

Summary

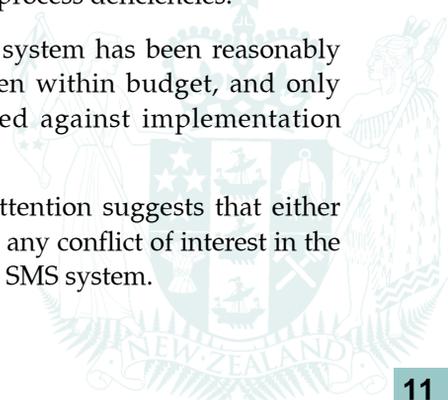
In 1996 and 1997, Capital Coast Health Limited (CCH) selected and contracted to purchase a comprehensive computerised information system from a supplier based in the United States of America – Shared Medical Systems Corporation (SMS).

Mr Jack Jenkins was appointed Acting Executive Chairman of CCH in November 1996. Dr Leo Mercer became the Chief Executive Officer of CCH in April 1997.

For a number of reasons, the way in which CCH came to select and purchase, and was implementing, the SMS system was the subject of adverse comment in the media and elsewhere. Because of the public interest in having the matter independently scrutinised, in May 1999 we decided to review all relevant aspects of the selection, purchase and implementation of the SMS system.

In summary, our conclusions are that:

- CCH complied with its policies and procedures in force at the time for the purchase of a major IT system.
- CCH handled the selection and purchase in an acceptable manner and followed good practice – although some aspects of the process could have been better handled.
- Generally, CCH's project management in implementing the system so far has been competent – although, again, there have been some minor process deficiencies.
- Implementation of the new system has been reasonably successful. The cost has been within budget, and only minor slippage has occurred against implementation timelines.
- Nothing that came to our attention suggests that either Dr Mercer or Mr Jenkins had any conflict of interest in the selection and purchase of the SMS system.



- We are in some doubt that, in committing CCH to purchase the SMS system, Mr Jenkins had the express and unequivocal authority of the CCH Board. The shareholding Ministers and their advisers were aware that Mr Jenkins intended CCH to purchase the SMS system, and we have been told that the CCH Board was similarly aware.
- We consider that CCH has made some significant achievements in delivering against the objectives established in 1994 to improve its information systems.

CCH needs to concentrate now on gaining maximum benefit from the investment in technology by:

- appointing a new project sponsor (to replace Dr Mercer) to restore the necessary degree of commitment and drive;
- establishing a planned approach to improving clinical ownership of the technology; and
- allocating resources to redesigning processes and procedures to make better use of the technology now available.



Introduction

Background

- 1.001 Capital Coast Health Limited (CCH) provides a wide range of health care services through Wellington and Kenepuru Hospitals – including emergency, maternity, radiology, and laboratory services, and inpatient care in surgical and general wards.
- 1.002 The computerised information systems (IT systems) that CCH inherited from the former Wellington Area Health Board in 1993 were in a poor state. The systems were old, not integrated, unreliable, and did not provide hospital management with the information needed for effective health care management. The ineffectiveness of the IT systems also meant that CCH was unable to record and cost its activities accurately, adversely affecting its ability to secure appropriate funding from the Health Funding Authority and its predecessors.
- 1.003 In November 1993 an Information Systems Steering Committee (ISSC) – comprising the Chief Executive Officer, all general managers, the chief financial officer, and the information systems manager – was formed to oversee and ensure that a structured approach was taken to address these issues. An Information Systems Strategic Plan (ISSP) was developed for the three years to 1997, the cornerstones of which were to “standardise, improve, and innovate” (where possible) in the respective years. This approach concentrated on existing systems, maintaining a balance between immediate demands of the business and longer-term goals.
- 1.004 Existing systems lacked interfaces between one another and suffered from poor supplier support. CCH’s “vision” was for an integrated system based on an electronic medical record and documented care plans, with the prime focus being delivering and collecting clinical information as close as possible to the point of care.

- 1.005 In July 1995 the Board of CCH (the Board) created its own Information Systems Committee to provide high-level oversight and keep the Board informed of information system issues. The Committee approved a proposal to contract out the day-to-day management of IT systems and to seek a partner to advise CCH in achieving its longer-term goals of information system improvement and innovation. The ensuing tender process resulted in CCH contracting with EDS to provide those two services.
- 1.006 EDS identified a number of potential suppliers of health information systems who could deliver the solutions that CCH was seeking. After calling tenders Shared Medical Systems Corporation (SMS) was selected in October 1996 as the preferred supplier of the IT system to fulfil the CCH “vision”, and contract negotiations began in November 1996. A contract for implementation of the SMS system was signed on 13 March 1997 and project-planning work began soon after.
- 1.007 In September 1997 “Project Iris” was started as an umbrella to carry out the separate projects to implement the six modules that were to make up the SMS system. The first module – Patient Registration and Accounting – was implemented during April and May 1998 and implementation of further modules is continuing. “Project Iris” is planned to be complete in June 2000.

Our Review

- 1.008 IT systems acquired by public sector entities have been the subject of considerable attention recently. CCH’s acquisition of a system from SMS has given rise to adverse comment in the media and elsewhere about the way the system came to be selected and purchased, and whether it will be able to meet CCH’s requirements. In addition, allegations have been made that some people involved in the selection and purchase had a conflict of interest.

- 1.009 The Health Committee of the House of Representatives was considering carrying out an inquiry into those matters. However, after we consulted with the Committee, and discussed the idea with the then chief executive of CCH (Dr Leo Mercer) who welcomed it, we decided to carry out our review.

History of the Project

1.010 In late-1993/early-1994 a group of CCH senior managers and clinicians attended a conference in the USA on the Transitions Clinical Costing System and visited a number of hospitals in the USA and Canada. The visits included the Sioux Falls Hospital in South Dakota where the CCH group observed an integrated information system based around:

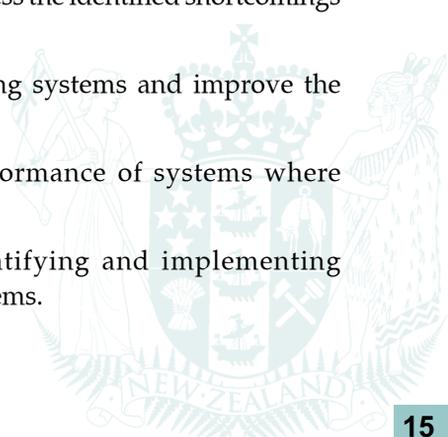
- an electronic medical record;
- electronic ordering of clinical services; and
- documented, electronic clinical pathways (care plans);

which delivered and collected clinical information close to the point of care.

1.011 During 1994 CCH developed its Business Plan, which concentrated on upgrading hospital facilities. Funds were identified as being urgently needed for a building programme (replacement and refurbishment of hospital sites) and a programme to improve its information systems. The latter was driven by the “vision” described in paragraph 1.004. The ISSP was necessary to ensure that a structured approach was taken. Costs of achieving the “vision” were estimated at \$26.2 million.

1.012 The ISSP was published in November 1994, following wide consultation among staff (including clinicians). The strategy of the ISSP to address the identified shortcomings in the existing systems was:

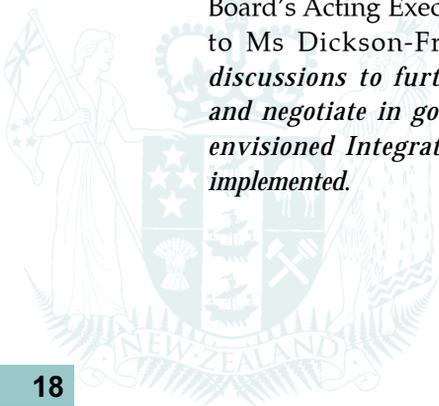
- Year 1 – standardise existing systems and improve the IT infrastructure;
- Year 2 – improve the performance of systems where possible; and
- Year 3 – innovate by identifying and implementing clinical based systems.



- 1.013 In October 1995 the Community and Support Services department issued a request for proposals to meet its information system needs. A successful supplier – ANSO – was chosen and notified but, following the engagement of EDS (see paragraph 1.005), a second (modified) request was issued in February 1996 for a “Care Management System”. ANSO and SMS responded. The project was not proceeded with.
- 1.014 In April 1996 EDS approached a number of providers of health information systems in the USA to identify any who might be interested in providing services in the New Zealand market. SMS and Cerner responded positively and were asked to demonstrate their respective systems.
- 1.015 EDS invited Dr Leo Mercer – at that time Associate Professor, Texas Tech University Health Service Centre, El Paso, Texas – to New Zealand to deliver a presentation on 6 May 1996 to CCH clinicians on the benefits of effective information systems. (Dr Mercer also gave the presentation at Middlemore Hospital in Auckland during the same visit.)
- 1.016 Based on his clinical background and considerable experience in the implementation of clinical information systems, Dr Mercer was considered an expert in the field. He had performed some consulting work for SMS in the USA and his name was used by SMS as a reference contact. CCH and EDS shared the costs of Dr Mercer’s visit to New Zealand.
- 1.017 Also in May 1996 EDS recommended to CCH that the “vision” for its IT systems could best be delivered by implementing an integrated health information network (IHIN) – consisting of all health care applications available on a network to all users. The recognised options were to:
- identify and implement “best of breed” systems from multiple suppliers for each of the business areas; or
 - define detailed specifications and develop systems from scratch; or
 - select an “off the shelf” package solution from one supplier (which was considered a lower-risk option).
- 1.018 In accordance with the ISSP, CCH elected to proceed with the third option.

- 1.019 In May and June 1996 representatives of SMS and Cerner demonstrated their respective systems and conducted workshops for clinical staff. Based on the demonstrations and workshops, clinical and information systems staff (including EDS) evaluated what functions each of the available modules would deliver. The result was that the SMS system was considered marginally better than the Cerner product. A significant factor in the users' assessment was that SMS was able to demonstrate established modules, whereas some of the Cerner modules had yet to be developed.
- 1.020 Around the same time CCH initiated "Project Quantum". The purpose of this project was to establish a change management programme and process re-engineering to underpin the five strategic initiatives set out in the Business Plan, of which IT systems was one. Consultants were engaged to undertake the project at a cost to CCH of approximately \$1.5 million. The ultimate result of the project was a conflict between re-engineering and new investment, and extreme difficulty in separating benefits that could be assigned to each approach. In both cases identified benefits exceeded \$20 million. CCH management decided that re-engineering would be continued only for Mental Health and Surgical Admissions.
- 1.021 However, on 17 June 1996 CCH determined that it would be necessary to invite tenders for the supply of new IT systems. A request for proposals was issued on 12 July 1996.
- 1.022 On 15 July 1996 (two weeks before tenders closed) EDS indicated that it wished to submit a joint proposal with SMS. CCH wrote to EDS on 16 July voicing its concerns about the integrity of the selection process. This resulted in EDS withdrawing from its engagement to advise CCH (but not from its engagement to manage CCH's IT systems – see paragraph 1.005).
- 1.023 Given the potential for a conflict of interest – should EDS be involved in submitting a proposal – and the shortage of in-house information systems resources, CCH engaged other consultants (Deloitte & Touche Consulting, Working Knowledge, and Business Continuity Services) to help with the evaluation of proposals.

- 1.024 The joint EDS/SMS proposal was presented in a manner that did not permit clear comparison with the proposal submitted by Cerner. SMS then advised CCH that it was prepared to submit a proposal without the involvement of EDS. Following advice to all four suppliers that responded to the request (see paragraph 1.055), the request for proposals was reissued on 18 September 1996 to all the previous respondents except McDonnell Douglas Information Systems Pty Ltd (MDIS) – which decided not to bid a second time.
- 1.025 The proposals received were evaluated in late-September 1996. With the exception of the SMS bid, proposals were the same as those submitted the first time. The evaluation team recommended to the ISSC that SMS be the preferred supplier.
- 1.026 The General Manager Finance and Information Services – on behalf of the ISSC – prepared a paper for the Board meeting on 24 October 1996 stating that SMS was the preferred supplier and proposing further negotiations with the company. The paper also recommended that approval to proceed with further IT investment be withheld, pending the completion of the preliminary phase of “Project Quantum” (see paragraph 1.020) and resolution of CCH’s fiscal problems. The Board did not discuss the paper – being preoccupied with its financial crisis – and the matter was held over until the next meeting.
- 1.027 In a memorandum of 7 November 1996 to Deborah Dickson-Freund of SMS, CCH’s Chief Information Officer said that SMS had been recommended to the Board as the preferred supplier with which to proceed to the next stage of planning and negotiation. On 21 November 1996, the Board’s Acting Executive Chairman (Mr Jack Jenkins) wrote to Ms Dickson-Freund undertaking *to initiate formal discussions to further define the business arrangements, and negotiate in good faith toward an agreement where the envisioned Integrated Health Information Network can be implemented.*



- 1.028 Dr Mercer arrived at CCH on 5 March 1997, from when he was involved in the final negotiations with SMS. The contract with SMS was signed on 13 March 1997 by Mr Jenkins and countersigned by Dr Mercer as Chief Executive Officer designate.¹
- 1.029 In August 1997 the Board approved capital investment in IT systems hardware and “Project Iris” (see paragraph 1.088) got under way the following month. Complementary applications to those making up the SMS system (such as ORSOS Theatre Management system and *Peoplesoft* Materials Management and Accounts Payable systems, where there was not a suitable SMS module available) were established as separate projects. Dr Mercer was sponsor of all the projects and also chaired the Project Control Group that had been set up to oversee their implementation (see paragraph 1.085).
- 1.030 The Patient Registration and Accounting modules were implemented during April and May 1998, replacing the former Admission, Discharge and Transfer systems for all except Mental Health patients. CCH has also set up a central registration process to handle referrals from General Practitioners using the new system.
- 1.031 The Hospital-Wide Scheduling module was implemented in May 1998 for all outpatient clinics that were previously scheduled using the old system. Other clinics have since been added. This is a multi-resource scheduling system that can be used to tailor appointments according to patient needs and ensure that all clinicians and equipment resources are available for an appointment.
- 1.032 The Electronic Medical Record module was implemented in September 1998 and, by the end of the year, seven years of historical laboratory and radiology results were added. This module of the SMS system holds the history of medical treatment for every patient and is also linked to the National Health Information System, maintained by the Ministry of Health. Patients are indexed using their National Health Index number.²

1 Dr Mercer was issued with a New Zealand work permit on 8 April 1997, and his employment contract was signed on 10 June 1997.

2 The index number is a unique identifier for every user of health care services.

- 1.033 The Radiology Management module was also implemented in September 1998. This module allows clinicians to order radiology services (such as x-rays) electronically and have the results transmitted back to them electronically. It also covers all other aspects of the radiology business, such as patient and film tracking and results reporting.
- 1.034 Again in September 1998, the Electronic Orders module was piloted in an inpatient ward and has been implemented elsewhere progressively since then. This module allows clinicians to order electronically a patient-related test, procedure, or therapy.
- 1.035 In February 1999 an attempt to implement the Laboratory module was unsuccessful due to software problems and process issues. Implementation is currently being re-evaluated. This module manages sample collection and results processing, and includes patient and specimen tracking using bar coding. The delay has meant that, as a contingency measure, the existing system has had to be upgraded to a Year 2000 compliant version.
- 1.036 The ORSOS Theatre Management system (which is not part of the SMS system) was implemented in December 1998. This system covers the scheduling of operations, equipment and surgical instrument tracking, inventory management, clinical documentation, and the management of surgical procedures in operating theatres.
- 1.037 The *Peoplesoft* Materials Management and Accounts Payable systems (also not part of the SMS system) were implemented in February 1999. These systems replace the Meditech Supply system and were required for Year 2000 compliance.



Managing the Purchase

What We Looked At

- 1.038 Guidance as to good practice for identifying, evaluating, and selecting IT systems is available from a number of sources. The Information Technology Association of New Zealand (ITANZ) and the State Services Commission have published guidelines specific to the selection, procurement and management of IT projects. The 1995 Audit Office guide *Good Practice for Purchasing by Government Departments*³ and the 1994 Ministry of Commerce guide *Government Purchasing in New Zealand: Policy Guide for Purchasers* provide benchmarks to measure purchasing practices against.
- 1.039 Our review of how CCH went about selecting and purchasing a new IT system to meet its needs consisted of:
- assessing the adequacy of CCH's policies and procedures for purchasing major capital items, including IT systems;
 - testing compliance with those policies and procedures; and
 - testing whether the procedures followed met accepted good practice guidelines.

Policies for Major Purchases

- 1.040 CCH had adequate policies and procedures for the purchase of major capital items. They addressed the development, review and approval of business cases and the procedures to be followed in obtaining capital expenditure approval. The policies and procedures were complied with.
- 1.041 The steps that CCH followed in the selection of the ANSO system (see paragraph 1.013) represented good practice in purchasing a major IT system. However, the steps did not reflect formally documented policies and procedures. The

3 September 1995, ISBN 0 477 02848 9.

same steps were followed in evaluating and selecting the SMS system – in that each step was completed – but not in the expected sequence (see paragraph 1.048).

Conclusion

- 1.042 Our conclusion is that CCH complied with its policies and procedures for the purchase of a major IT system that were in force at the time of selecting and purchasing the SMS system. While those policies and procedures were adequate they have since been reviewed and updated, resulting in:
- the addition of policies and procedures for comparing and analysing options to support prioritisation in the Business Plan;
 - a new policy on “Project Justification – Business Case Preparation”; and
 - establishment of a Project Support Unit – to ensure that business cases, project plans, communication strategies, and accountabilities meet minimum set standards.
- 1.043 Procedures for major IT system purchases have been reviewed and are now formally documented.

Needs Analysis and Business Case

- 1.044 CCH’s “vision” of what it wanted its IT systems to deliver (see paragraph 1.004) drove the development of both the ISSP and the Business Plan. There was a clear understanding that – as existing business processes, procedures and information systems needed major redesign to achieve the vision – there was little point in spending valuable time and resources documenting existing systems for specification purposes.
- 1.045 Development of the ISSP was based on analysis of CCH’s needs from clinical, business, and technical perspectives. The ISSP:
- assessed the capability of existing systems to deliver the “vision”;

- detailed the deficiencies in existing systems, which were described as lacking interfaces to other systems and suffering from poor supplier support; and
 - adequately defined the high-level specifications for a new integrated IT system, which were used in the evaluation of potential solutions.
- 1.046 The existing systems were primarily administrative rather than clinical, in that few maintained clinical data that directly helped with providing care to the patient. There was also little feed-back on actual resources used for treatment – which meant that it was difficult to link activities to costs, analyse budget variances, or develop realistic budgets.
- 1.047 Application of the ISSP during 1995 focused on improving the support provided by existing systems, maintaining a balance between meeting the immediate demands of the business and achieving longer-term goals from implementing new systems. Work began on developing high-level and detailed business cases to support the investment required in new IT systems. By December 1995, 45 information system projects were in progress and a further 41 were waiting funding and approval.
- 1.048 A good quality business case was prepared for the IT system for which the Community and Support Services department issued a request for proposals (see paragraph 1.013). However, during 1996 CCH incurred significant costs (\$2.6 million) on developing detailed business cases for the systems that were to comprise the IHIN (see paragraph 1.017), which were not completed until after the SMS and Cerner systems had been demonstrated and the request for proposals issued to identify a preferred supplier. In addition, no detailed system specifications were prepared – reliance was placed on the high-level specifications in the ISSP.
- 1.049 Considerable effort and resources were also spent on “Project Quantum” during 1996.
- 1.050 By selecting an “off-the-shelf” packaged solution as the core of its integrated IT system CCH minimised the potential risks to the organisation.

Conclusions

- 1.051 In our view, the ISSP represented an adequate needs analysis for the new IT system that CCH wanted. Nevertheless, it was not good purchasing practice to select the successful supplier and system before completing proper business cases and detailed system specifications – which should have been used in evaluating the proposals.
- 1.052 We are also of the view that CCH, having selected the lower-risk option of an “off-the-shelf” solution in the form of the SMS system, need not have completed the detailed business cases to support the purchase of the SMS system after it and the Cerner system had been demonstrated and the request for proposals issued to identify a preferred supplier.

Conducting the Tender

- 1.053 The EDS Health Industry Executive had translated CCH’s broad requirements for a clinical services system into the IHIN. In accordance with CCH’s requirement that an “off-the-shelf” packaged solution was preferable to developing a system from scratch, EDS approached a number of health information system providers in the USA to identify any that would be interested in providing systems solutions in the New Zealand market. There may have been some advantage to CCH if, considering EDS’s global health industry associations, EDS had cast the net more widely to identify potential solutions.
- 1.054 Given the time already spent on developing business cases and the known results of the SMS and Cerner evaluations, the ISSC recommended to the Board, and the Board agreed, that a fast-track process for evaluating any tender proposals be adopted. The aim was earlier implementation and achievement of benefits by:
- limiting the choice of suppliers and systems; and
 - performing less detailed evaluations of systems.
- 1.055 In July 1996, CCH issued a request for proposals to SMS and Cerner for the supply of the modules to make up the

- IHIN, concentrating on pricing and support issues. Two other organisations – MDIS and Trak Systems Pty Ltd – also asked for, and were given, the opportunity to submit a proposal.
- 1.056 Proposals were received from all four of those suppliers except that SMS submitted its proposal jointly with EDS. Because EDS had assisted CCH to find potential suppliers, EDS would have had a clear conflict of interest in also assisting CCH to evaluate the proposals. CCH therefore engaged other consultants to assist it in that task (see paragraph 1.023).
- 1.057 SMS then indicated that it wished to submit a bid on its own. CCH took appropriate legal advice and, consistent with accepted good practice, reissued the request for proposals in September 1996. The request was not reissued to MDIS because it had said it would not bid a second time.
- 1.058 Because of EDS's withdrawal from the joint proposal with SMS and the need for the successful supplier to work with EDS as IT systems manager, CCH engaged EDS to provide limited assistance in the evaluation process for proposals received from the second request. EDS collected the evaluation results, which were then collated by CCH staff. The evaluation results were confirmed with users.

Conclusions

- 1.059 In our view, CCH conducted the tender in accordance with proper procedure.
- 1.060 However, we are also of the view that CCH – having already employed EDS as its IT *systems manager* (with the consequent reduction in in-house expertise) – by also engaging EDS as its IT *adviser* put itself in the position of being overly dependent on EDS.
- 1.061 That dependency created the risks that CCH might not receive from EDS the impartial advice it had a right to expect, and could be perceived to be open to influence from EDS in reaching its decisions on IT systems. Nevertheless, we have seen no evidence to suggest that either of those risks was realised. Furthermore, the contract between CCH and EDS contained conditions designed to protect CCH from conflict of interest on the part of EDS.

Selecting the Preferred Supplier

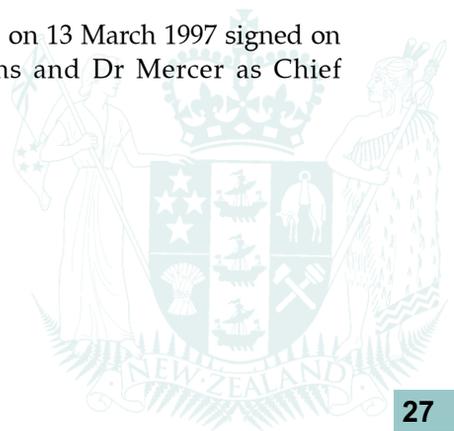
- 1.062 Given CCH's "vision" for a new IT system and its preference for a low-risk solution, the decision to evaluate potential solutions based on demonstrations and workshops of a tried and true system was reasonable. However, the choice of supplier and system was made from the limited selection of two interested potential suppliers out of the nine that EDS said it had approached.
- 1.063 Of the nine organisations that EDS told CCH it had approached, only two – SMS and Cerner – expressed interest. Both were asked to demonstrate their systems and conduct workshops for clinical staff, which they did before CCH issued the request for proposals. MDIS and Trak Systems demonstrated their systems after putting in proposals in response to the request.
- 1.064 Based on the demonstrations and workshops, clinical and information systems staff (in conjunction with EDS) evaluated the functions that each available module would deliver. Detailed criteria against which the functions could be evaluated were not available (because of the decision to not document existing processes), but the evaluation process was thorough in establishing whether the functions provided would satisfy requirements for a clinically based information system.
- 1.065 A significant factor in the users' assessment was that SMS was able to demonstrate established modules, whereas some of the Cerner modules had yet to be developed. As neither supplier had an adequate theatre management module, the ORSOS system – recommended by SMS as a suitable solution that could be integrated with its system – was selected.
- 1.066 Evaluation of the systems demonstrated by SMS and Cerner, and evaluation of the proposals received from the second request, resulted in the ISSC submitting a paper to the Board stating that SMS should be the preferred supplier and proposing further negotiations with the company.

Conclusions

- 1.067 CCH chose its preferred supplier from the limited range of two suppliers found by EDS – CCH having discounted two other potential suppliers that responded to the first request for proposals, only one of which responded to the second request and was not considered suitable. In effect, CCH chose the selective tender method of establishing potential suppliers.
- 1.068 Subject to that choice, in our view CCH followed accepted good practice in selecting SMS as its preferred supplier.

Letting the Contract

- 1.069 On 21 November 1996 (three days after his appointment as Acting Executive Chairman) Mr Jenkins wrote to Deborah Dickson-Freund of SMS. He undertook *to initiate formal discussions to further define the business arrangements, and negotiate in good faith toward an agreement where the envisioned Integrated Health Information Network can be implemented.*
- 1.070 From that time on Mr Jenkins continued to take sole responsibility for negotiating the contract with SMS – although he was assisted later by Dr Mercer in securing terms and conditions that achieved a better sharing of risks between CCH and SMS.
- 1.071 The Deputy Chairman – Dr Richard Bush – told us that the Board was kept informed of progress in the contract negotiations, but it was not party to the details of the contract.
- 1.072 The contract was finalised and on 13 March 1997 signed on behalf of CCH by Mr Jenkins and Dr Mercer as Chief Executive Officer designate.



Reporting to the Board

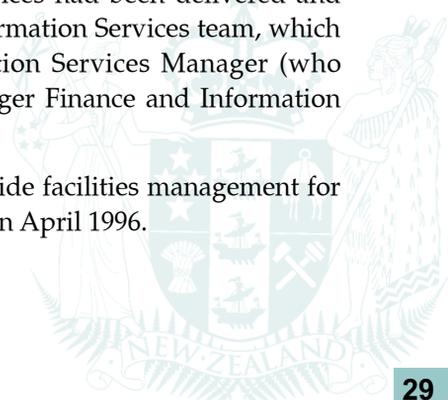
- 1.073 Shortly after his appointment in November 1996, Mr Jenkins suggested that the Board (which normally met monthly) should meet weekly. His intention was to keep the Board informed of the work of the change team that he headed (see paragraph 1.127). However, weekly meetings did not occur because members came from diverse locations.
- 1.074 There is a lack of documentation on what information was being provided to the Board at this time. We have been told that there were “in camera” information sessions before Board meetings without company members or members of the change team present, but no record was made of these sessions. Members of the change team also reported to the Board at its meetings.



Managing the Project

Administration of Information Systems

- 1.075 The Board established an Information Systems Steering Committee (ISSC) in July 1995 to provide high-level oversight and keep the Board informed of information system issues (see paragraph 1.003).
- 1.076 The remit of the ISSC was to oversee development of the ISSP and any projects that followed. The ISSC had terms of reference, met monthly, and a formal record was kept of its meetings.
- 1.077 The ISSC reported to the Board on issues that required its attention and submitted proposals to the Board for approval. Key issues and proposals submitted during the acquisition process included:
- tendering for IT systems advice and facilities management services;
 - evaluation of the SMS and Cerner systems;
 - tendering for implementation of the IHIN;
 - fast-track evaluation of proposals from the second request; and
 - recommendation of SMS as the preferred supplier.
- 1.078 In January 1996 CCH employed a Chief Information Officer. Until this time IT system services had been delivered and supported by an in-house Information Services team, which was overseen by an Information Services Manager (who reported to the General Manager Finance and Information Services).
- 1.079 The contract with EDS to provide facilities management for CCH's IT systems was signed in April 1996.

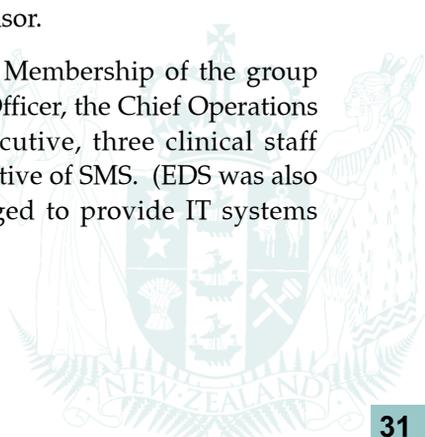


- 1.080 The Information Services team (the team) has undergone significant change during the course of implementing the IHIN. The facilities management contract with EDS began to be phased out from February 1999, with final withdrawal of services in June 1999. The services have been brought back in-house. It has taken time to put appropriate staffing structures in place, employ resources with the required skills, and build up expertise in the systems being supported.
- 1.081 The team has been successful in greatly improving the reliability and availability of CCH's information systems. For example, the old patient information systems were unavailable for 4 hours a night; the new SMS system modules have one scheduled close-down for maintenance and "housekeeping" of 3 to 4 hours a month. The team provides a 24-hour/7 days a week helpdesk service and supports 1,600 personal computers (compared to 400 in 1994).
- 1.082 The team is now confident that it is in a position to develop and implement the changes required to address user-identified problems. Many of those problems relate to getting information out of the system (reports and customised screens of data) and using that information to improve organisational management and service to patients. Users expressed to us their satisfaction with the service they now receive from the helpdesk staff.

Implementation

- 1.083 We interviewed a total of 26 CCH staff – 11 of whom were clinicians (including the Chief Executive Officer) and three were nurses. Other staff in the 26 were the Chief Information Officer, information systems staff, and clerical staff. We sought to establish their views on:
- how the implementation was being managed – concentrating on whether processes and procedures for the effective management of change were in place;
 - what problems they had identified with the new IT systems; and
 - whether the new IT systems are of benefit to them in their jobs and to CCH in the management of its business.

- 1.084 CCH faced some significant challenges in implementing its “vision”. The systems being implemented were not just automating the existing manual processes or replacing existing IT systems. An integrated system based on electronic medical records, documented care plans, electronic orders, and hospital-wide scheduling would significantly change the way staff did their jobs and CCH managed its business. In particular, the use of technology would become an integral part of the way staff did their work, often in areas where computers had not been used before. This change involved not only the implementation of a new IT system (which is significant in itself) but also the process and culture changes necessary for CCH to achieve its “vision”.
- 1.085 A Projects Control Group (PCG) was set up in July 1997 to provide immediate oversight of the six projects required for implementing the SMS system modules. The PCG:
- functioned as a steering committee;
 - was chaired by Dr Mercer as Chief Executive Officer, who was sponsor of the projects; and
 - met fortnightly during the initial stages.
- 1.086 It was believed that Dr Mercer’s substantial experience as a clinician and of IT systems would be of significant benefit during implementation of the SMS system. This was one of the reasons contributing to his appointment as Chief Executive Officer. Dr Mercer was a driving force behind the project and since his departure in June 1999 no replacement as clinical sponsor has been appointed. Some senior clinicians told us that they feel the overall success of the implementation is now suffering from the lack of a suitably enthusiastic and committed sponsor.
- 1.087 The PCG now meets monthly. Membership of the group includes the Chief Information Officer, the Chief Operations Officer, the Chief Nursing Executive, three clinical staff representatives, and a representative of SMS. (EDS was also represented while it was engaged to provide IT systems management.)



1.088 “Project Iris” was begun in September 1997 as an umbrella for the projects to implement the six modules comprising the SMS system:

- Electronic Orders;
- Clinical Repository (electronic medical records);
- Patient Registration;
- Patient Accounting;
- Radiology; and
- Scheduling.

1.089 Separate projects were begun in 1998 for implementing the ORSOS Theatre Management system and the *Peoplesoft* Materials Management and Accounts Payable systems.

1.090 Each project was set up with a Project Manager and appropriate representation from the areas of the business that would be affected. These representatives included:

- user liaison (a representative from the appropriate hospital department);
- an application analyst (for in-house business expertise); and
- an SMS consultant.

1.091 The level of planning for each project was adequate, including sufficient detail of the tasks necessary and the resources required to perform those tasks. A budget and milestones were set for each project and progress measured and reported against both.

1.092 A strong feature of all projects to implement the SMS modules was the effort and resources put into training and user support during the initial stages of implementation. Users were given the opportunity to attend a number of available training sessions and fit their attendance into their work schedules. This approach was designed to ensure that as many users as possible could attend. User training and support during implementation was rated highly by many of those we interviewed.

1.093 Implementation consists of three stages – implement, optimise, and redesign. The PCG made a conscious decision to

implement systems as soon as possible, rather than allow time for each system to settle down before implementing the next module. While this approach is understandable considering the integrated nature of the system being implemented, it has adversely affected the ability of information systems staff to address issues and problems to users' satisfaction.

- 1.094 The PCG set up a Project Issues Resolution Committee (PIRC), which meets regularly and prioritises the action to be taken to address issues and problems. Two representatives from each clinical/operational area make up the PIRC. While it functions well as a forum for users to report problems and issues, the skilled resources to address them are in short supply.

Conclusion and Recommendations

- 1.095 The PCG and PIRC need to take stock of where they are with the implementation of core systems and establish a planned approach to improving clinical ownership.
- 1.096 We recommend that the approach include the following:
- *Creating an Issues Register*, which should identify those problems that require the most urgent attention. The Issues Register should be used for the ongoing identification and tracking of issues and problems through to resolution. The prioritisation of issues should be determined and agreed in consultation with users on the PIRC. Significant gains in user acceptance and satisfaction with the systems could be achieved by developing the reports for Emergency and Outpatient departments that would improve the systems' usefulness in day-to-day management.
 - *Identifying and assigning resources to developing and implementing Healthcare Guidelines* (the "Clinical Pathways" observed in the Sioux Falls Hospital in 1994). Communications and consultation, particularly with clinicians, are critical elements in achieving the benefits from implementing Healthcare Guidelines. The SMS system provides the infrastructure and systems that facilitate the concept, which has the potential to deliver significant efficiency gains.

- 1.097 In a draft of this report we included a recommendation that CCH pursue its intention to appoint a Theatre Manager and make full use of the ORSOS system – which has the potential to achieve significant efficiencies and cost savings in the use of expensive resources. Considerable work is still to be done to convince senior clinicians (surgeons and theatre support staff) of the benefits, and to ensure their buy-in to a system that does not directly help them do their jobs of performing surgery. We are pleased to record that a Theatre Manager was appointed in July 1999.
- 1.098 We also recommend that a suitably qualified and committed project sponsor to replace Dr Mercer be identified and appointed.

Meeting Objectives and Specifications

- 1.099 Our observations are that the PCG and PIRC have been active in ensuring that major problems that occurred immediately post-implementation have been quickly addressed – however, they have not put adequate procedures in place to track all issues through to resolution. The project teams have documented records of problems, what needs to be done, and the progress to achieve resolution (liaison with SMS, internal support resource) but this information is not readily available to the user(s) who identified an issue.
- 1.100 An external consultant performed an independent quality assurance review of “Project Iris” in November 1997. While the consultant was reasonably confident that phase one implementations (as scoped) would be delivered on time, the consultant also expressed concern about the lack of planning and management covering the whole scope of “Project Iris”. Subsequently, phase one implementations were delivered on time.
- 1.101 The consultant’s major concern was that there had been no planning for the system optimisation and process redesign stages that are expected to deliver the monetary savings from “Project Iris”.
- 1.102 Implementation of the SMS modules has introduced new computerised processes and procedures. Staff have been trained to use the modules, but little work has been done to

- determine how work processes and procedures can be redesigned to maximise the benefits from the investment in IT systems. The SMS contract provides for 12 person-months of resource for this optimisation and process redesign work. Some of that work has started and skills are being developed in-house to do more.
- 1.103 The most significant redesign effort to date has been in the implementation of Centralised Registration. Previously, to register a patient for treatment the General Practitioner wrote to the department that would treat them. Letters sometimes went missing and Practitioners had some difficulty obtaining information about their patients.
- 1.104 Now, all registration letters are sent to a central point where trained staff enter the relevant information and check patient details against the Patient Registration system and the National Health Index.⁴ This process is more efficient and has improved the quality of information in the system – benefiting both clinicians and management.
- 1.105 Matching the SMS Pharmacy module to user requirements was expected to be difficult and that proved to be the case. CCH has chosen not to implement this module due to the differences in procedures between New Zealand and USA hospital pharmacies. SMS has agreed a credit of costs for that module to be applied to an alternative solution.
- 1.106 Implementation of the Laboratory module – expected to be relatively straightforward – has also proven more difficult, partly due to software problems (see paragraph 1.035). While evaluation results show a high level of user satisfaction, implementation problems have also been caused by the differences between the way the system works and the business processes. Implementation of this module is currently being re-evaluated. (It was originally scheduled for November 1998, was rescheduled for September 1999, is now rescheduled for 2000, and has cost more than \$600,000 to date.)
- 1.107 Because of the delay, the existing Laboratory system has had to be upgraded to a year 2000 compliant version as a contingency measure. We understand that Laboratory staff may choose to retain the existing system.

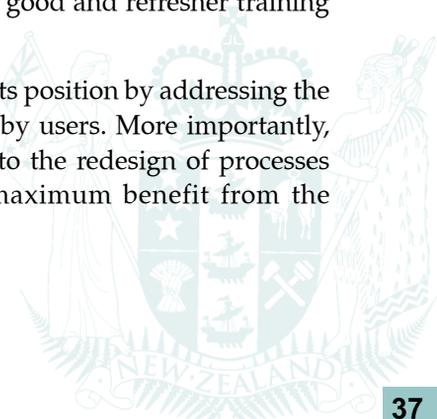
4 The National Health Index is maintained by the Ministry of Health and consists of a unique identifier for every user of health care services.

- 1.108 The failure to successfully implement the Laboratory module indicates shortcomings in the evaluation of its ability to meet users' needs. However, the evaluation results clearly indicate not only a preference for the SMS module but also enthusiasm for its ability to meet users' needs. The difficulties with implementation suggest that Laboratory processes and procedures should have been more thoroughly documented and used as a basis for the evaluation criteria.
- 1.109 Our interviews with users brought mixed responses. The Chief Executive Officer considered that he and senior managers now had good information available to manage the hospital's resources and assist them in securing appropriate funding. Clerical staff and business managers are also positive about the new technology and the improvements to the quality of management information in the system.
- 1.110 Departments that use the system a lot, such as Central Registration, have gained greater familiarity with the system and confidence in using it and rate it highly. The electronic medical record is generally considered an excellent concept and those who are making good use of it are very positive about the benefits of having historical patient information and test results readily available. As one senior clinician put it – the challenge is getting clinical buy-in and commitment and getting good information into the record.
- 1.111 Some users are still relying on paper records, with the result that the electronic record is not always up to date. Clinical staff in departments such as the Fracture Clinic, Outpatients, and Emergency are frustrated by the detailed data entry requirements for registration and generating electronic orders, but they acknowledge the positive aspects of improved management information.
- 1.112 Common complaints included:
- identified problems not being fixed in a timely manner;
 - information not being presented on computer screens in a user-friendly format;
 - some processes being unnecessarily complex;

- frustration with having to log in to modules separately, indicating that the system is not as “integrated” as claimed; and
 - customised reports not being developed yet.
- 1.113 The specific problems identified to us during the review have been discussed with the project team.
- 1.114 A number of staff told us that the version of the system that is being implemented is not the same as that demonstrated by SMS. During its negotiations with SMS, CCH’s objective was to purchase a “tried and true” version of the SMS system rather than a newer version that had not been fully implemented in another hospital. In addition, CCH chose not to use a “Windows” type of access software for all workstations, and a clinical application that was demonstrated was not part of the SMS system.

Conclusions

- 1.115 We consider that there have been significant achievements in delivery against the objectives established in 1994. The ISSP identified four major needs to be met by the implementation of a selected system. Figure 1.1 on pages 38-39 provides a summary of the extent to which we consider that the implementation of the SMS system has met, or has the potential to meet, those needs.
- 1.116 Implementation of the SMS, ORSOS and *Peoplesoft* systems has been reasonably successful. The systems have been delivered within budget and with only relatively minor slippage against timelines. Training and support provided as part of the implementation was good and refresher training is ongoing.
- 1.117 CCH now needs to consolidate its position by addressing the problems and issues identified by users. More importantly, resources need to be allocated to the redesign of processes and procedures to gain the maximum benefit from the investment in technology.



*Figure 1.1
Comparing the SMS System with CCH's Needs*

<p>1. Collecting and providing data at the point of care and only collecting data once</p>	<p>Patient Registration ensures that data is collected (once) for all patients [a significant improvement].</p> <p>Scheduling, Radiology Management and Electronic Orders ensure that relevant data is collected once, is readily available to clinicians and risks of loss of data are minimised.</p> <p>The implementation of Care Plans (Healthcare Guidelines) will be a significant step towards meeting this need in full. The system has the capacity to provide this facility, but the resources required to develop and agree the guidelines are the current limitation.</p>
<p>2. Lifetime history of care</p>	<p>The Patient Registration system (with 7 years of historical laboratory and radiology data added) and links to the National Health Index provide clinicians with up to date patient information from “one system”.</p>
<p>3. Information Analysis – management information</p>	<p>Scheduling, Radiology Management and Electronic Orders provide business managers with complete information on the services being provided by CCH. Patient Accounting ensures that costs are accurately recorded for all cases.</p> <p>The information now being collected by CCH systems has the potential for clinical staff to analyse the effectiveness of treatment, patterns of services and demand for services.</p> <p>Although the ORSOS system is not part of SMS, it has the potential to provide Theatre Managers with good management information and does provide them with the tools to effectively manage theatre resources.</p>



**4. Corporate
Infrastructure**

A critical success factor for the strategy was clinical ownership and involvement.

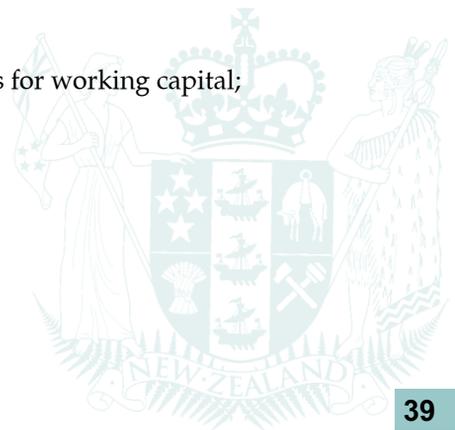
Clinical staff have been involved in all aspects of the project, from the development of the ISSP, through to the evaluation, selection and implementation of systems solutions.

Clinical ownership, buy-in and commitment, in their fullest sense, have not been achieved. The system has introduced a level of management control and accountability that was not in place with previous systems. It is fair to say that the primary purpose of some modules is to collect management information as opposed to providing direct assistance to the user in the performance of their job. The system does have the potential and we believe that, as problems are fixed and systems specific to the delivery of health care (such as Care Plans) are introduced, clinical ownership should improve.

Monitoring Progress

1.118 The projected costs of implementing the IHIN were established at \$25.79 million. In addition to the actual cost of the SMS software (\$5.1 million), the projected costs comprised all key components including:

- the costs of other third party software;
- hardware and network components;
- capitalisation of salaries;
- capitalisation of interest costs for working capital;
- contract staff; and
- implementation costs.



- 1.119 Progress against that budget has been measured throughout the project. As at 30 June 1999, CCH had incurred costs of \$17.6 million and this is within the budget to date. CCH expects to complete the implementation of the SMS system (which does not include the ORSOS or *Peoplesoft* systems) within the projected costs.
- 1.120 The ongoing costs (estimated to be \$2.78 million a year) – including SMS licensing and support agreements, in-house support services and equipment leasing – are incorporated in operational budgets.
- 1.121 There has been some slippage in meeting the implementation programme deadlines set in July 1997. This has meant that existing systems have had to continue to operate. Patient Registration went live on time but the other core modules (Radiology, Orders and Clinical Record) were delivered between one and three months later than scheduled. Costs are currently within budget and we do not consider the slippage to be a major issue for a project of this size and scope.

Post-implementation Review

- 1.122 To date CCH has carried out only limited formal post-implementation reviews. Resources have been focused on implementation and support issues. We consider reasonable CCH's assertion that an effective post-implementation review of such an integrated system is not possible until all modules are live and any necessary process changes made.
- 1.123 The one area where process redesign has been completed (Centralised Registration) has been reviewed, with positive results. A post-implementation review of the Radiology Management system was also conducted in February 1999. In general terms, results were positive. However, the inability of the system to produce adequate statistical reports, and continued failure of the auto-fax facility to send results to General Practitioners, had been issues for some time and were beginning to cause a negative impression of the system. The auto-fax facility is still outstanding.

- 1.124 The Radiology system has also recently been affected by a problem of compatibility of field sizes in two interfacing systems. This resulted in the system being out of action for three days until an interim solution was put in place. A permanent solution is currently under discussion with SMS.



Other Management Considerations

Conflict of Interest

- 1.125 Mr Jack Jenkins met Dr Leo Mercer in August 1996 while on a Health Waikato Limited delegation to the USA to investigate health information systems. At that time Mr Jenkins was not associated with CCH.
- 1.126 The Ministers of Health and Finance appointed Mr Jenkins Acting Executive Chairman of CCH on 18 November 1996. The previous Chairman, Mr Rob Thompson, resigned from the position on the same date. (However, Mr Jenkins did not receive a formal letter of appointment from the two Ministers until four weeks later.)
- 1.127 The then Chief Executive of the Crown Company Monitoring Advisory Unit (CCMAU), Mr Andrew Weeks, asked Mr Jenkins to work on site for three to five days each week. Mr Weeks also assisted Mr Jenkins to bring together a change team of four – two consultants then working for CCMAU and two other consultants – which set about managing the affairs of CCH following a financial crisis. Their initial task was to understand and control costs, and then to restructure the organisation with a model of clinical leadership. Issues which were immediately addressed were those of contracting with the (then) Regional Health Authority, capital works, and advancing the IT systems proposal.
- 1.128 A member of the change team told us that the situation was analogous to a receivership, with the financial crisis meaning that the Ministers and CCMAU had sought to take urgent action to stem the escalating losses. Mr Weeks was frequently consulted about actions taken at this time.
- 1.129 The resignation of Mr Harrison as Chief Executive Officer of CCH required the change team to seek a new chief executive. It became apparent to the change team that it would be most useful to have a chief executive with skills in the health information technology area.

- 1.130 The first approach to Dr Mercer about the possibility of applying for the chief executive position came from Ms Dickson-Freund of SMS late in November 1996. It is not clear how or by whom Ms Dickson-Freund was prompted to make this approach.
- 1.131 However, Dr Mercer agreed to Ms Dickson-Freund sending his curriculum vitae to CCH, which she did on 25 November 1996. (Dr Mercer had previously visited New Zealand in May 1996 as mentioned in paragraph 1.015.)
- 1.132 In December 1996 Mr Doug Martin (a member of the change team), at Mr Jenkins' suggestion, visited Dr Mercer in the USA and discussed the chief executive position with him. At this point Dr Mercer reported that he recognised potential for a conflict of interest, and determined to undertake no additional consultancy work for SMS. He carried out his last consultancy in late-December 1996/early-January 1997.
- 1.133 At the end of January 1997 Mr Jenkins asked Dr Mercer to advise CCH on the SMS contract from the USA. As a result, Dr Mercer provided CCH with technical advice on the feasibility of the contract as currently specified, and on how to get SMS to share more risk in the terms and conditions. Dr Mercer and Mr Jenkins both say that this achieved benefits for CCH in the contract negotiations.
- 1.134 The vacancy for Chief Executive Officer was advertised on 10 January 1997. Dr Mercer visited New Zealand, was interviewed by a number of Board members (including Mr Jenkins and Dr Bush, the Deputy Chairman), and agreed to accept the position in the week commencing 5 February 1997.
- 1.135 A contract of employment was negotiated. It recognised the potential for a conflict of interest by setting out the circumstances in which Dr Mercer could undertake consultancy work in New Zealand. The contract:
- permitted him to continue his consultancy work in the USA – which was to enable him to continue some work already in progress at Thomason Hospital; but
 - provided that any consultancy work in New Zealand was to be done only with the agreement of CCH, which was to receive all payment for that work.

- 1.136 Dr Mercer's remuneration from CCH consisted of two components – the amount relating to his duties as Chief Executive Officer and a fixed sum for consultancy work in New Zealand. The latter component had the effect of removing the potential for Dr Mercer to increase his income by carrying out consultancy work in New Zealand.
- 1.137 Dr Mercer was not involved in CCH's evaluation and selection of the SMS system. The ISSC had made its recommendation to the Board regarding SMS, SMS had been advised that it was the preferred bidder, and negotiations were proceeding with SMS, before Dr Mercer agreed to his curriculum vitae being forwarded to CCH. His only involvement with the purchase of the SMS system was in assisting Mr Jenkins to negotiate the contract to ensure that the conditions obtained were advantageous to CCH.

Conclusion

- 1.138 People not aware of all the facts as we have described them may have formed the perception that there was a conflict of interest. However, nothing has come to our attention to lead us to the view that any conflict of interest in fact existed – in the case of either Mr Jenkins or Dr Mercer – in selecting and contracting with SMS as the preferred supplier of CCH's new IT system.

Acting Within Delegated Authority

- 1.139 Mr Jenkins personally took charge of the negotiations with SMS from the time he wrote to SMS on 21 November 1996 (see paragraph 1.069). His position as Acting Executive Chairman can be presumed to import sufficient authority for him to do so since it did not entail any final expenditure commitment on the part of CCH.
- 1.140 In a report dated 6 March 1997 Mr Jenkins informed the Ministers of Finance and Health, CCMAU, and the Treasury of his intention to enter into an agreement with SMS.

- 1.141 Mr Jenkins (together with Dr Mercer as Chief Executive Officer designate) signed the finalised contract on 13 March 1997. The Deputy Chairman, Dr Bush, told us that the Board knew the contract was to be signed and had no concern about Mr Jenkins' authority to do so. Nevertheless, there is no record that Mr Jenkins (whether alone or in company with one or more others) had express authority from the Board – by way of a formal delegation – to sign the contract with SMS.
- 1.142 The circumstances of Mr Jenkins' appointment and the nature of the task he was appointed to carry out were a matter of common understanding. It seems clear that the circumstances were abnormal and that Mr Jenkins was expected to “get on with the job in hand”. Nonetheless, we observe that his letter of appointment from the shareholding Ministers included the plain statement that *Primary accountability remains to shareholding Ministers through the board of Directors* [our emphasis added].
- 1.143 The Board finally approved capital investment in IT systems (including SMS) in August 1997 – five months after the contract with SMS was signed.

Conclusion

- 1.144 We think that a purchase involving such a major amount of capital expenditure should have had the express and unequivocal approval of the Board.

