations outweighed the potential cost of negotiating a settlement with Government. In this respect it should be noted that IBM consistently gave Police assurances that resources in sufficient quantity and quality would be provided from its world wide resource base to ensure the project was completed. The most notorious of these was the undertaking by the Deputy Chairman of IBM International John Thomson in mid 1998 to the Treasurer Winston Peters that IBM would "darken the skies" with planes and resources to ensure INCIS was delivered within then known time frames.

While it was not unreasonable for Police to rely on these undertakings, especially after IBM recommitted contractually to the project under the Deed of Variation, it is clear that a better mix of contractual, structural, contract management and reporting mechanisms is needed to monitor performance to lessen the risk of the contractor failing to deliver.

2 Governance Structures

Governance arrangements for a large IT project are very important. The governance structures for the INCIS project could have been strengthened in a number of ways:

- Roles were shared with both the Audit Committee and the Police Executive Conference each playing a part. A single group having responsibility for oversight and decision making would have provided a better focus.

- The INCIS Project's Steering Committee (which later became the Executive Control Group) was implemented in line with the views expressed in the Ernst and Young report. A top level committee consisting of the most senior executives of the contracting party was useful to facilitate project management. It should be clear that such a committee has no governance role.
- The governance structure for INCIS would have benefited from wider external membership from both the private sector and the State sector control agencies.

3 Technology Choices

Technology choices impacted on the INCIS Project in a number of ways. At the outset the recommended technology was viewed as leading and not bleeding edge and the intention was to take advantage of newer products if they could improve performance but not increase risk. Ultimately the choice of the technical architecture had a substantial impact on project implementation as did infrastructure changes to the network and operating systems to a lesser extent. Where a project is due to be implemented over an extended time frame, the selection of mature but current industry standard technologies lessens the risk on the one hand but increases the risk of obsolescence on the other. The changes in technical architecture solved some problems but posed others.

The technology choices made during the project were externally validated, but the selections occurred during a cycle of significant development. This also became relevant in efforts to "future proof" INCIS technology. The specification of open systems was one example of this posing a challenge to IBM to make the transition from its proprietary product set earlier than it might have intended. The Windows NT OS/2 debate is a classic example of the dilemma facing the police in terms of selecting proven technology while future proofing the solution.

At the time INCIS was developed current market thinking was that business requirements were the priority first decision and then the best technology would be sought to deliver the business solution. During INCIS that thinking evolved as did the flexibility and availability of technology. It became increasingly possible to select a technology infrastructure and then incrementally develop flexible applications on that infrastructure.

Managing large projects in a time of rapid technology change does require a rethink in approaches for the future.

4 Application Specifications

The additional level of detail required to develop the application specifications undoubtedly caused a loss of time for the INCIS Project. Though independent studies confirmed that the detailed specifications developed during the project did not increase its scope or complexity,

efficient software development could not flow simply from the assumptions derived from the statement of user requirements.

5 Project Management

Project management leadership is critical to a large undertaking. To give practical emphasis to its business orientation, the INCIS Project sought to combine the business skills of a talented Police officer with the technical leadership of an external I&T specialist. The mix proved not to be successful and impacted on relationships between project staff. Ultimately an experienced project manager was engaged.

6 Complexity of the Project

Implementation of the INCIS Project was broken down into a series of increments. Those increments were very large and were broken down further into sub-projects. One option available is for each of these pieces of work to form individual statements of work under an umbrella contract. Such an arrangement would more easily facilitate engaging an alternative contractor if it became necessary. Complex dependencies such as the exiting from legacy systems will continue to present substantial challenges regardless of how implementation is staged.

7 Change Management Issues

A technology project based on business case benefits which were translated into staff reductions was bound to face change management challenges. With the INCIS Project, delays in delivering a tangible outcome cost the project its credibility. The result of this was that successful aspects of change management lost their impact.

8 Relationship with Contractor

The partnering concept which was adopted at the beginning of the INCIS contract was not a success when compared with the more traditional supplier and customer relationship that followed. The INCIS Project did however result in a close working relationship between the project teams of both parties. Good processes and good people combined well. The steering group concept also allowed problems to be efficiently and effectively resolved. One issue which arose was that having IBM Corporate a party to the contract complicated and relationships and delayed decision making. The New Zealand IBM team frequently took a different view from the U.S. based IBM Group, especially in terms of commitment later in the project. It is somewhat ironic that the mechanism for reducing risk of compensation to Police in the event of failure, ie, IBM Corporates role, was in itself a contributing factor to that failure.

Under this heading the Police also agree with the recommendations in the Controller and Auditor-General's Report with respect to the appointment of a Contracts Manager (paras 129-133).

9 Risk Management Processes

Rigorous risk management processes are critical for proper governance arrangements for a substantial project. Risk management strategies employed on the INCIS project improved as the project was implemented, but tighter coordination, including more focused contract management, may have increased the chances of a successful outcome. In particular the interdependencies of a wide range of issues need to be more systematically mapped and tracked to avoid action in one area adversely impacting other areas of a project. It should be noted, however, that the project was the subject of almost constant review of one aspect or another. A large number of reviews were undertaken at one or other point of the project. That these reviews did not, until very late in the project, reveal that the project would not be completed by IBM, indicates that even the best risk management process may not detect and respond to vendor delivery failures.

10 Quality and Management of Consultants

INCIS during its development and implementation utilised a wide range of consultants for a wide range of advice on specialist issues where they apparently had the necessary skills and experience to give that advice. The recommendations of these consultants were followed almost without exception. Looking back on that advice, all of it can be supported by events and knowledge of the time it was given, yet events outstripped the validity of some of that advice. The lesson here to be learnt is that careful drafting of terms of reference and future monitoring of the currency of advice given, especially on technology issues should be undertaken in all major projects with a significant technology component

SCHEDULE 15

CONSOLIDATED LESSONS & RECOMMENDATIONS

Section 6.1 General & Strategic Assessment

Strategic Assessment

LESSON:

The successful conception, implementation and completion of a large IT project requires a high degree of strategic assessment by governance and management.

RECOMMENDATION:

Governance and management and Monitoring Agencies should ensure that proper strategic assessments are made as and when required during the conception and implementation of a large IT project.

Section 6.2 Technology and Architecture

Proposed Solution

LESSON:

The INCIS Project sought to achieve its objectives by implementing technology and architecture where aspects of the technology were unproven in a system of the size, complexity and geographical distribution of INCIS.

RECOMMENDATION:

Normally it is desirable to use proven technology. Where it is necessary to depart from using proven technology, a New Technology Testing programme should be completed prior to contract and the Chief Executive and monitoring agencies should be satisfied the technologies will deliver the business benefits.

LESSON:

Large IT projects will normally change the technical infrastructure and applications. The two are separate, though complementary, and should be dealt with as such. The bundling of infrastructure and applications into a single contract (which does not provide clearly for the delivery of

applications in modules of discreet useable business benefits) for a large IT project will significantly increase the project's complexity which will, in turn, increase the risk of serious problems.

RECOMMENDATION:

For large IT projects, the IT infrastructure should preferably be "unbundled" from the applications and, where possible, the applications should be modulated into discrete business deliverables.

Core Architecture

LESSON:

The extensive changes to core architecture adversely affected the INCIS Project.

RECOMMENDATION:

Core architecture should not be changed unless absolutely necessary. Any changes should be in strict compliance with change control, be referenced to the business case and be reported by the Project Manager and to the Monitoring agencies. Where possible changes should be delayed until after the application development has been completed.

LESSON:

The rate of change of technology over the life of the project can create significant pressures on project governance.

RECOMMENDATION:

The life of the project should normally be limited to not more than one year. Any project planned to take a longer time needs to be broken down into a number of modules and predefined points where a decision can be made to modify technology to meet the new position.

New Technology Testing

LESSON:

A contract requirement for emerging or unproven technology brings high risk. The normal approach where emerging or unproven technology might be required would be to complete a New Technology Testing programme. In the absence of New Technology Testing, the risk is usually prohibitive.

RECOMMENDATION:

New Technology Testing should be used for emerging or unproven technologies and, even with New Technology Testing, emerging and unproven technologies should be used only after a careful assessment of risk.

Missing Blueprint

LESSON:

Without a Blueprint at an early stage, a large IT project will lack the essential and integrating focus required for guiding the detailed design, development and change process.

RECOMMENDATION:

Any large IT project should have developed an effective Blueprint prior to application design.

Technology Substitution

LESSON:

A large IT project must have a sound technical solution in place at the time of contract. A technology substitution regime should not be used instead of identifying sound technical solutions in the first place.

A technology substitution provision in a contract is in principle an appropriate approach, as it is a means of giving some of the technical flexibility necessarily required by a large IT project. There are other ways of providing flexibility, such as in the form of the contract itself. A danger inherent in a technology substitution provision is that it is open to misuse. It cannot be used as a means of making up for shortcomings in the contract, such as the lack of a clear technical specification, and its use as a mechanism for changing major technical components of the solution will lead to increased delay and risk.

RECOMMENDATION:

Large IT projects should have identified sound technical solutions at the time of contract and any technology substitution should be limited in scope to substitution of items or components within the existing technical solution. Technology substitution provisions should not be used as a primary means of managing a contract.

Role of Systems Integration

LESSON:

Systems Integration for large IT projects is a skilled operation which normally requires the engagement of a specialist organisation.

RECOMMENDATION:

Normally a large IT Project should engage a systems integration specialist.

Section 6.3 Governance and Management

Governance and Management of the Project

LESSON:

Good governance and management structures and experienced and skilled personnel are essential for the success of a large IT project at the commencement and throughout the project.

RECOMMENDATION:

Government and Government agencies should ensure that large IT projects have sound organisation structure, adequate resources, and experienced and skilled personnel in terms of project governance and management.

Chief Executive

LESSON:

Projects are more likely to suffer unless the Chief Executive oversees the governance and management of the project.

RECOMMENDATION:

The Chief Executive should oversee the governance and management of a large IT project by:

- Ensuring acceptance and continued commitment by the whole of the organisation to the project.
- Ensuring the project and business case support the overall strategy of the organisation.
- Ensuring adequate resourcing.
- Appointing a qualified Sponsor.
- Being fully briefed, at least monthly, on progress, major risks and resourcing issues.
- Receiving and acting on relevant reports and information.
- Ensuring achievement of objectives.

The Chief Executive should be aware of and resolve or require to be resolved any serious dispute between senior project personnel that impacts adversely on the Project.

Project Sponsor

LESSON:

The primary responsibility for the appointment of the Project Manager rests with the Sponsor. The appointment by the Sponsor of a person as Project Manager when that person lacks project management skills and experience carries with it a high risk.

The Project Manager should report to the Sponsor and departure from this carries increased risk.

Failure by the Sponsor to ensure good relationships within senior personnel can be detrimental to the project.

Lack of commitment of all personnel in the business can be detrimental to the success of the project.

RECOMMENDATION:

The Sponsor should be either a Chief Executive or a senior executive manager.

Sponsors should appoint a Project Manager who has the necessary project management skills and experience.

The Project Manager should report to the Sponsor.

The Sponsor should address and resolve any unsatisfactory relationship between senior personnel immediately.

The Sponsor should continually reinforce commitment to the project by the whole business.

Project Directors and Director of I&T

LESSON:

The success of a large IT project is critically dependent on the skills and experience of the Project Manager. For a project such as INCIS, it is far more important to get good IT project management skills than to appoint a Project Manager from within the organisation.

RECOMMENDATION:

The person appointed as Project Manager should have the appropriate skills and experience, particularly in the management of large IT projects.

LESSON:

Difficulties can arise in a large IT project if there is an inappropriate reporting structure. In particular, the Project Manager should report directly to the Project Sponsor. There are likely to be problems where this is not the

case and, for example, the Project Manager has to report directly to a line manager.

RECOMMENDATION:

The Project Manager should report to the Sponsor.

LESSON:

There are serious risks to a project if proper procedures are not followed in the process for the appointment of key personnel.

RECOMMENDATION:

Governance and management should follow proper procedures ie. a "from the top down" process, in relation to the appointment of key personnel and should be aware of the potential for human relations and other conflicts detrimental to the project.

LESSON:

Serious human relations or other disputes between or within governance or management of a project can be detrimental to a project.

RECOMMENDATION:

Governance and management should he aware of the potential for disputes between or within governance and management and should take action to avoid the potential. Where a serious dispute arises governance or management need to address and resolve the dispute promptly.

LESSON:

Poor or inadequate reporting inhibits proper governance and management and is prejudicial to the efficient operation of the project.

RECOMMENDATION:

In order to perform their functions, government and management must enforce timely, full and frank reporting at all levels and in particular by the Project Manager, IQA and audit.

Any departure from that standard should be heeded and acted upon by governance, management and Monitoring agencies.

Steering Committee

LESSON:

The lack of an effective Steering Committee as part of the project governance and management structure is detrimental to a project.

RECOMMENDATION:

It is essential that all large IT Projects have an effective Steering Committee. The membership should include senior line management. Monitoring agencies as part of monitoring should require a Steering Committee to be in place and may require to attend or receive minutes of meetings.

Baselines and Milestones

LESSON:

Proper baselines and milestones need to be established to enable effective management and monitoring.

RECOMMENDATION:

Cabinet, Ministers and Monitoring agencies should require that proper baselines and milestones be indicated in the business case and that material changes be referenced to the business case and be reported to the Monitoring agencies. Reports on project progress should reference the original business case baselines.

Project Manager's Reports

LESSON:

The lack of a timely and comprehensive Project Manager's reporting is detrimental to a project and to monitoring.

RECOMMENDATION:

Project Managers reports need to be at least monthly, address key risks and to be concise, focused and properly reflect the current project status.

Police Culture

LESSON:

Command-line cultures of governance and management, such as those in the Police, are not generally the most appropriate structures for the management of large IT projects.

RECOMMENDATIONS:

Police and organisations having a command-line culture should be aware of the adverse aspects of a command-line culture in relation to large IT or other projects.

Monitoring agencies should also be aware of the problems that might arise if a large IT project is being managed within a command-line culture.

Experts' Reports

LESSON:

There are many occasions when outside experts must be asked to review and report on aspects of a large IT project. However, the effectiveness of the process can be reduced for a number of reasons.

- Difficulties can arise if the terms of reference are not defined in clear terms.
- The report may be deficient in some way and not deal adequately with the issues it addresses.
- At times, reservations and negative comments in the body of the report are missing from or downplayed in the report's executive summary.
- Selective quotation from an expert's report can give a very wrong impression of its findings.
- A report can be used as a substitute for action. Reservations and negative findings in a report by outside experts often appear to be ignored or downplayed.

RECOMMENDATION:

Agencies, when considering an expert's report, should:

- Check the terms of reference of the report;
- Assure themselves of the adequacy of the report, use a peer review if needed; and
- Consider the whole of the report, particularly any reservations and negative comments.

Management needs to assure itself that an expert's report is adequate, accurate and balanced and should look for indicators to the contrary.

Approved Quality Management and Warnings not Heeded

LESSON:

Major problems in a large IT project do not arise suddenly. There are always prior warnings of trouble and indicators that all is not well. If the warnings and indicators are sought, seen and dealt with promptly, the risks to a project can be reduced and problems averted. On the other hand, to not heed warnings and to hope optimistically that all will be well is a sure path to disaster.

RECOMMENDATIONS:

Throughout large Government IT projects, policies and practices should be adopted that encourage an awareness of the need to heed and, where appropriate, to take immediate action on warnings and indicators of trouble.

Monitoring agencies in monitoring the project should be alert to any departure from this requirement and should pay particular attention to how, and how promptly, issues are resolved.

Section 6.4 Risk Management Process

General

LESSON:

Typically, the risks in a large IT project are very high both because of its complexity and also because the context of rapidly-developing technology leads to a high degree of uncertainty. Without a pervasive and thorough quality management and risk management policies at all levels, there is a high likelihood of under-performance if not outright failure.

RECOMMENDATION:

Large IT projects should have comprehensive formal quality management and risk management processes that are fully integrated within all aspects of project management. All personnel should have an awareness of risk, and of the risk consequences of all their decisions and actions. Monitoring agencies should monitor the observance of and adherence to the formal risk management process.

System Complexity

LESSON:

Highly complex processes are difficult to manage successfully. They require special systems-related skills. The unexpected and often unpredictable interactions occurring within complex systems leads to counterintuitive consequences and to high uncertainty and risk .

RECOMMENDATION:

Large and complex IT projects should ensure that they have special system skills available to their management.

Risk Manager

LESSON:

It is difficult to manage the risk within a large IT project and to adhere to a formal risk management process without a Risk Manager, whose role should be to ensure the presence and continuing health of the risk management process.

RECOMMENDATION:

Large IT projects should have a Risk Manager.

Governance

LESSON:

Large IT projects are particularly vulnerable to increases in complexity and uncertainty arising from lack of a clear and central integration and focus. Too frequent changes of technology and direction will also increase the risk.

RECOMMENDATION:

Large IT projects must have tight management and control.

Sapphire Report

LESSON:

A major IT project requires full and frank reporting of both positive and negative information and assessment. Where problems and issues are known but information about them is not distributed either within governance and management or to monitoring bodies, serious trouble can be expected.

RECOMMENDATION:

The reporting mechanisms, communication channels and culture in large IT projects must both allow and encourage full dissemination of all relevant information, no matter how unpalatable it may be.

Business Case

LESSON:

It is imperative that a Business Case addresses all relevant issues to enable a sound business decision to be made. Business forecasts and financial estimates are worthless unless they are based on sound and well-understood technical and operational plans.

RECOMMENDATION:

Cabinet should prescribe a comprehensive specification for all relevant aspects that it requires to be addressed in a sound Business Case. These should include assurance of and evidence for the soundness of the technical and operational solutions underlying the business forecasts and financial estimates. The forecasts and financial estimates should address risk by including estimates of uncertainty. Government and Monitoring agencies should ensure that these aspects are covered effectively.

Contract

LESSON:

One of the major functions of a contract is to specify and manage risk. It specifies how risks are distributed between the parties. It follows that if this

role is not well understood, and if the nature of the risks are not clear, then there will be trouble, particularly if the risks are later perceived to be unfairly distributed.

RECOMMENDATIONS:

In a large IT project, risk and risk management matters should be specifically addressed before a contract is signed.

Flexible forms of contract should be used for large IT projects.

If there is material change in risk from the risk identified in the Business Case, the change should be referenced to the Business Case and be reported including a report to the Monitoring agencies.

Government agencies contracting out large IT projects should monitor risk control mechanisms within the contract.

Government agencies should not sign a contract for a large IT project without first being assured that the risks inherent in the project are:

- Well understood.
- At an acceptable level.
- Capable of management in accordance with the risks identified in a business case.
- Fairly distributed between the parties.

Communication

LESSON:

Good communication is essential in a complex project. Good communication is clear, complete, balanced and accurate. Furthermore, good communication should be seen as a two-way process.

RECOMMENDATIONS:

The governance and management of a large and complex project should ensure that a good communication process is in place, where good communication is characterised as being clear, complete, balanced and accurate.

Reports must have the above characteristics of good communication and must be delivered on time.

Role of Advisers

LESSON:

Independent expert advice is particularly important in projects with a high degree of complexity and with a major technological component. Two things

follow: that there should be an assurance that the advice is sound, and that the advice should be acted on appropriately.

RECOMMENDATIONS:

The management of large and complex IT projects, and also Monitoring agencies involved with the approval and oversight of such projects, should seek independent expert advice where appropriate.

A peer review or second opinion on expert advice should normally be sought where there is doubt, or where the issues are critical.

Project management must deal promptly and thoroughly with issues raised by independent advisers.

Expert advisers must make every effort to ensure the advice contained in their reports is sound, and that their reporting of it is clear and well-balanced.

Risk Indicators

LESSONS:

A number of lessons arise from viewing the failure of the INCIS Project to fully achieve its objectives from the point of view of risk indicators. The main lesson is that indicators of potential trouble and increased risk are there to be seen well before difficulties arise. Priority must be given to looking for such indicators, and if they are found, then prompt action must be taken. More detailed lessons are:

- Pressure on a project to succeed can arise from a number of quarters. A high degree of pressure can lead to increased risk.
- New technology can bring high risk to a project.
- Management inexperience leads to increased risk.
- Major organisational change brings high risk.
- Human relations difficulties in a complex project leads to increased risk.
- The complexity inherent in large IT projects leads to increased risk.
- Inexperience and inappropriate technical skills in a large IT project bring with them increased risks.

RECOMMENDATIONS:

Priority must be given to looking for risk indicators. If they are found, management must take prompt action.

Management must be aware of the danger that pressure on and within a project can lead to increased risk. It must therefore watch for symptoms of high pressure and take active steps to deal with its sources, which can be

many. Where this is not possible, particular care must be taken with other aspects of the management of risk.

New or emerging technology should be avoided wherever possible. Where it is adopted, the high risk it brings must be managed very carefully. Wherever possible, proven technology and off-the-shelf packages should be used for large IT projects.

High priority must be given to the risk management of major organisational change.

Because complex projects bring high risk, complexity should be reduced wherever possible.

Human relations difficulties in a complex project must be dealt with promptly.

Because risk management and quality management are closely related, where there is high risk there must be thorough quality management.

Large and complex IT projects must have management with particular skills for dealing with complex systems.

The increased risks brought to a large IT project by inexperience and inappropriate technical skills must be appropriately managed by bringing in external reviews and other means.

Project Manager

LESSON:

A project manager's reports to the project sponsor, IQA, auditors and oversight bodies provide a major means by which the health of the project can be assessed. It follows that where there are deficiencies in the reports, particularly with regard to project risk, the consequences can be serious. However, it is generally the case that deficiencies in the reporting process are indirectly signalled for all to see by, for instance, a lack of timeliness or a failure to report on risks.

RECOMMENDATION:

It is essential that a project manager should give full and timely reports, particularly with regard to project risk.

Monitoring agencies and others overseeing large projects should ensure there is comprehensive reporting of risk by the project manager.

Section 6.5 Change Control

Change Control

LESSON:

An effective change control process is essential for a project of the size and complexity of INCIS. The process should reflect changes to the project budget and impacts on the business case.

The process should record both change in scope as well as change within scope.

RECOMMENDATION:

The governance and management of large IT projects should have in place and enforce a proper change control process. Monitoring agencies, as part of monitoring of a project, should confirm that a proper change control process is in place and being observed.

The impact of changes should also be reflected in the project budget and on the business case.

Section 6.6 Project Formation

Project Development (RFI, RFT and RFP)

LESSON:

Unless care is taken in the strategic formation of a large IT project risks can be increased and this was apparent in the INCIS Project by the adoption of a fixed or capped price contract for the whole of the project including infrastructure and application development.

RECOMMENDATION:

The Chief Executive should ensure that adequate resources are committed to the consideration of strategic formation and that decisions in accordance with generally accepted practice are made on relevant issues including the nature and type of the Contracts for infrastructure and applications. A fixed or capped price contract for the whole of a large IT Project should normally be avoided.

LESSON:

The RFT and RFP should not have had such an emphasis on the technical solution and in particular on unproven technology and architecture.

RECOMMENDATION:

In large IT projects the tender documents should normally specify the business objectives required, state a preference for proven technology, state

any conditions regarding existing installed technology and require the tenderer to specify the technical solution.

Today the Inquiry would recommend obtaining the maximum flexibility through an open system. A large IT project should have an Blueprint and a proof of concept.

Role of Advisers

LESSON:

The lack of a peer review shortly prior to contract meant increased risk for the INCIS Project. This was particularly so given the complexity of the Project and the unproven technology proposed.

RECOMMENDATION:

Normally the Chief Executive and the monitoring agencies should require an independent peer review of the Project and the proposed contract before proceeding to contract.

No Proof of Concept

LESSON:

The lack of a proof of concept results in increased risks and this is particularly so where unproven technology or architecture are proposed.

RECOMMENDATION:

Large IT projects should perform a proof of concept before contract and this is particularly so if unproven technology is proposed or when the credentials of the supplier are in doubt.

Business Process Re-engineering (BPR)

LESSON:

BPR should be completed or substantially completed prior to contract or application development as the information from BPR is necessary to define the scope of the Contract. If this is not done, then subsequent variations to the contract are inevitable.

RECOMMENDATION:

A failure to complete or substantially complete BPR prior to contract is usually detrimental to the Project and carries a risk that the BPR will result in an increase in scope not provided for in the contract.

Section 6.7 Project Approval

General and Business Case

LESSON:

Operational and financial risk attending a proposed project must be included in an application for project funding and approval and the technical and functional soundness of the proposal should also be established. Otherwise, a project should not be approved.

RECOMMENDATION:

Cabinet should specify the components required for a sound business case so that operational, technical and financial information establishing the soundness of the business case is disclosed.

The Chief Executive is responsible for the preparation of the business case and should approve and sign it to acknowledge that responsibility.

Cabinet should be assured by the monitoring agencies that a proposed project is technically, functionally and financially sound.

Role of Advisers

LESSON:

The terms of reference of an expert adviser need to be carefully defined and carefully considered by any person relying on advice. Any person relying on the advice should:

- Check that the advice is timely and accurate
- Study the whole of the advice and not just an executive summary.

RECOMMENDATION:

The terms of reference of experts, the timeliness and applicability of advice and the advice of an expert included in an application for approval should be critically reviewed in total by Monitoring agencies and any uncertainties or contradictions resolved.

The Role of Monitoring Agencies

LESSON:

Unless the actions of the Monitoring agencies are effective, Cabinet may be requested to approve a large IT project without having sound information.

RECOMMENDATION:

The Monitoring agencies should be sufficiently resourced, skilled and

experienced to effectively advise Cabinet on large IT Projects.

Financial Return

LESSON:

The Inquiry believes the focus on financial return and Government participation caused a distortion to the application to Cabinet for approval for the INCIS project. Furthermore, the financial estimates gave no indication of the degree of uncertainty underlying the figures.

RECOMMENDATION:

Government should specify that non-financial matters can properly be put forward in support of an application and give them due weight.

Government should require an explicit assessment of the uncertainty underlying financial estimates put forward in applications for funding.

Application as a Whole

LESSON:

Any application for funding is likely to be couched in the most favourable terms possible. It will therefore contain a certain degree of bias and distortion. Care needs to be taken to detect any unduly favourable presentation.

RECOMMENDATION:

Monitoring agencies should be aware of any tendency to present an application in a too favourable way and should adopt a critical appraisal.

Section 6.8 The Contract and Deed of Variation

Form of Contract

LESSON:

A fixed price contract for the whole of a large IT project has a high level of risk - a more flexible form should be used, requiring delivery in stages.

RECOMMENDATION:

A flexible form of contract or contracts should be used for large IT projects, normally with separate contracts for infrastructure and applications with delivery in modules of business benefits and infrastructure being just in time for delivery of applications.

Off-Ramp and Lay-By

LESSON:

Off-ramp and lay-by provisions are important means of risk control. Where they are in a contract, they must not be forgotten and instead be kept under proper assessment.

RECOMMENDATION:

Governance, management and Monitoring agencies should require that procedures are in place to ensure that critical issues such as the Contract Off-Ramp are properly assessed.

Time Not of Essence

LESSON:

In a large IT project where time of delivery is always critical and delays are costly, time should be of the essence in relation to key milestones.

RECOMMENDATION:

The Chief Executive should not agree to a contract in which time is not of the essence in respect of key milestones unless the time issue is specifically addressed and there are compelling reasons for taking such a course.

Warranties

LESSON:

The warranties and end-to-end guarantees in a contract are an important means of risk control. Therefore any decision that affects warranties or guarantees needs to be carefully assessed in relation to the risks of the project.

RECOMMENDATION:

In large IT projects any decision that affects warranties or guarantees should be carefully assessed by the sponsor, project manager and contract manager in relation to risks of the project.

Technology Substitution

LESSON:

A provision for technology substitution in a contract can be worthwhile. However, it is not a surrogate for having a sound technology solution in place.

There are risks if the effect of a technology substitution clause is perceived to be wider than a correct interpretation of the clause.

RECOMMENDATION:

Care needs to be taken in interpreting and assessing the effect of a technology substitution clause, it should not be used beyond its scope and should not be a surrogate for a sound technology solution.

Significant technology substitution should be avoided whilst the application is being developed.

Section 6.9 Project Implementation

Business Process Re-engineering (BPR)

LESSON:

There is an interaction between the business changes and technology associated with a large IT project. The business changes should drive the technology and not vice versa. If BPR is not carried out till after the technical solution has become fixed (normally at the latest at the time of the signing of the contract), there is an increased risk that technology will drive the business changes. There can then be an underground function creep that is hard for management to detect.

RECOMMENDATION:

In large Government IT projects BPR should be completed or substantially completed prior to contract in order to stabilise the level of change impacting application design and development.

Furthermore, during the course of a BPR, every effort should be made to ensure thorough acceptance and buy-in throughout the organisation of the whole project, including both organisational and technical changes

Project Charter

LESSON:

A project charter is the project's management and governance 'glue'. Without a charter or where the contents are spread over a number of documents and where these documents are not maintained throughout the life of the project to reflect change, especially when the project lasts longer than one year, there is a high risk of governance and management of the project becoming unstuck.

RECOMMENDATION:

A project charter should be completed and agreed to by all the major stakeholders, including the Monitoring agencies, immediately following project initiations. The charter should be maintained throughout the life of the project. The charter should be readily accessible to all interested parties.

Personnel and Resource Issues

LESSON:

For a large IT project to be successful it must be adequately resourced, particularly in terms of skilled and experienced personnel, and governance and management at all levels.

RECOMMENDATION:

In large and complex Government IT Projects, there should be appropriate resourcing particularly in terms of skilled and experienced personnel at governance and management levels and that the Monitoring agencies should monitor the proposed resourcing and the actual resourcing throughout the project.

Pressure

LESSON:

Many large IT projects are likely to be subjected to pressure from many sources.

RECOMMENDATION:

Governance and management should be aware of and guard against negative aspects of pressure.

Section 7.2 Approval and Monitoring Regimes

General

LESSON:

Annual accounts and reports to Parliament will not, under GAAP, disclose contingent liabilities in respect of contracts for large IT projects unless special risks are identified.

RECOMMENDATION:

Government agencies and their auditors should ensure that there is enquiry and investigation of the issue of special risks in relation to large IT projects and that any special risk is reported in the annual accounts and reports.

Approval and Monitoring Regimes

LESSON:

The approval regime and the monitoring regime (until a late stage) in place at the time of INCIS did not provide sufficient information on which Cabinet

and Ministers could base decisions.

RECOMMENDATION:

The approval and monitoring regimes should be made more robust by:

- Cabinet and Ministers specifying the requirements for an application and attaching directions to any approval.
- The Monitoring agencies being sufficiently resourced to enable them to participate effectively in the approval and monitoring regimes.

LESSON:

Without compliance with improved IT project standards and methodologies the measurement and monitoring of project performance is subjective and open to error.

RECOMMENDATION:

The approval and monitoring regimes should require compliance with new and improved standards and methodologies.

Use of Experts

LESSON:

In the approval and monitoring regimes care needs to be taken in the instruction and use of experts and the assessment of their reports. Failure to do so can lead to adverse consequences for Government and the Project.

RECOMMENDATION:

Monitoring agencies should develop skills in instructing and using experts and the assessment of their reports.

Improvements to Monitoring

LESSON:

Defects in the business case and lack of proper baselines, milestones and measurements inhibit or preclude effective monitoring. Likewise the lack of an effective change control process can result in material changes or de-functioning not being properly recorded or reported to the detriment effective monitoring.

RECOMMENDATION:

Cabinet, Ministers and the Monitoring agencies should require a proper business case, baselines and milestones that provide a base from which effective monitoring can be performed. Monitoring agencies should identify specific measurements and reporting they require of the project and IQA. Likewise there should be a direction that should be an effective change

control process be implemented, and that any material change or de-functioning be referenced to the business case and be reported to the Monitoring agencies.

Section 8.0 Relationship with prime contractors

Section 8.5 Lessons and Recommendations

Pre-Contract

LESSON:

There can be difficulties if a prime contractor proceeds with Request for Tender (RFT) and/or a Request for Proposals (RFP) for a large IT project if the contractor has knowledge that key elements of the technology or architecture are unproven.

RECOMMENDATION:

Normally it is desirable to use proven technology. Where the prime contractor expresses reservations in relation to technology or architecture for a large IT project, the Chief Executive and the monitoring agencies need to review the position and should not proceed with the project until they are satisfied that the technology and architecture to be contracted for can be delivered and will provide the required business benefits.

LESSON:

Difficulties are likely to arise if the Government agency and the prime contractor do not have a correct and common understanding of the scope, volume and complexity of the work to be provided for a large IT contract.

RECOMMENDATION:

The Chief Executive and the monitoring agencies should take reasonable steps to satisfy themselves that they and the prime contractor have a correct and common understanding of the scope, volume and complexity of the work to be provided for in the proposed large IT contract.

Contract

LESSON:

There are significant risks to all parties if they or any of them enter into contract before they are ready to do so.

RECOMMENDATION:

The Chief Executive and the monitoring agencies should take all reasonable

action to ensure that all parties to a contract for a large IT project are in fact ready to enter into contract at the date of the contract.

Implementation of Contract

LESSON:

Whilst a partnering arrangement can be acceptable, it was unlikely to work in the INCIS project as the parties had different objectives and the form of the Contract was not appropriate for partnering.

RECOMMENDATION:

Care needs to be taken in implementing and committing to a partnering arrangement.

LESSON:

Excessive turnover of prime contractor key personnel and locations can be disruptive to a large IT project.

RECOMMENDATION:

All reasonable steps should be taken by all parties to minimise turnover of key personnel and locations that may impact adversely on a large IT project.

LESSON:

There are risks if the prime contractor has restructured or downsized in terms of expertise or capacity required for a large IT project.

RECOMMENDATION:

Chief Executives and monitoring agencies should have a sound knowledge of the expertise and capability of the prime contractor and should satisfy themselves that, notwithstanding any restructuring or downsizing, the prime contractor will be in a position to deliver the expertise and capacity required to complete contractual commitments relating to a large IT project.