# Managing the Year 2000 Problem

## Risk Assessment and Management in Commonwealth Agencies

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Canberra ACT
xx December 1997

Dear Madam President
Dear Mr Speaker

In accordance with the authority contained in the *Audit Act 1901*, the Australian National Audit Office has undertaken a performance audit of Commonwealth Agencies, and I present this report and the accompanying brochure to the Parliament. The report is titled *Managing the Year 2000 Problem – Risk Assessment and Management in Commonwealth Agencies.*

Yours sincerely

P. J. Barrett
Auditor-General

The Honourable the President of the Senate
The Honourable the Speaker of the House of Representatives
Parliament House
Canberra ACT

The Auditor-General is head of the Australian National Audit Office. The ANAO assists the Auditor-General

to carry out his duties under the Audit Act to undertake performance audits and financial statement audits of Commonwealth public sector bodies and to provide independent reports and advice for the Parliament, the Government and the community. The aim is to improve Commonwealth public sector administration and accountability.

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## Audit Team

# Contents

Abbreviations

**Part One**

Summary i

Audit Approachi

Conclusions ii

Key Findings v

Recommendations viii

**Part Two**

1. Introduction

Background

Audit rationale

Audit approach

2. Whole-of-Government Coordination

Background

Office of Government Information Technology

3. Agencies' Preparedness

Background

Levels of preparedness

Overall preparedness

Input issues

Output issues

4. Agencies' Year 2000 Management

Background

Awareness

Assessment

Management

Monitoring

Better administrative practices

**Appendix A** Commonwealth agencies responding to ANAO Year 2000 questionnaire

**Appendix B** Risk Management of the Year 2000 Problem

**Appendix C** Year 2000 Management Framework

# Abbreviations

| | |
|---|---|
| AMSA | Australian Maritime Safety Authority |
| ANAO | Australian National Audit Office |
| ASA | Airservices Australia |
| ASC | Australian Sports Commission |
| ATO | Australian Taxation Office |
| CEO | Chief Executive Officer |
| CGIO | Chief Government Information Officer |
| DEETYA | Department of Employment, Education, Training and Youth Affairs |
| DHFS | Department of Health and Family Services |
| DIST | Department of Industry, Science and Tourism |
| DoD | Department of Defence |
| DoFA | Department of Finance and Administration |
| DPIE | Department of Primary Industries and Energy |
| DVA | Department of Veterans' Affairs |
| FMIS | Financial Management Information System |
| GAO | General Accounting Office (United States of America) |
| GISPB | Government Information Service Policy Board |
| HIC | Health Insurance Commission |
| HRMS | Human Resources Management Information System |
| IT | Information Technology |
| IT&T | Information Technology and Telecommunications |
| LAN | Local Area Network |
| NAO | National Audit Office (United Kingdom) |
| OGIT | Office of Government Information Technology |
| RBA | Reserve Bank of Australia |

# Summary and Recommendations

# Summary

**1.** Over the next two years, a number of private and public sector organisations may experience business disruptions resulting from an inability of computerised business systems, or other equipment and machinery using micro-processors, to represent the year 2000 as a two digit year date. This source of potential systems malfunction has been variously referred to as the 'Year 2000 problem' or the 'millennium bug'. The core business functions of government entities are heavily reliant on computerised information systems and electronic equipment and, as a result the Year 2000 problem presents significant potential risks to the Commonwealth. Computer systems critical to the operations of government are complex and are often highly integrated, both within and between Commonwealth agencies and other legal entities, and externally with other levels of government, the financial sector, industry and with a range of clients.

**2.** Among the risks to key government functions associated with the Year 2000 problem are:

- government revenue not being received or being processed incorrectly;
- program moneys not being paid or paid correctly (including payments to beneficiaries);
- disruption of business critical processes, including program delivery, with consequent costs arising from, for example, lost productivity, reduced efficiency and loss of stakeholder confidence;
- legal risks arising from liability for adverse effects upon other parties such as contractors or clients/customers;
- the risk that government entities may be unable to fulfil statutory obligations; or
- risks to personal security or safety.

**3.** The Year 2000 problem is basically a management/business problem that needs to be addressed in a corporate manner and communicated to all staff as a shared concern.

**4.** Year 2000 related systems malfunctions have already occurred in the public and private sectors in Australia and overseas. Many business processes depend on date-sensitive calculations or date-related

'triggers' which already require a capacity to enter dates from 2000 and beyond. Computerised information systems which have not been modified will react in a variety of ways to the Year 2000 problem. Some may not be able to cope and will simply fail to operate. Others may continue to run, but will produce meaningless or erroneous data.

## Audit approach

**4.** The audit surveyed a wide range of Commonwealth agencies' Year 2000 preparedness, their management of the problem and their application of core corporate governance principles, including risk management disciplines. The scope of the audit reflected the wide ranging ramifications of the Year 2000 problem for agencies' overall functions (whole-of-business) internally as well as in terms of external interactions. The audit objectives were to:

- assess the adequacy of agencies' planning in relation to achieving Year 2000 compliance;
- review and assess agencies' implementation, management and monitoring of Year 2000 compliance strategies;
- review agencies' strategic risk assessments in relation to the Year 2000 changeover; and
- raise surveyed agencies' and other Commonwealth agencies' awareness of the various aspects of theYear 2000 problem.

**5.** The ANAO undertook a survey of agencies in June 1997, to ascertain the appropriateness and adequacy of their approach to the identification and management of Year 2000 related risks. The analysis contained in this report is largely based upon 74 completed questionnaires. The questionnaire was designed to provide both an indicative assessment of Commonwealth agencies' state of preparedness and to identify issues that need to be addressed. Two forms of questionnaire were used: approximately two thirds of agencies were sent a 'short form' questionnaire while the remaining third were sent a more detailed 'long form' questionnaire. Agencies receiving the long form of the questionnaire were those responsible for delivering key government functions. The questionnaire was complemented by fieldwork in six agencies.

## Conclusions

**6.** Overall, the ANAO found that the majority of agencies surveyed are not following a systematic and structured approach to the identification, ranking and treatment of Year 2000 risks and, as a result, it is probable that many agencies have not yet identified the full extent of their Year 2000 exposure. The majority of agencies reported that they have not integrated their management of Year 2000 risks within a broader corporate risk management framework, although it is obvious that this is predominantly a management problem. There are, however, several indications of good practice that reflect what can and should be done.

**7.** The ANAO considers that all agencies should review, and where necessary re-orient their management of, and strategies for dealing with, the Year 2000 problem. Unless agencies can provide reliable assurances about their management of business risks associated with the Year 2000 problem, the possibility exists that core functions of government and the interests, and confidence, of clients and other stakeholders will be adversely affected with wide ranging potential consequences for program outcomes. As with many other major IT projects, implementing solutions to the Year 2000 problem can involve long lead times to which must be added time for testing and providing assurance to management. Taking these issues into consideration, it may already be too late for some agencies to substantially reduce their Year 2000 risks in the time available.

**8.** In terms of the objectives of the audit the ANAO found the following:

- ***Whole-of-government planning coordination:*** The Office of Government Information Technology (OGIT) has been effective in raising awareness of the Year 2000 issue in Commonwealth agencies and coordinating Year 2000 efforts within and across government. However, OGIT's activities to date have not been supported by a structured or systematic approach in which the effectiveness of its work with agencies can be readily measured or assessed. OGIT, through its central coordinating role and influence, should give increased attention to seeking assurance of Year 2000 compliance from third party suppliers of a broad range of business-critical services to government, both directly (in the case of utility suppliers) and indirectly (by providing strategic advice to agencies).

- ***Adequacy of agencies' planning:*** Agencies responding to the ANAO survey have commenced their Year 2000 planning at different points in time. About half commenced planning for Year 2000 compliance in June 1996 when the issue was first raised by OGIT. However, few agencies have adopted a structured and systematic approach to the assessment of their Year 2000 problem and the identification of solutions. Consequentially, agencies are at differing stages of preparedness. Smaller agencies appear to be generally less prepared than larger agencies.
- ***Risk management:*** Sound risk management arrangements are seen as crucial to the effective management of the Commonwealth's exposure to risk as a result of the Year 2000 problem. Most agencies surveyed have undertaken some identification and analysis of Year 2000 risks, but few agencies have done so as part of an overarching corporate risk management plan. This is essential if the problem is to be treated as a business risk affecting the whole agency. Only 36 per cent of agencies responding to the survey reported having a corporate risk management plan. Agencies have generally commenced the preparation of inventories of information technology, business functions, business services and other non-IT services. However, this work is not well advanced in most cases and, unless agencies take a systematic approach to the problem, potentially significant sources of risk requiring early action may not have been identified or could even be overlooked. Risk analysis is incomplete or deficient in many agencies with limited ranking (or prioritisation) of risks.
- Few agencies have undertaken comprehensive testing of systems and applications and few have contingency, business resumption or disaster recovery plans in place to deal with Year 2000 related failures. Agencies need to take into account the probability that testing activities may require generous lead times and in some cases will require the re-direction of internal resources and re-allocation of priorities which, in the short term at least, may affect the efficiency and effectiveness of some business operations. However, there is no real substitute for proven performance under operational conditions.
- ***Implementation, management and monitoring:*** Year 2000 project planning and management is generally lacking in the majority of agencies surveyed. Generally, considering the potential risks and costs involved, agencies have not demonstrated that sufficient internal resources have been assigned to address the

Year 2000 problem or that they have adequately assessed the need for the procurement of products and services necessary to assist in becoming Year 2000 compliant. For most agencies this will be an exercise in priority setting as part of their overall risk management plan. For the most part, agencies have not been able to show that appropriate management and reporting structures have been put into place to support a whole-of-business approach to the problem, assure effective corporate governance of Year 2000 risks and demonstrate accountability to clients and stakeholders in relation to Year 2000 risks to agencies' performance.

**9.** Few agencies have estimated the full cost of achieving Year 2000 compliance. Although the ANAO recognises the difficulty involved in quantifying the likely costs of resolving the Year 2000 problem, it is considered necessary to derive justifiable estimates which can be readily up-dated as new information comes to hand. Those costs which have been derived have not been prepared in accordance with a comprehensive methodology and, as a result, do not provide adequate assurance to management about agencies' Year 2000 exposures, particularly in relation to their business critical systems.

**10.** The majority of agencies report that their Year 2000 projects are primarily a responsibility of an information technology (IT) functional unit. As a result there is, apparently, insufficient attention being given in many agencies to the non-IT risks and effects of the Year 2000 problem, including risks associated with the Year 2000 compliance of suppliers of business critical goods and services.

**11.** In some agencies treatment of Year 2000 problems and testing/validation activities are well under way. However, the majority of agencies have not reached these crucial stages and, as a result, are not yet in a position to offer assurances that their systems will operate as required in the year 2000 (or earlier, in the case of software applications which will need to use '2000' dates before 1 January 2000). Few agencies appear to be utilising external expertise to provide quality assurance about the adequacy or appropriateness of their Year 2000 activities. This is surprising considering the limited experience to date in addressing the problem in the public sector.

- ***Awareness of the Year 2000 problem:*** The ANAO has also endeavoured to raise agencies' awareness of the urgency of the Year 2000 problem and its various elements. The questionnaire used by the ANAO has been used by agencies as an aid for self

assessment of their Year 2000 activities and has stimulated awareness and discussion of risk factors which had not previously been generally recognised. All agencies surveyed report that they are aware of the Year 2000 problem. However, the nature and extent of agencies' understanding of the problem and available solutions vary widely.

### *Agencies' Responses*

**12.** The ANAO made eight recommendations which were agreed, or agreed with qualification by agencies. Agencies have generally responded positively to the audit and a number of agencies have written to the ANAO commending the report and its findings.

# Key Findings

## Whole-of-Government coordination

**13.** OGIT has been effective in raising Commonwealth agencies' awareness of the Year 2000 problem as a significant business continuity issue. Nearly half of the agencies surveyed reported that they had initiated their Year 2000 projects as a direct result of OGIT's initial survey and compliance plan checklist. OGIT has effectively fostered and maintained channels of communication with Commonwealth entities, State and Territory Governments and peak industry bodies. The ANAO considers that the broad objectives articulated for OGIT by the Year 2000 Sub-Committee together with the milestones nominated by OGIT for agencies' Year 2000 projects provide sound strategic direction for OGIT's whole-of-government approach to the problem. However, the ANAO considers that OGIT's actions to address the Year 2000 problem at a whole-of-government level have not to date been guided by a milestones and time-frames set out in a strategic plan.

## Resourcing

**14.** The ANAO found that less than half of the agencies surveyed were able to provide estimates of the total cost for their agency to become Year 2000 compliant. The evidence indicates that agencies do not have access to a consistent and systematic methodology to the analysis and projection of Year 2000 costs. The absence of reliable cost estimates constitutes a significant gap in information for decision-making in relation to the management of Year 2000 risk at a whole-of-government level and should be given priority to facilitate a planned, orderly and timely outcome. A more systematic approach to risk management would greatly assist agencies in these respects.

## Procurement

**15.** Actions taken to date to address whole-of-government Year 2000 procurement risks are reasonably timely and appropriate. Greater attention should be given by agencies to managing the Year 2000 contracting risks associated with the procurement of non-IT goods and services. The ANAO considers that agencies should establish their level

of reliance on third party suppliers of non-IT goods and services and, where necessary, seek to minimise their risks through cost-effective procurement, or contractual arrangements. This is an aspect of Year 2000 risk management which could benefit from guidance provided by relevant agencies such as OGIT and the Department of Finance and Administration (DoFA). A whole-of-government approach to utility suppliers would be beneficial. The ANAO considers that OGIT is best placed to coordinate a single approach to suppliers of telecommunications, electricity, water and sewerage and other commonly used services in each State and Territory on behalf of the Commonwealth as part of its whole-of-government mandate.

## Preparedness

**16.** The responses of the majority of agencies broadly indicate the need to do much more to address their Year 2000 problem in terms of the various aspects of preparedness assessed by the ANAO questionnaire. The ANAO notes that agencies are at different levels of Year 2000 preparedness and that agencies assessed as being *moderately prepared* or *reasonably prepared* are in a better position to become Year 2000 compliant, providing they are able to sustain their current levels of effort over the next two years. Although there are several indications of good practice that reflect what can and should be done, the overall results of the ANAO's analysis suggest insufficient grounds to be confident about the ability of many agencies to achieve compliance without increasing their current Year 2000 effort (with attendant resource implications). Unless agencies can provide reliable assurances about their management of business risks associated with the Year 2000 problem, the possibility exists that core functions of government and the interests, and confidence, of clients and other stakeholders will be adversely affected with wide ranging potential consequences.

**17.** A majority of agencies surveyed do not appear to be well prepared for the Year 2000 problem in relation to key input issues which affect the viability of their Year 2000 projects, as well as the on-going viability of their business processes and technological infrastructure. A majority of agencies surveyed have not systematically and comprehensively analysed and established priorities for their Year 2000 risks from a whole-of-business perspective and are not well prepared for the year 2000 in terms of output issues, including assessment of the effects on clients and other stakeholders; interruptions to the production

and delivery of products and services; and whole-of-business issues which affect their viability and credibility.

## Awareness

**18.** Many agencies surveyed reflected only a partial understanding or appreciation of the potential implications of the Year 2000 problem for their functions and business processes. The ANAO considers that the corporate governance regimes in agencies could be improved, for example, by strengthening internal controls associated with Year 2000 projects and by improved reporting to senior management and chief executives. Such measures would lead to an overall enhancement of internal and external assurance about the effective management of the Year 2000 problem. Senior managers should be able to provide assurances to their chief executives about the use of resources (particularly assets); efficient operations (including the impact of suppliers' readiness and compliance with Year 2000 requirements); financial integrity and validity; compliance with legislation; accountability to clients and other stakeholders; and public safety and security.

## Assessment

**19.** It is essential that agencies assess their Year 2000 risks in the context of an overarching corporate risk management plan in order to ensure that the problem is treated as a business risk affecting the whole agency. Approaches used by agencies surveyed to assess Year 2000 risks reflect general deficiencies in risk management, as evidenced by the small proportion of agencies which report having a corporate risk management plan. It is generally accepted that the Year 2000 issue is a whole-of-business problem and needs to be addressed corporately to ensure a comprehensive and timely outcome. Agencies' responses to questions about the preparation of inventories, risk assessment, resource requirements, compliance testing and contingency planning are generally suggestive of an unstructured approach to the Year 2000 problem.

**20.** Agencies have generally commenced the preparation of inventories of information technology, business functions, business services and other non-IT services. However, this work is not well advanced in most cases and, unless agencies take a systematic approach to the problem, potentially significant sources of risk requiring early action may not have been identified or could even be overlooked.

The majority of agencies have not reached a point in the progress of their Year 2000 projects where they are in a position to undertake compliance testing of their systems and business applications and, as a result, are not yet in a position to offer assurances that their systems will operate as required in the year 2000 (or earlier, in the case of software applications which will need to use '2000' dates before 1 January 2000).

## Management

**21.** Almost one quarter of agencies surveyed reported that they do not have a Year 2000 project in place; approximately one third reported that they do not have an overall Year 2000 project manager or some designated coordinator; and nearly half reported that they have not formally defined the roles and responsibilities of individuals responsible for responding to the Year 2000 problem. In addition, almost one third of agencies reported that they do not provide periodic reports on Year 2000 progress to their chief executive or executive board of management. Mandatory quarterly reporting through OGIT should reinforce the involvement and responsiveness to the Year 2000 issue on the part of agencies' senior management. However, the ANAO considers that the potential business impact of the problem on the agency should be the more compelling catalyst to action.

## Monitoring

**22.** A majority of agencies surveyed have not yet reached a stage where they can confidently and reliably estimate their total exposure to the Year 2000 problem; identify the range and number of business inputs which are potentially affected; assign priority to systems, applications, infrastructure, products or services in terms of actual Year 2000 risk and potential effects on core business functions; provide assurance about the resolution of the Year 2000 problem for each of the business inputs upon which they rely; or offer assurances that their Year 2000 projects will be completed on time. The ANAO considers that agencies should establish an effective framework as soon as possible to monitor Year 2000 projects; provide quality assurance; improve accountability to clients and stakeholders; and enable timely adjustment or corrective action in relation to key project inputs or milestones. Ideally, this should be an integral part of their overall corporate governance framework.

# Recommendations

*Set out below are the ANAO's recommendations with abbreviated responses from agencies. The ANAO invited responses from selected agencies having a central coordination role in relation to the Year 2000 problem and from agencies in which field work was conducted (that is, OGIT, DIST DoFA, RBA, ATO, Centrelink, AMSA and ASA). In addition, a number of the agencies surveyed for this audit took the opportunity to respond to the ANAO's draft recommendations. Detailed responses by agencies are shown in the body of the report. The ANAO considers that agencies should give priority to Recommendations Nos 2, 3, 6, 7, and 8.*

**Recommendation No. 1**

The ANAO recommends that OGIT prepare a strategic plan to underpin its Year 2000 activities on a whole-of-government basis for the critical period ahead and that the plan should include a full risk analysis, key objectives and milestones, performance measures and desired outcomes; and acquit its performance against the plan in its forthcoming annual report.

*Agree*: OGIT; DoFA; DIST; ATO; RBA; Centrelink; ASA; AMSA; HIC; DoD; DEETYA; DPIE; DHFS; ASC; and DVA.

**Recommendation No. 2**

The ANAO recommends that OGIT, in consultation with lead agencies, develops a costing model to be used by agencies to estimate their Year 2000 costs reliably and accurately.

*Agree*: DIST; DoFA; ATO; RBA; Centrelink; ASA; AMSA; HIC; DoD; DEETYA; DPIE; DHFS; ASC; and DVA.
*Agree with qualification*: OGIT.

**Recommendation No. 3**

The ANAO recommends that OGIT, in consultation with DoFA:

a) develops and promulgates Year 2000 guidelines to assist agencies with the management of purchasing risks arising from both common-use and unique supplier arrangements for IT and non-IT goods and services; and

b) on behalf of the Commonwealth, seeks written assurances about Year 2000 compliance from utility suppliers in each State and Territory and communicates the outcome to agencies.

*Agree*: OGIT; DoFA; DIST; ATO; Centrelink; ASA; AMSA; HIC; DoD; DEETYA; DPIE; DHFS; ASC; and DVA.

*Agree with qualification*: RBA.

**Recommendation No. 4**

The ANAO recommends that agencies review and document their Year 2000 assessment and planning activity to ensure that agency management can make a confident assessment of the appropriateness and sufficiency of their approach from a whole-of-business perspective.

*Agree*: DoFA; DIST; ATO; Centrelink; ASA; AMSA; HIC; DoD; DEETYA; DPIE; DHFS; ASC; and DVA.

*Agree with qualification*: RBA.

**Recommendation No. 5**

The ANAO recommends that agencies establish appropriate mechanisms to ensure effective governance of their Year 2000 activities and to provide appropriate assurances to stakeholders in relation to the business implications of the Year 2000 problem, including assurances to stakeholders about the use of resources; efficient operations; financial integrity and validity; compliance with legislation; accountability to clients and other stakeholders; and public safety and security.

*Agree*: DoFA; DIST; ATO; Centrelink; ASA; AMSA; HIC; DoD; DEETYA; DPIE; DHFS; ASC; and DVA.

*Agree with qualification*: RBA.

**Recommendation No. 6**

The ANAO recommends that agencies develop and document, as part of their overall risk management approach, a strategy for the management of Year 2000 risks that incorporates an analysis of the aspects of the operating, compliance and external environment that are potentially affected by the Year 2000 problem; the identification of possible sources of risk; an assessment and ranking of risks; options for the treatment of identified risks; and measures to monitor and review identified risks.

*Agree*: DoFA; DIST; ATO; Centrelink; ASA; AMSA; HIC; DoD; DEETYA; DPIE; DHFS; ASC; and DVA

*Agree with qualification*: RBA.

**Recommendation No. 7**

The ANAO recommends that agencies review their Year 2000 project management and take remedial action to ensure that the project is governed by clear and achievable milestones which are regularly reviewed; all staff responsible for aspects of the Year 2000 project operate within clear authorities and lines of accountability; and the project has top level commitment, including for adequate resources and strategic direction.

*Agree*: DoFA; DIST; ATO; RBA; Centrelink; ASA; AMSA; HIC; DoD; DEETYA; DPIE; DHFS; ASC; and DVA.

**Recommendation No. 8**

The ANAO recommends that agencies establish a monitoring framework for their Year 2000 projects including independent review where considered appropriate; linkage with key corporate control systems; mechanisms which assure accountability for the implementation of the Year 2000 project on time and within cost and quality parameters; and internal and external reporting arrangements to monitor progress against key project milestones which are regularly reviewed.

*Agree*: DoFA; DIST; ATO; RBA; Centrelink; ASA; AMSA; HIC; DoD; DEETYA; DPIE; DHFS; ASC; and DVA.

# Audit Findings

# 1. Introduction

*This chapter outlines the rationale, approach and methodology for the audit into Commonwealth agencies' management of the Year 2000 problem.*

## Background

**1.1** In the last two decades, both government and the private sector have become increasingly reliant on computerised information systems for the performance of their core business functions. Unless these systems are modified, it is possible that many automated or computerised business systems may malfunction as a result of the so called 'Year 2000' problem. The Year 2000 problem is not restricted to computers: other equipment and machinery using micro-processors (micro-chips) may also be affected.

**1.2** In the 'early days' of computer programming, dates were abbreviated from four to two digits in order to preserve memory capacity[1]. Thus, two digits are used to represent a year (for example, '97' is used to represent 1997). In the year 2000, computers and micro-processors may not recognise '00' as the year 2000. There is a risk that '00' may be read as being a lesser value than '99' (for example, '00' may be read as 1900 rather than 2000)[2]. Similarly, computer applications which involve calculations based on dates may yield incorrect answers. For example, the calculation of the difference between two years, say 2004 and 1997, using a two digit date field could give an erroneous answer (04 minus 97 equals –93, rather than 2004 minus 1997 equals 7).

**1.3** Year 2000 related systems malfunctions have already occurred in the public and private sectors in Australia and overseas. Many business processes depend on date-sensitive calculations or date-related 'triggers' which already require a capacity to enter dates from 2000 and beyond. Examples include the issuing of licences, credit cards and loan calculations. Computerised information systems which have not been modified will react in a variety of ways to the Year 2000 problem. Some may not be able to cope and will simply fail to operate. Others may continue to run, but will produce

[1] For example, the year 1970 would be entered as 70 and a birth date of 16 June 1970 could be represented as combinations of numerical Exhibits such as 1606**70**, 0616**70** or **70**0616.

[2] In addition, some computer programming uses '00' to trigger an error message which could result in affected systems 'shutting down'.

meaningless or erroneous data. Others may revert to another date, such as the date when the system was first programmed[3].

**1.4** The available memory of computing systems has vastly increased and many computer-related business applications now include century-related dates. In addition, many 'legacy' computer systems have been upgraded, converted or replaced, thus decreasing exposure to Year 2000 related systems failures. However, there is likely to still be a high level of residual risk which should be addressed in the context of a comprehensive and systematic risk management framework.

## Audit rationale

**1.5** The Year 2000 computer problem presents significant potential risks to the Commonwealth as some information systems may not operate as designed. Computer systems critical to the operations of government are complex and are often highly integrated, both within and between Commonwealth agencies and other legal entities, and externally with other levels of government, the financial sector, industry and with a range of clients.

**1.6** The Year 2000 problem is not exclusively concerned with information technology (IT), or computers, or software (although all of these are business inputs which are 'at risk' of Year 2000 related failure). The Year 2000 date field changeover is predominantly a business problem with potentially significant adverse implications for Commonwealth entities and their stakeholders.

**1.7** The Year 2000 problem involves issues of corporate governance, including the application of risk management disciplines. The Year 2000 issue challenges agencies to ensure business continuity and protect the interests of all their stakeholders. Safeguarding business continuity will require the identification, in a broad risk management context, of agencies' 'business-critical systems'; an assessment of the extent of the Year 2000 exposure of these systems; and the likely effect on the achievement of core business outcomes.

**1.8** Among the risks to key government functions associated with the Year 2000 problem are:

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[3] *Managing the Millennium Threat*, Report by the Comptroller and Auditor-General, National Audit Office (UK), May 1997, pages1-2.

- government revenue not being received or being processed incorrectly;
- program moneys not being paid or paid correctly (including payments to beneficiaries);
- disruption of business critical processes, including program delivery, with consequent costs arising from, for example, lost productivity, reduced efficiency and loss of stakeholder confidence;
- legal risks arising from liability for adverse effects upon other parties such as contractors or clients/customers;
- the risk that government entities may be unable to fulfil statutory obligations; or
- risks to personal security or safety.

**1.9** The Year 2000 problem is basically a management/business problem that needs to be addressed in a corporate manner and communicated to all staff as a shared concern. It is also a foreseeable problem and one which is capable of being addressed provided agencies act in a timely manner and apply sufficient resources to get effective results[4].

### *Audit reviews*

**1.10** State and Territory Governments have also recognised the need for some level of central coordination of public sector entities' efforts to address the Year 2000 problem. Similarly, countries such as New Zealand[5], the United States, the United Kingdom and Canada have implemented central oversight mechanisms to assist with the management of government exposures. In addition, public audit organisations in Australian and overseas jurisdictions have initiated activities aimed at providing assurance to governments and parliaments/legislatures about the management of the Year 2000 problem by government entities.

**1.11** In February 1997, the United States General Accounting Office (GAO) published the *Year 2000 Computing Crisis: An Assessment Guide*[6] which detailed a structured approach to Year 2000 conversion. The GAO

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[4] The Department of Employment, Education, Training and Youth Affairs (DEETYA) has advised the ANAO that: *…the impact of the Year 2000 problem has yet to be fully understood by many organisations and individuals. The impact is likely to extend beyond 1 January 2000 because of the deferral of some business initiatives prior to that date and the potential failure of business functions associated with the cusp dates occurring after 1 January 2000, such as end of financial year processing and leap year processing.*

[5] The Controller and Auditor General of New Zealand is undertaking an audit of the state of readiness of public bodies in facing the 'Year 2000' challenge. The work is being performed by Audit New Zealand and other relevant audit service providers and has taken the form of a survey of 200 entities across the New Zealand public sector.

[6] *Year 2000 Computing Crisis: An Assessment Guide,* United States General Accounting Office, Accounting and Information Management Division, (Exposure Draft),Washington, February1997.

recommends that an agency's Year 2000 program be planned and managed as a single large information system development effort in which good management practices are promulgated and enforced at the program and project levels.

**1.12** The National Audit Office (NAO) in the United Kingdom, in its May 1997 report *Managing the Millennium Threat*[7], made the following key findings in relation to government departments and agencies in the United Kingdom:

- most are aware of the Year 2000 problem;
- most are at the stage of auditing their systems;
- four-fifths are confident that they will complete the work on time; and
- it is not possible, at this stage, to estimate the costs with confidence[8].

**1.13** The NAO noted that many government departments have not completed the audit of their systems, nor, in some cases, have they established who has legal liability for modifications. The report makes the point that:

> *…there is a need for managers at all levels to be aware that this is not just a technical issue, but one which can have a profound impact on the ability of the organisation to continue functioning in the next millennium.*[9]

**1.14** The *Report of the Auditor-General of Canada - October 1997* noted Treasury Board Secretariat estimated costs of $C1 billion for the Canadian Government of dealing with Year 2000 issues. The report observed that competing priorities for systems development and insufficient technical resources could jeopardise Year 2000 efforts. The report indicates that the failure of critical systems could affect public health and safety and essential services to the public and concluded that *Year 2000 is a serious threat that requires urgent and aggressive action*. The report recommended that year 2000 projects, including the development of contingency plans, be ranked among the top priorities of departments and agencies[10].

**1.15** The Victorian Auditor-General's May 1997 *Report on Ministerial Portfolios*, commented on the Year 2000 activities of State government

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[7] *Managing the Millennium Threat,* Report by the Comptroller and Auditor General, National Audit Office (UK), 21 May1997.

[8] The NAO observed indications that the cost of employing suitably skilled people is rising as demand for their services increases and noted a shortage of suitably skilled staff in the community at large to manage the program and make modifications.

[9] Ibid page 3.

[10] *Report of the Auditor-General of Canada - October 1997*, Chapter 12, Information Technology: Preparedness for Year 2000 (source: http://www.oag-bvg.gc.ca).

agencies. The Victorian Auditor-General's Office wrote to 547 Victorian public sector agencies in the latter part of 1996 seeking information on the measures being introduced or considered to address the Year 2000 issue. The Auditor-General expressed concern that the issue may not be widely understood within the Victorian public sector and that *agencies may not be well positioned to deal with the impending problem*[11].

**1.16** The Auditor-General of New South Wales, in his December 1997 report *1999-2000 Millennium Date Rollover: Preparedness of the NSW Public Sector* found that *the NSW public sector is not as prepared as it could be* and noted that *significant areas of risk are yet to be fully assessed, and action to resolve and implement appropriate solutions are lagging in areas of the public sector.* The Auditor -General observed the need for a *substantial acceleration and expansion* of Year 2000 activity over the next twelve months[12].

## Audit approach

**1.17** This audit set out to gauge Commonwealth agencies' preparedness for the Year 2000 problem. The audit was concerned to address the steps taken by Commonwealth agencies to assess and implement solutions for the Year 2000-related risks to their 'business-critical' functions; and the possible risks to key government functions, such as revenue collection, service delivery, payments, national security, law and order and health and safety. The audit surveyed a wide range of Commonwealth agencies' Year 2000 preparedness, their management of the problem and their application of core corporate governance principles, including risk management disciplines. The scope of the audit reflected the wide ranging ramifications of the Year 2000 problem for agencies' overall functions (whole-of-business) internally as well as in terms of external interactions.

### *Objectives*

**1.18** The audit objectives were to:

- assess the adequacy of agencies' planning in relation to achieving Year 2000 compliance;
- review and assess agencies' implementation, management and monitoring of Year 2000 compliance strategies;

[11] Victorian Auditor-General's Office, *Report on Ministerial Portfolios May 1997*, Part 4.
[12] The Audit Office of New South Wales, *1999-2000 Millennium Date Rollover: Preparedness of the NSW Public Sector,* December 1997.

- review agencies' strategic risk assessments in relation to the Year 2000 changeover; and
- raise surveyed agencies' and other Commonwealth agencies' awareness of the various aspects of the Year 2000 problem.

### *Methodology*

**1.19** In June 1997, the ANAO sent questionnaires to 73 Commonwealth agencies (see Appendix A) to ascertain the appropriateness and adequacy of their approach to the identification and management of Year 2000 related risks. The questionnaire was designed to provide both an indicative assessment of Commonwealth agencies' state of preparedness and to identify issues that need to be addressed. Selection of the agencies took into consideration the number of staff employed by the agency, the size of the agency's operating budget, and the agency's functions. Two forms of questionnaire were used: a 'short form' questionnaire was sent to 53 smaller agencies while a more detailed 'long form' questionnaire was sent to 20 larger agencies and agencies responsible for delivering key government functions. The questionnaire proceeds from a recognition that the resolution of the Year 2000 problem requires a 'whole of business' approach and was used to assess agencies' preparedness to resolve the Year 2000 problem in relation to potential effects on:

- customers and stakeholders;
- the production of its products and services;
- the ability of business processes being able to function through the turn of the century and beyond; and
- the technological infrastructure which supports the agency's business processes.

**1.20** The analysis contained in this report is based upon 74 completed returns[13]. Agencies' responses to the questionnaire were analysed on an unweighted basis (for more detailed explanation of the analytical approach, refer to Chapter 3). The questionnaire was complemented by field work in six agencies, namely:

- Australian Taxation Office (ATO), in view of its key revenue collection function;

[13] See Appendix A for a breakdown of completed returns. Although 73 questionnaires were sent, a small number of agencies completed questionnaires on a business unit basis and, as a result, submitted multiple returns. In addition, a small number of agencies did not submit separate returns owing to mergers with other agencies.

- Centrelink, in view of its payments and program delivery functions;
- Department of Finance and Administration (DoFA), in view of its responsibilities for the coordination of government resource management functions and its role in the payments system; [14]
- Reserve Bank of Australia (RBA), in view of its role in relation to economic regulation and its role in the payments system;
- Australian Maritime Safety Authority (AMSA), in view of its role in relation to maritime safety and environmental regulation; and
- Airservices Australia (ASA), in view of its role in relation to the provision of air traffic services, rescue and fire-fighting services and navigation services[15].

**1.21** Research, data collection and field work for the audit took place during the period from February 1997 to September 1997. The field work generally validated the results of the questionnaire survey and confirmed that the selected agencies were among the top 40 per cent of agencies surveyed in terms of the measures of preparedness discussed in Chapter 3 of this report.

**1.22** In the course of this audit the ANAO engaged Price Waterhouse Urwick and Hitachi Data Systems to assist with the design and analysis of the ANAO Year 2000 questionnaire.

**1.23** The cost of the audit was approximately $318 000. The audit was conducted in accordance with ANAO Auditing Standards.

[14] The Department of Finance was reorganised in October 1997 to form the Department of Finance and Administration, in this report the Department of Finance will be referred to by its current name or by its acronym DoFA.

[15] In June 1997, ASA ceased to be a Government Business Enterprise (GBE) and, as a result, was included as a case study for the purposes of the audit. ASA was not requested to complete a questionnaire and is therefore not included in the analysis presented in chapters 3 and 4.

# 2. Whole of Government Coordination

*This chapter discusses the whole-of-government approach for the coordination of agencies' Year 2000 planning, including resourcing and procurement issues.*

## Background

**2.1** Commonwealth agencies use a diverse range of business inputs and processes to deliver programs and services. In this environment, the Year 2000 problem carries the potential for significant operational, administrative and legal exposures for Commonwealth entities. The minimisation of risk exposures across this complex system requires a high level of central coordination of policy, planning and communication.

**2.2** To date, the principal coordination role has been assumed by the Office of Government Information Technology (OGIT), owing to its responsibilities for the development and implementation of policies concerning the efficient and effective utilisation of government information technology and telecommunications. The Department of Finance and Administration also has an important role in relation to the Year 2000 problem as a result of its mandate to ensure the efficient management of the business of government, the strategic planning of government expenditure and the management of the Commonwealth purchasing framework.

**2.3** The Government recently announced that the Department of Industry, Science and Tourism (DIST) will assume responsibility for the coordination of a Year 2000 National Strategy. DIST is currently working with OGIT and key industry associations to raise awareness in industry, particularly with small and medium sized businesses. DIST will work in conjunction with State and Territory Governments and the Online Council to implement the strategy which will encompass Commonwealth, State/Territory and local government.

**2.4** The object of the strategy is to raise awareness of the problem and the need for action by business (particularly small-medium sized enterprises) and other organisations. Activities are planned to include publicity campaigns, the establishment of help facilities and nationally coordinated activities such as surveys and national Year 2000 testing days. DIST will receive additional funding of $4.26 million in 1998-99 and $1.17 million in 1999-2000 for implementation of the Commonwealth's share of the strategy[16].

## Office of Government Information Technology

**2.5** Primary responsibility for whole of government coordination of Year 2000 effort has been assumed by OGIT. OGIT provides progress reports on Year 2000 issues to the Minister for Finance and Administration's IT&T Policy Advisory Committee and has provided briefings for the Minister for Science and Tourism. OGIT has also provided a paper to the Online Council chaired by the Minister for Communications and the Arts.

**2.6** OGIT reports that Australia's overall Year 2000 effort is at least six months behind other countries such as the United States, the United Kingdom and Canada, and considers that it is necessary to increase the momentum towards compliance and, in so doing, take account of responses to the problem in other countries.

### *Year 2000 Sub-Committee*

**2.7** Early in 1996, the Year 2000 date change-over was considered by the (then) Government Information Service Policy Board (GISPB) at the request of the Chief Government Information Officer (CGIO). Although OGIT was not specifically resourced to comprehensively address the Year 2000 problem on behalf of the Commonwealth, the CGIO recognised that this was a significant issue which fell within OGIT's responsibilities.

**2.8** In May 1996, the GISPB[17] formed a Year 2000 Sub-Committee to assess the status of the problem and promulgate the development of compliance plans by Commonwealth agencies. The Sub-Committee's goal is to ensure that all Commonwealth applications and business systems will run

[16] "National Strategy for 'Year 2000' Computer Bug", Joint Media Release from the Minister for Finance, the Minister for Science and Tourism, 12 September 1997.

[17] The GISPB was disbanded in October 1996, and the Year 2000 Sub-Committee reported instead to the Minister for Finance's Information Technology and Telecommunications Policy Advisory Committee.

faultlessly into the Year 2000 and that, through sharing experiences, costs for the Commonwealth will be minimised[18].

**2.9** A Year 2000 project coordinator was appointed by the CGIO to develop a broad strategy for ensuring awareness and compliance of Commonwealth agencies, as well as a national Year 2000 strategy for Australia. This work was to be carried out under the direction of the CGIO and the Chair of the Year 2000 Sub-Committee.

### *Year 2000 activities*

**2.10** Among the actions initiated to date by the Committee (through OGIT) are: the circulation of a Year 2000 survey and compliance plan checklist to the heads of 94 Commonwealth entities in July 1996[19]; the establishment of a preferred date standard for storage or transfer of data for the Commonwealth (agreed by the GISPB on 25 July 1996); liaison with the Department of Finance and Administration and the Attorney General's Department on the definition of compliance and the inclusion of a standard clause for Year 2000 compliance in Commonwealth contracts; and a variety of communication activities targeting Commonwealth agencies[20].

**2.11** OGIT's Year 2000 survey provided baseline data on the status of Year 2000 activity in 54 agencies. OGIT reported that responses to the questionnaire indicated that agencies were at varying stages of Year 2000

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[18] The Sub-Committee has undertaken to raise the profile of the issue so that all agencies are aware of its implications; establish the current status of remedial activities within the Commonwealth; share the experience of those who have already begun to address the issue; and recommend appropriate approaches to resolving the problem.

[19] In July 1996, OGIT, on behalf of the Year 2000 Sub-Committee, disseminated a Year 2000 survey and compliance plan checklist to 94 Commonwealth agencies. An accompanying letter from the CGIO to all heads of agencies outlined the urgent need to address this issue from a business focus. The deadline for survey returns was 23 August 1996 and it was requested that compliance plans, prepared in accordance with the checklists, were to be lodged with OGIT by 20 December 1996.

[20] Other actions taken by OGIT include placing Year 2000 information on OGIT's internet home page; correspondence to all endorsed suppliers and to all members of the Australian Information Industry Association (AIIA) alerting them to the fact that their government customers would be contacting them about the Year 2000 issue and outlining Commonwealth Government expectations as a major buyer of IT&T (agencies were reminded that this mail out may not have covered all vendors of all agencies and that it would be the responsibility of all agencies to ensure that all vendors are contacted); initiate quarterly meetings of the is forum is open to State Government representatives and focuses on case studies and status reports; maintaining contact with Year 2000 service providers in private industry; and, representing Australia in international Year 2000 forums.

readiness and observed that much work needed to be done, especially in larger agencies with more complex systems[21]. OGIT also found that:

- 15 agencies reported that they had already experienced Year 2000 problems;
- approximately half had established a Year 2000 project management structure and that their Year 2000 project had commenced, although most did not commence until June 1996 (on the receipt of the OGIT survey);
- approximately one-third of agencies had not undertaken a risk assessment, set priorities for their mission critical business systems, or developed contingency plans (in the event of Year 2000 related systems failure); and
- most agencies (34 out of 54) had not initiated an internal awareness campaign[22].

**2.12** The survey also illustrated positive actions by agencies to address the Year 2000 problem. OGIT observed that actions to address the Year 2000 problem had not acquired a great deal of momentum by mid- to late 1996 owing to a generally low awareness of the Year 2000 problem on the part of senior agency management.

**2.13** OGIT requested agencies to submit Year 2000 compliance plans by the end of 1996. By July 1997, OGIT had received 67 (out of a potential 94) compliance plans. OGIT observed that the quality and comprehensiveness of the compliance plans was highly variable and, correspondingly, the level of confidence about agencies' readiness to achieve compliance before 2000 was not high.

**2.14** OGIT subsequently engaged a consultant in April 1997, to assess a sample of compliance plans, establish a risk assessment and develop a communication strategy. The consultant carried out desk audits of compliance plans in 13 Commonwealth agencies to determine their readiness for the year 2000[23]. 'Readiness' was assessed by reference to the current project status, and took into account comprehensiveness, timeliness, methodologies and tools, cost, and contingency planning[24].

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[21] The results of the survey were posted on OGIT's internet home page.
[22] OGIT, *Results of the Year 2000 Survey of Commonwealth Agencies*, November 1996.
[23] With the agreement of selected agencies.
[24] In addition to preparing a general non-attributable report to OGIT, the consultant also prepared individual agency assessments with recommendations for best practice.

**2.15** The review found considerable variation between agencies' levels of readiness. Three of the 13 agencies were assessed as having an appropriate level of readiness while three did not have Year 2000 projects established. The remaining seven agencies were assessed as being behind best practice in that they had not identified, assessed or developed strategies for their business-critical systems. Most agencies in the sample were in the 'inventory' or 'early assessment' phase of their Year 2000 projects and many had not considered embedded systems[25].

**2.16** The consultant considered that the agencies reviewed were not displaying appropriate urgency in their Year 2000 projects, which was attributed to a number of factors:

- being focussed on public sector reform agendas[26];
- relying on the replacement of systems and IT outsourcing;
- ownership of the Year 2000 issue residing in IT branches;
- the Commonwealth's policy of requiring agencies to find Year 2000 project funds within existing budgets may have encouraged agencies to treat the Year 2000 project as a routine maintenance project; and
- confusion in relation to OGIT's role; that is, waiting for OGIT to define methodologies and tools to assist in formulating solutions[27].

**2.17** In August 1997, OGIT released a draft *Year 2000 Accountability and Reporting Framework for Heads of Departments and Agencies.* The object of the framework is to assist agencies in the rigorous monitoring of risk management and speed of progress of their Year 2000 compliance.

**2.18** The framework articulates a series of questions to be addressed by agencies in the context of reporting on their management of Year 2000 risk to business continuity.

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[25] Embedded systems are devices used to control, monitor or assist the operation of equipment, machinery or plant. 'Embedded' reflects the fact that they are an integral part of the system and, in their simplest form, may consist of a single microprocessor or 'chip'. A failure of an embedded system may cause equipment to malfunction or fail to operate with potential loss of production or even risks to human safety. (Source: Institution of Electrical Engineers, *Embedded Systems: Explanation*, *iteedie@iee.org.uk*).

[26] The consultant noted that Commonwealth agencies, unlike their private sector counterparts, are less able to divert resources to Year 2000 projects because they are generally unable to delay the implementation of legislated or policy-driven changes.

[27] OGIT, *Commonwealth Readiness for the Year 2000, Phase 1 - Assessment of Year 2000 Compliance Plans*, Coopers & Lybrand, Draft 2, 25 June 1997, pp i-iii.

**2.19** OGIT explained the reason for developing the framework in the following terms:

> *Failure by agencies to maintain the capacity to provide information and services to Australians can have severe consequences. These include substantial financial loss, embarrassment and loss of credibility or goodwill for the agency and consequential impacts on staff welfare, clients, suppliers, taxpayers, the Minister, the Government and the general public.*
>
> *Year 2000* [planning] *uses a standard risk management approach to the continuity of business operations: assessing the impact or consequence of the risk; determining a ranking or prioritisation of that risk and establishing a strategy for mitigating that risk; and establishing a contingency plan should it occur.*[28]

***Finding:*** OGIT has been effective in raising Commonwealth agencies' awareness of the Year 2000 problem as a significant business continuity issue. Nearly half of the agencies surveyed reported that they had initiated their Year 2000 projects as a direct result of OGIT's initial survey and compliance plan checklist.

### *Recent initiatives*

**2.20** The Government has recently approved a strengthened regime for the central oversight and reporting of agencies' progress towards Year 2000 compliance. This includes the establishment in OGIT of a Year 2000 Project Office to ensure an increased and uniform effort on the part of Commonwealth agencies; and, from November 1997, a requirement for all Commonwealth agencies to report quarterly on progress towards Year 2000 compliance[29].

**2.21** OGIT advised that its oversight role will include Year 2000 compliance audits of selected agencies' progress towards achieving Year 2000 compliance and the provision of support to small agencies in developing protocols to address the Year 2000 problem (this project has been funded to an amount of up to $600 000 for this purpose). OGIT has initiated the development of a standard reporting framework on progress of Year 2000 projects in Commonwealth agencies. The framework will include a timetable for agency

[28] OGIT, Year 2000 Accountability and Reporting Framework for Heads of Departments and Agencies, Appendix A, 'Draft Agency Accountability and Reporting Framework', August 1997.
[29] "National Strategy for 'Year 2000' Computer Bug", Joint Media Release from the Minister for Finance and the Minister for Science and Tourism, 12 September 1997.

reporting on their Year 2000 efforts over the next two and one-half years. OGIT has advised the ANAO that:

> *OGIT believes that the new OGIT initiative will provide the necessary boost and impetus for agencies to substantially reduce their Year 2000 risks. This has the potential to reduce the possibility that core functions of government and the interests of clients and other stakeholders would be adversely affected.*

***Finding:*** OGIT has effectively fostered and maintained channels of communication with Commonwealth entities, State and Territory Governments and peak industry bodies. The ANAO considers that the broad objectives articulated for OGIT by the Year 2000 Sub-Committee together with the milestones nominated by OGIT for agencies' Year 2000 projects provide sound strategic direction for OGIT's whole-of-government approach to the problem. However, the ANAO considers that OGIT's actions to address the Year 2000 problem at a whole-of-government level have not to date been guided by a milestones and time-frames set out in a strategic plan.

**Recommendation No. 1**

The ANAO recommends that OGIT prepare a strategic plan to underpin its Year 2000 activities on a whole-of-government basis for the critical period ahead and that the plan should include a full risk analysis, key objectives and milestones, performance measures and desired outcomes; and acquit its performance against the plan in its forthcoming annual report.

**2.22** Agencies responded to the recommendation as follows:

- Agree: OGIT; DoFA; DIST; ATO; RBA; Centrelink; ASA; AMSA; HIC; DoD; DEETYA; DPIE; DHFS; ASC; and DVA.

Specific comments by agencies are set out below.

- *OGIT response*: Agree. Since the ANAO survey was completed in June of this year, OGIT has been developing a strategic plan for its Year 2000 activities which addresses key milestones, performance measures, etc.
- *DIST response*: Agree. The regular reporting requirements are a useful internal method for reviewing and reporting on progress and likely problem areas.

- *ASA response*: Agree. A whole-of-government Year 2000 project plan would be beneficial to all Commonwealth agencies. This strategic plan would provide a co-ordinated approach to many of the issues that agencies need to address within the Year 2000 problem. Airservices Australia already has a Year 2000 project plan that has been endorsed by the Board of Management after having been independently assessed by Computer Power Pty Ltd.
- *Centrelink response*: Agree. Agencies can then review their individual approach to ensure consistency against the whole of government strategic plan prepared by OGIT.
- *DoD response*: Agree. OGIT has to have the necessary expertise to be able to consider non-IT (embedded) systems as well as the more familiar IT systems. Because of national security issues, many of Defence's systems, both IT and non-IT (embedded), cannot be included in OGIT activities.

### *Resourcing*

**2.23** DoFA has been instrumental in defining the parameters of agencies' resourcing of Year 2000 activity. In March 1997, the Department released an Estimates Memorandum (1997/13), *Year 2000 Date Change - Financial Implications*, to agencies. The purpose of the memorandum was to advise agencies of the treatment of financial implications for the computer systems' Year 2000 date change.

**2.24** The Memorandum acknowledged that the Year 2000 date *change is likely to cause a number of problems for current computer systems unless steps are take to ensure that anomalies are corrected* and noted that system failure could take the following forms:

- legitimate data entries will be rejected;
- computing systems will produce erroneous results; and
- computing systems will simply not run.

**2.25** The Memorandum observed that the *total financial implications for the Commonwealth of this date change are still uncertain* and offered the following guidance to entities:

> *The Year 2000 date change is a foreseeable part of agency operations and there is ample scope for the flexibilities of the Running Costs arrangements, including through the use of Resource Agreements, to resolve many concerns that agencies have.*

*Significant portions of the costs can be avoided through software upgrades which are themselves part of on-going operations.*

*Out-sourcing of computer facilities and services will also enable agencies to address their needs by ensuring that services are provided by Year 2000 compliant providers.*

In this context, the memorandum stated that *agencies are expected to address Year 2000 issues through re-prioritisation of their existing funding or absorbing their additional costs within their current funding levels*.

**2.26** The ANAO survey revealed that only 30 agencies (40 percent) were able to provide estimates of the total cost for their agency to become Year 2000 compliant. The total of all estimates provided was $84.1 million (estimates ranged from $50,000 to $20 million). These results indicate that many agencies, at present:

- are unable to reliably quantify the costs of their overall Year 2000 effort (including direct and indirect Year 2000 project costs);
- are unable to reliably estimate the likely costs of treating or rectifying the problem; and
- have not estimated the likely cost effect of systems failures[30].

**2.27** Although the ANAO recognises the difficulty involved in quantifying the likely costs of resolving the Year 2000 problem, it is considered necessary to derive justifiable estimates which can be readily up-dated as new information comes to hand.

[30] The ANAO notes that there are several factors which, at present, prevent agencies from accurately identifying their Year 2000 expenditure, including: for several agencies Year 2000 projects represent a part-time component of individuals' time (that is, staff responsible for Year 2000 project management have additional substantive duties); in some agencies, responsibility for the management of aspects of the Year 2000 project are dispersed to business unit managers and no monitoring of the distributed effort occurs; and, some Year 2000 rectification costs are 'masked' by scheduled software and equipment up-grades or the planned replacement or retirement of business systems.

**2.28** On the issue of resourcing Year 2000 activities, DEETYA advised the ANAO that:

> *The cost of Year 2000 activities is largely being borne as an opportunity cost and is not easily identifiable as a unique line item. The impact of this transfer of existing resources to address an undefined total cost has yet to be determined. Without adequate resources, both the quality and flexibility of Government business functions may potentially be compromised.*

**2.29** OGIT has expressed the view that, based on international comparisons, the total cost to the Commonwealth of the Year 2000 problem may be in the order of $600 million to cover planning, programming and testing. OGIT's Year 2000 survey revealed that most agencies did not appear to have a clear idea of the likely costs of treating the Year 2000 problem and had not yet costed their Year 2000 activities as a separate project (instead, absorbing costs into on-going maintenance and upgrades, or by deferring developmental work) [31]. Similarly, the report of the OGIT-commissioned desk audits of 13 agencies' compliance plans stated:

> *There were eight agency-wide estimates of Year 2000 costs in the 13 agencies reviewed. Those estimates were not based on complete inventories, assessments or strategies for Year 2000 projects and must be regarded as unreliable. Generally, forecasts for IT projects are frequently over-budget and overdue when completed. Experience in the private sector indicates that cost estimates increase throughout the life of Year 2000 projects.*[32]

**2.30** The 1996-97 financial statements for the Department of Defence provides an example of the difficulty of quantifying Year 2000 costs with certainty:

> *Costs relating to the conversion of Department of Defence computer systems to Year 2000 compatibility is also considered to be a contingent liability. The current estimate of these costs is $20 million, however, this estimate does not include embedded systems or some large areas of*

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[31] OGIT has begun drawing together agencies' estimates of their likely Year 2000 costs and has recommended that estimated costs be reported initially in November 1997, and then quarterly thereafter. OGIT reports that initial agency estimates of costs totalled $65 million, and that subsequent revisions have increased these costs to $147 million. OGIT cautions that the estimates are all based on different methodologies and speculated that the total cost of the Year 2000 projects is likely to be significantly understated.

[32] OGIT, Commonwealth Readiness for the Year 2000, Phase 1 - Assessment of Year 2000 Compliance Plans, Coopers & Lybrand, June 1997, page 16.

*Defence which are still assessing the cost: it is therefore expected to rise significantly.*[33]

**2.31** Similarly, the 1996-97 financial statements for the Department of Social Security states that a *project to make all automated systems Year 2000 compliant has been undertaken. The costs associated with this project are unable to be quantified at this stage.*[34]

***Finding:*** The ANAO found that less than half of the agencies surveyed were able to provide estimates of the total cost for their agency to become Year 2000 compliant. The evidence indicates that agencies do not have access to a consistent and systematic methodology to the analysis and projection of Year 2000 costs. The absence of reliable cost estimates constitutes a significant gap in information for decision-making in relation to the management of Year 2000 risk at a whole-of-government level and should be given priority to facilitate a planned, orderly and timely outcome. A more systematic approach to risk management would greatly assist agencies in these respects.

**Recommendation No. 2**

The ANAO recommends that OGIT, in consultation with lead agencies, develops a costing model to be used by agencies to estimate their Year 2000 costs reliably and accurately.

**2.32** Agencies responded to the recommendation as follows:

- *Agree*: DIST; DoFA; ATO; RBA; Centrelink; ASA; AMSA; HIC; DoD; DEETYA; DPIE; DHFS; ASC; and DVA.
- *Agree with qualification*: OGIT.

Specific comments by agencies are set out below.

- *OGIT response*: Agree with qualification. Since the ANAO survey, OGIT has established a Year 200 Reporting framework for agencies to report on a number of elements of their Year 2000 activities, including the estimated costs of addressing the Year 2000 issue. Agencies have been asked to provide costing information for the fiscal years ending 1997, 1998, 1999 and 2000 on the following categories: Year 2000 costs of non IT and IT business critical systems; Year 2000 project management

[33] Department of Defence, 1996-97 Annual Report.
[34] Department of Social Security, 1996-97 Annual Report.

costs; Year 2000 integration testing costs; Year 2000 costs for non-business critical systems; total Year 2000 costs; total application & maintenance budget (includes Year 2000 budget); [*and*] total IT budget. OGIT has also instructed agencies to restrict the estimated Y2K costs to those expenditures that are directly attributable to addressing the Year 2000 issue. OGIT is of the view that the reporting framework will bring about more consistent Year 2000 cost estimates across Commonwealth agencies.

- *DIST response*: Agree. The full costs of solving the Year 2000 processing problem should be available to the Secretary.
- *ASA response*: Agree. The development of an appropriate costing model by the Office of Government Information Technology should assist agencies to accurately estimate their Year 2000 costs.
- *Centrelink response*: Agree. A costing model template developed by OGIT would assist those agencies which don't currently have one, and ensure consistency across all agencies.
- *DHFS response*: Agree. This approach could be useful, but would need to have the flexibility to accommodate the different approaches to the issues being adopted across different agencies.

### *Procurement and contracting issues*

**2.33** Several large private sector companies have reported that a key part of their overall Year 2000 strategy involves a comprehensive assessment of the whole of their supply chain. While the products or services procured by an organisation may not, themselves, be date affected, there is a possibility that elements of the supplier's productive or business processes may be date affected and, therefore, at risk of Year 2000 related failure. This could result in an interruption of the delivery of key business inputs for which there may not be alternative sources of supply.

**2.34** DoFA is responsible for the administration of the broad policies and guidelines within which all Commonwealth agencies make their purchasing decisions[35]. Common use arrangements have been established in the form of standing offers from companies to supply goods and services for a period of time, under specified terms and conditions and agreed prices. Common use arrangements are in place for general goods and informational technology. The most recent common-use arrangement established is the Information

[35] The Procurement and Contracting Division (formerly Purchasing Australia) of the former Department of Administrative Services is now incorporated as a function of the Competitive Tendering and Contracting Group of DoFA.

Technology Services Panel, PE68, which covers a wide range of IT services[36]. Other common-use arrangements apply for IT and major office machines[37].

**2.35** Suppliers of information technology products have been requested to submit only Year 2000 compliant products for the Department's PE series of common use contracts. In addition, IT companies on the PE series of contracts for IT products have been informed that they will be required to agree to Year 2000 compliance clauses when their contracts are renewed in October 1997. An approved list of Year 2000 consultants and contract programmers under the IT services panel contract (PE68) has been established for legacy systems in use in government agencies. All government buyers of information technology will be advised to ensure that all purchasing evaluations consider Year 2000 compliance issues.

**2.36** In addition to the range of IT products and services covered by the PE series of contracts, Commonwealth agencies may be reliant on a variety of externally supplied non-IT business inputs. Some of these inputs will, inevitably, be dependent on upon date-affected production processes and business systems. A failure of a supplier's production, inventory and delivery mechanisms could impair a Commonwealth entity's ability to fulfil its own obligations (if third party failure results in a failure to supply a critical input).

**2.37** Several agencies have expressed concern to the ANAO about the need to seek assurances of compliance from providers of common services, in particular, services such as electricity, water and telecommunications[38]. Agencies have suggested that a single approach to suppliers of common use services on behalf of the Commonwealth would be preferable to multiple approaches by individual agencies. OGIT has made initial approaches to

[36] PE68 contracts cover: systems integration services; networking integration services; business consulting services; IT specialist services; application development services; and systems management services.

[37] These are: PE60 for small computer systems hardware and maintenance; PE 64 for software; PE65 for voice, data and video communications equipment and services; PE67 for medium and large systems hardware and maintenance; and BG57 and BG99 for facsimiles and photocopiers.

[38] Power generation and distribution, and water and sewerage services are characterised by a mix of private and public ownership. Those utilities that are still in some form of public ownership are, for the most part, corporatised entities and as such operate with a high level of autonomy from government. Furthermore, the current trend is towards a transfer of an increased share of utility ownership to the private sector. In addition, with deregulation, electricity can now be sold across State and Territory boundaries.

suppliers of telecommunications and utilities such as electricity and water to ascertain their Year 2000 status[39].

**2.38** Assurances of compliance may not be readily obtained. For example, the Telstra public share-offer document stated:

> *There can be no assurance that* [Telstra's Year 2000] *programme will be successful or that the date change from 1999 to 2000 will not materially affect Telstra's operations and financial results. Telstra's operations may also be affected by the ability of third parties dealing with Telstra to also manage the effect of the Year 2000 date change.* [40]

[39] OGIT reports that it has made an initial approach to telecommunications suppliers to determine whether they have posted statements of Year 2000 compliance on their web-pages. In addition, OGIT has obtained the agreement of State/Territory representatives from the Commonwealth/State Government Liaison Group to seek assurances from State/Territory utilities.

[40] *Telstra Public Offer Document*, dated 29 September 1997, page 34.

***Finding:*** Actions taken to date to address whole-of-government Year 2000 procurement risks are reasonably timely and appropriate. Greater attention should be given by agencies to managing the Year 2000 contracting risks associated with the procurement of non-IT goods and services. The ANAO considers that agencies should establish their level of reliance on third party suppliers of non-IT goods and services and, where necessary, seek to minimise their risks through cost-effective procurement, or contractual arrangements. This is an aspect of Year 2000 risk management which could benefit from guidance provided by relevant agencies such as OGIT and DoFA.

A whole-of-government approach to utility suppliers would be beneficial. The ANAO considers that OGIT is best placed to coordinate a single approach to suppliers of telecommunications, electricity, water and sewerage and other commonly used services in each State and Territory on behalf of the Commonwealth as part of its whole-of-government mandate.

**Recommendation No. 3**

The ANAO recommends that OGIT, in consultation with DoFA:

a) develops and promulgates Year 2000 guidelines to assist agencies with the management of purchasing risks arising from both common-use and unique supplier arrangements for IT and non-IT goods and services; and

b) on behalf of the Commonwealth, seeks written assurances about Year 2000 compliance from utility suppliers in each State and Territory and communicates the outcome to agencies.

**2.39** Agencies responded to the recommendation as follows:

- *Agree*: OGIT; DoFA; DIST; ATO; Centrelink; ASA; AMSA; HIC; DoD; DEETYA; DPIE; DHFS; ASC; and DVA.
- *Agree with qualification*: RBA.

**2.40** Specific comments by agencies are set out below.

- *OGIT response*: Agree. OGIT, in conjunction with the Competitive Tendering and Contracting Group in DOFA have been working on the

development of Year 2000 guidelines to assist all agencies in the management of Commonwealth contracts. Also, OGIT has been working with the Year 2000 Project Directors in State governments to develop a coordinated approach in seeking written assurances about Year 2000 from utility companies.

- *ASA response*: Agree. The development of Year 2000 guidelines for the minimisation of risks during agency purchases is strongly supported. This action coupled with written assurances from State and Territory utility suppliers concerning Year 2000 compliance would assist agencies to achieve the outcomes in these particular areas.
- *RBA response*: Agree with qualification. [*The RBA is*] significantly advanced in (its) Year 2000 project and common guidelines as suggested in part (a) may be of only limited use to us. The common approach to utilities outlined in (b) would be much more effective than approaches by individual agencies. Indeed, we would suggest that, in addition to seeking written assurances, OGIT facilitate a forum(s) at which utilities, common IT and non-IT vendors and service providers would make detailed presentations on their Year 2000 plans to the agencies.

**ANAO Comment:** The ANAO considers that the RBA's suggestion concerning a forum convened by OGIT involving utilities, common IT and non-IT vendors and service providers making detailed presentations on their Year 2000 plans to agencies has merit and its feasibility should be investigated.

# 3. Agencies' Preparedness

*This chapter discusses agencies' preparedness to address and resolve the Year 2000 problem.*

## Background

**3.1** In the private sector there is strong evidence that many large firms - particularly in the banking and telecommunications sectors - are vigorously assessing not only their internal Year 2000 status, but also that of the range of companies and organisations which intersect with their business[41].

**3.2** In responding to the ANAO survey 65 agencies (88 per cent) acknowledged that they are affected by the Year 2000 problem. Fifty agencies (68 per cent) acknowledged that the Year 2000 problem presented a risk of disruption to core business processes; 45 agencies (61 per cent) acknowledged a risk of adverse effects upon key customers and stakeholders; and 32 agencies (43 per cent) acknowledged a risk that they will be incapable of fulfilling their statutory obligations (see Exhibit 3.1).

**3.3** In many agencies, the Year 2000 problem is regarded as being primarily a 'computer' or IT problem and resolution is seen as an exercise in achieving date-field compliance in agencies' major IT business applications. The ANAO survey revealed an uneven level of understanding about the nature and scope of the Year 2000 problem, even though several agencies have reported incidents of date-field related failure when attempting to use '00' to represent the year 2000. Only 22 agencies (30 per cent) reported that they have a statement of Year 2000 compliance[42].

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[41] Examples cited in the media over the last 12 months include the Commonwealth Bank of Australia, Telstra, BHP and the NRMA, all of whom have published details of their actions to address the Year 2000 problem. Telstra, for example, has estimated its Year 2000 costs at $500 million (Source: Telstra *Public Offer Document*, Appendix 2, 'Financial Information', p. 37,) while a survey undertaken by the Reserve Bank of Australia has revealed that the Australian Banking sector has earmarked $600 million for Year 2000 compliance spending. (Source: Reserve Bank of Australia, *More on Risks in Banking*, speech to Institute of Banking and Finance by Deputy Governor, Graeme Thompson, October 1997).

[42] A statement of compliance provides a definition of Year 2000 compliance for the agency and its contractors and suppliers. Being 'Year 2000 compliant' means that neither performance nor functionality is affected by dates prior to, on and after 1 January 2000. In particular, (a) no value for current date will cause any interruption in operation; (b) date-based functionality must behave consistently for all dates; (c) in all interfaces and data storage, the century in any date must be specified either explicitly or by unambiguous algorithms or interfacing rules; and (d) the Year 2000 must be recognised as a leap year (source: OGIT 1997).

## Levels of preparedness

**3.4** In the context of this report, 'preparedness' is an indicator of the ANAO's *level of confidence* that agencies' have a sufficient appreciation of their Year 2000 risks and are positioned to complete their Year 2000 projects in time to avert potential failure of key business systems and processes. Although preparedness can serve as an indicator of the 'maturity' of agencies' Year 2000 projects, it is not a definitive measure of agencies' preparedness.

**3.5** The analysis of the questionnaire used a scoring technique which assigned values to agencies' responses to each question[43]. The values for groups of questions were then aggregated to provide an overall 'score' for major aspects of preparedness. Agencies' responses were unweighted in relation to agency size, profile or function[44]. The categories according to which questionnaire responses were scored were grouped as follows:

- ***input issues***, in relation to: the project management; organisational factors; the continued viability of business processes; and the continued viability of technological infrastructure; and
- ***output issues***, in relation to: customers and stakeholders; products and services; and whole-of-business issues.

**3.6** The input and output issues were analysed on an unweighted basis because the relative importance (in terms of risk exposure) of each of these issues would vary from agency to agency. As a result, the analysis assumes that each of these issues is of equal importance.

**3.7** The distribution of agencies' scores, expressed as a percentage (of a total score of 48 for agencies' responding to the short form questionnaire and 49 for agencies responding to the long form questionnaire) is illustrated in Exhibit 3.2.

**3.8** Exhibit 3.2 illustrates that about half of the agencies responding to the ANAO questionnaire achieved overall scores of less than 45 per cent. Conversely, 50 per cent of agencies achieved scores of between 45 per cent and 81 per cent. Agencies' scores do not directly correlate with a degree of

[43] In designing the questionnaire it has been necessary to make certain simplifying assumptions about the core elements of better practice in Year 2000 management. The questions used to assess preparedness assume significant potential risk exposures in agencies.

[44] The method of analysis did not allow consideration of any qualifying statements made by agencies to particular questions.

preparedness. For example, a score of 75 per cent does not mean that an agency is 75 per cent prepared. Rather, agencies' scores provide a broad indicator of confidence in agencies' approach to the Year 2000 problem[45]. For example, an overall score of 75 per cent would imply a higher level of confidence in the capability of an agency to successfully address the Year 2000 problem than would an overall score of 45 per cent.

**3.9** The ANAO's analysis assessed agencies according to four levels of preparedness, namely:

- ***unprepared*** - agencies have not adequately assessed their Year 2000 risks and are likely to be *unprepared* in most respects;
- ***somewhat prepared*** - agencies have undertaken some level of assessment but are likely to be *unprepared* in relation to a number key exposures;
- ***moderately prepared*** - agencies are well advanced with some aspects of assessment, but their preparedness is likely to be uneven; and
- ***reasonably prepared*** - agencies have made reasonable progress in most aspects of their Year 2000 projects and are likely to be positioned to achieve compliance in the time remaining.

**3.10** To be *fully* prepared would imply that agencies have successfully eliminated all sources of controllable risk and minimised foreseeable sources of uncontrollable risk. With two years to go until the year 2000, agencies would not be expected to claim that they are fully prepared, owing to the possibility that new sources of controllable and uncontrollable risk could emerge. However, it would be expected that agencies should be in a position to demonstrate relatively high levels of preparedness.

**3.11** For example, the term *reasonably prepared* does not mean that agencies are fully Year 2000 compliant or that the agencies are not presently subject to Year 2000 risk. It does mean that agencies' Year 2000 projects are sufficiently advanced to provide a reasonable level of confidence that they will achieve compliance. Agencies which are assessed as *moderately prepared* are also likely to be well advanced in most aspects of their Year 2000 projects and, as with agencies which are *reasonably prepared,* are likely to be well placed to substantially reduce their Year 2000 risks in the two years remaining to the year 2000.

**3.12** Levels of preparedness were determined for agencies on two bases:

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[45] Detailed assessments of preparedness at the individual agency level would require consideration of a broader range of information than could be collected by the questionnaire alone.

- for all agencies, undifferentiated by size or function; and
- differentiated according to whether agencies completed a long or short form questionnaire.

**3.13** The long form of the questionnaire was sent to agencies assessed by the ANAO as representing substantial potential exposures for the Commonwealth in terms of their functions, the size of their budgets and number of employees. The questionnaire results have been differentiated on this basis in order to isolate results which pertain to agencies representing, in aggregate, larger risk exposures relative to those agencies which were sent the short form questionnaire.

**3.14** It should be noted that the size and complexity of the Year 2000 problem will not be the same for all agencies[46]. The size of the problem, and therefore, the time and resources required to eliminate or minimise Year 2000 exposures, will vary in relation to a number of factors, including the agency's size, operational complexity, the nature of its key functions and the configuration of its IT environment (domain complexity).

**3.15** For example, large agencies which are reliant on mainframe computing systems for the administration and delivery of complex functions (such as the collection of government revenue or making payments) may require far greater lead time than smaller agencies that are reliant on mid-range or LAN-based computing systems. All agencies, particularly those which are reliant on mainframe and mid-range computing systems, will need to ensure that once the Year 2000 problem has been treated, sufficient time is available to rectify any errors that might be identified through compliance testing. Of course, treatment, testing and rectification need to have occurred before the critical point in time from which their systems must be compliant (their critical event horizon).

## Overall preparedness

[46] The RBA advised the ANAO that: *While there is obvious advantage in having Commonwealth agencies, where practicable, adopt a common approach to the management of the Year 2000 problem, specific elements of that approach - particularly the milestones and the governance mechanisms - must take into account the circumstances of individual agencies. The Bank, for example, is a major participant in the financial system and its Year 2000 project is being driven in important measure by the need to meet milestones adopted by other major players.*

**3.16** Agencies' responses to the ANAO survey undertaken in mid-1997 indicate that 28 per cent of all agencies are *unprepared* and 53 per cent are *somewhat prepared*. Conversely, 16 per cent of agencies were assessed to be *moderately prepared* and only three per cent are *reasonably prepared*. Although these results offer only a broad indication of the actual extent of agencies' Year 2000 preparations, they are not encouraging and, accordingly, the ANAO does not have a high level of confidence that the majority of agencies are well prepared for the Year 2000 problem[47].

**3.17** Agencies which completed the short form questionnaire generally demonstrate lower levels of preparedness than those agencies completing the long form questionnaire. Whereas 93 per cent of short form respondents were *unprepared* or *somewhat prepared*, 48 per cent of long form respondents were *unprepared* or *somewhat prepared*. By contrast, 47 per cent of long form respondents were *moderately prepared* compared to only five per cent of short form respondents while five per cent and two per cent of long and short form respondents, respectively, were likely to be *reasonably prepared.* These results show that agencies responding to the short form questionnaire were largely *unprepared/somewhat prepared* (see Exhibit 3.3).

[47] The ANAO notes that even when scores were moderated to a higher level, the overall results for the sample are still not encouraging.

***Finding:*** The responses of the majority of agencies broadly indicate the need to do much more to address their Year 2000 problem in terms of the various aspects of preparedness assessed by the ANAO questionnaire. The ANAO notes that agencies are at different levels of Year 2000 preparedness and that agencies assessed as being *moderately prepared* or *reasonably prepared* are in a better position to become Year 2000 compliant, providing they are able to sustain their current levels of effort over the next two years. Although there are several indications of good practice that reflect what can and should be done, the overall results of the ANAO's analysis suggest insufficient grounds to be confident about the ability of many agencies to achieve compliance without increasing their current Year 2000 effort (with attendant resource implications). Unless agencies can provide reliable assurances about their management of business risks associated with the Year 2000 problem, the possibility exists that core functions of government and the interests, and confidence, of clients and other stakeholders will be adversely affected with wide ranging potential consequences for program outcomes.

## Input issues

**3.18** Input issues refer to Year 2000 project inputs, including the resources deployed to address the Year 2000 problem, together with the organisational structures that support the project; and those inputs which support the productive processes of the agency, including the agency's core business processes and technological infrastructure.

### *Organisational factors*

**3.19** Most agencies demonstrated a low level of preparedness in terms of senior management acceptance and awareness of the Year 2000 problem. This assessment is based upon agencies' responses to a range of questions which focus primarily on corporate governance issues, including senior management involvement in agencies' Year 2000 projects; the preparation of regular Year 2000 status reports; and risk management activities. Seventy-three per cent of all agencies were *unprepared*/*somewhat prepared* in terms of this measure. A larger proportion of long form respondents than short form respondents were *moderately prepared*/*reasonably prepared* (42 per cent compared to 22 per cent). It is significant that no short form questionnaire respondent was found to be *reasonably prepared* (see Exhibit 3.4).

**3.20** Agencies demonstrated a low level of preparedness when examined in terms of the key elements of their project management, including:

- the composition and structure of their Year 2000 project team;
- project reporting structure;
- whether the project is primarily a responsibility of an IT functional area; and
- whether agencies have used a formal, structured and externally verified methodology to address their Year 2000 problem.

**3.21** Using these criteria, no agency (either short form or long form questionnaire respondents) was assessed as being *reasonably prepare* (see Exhibit 3.5). Only 19 per cent of all sample agencies were *moderately prepared* (42 per cent of long form and 11 per cent for short form respondents). By contrast, 81 per cent of all sample agencies were *unprepared*/*somewhat prepared* (58 per cent of long form and 89 per cent of short form respondents).

## Viability of business processes

**3.22** A majority of agencies exhibit a low to moderate level of preparedness in terms of the continued viability of their business processes. This assessment is based upon an analysis of agencies' responses to questions focussing on particular risks to agencies' operations and core business processes, as well as actions taken by agencies to address their risks. Seventy-two per cent of agencies were *somewhat prepared*/*moderately prepared* in relation to measures of whether their business processes will continue to operate through the turn of the century.

**3.23** Long form questionnaire respondents demonstrated a substantially better level of preparedness than short form respondents. Fifty-three per cent of long form respondents were *moderately prepared*/*reasonably prepared* compared to 37 per cent of short form respondents (although only 16 per cent and four per cent, respectively, were *reasonably prepared*). Conversely, no long form agencies were *unprepared*, as compared to 28 per cent of short form agencies (see Exhibit 3.6).

### *Viability of technological infrastructure*

**3.24** The overwhelming majority of agencies are unprepared in terms of their ability to provide assurance about the future viability and performance of their technological infrastructure. This assessment is based upon an analysis of agencies' responses to questions about actions taken to address Year 2000 risks to technological infrastructure, including IT components (hardware and software) and non-IT machinery and equipment (using embedded systems). The analysis took into account agencies' responses to questions about: the documentation of inventories of potentially affected systems; the volume of exposures; and, compliance testing. Ninety-two per cent of all agencies surveyed were assessed as unprepared (54 per cent) or somewhat prepared (38 per cent). Only seven per cent were assessed as moderately prepared and only one per cent were assessed as reasonably prepared.

**3.25** The results for agencies responding to the long form questionnaire were somewhat more positive than for agencies responding to the short form questionnaire. Sixteen per cent of long form respondents were moderately prepared/reasonably prepared while only five per cent of short form respondents were moderately prepared (none was reasonably prepared). Conversely, 64 per cent of short form respondents were unprepared, compared to 26 per cent of long form respondents, and 31 per cent were somewhat prepared, compared to 58 per cent of long form respondents.

**3.26** The poor result in relation to technological infrastructure led to a substantial reduction in the overall score for the fundamental question about whether Commonwealth agencies are prepared for the Year 2000 problem. This result is surprising in light of other indications that many agencies see the Year 2000 problem as primarily an information technology problem. What it suggests is that most agencies are at a relatively early stage of their assessment, testing and treatment of Year 2000 risks to their technical infrastructure (see Exhibit 3.7).

> ***Finding:*** A majority of agencies surveyed do not appear to be well prepared for the Year 2000 problem in relation to key input issues which affect the viability of their Year 2000 projects, as well as the on-going viability of their business processes and technological infrastructure.

## Output issues

**3.27** Output issues relate to the possible effects of a failure to adequately address the Year 2000 problem. These include effects on clients and stakeholders which might arise as a result of a loss of confidence or actual

hardship; interruptions to the production and delivery of products and services; and failures to take into account whole-of-business issues which adversely affect the organisation's productivity and competitive position.

### *Clients and stakeholders*

**3.28** Agencies should identify the clients and stakeholders whose interests and needs might be affected by the Year 2000 problem and establish clear channels of communication to provide appropriate assurance and to seek information which might be instrumental in reducing risk and/or adverse effects.

**3.29** Agencies demonstrated a higher level of preparedness in terms of the potential Year 2000 impacts on their customers and stakeholders. This assessment is based upon a consideration of the extent to which agencies recognise and have addressed the potential effects of the Year 2000 problem on their clients and stakeholders. The analysis also takes into account the extent to which agencies recognise their legal exposures and other risks arising from a failure on the part of organisations with which they have strategic relationships.

**3.30** The results for all agencies were fairly evenly split with 45 per cent being *moderately prepared*/*reasonably prepared* compared to 55 per cent who were *unprepared*/*somewhat prepared*. When the results are differentiated for the recipients of long and short form questionnaires, 90 per cent of long form respondents are *moderately prepared*/*reasonably prepared* compared to only 29 per cent of short form respondents. Conversely, 71 per cent of short form respondents are *unprepared*/*somewhat prepared* compared to 10 per cent of long form respondents (see Exhibit 3.8).

### *Products and services*

**3.31** Agencies demonstrated slightly less preparedness in terms of their management of the potential Year 2000 effects on the production of products and services. This assessment is based upon an analysis of agencies' responses to questions about Year 2000 risks which might affect their ability to fulfil their statutory responsibilities; expend program funds; procure needed inputs; and produce required outputs.

**3.32** Thirty-eight per cent of all agencies are *moderately prepared/reasonably prepared* while 62 per cent are *unprepared* or *somewhat prepared*. As with clients and stakeholders, the results for the sample as a whole disguise important differences between long and short form questionnaire respondents. While 89 per cent of long form respondents are *moderately prepared/reasonably prepared*, only 20 per cent of short form respondents are similarly prepared. Conversely, 11 per cent of long form respondents are *somewhat prepared* compared to 80 per cent of short form respondents who are *unprepared/somewhat prepared* (see Exhibit 3.9).

### *Whole-of-business issues*

**3.33** Agencies' preparedness was also measured in relation to a 'whole-of-business' view. This aspect addresses issues which cross the boundaries of two or more of the six input and output issues discussed previously and seeks to establish a level of confidence that agencies recognise the Year 2000 as a problem that affects them from a whole-of-business perspective.

**3.34** In making this assessment the following issues were considered:

- the progress of agencies' risk management activities;
- whether agencies have prepared contingency plans;
- whether agencies have identified the date of first impact;
- time spent to date working on the Year 2000 problem; and
- the extent to which Year 2000 activities appear to focus primarily on IT related risks.

**3.35** By this measure, 76 per cent of all agencies are *unprepared/somewhat prepared* compared to only 24 per cent which are *moderately prepared/reasonably prepared*. Agencies responding to long form questionnaires are slightly better prepared with 32 per cent being *moderately prepared/reasonably prepared* compared to 21 per cent of short form respondents (see Exhibit 3.10).

***Finding:*** A majority of agencies surveyed have not systematically and comprehensively analysed and established priorities for their Year 2000 risks from a whole-of-business perspective and are not well prepared for the year 2000 in terms of output issues, including assessment of the effects on clients and other stakeholders; interruptions to the production and delivery of products and services; and whole-of-business issues which affect their viability and credibility.

**Recommendation No. 4**

The ANAO recommends that agencies review and document their Year 2000 assessment and planning activity to ensure that agency management can make a confident assessment of the appropriateness and sufficiency of their approach from a whole-of-business perspective.

**3.36** Agencies responded to the recommendation as follows:

- *Agree*: DoFA; DIST; ATO; Centrelink; ASA; AMSA; HIC; DoD; DEETYA; DPIE; DHFS; ASC; and DVA.
- *Agree with qualification*: RBA.
- Specific comments by agencies are set out below.
- *DoFA response*: Agree. DoFA is currently undertaking a review and assessment of its Year 2000 obligations. The resultant outcome with its project overview and directions will enable both individual and whole of business assessment.
- *ASA response*: Agree. The Airservices Australia Year 2000 project plan focuses on a whole-of-business approach addressing IT and non IT issues. Airservices have addressed the business issues and business impacts within Airservices as well as those impacts likely to occur from external sources such as suppliers, customers and operators of adjoining airspace.
- *Centrelink response*: Agree. Centrelink have an ongoing program of review and documentation of their Year 2000 readiness which is being coordinated through the Project Office. OGIT's year 2000 quarterly reporting template should also assist in standardisation from a whole of government perspective.
- *RBA response*: Agree with qualification. It is not clear what level of documentation is intended. The Bank's Year 2000 Steering Committee already receives regular reports on Year 2000 assessment and planning activities.

- *DPIE response*: Agree. DPIE has reviewed its year 2000 activities from a whole of business perspective and has extended the project scope to ensure a consistent approach to the issue across the Department.
- *DHFS response*: Agree. DHFS already has a detailed plan to deal with Year 2000 issues. At the request of the Department's Executive, an independent internal assessment of DHFS preparedness for Year 2000 compliance, from a whole-of-business perspective, has been included on the 1997/98 Internal Audit work program.

# 4. Agencies' Year 2000 Management

*This chapter discusses a number of key issues which should be considered by agencies as part of their overall approach to the management of their Year 2000 problem.*

## Background

**4.1** Addressing the Year 2000 problem requires agencies to apply a whole-of-business focus, sound project management, and rigorous risk management disciplines. The following themes are common to most, if not all, recommended approaches to the Year 2000 problem:

- ***Awareness*** of the problem, by both executive management and business units. Awareness is an essential foundation for accountability and requires a communication strategy to ensure that internal and external stakeholders are kept informed.
- ***Assessment*** of the problem, involving the preparation of detailed inventories of business functions, business services, information technology and non-IT services; the identification, ranking and assessment of the risks; identification of resource requirements; development of plans to treat the identified risks; and the preparation of contingency plans to minimise the impact of any Year 2000 related business disruption.
- ***Management*** of the Year 2000 project, involving the assignment of clear roles and responsibilities within a coherent project management structure; assigning resources, including human resources, and procuring inputs; and establishing internal controls to ensure vertical and horizontal accountability.
- ***Monitoring*** the risks and progress of the project, involving the continual review and, as necessary, revision of risk assessments; applying quality assurance and verification processes; and establishing internal and external reporting protocols to keep relevant stakeholders informed about progress.

## Awareness

**4.2** All agencies responding to the ANAO's questionnaire have some knowledge about the Year 2000 problem, although the adequacy of their understanding varies. For example, only 22 agencies (30 percent) report that they have a statement of Year 2000 compliance and, of the 50 agencies which acknowledged a risk of disruption to core business functions, 10 had not yet commenced an assessment of how the Year 2000 problem affects them. Significantly, nine agencies responded that they are not affected by the Year 2000 problem.[48].

**4.3** Executive awareness and sponsorship of an agency's Year 2000 project is an important indicator of an agency's Year 2000 preparedness and appears to be associated with an acknowledgment that the Year 2000 problem represents a risk of business failure. The ANAO's survey revealed that 43 agencies (58 percent) provide the chief executive officer and/or executive board of management with periodic reports on the status of actions to resolve the Year 2000 problem.

**4.4** Corporate governance may be defined as accountability for an organisation's performance and focuses on the integration of the various processes used to direct and manage the business and affairs of an organisation. Senior management should be fully apprised of risks associated with the Year 2000 problem and act to ensure appropriate action to minimise such risks. Among the risks associated with the Year 2000 problem is the risk that agencies might be placed in breach of principles of common law, legislation and regulations; and/or guidelines and statements of sound administrative and financial management practice. Senior managers should be vigilant in ensuring that statutory and regulatory compliance of their agencies is not compromised by Year 2000 related failures.

**4.5** A recent ANAO publication, *Principles for Core Public Sector Corporate Governance,* identifies eight broad corporate governance principles which can be applied to agencies' management of the Year 2000 problem (see Exhibit 4.1). Senior management should have a clear understanding of the implications of the Year 2000 problem for their agencies and the extent to which it affect each of the major elements of corporate governance in the organisation.

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[48] The agencies which reported that they are already Year 2000 compliant are: the National Gallery of Australia; the Public Service and Merit Protection Commission; the Insurance and Superannuation Commission; the Department of the Prime Minister and Cabinet; the Australian Agency for International Development (AusAID); the Australian National Training Authority; and three functional areas within the Department of Primary Industries and Energy (Australian Bureau of Agricultural and Resource Economics, Agriculture and Forestry, and Resources and Energy).

***Finding:*** The ANAO found that many agencies surveyed reflected only a partial understanding or appreciation of the potential implications of the Year 2000 problem for their functions and business processes. For the most part, agencies have not been able to show that appropriate management and reporting structures have been put into place to support a whole-of-business approach to the problem, assure effective corporate governance of Year 2000 risks and demonstrate accountability to clients and stakeholders in relation to Year 2000 risks to agencies' performance.

The ANAO considers that the corporate governance regimes in agencies could be improved, for example, by strengthening internal controls[49] associated with Year 2000 projects and by improved reporting to senior management and chief executives. Such measures would lead to an overall enhancement of internal and external assurance about the effective management of the Year 2000 problem. Senior managers should be able to provide assurances to their chief executives about the use of resources (particularly assets); efficient operations (including the impact of suppliers' readiness and compliance with Year 2000 requirements); financial integrity and validity; compliance with legislation; accountability to clients and other stakeholders; and public safety and security.

**Recommendation No. 5**

The ANAO recommends that agencies establish appropriate mechanisms to ensure effective governance of their Year 2000 activities and to provide appropriate assurances to stakeholders in relation to the business implications of the Year 2000 problem, including assurances to stakeholders about the use of resources; efficient operations; financial integrity and validity; compliance with legislation;

[49] The ANAO issued a Better Practice Guide to Effective Control in December 1997. The Better Practice Guide provides a framework that can help public sector managers assess the appropriateness and effectiveness of their control structures. The Guide should prove a useful tool for encouraging the review, design and implementation of a control structure which fits the nature, assessed risks and required performance outcomes of an agency, particularly as it coincides with the introduction of the package of new financial legislation. It contains a brief outline of the concepts of control and a number of checklists on their practical application and is very much focused on controlling performance and outcomes. The Guide is a logical extension of the ANAO's discussion paper "Applying the Principles and Practices of Corporate Governance in Budget-Funded Agencies" in that it focuses on the issue of control, one of the three elements making up corporate governance (the other elements being stewardship and leadership). It is intended that the guide will be progressively updated to include the lessons learnt by agencies as they revise and implement control structures to align with the new financial management reforms.

accountability to clients and other stakeholders; and public safety and security.

**4.6** Agencies responded to the recommendation as follows:

- *Agree*: DoFA; DIST; ATO; Centrelink; ASA; AMSA; HIC; DoD; DEETYA; DPIE; DHFS; ASC; and DVA.
- *Agree with qualification*: RBA.

**4.7** Specific comments by agencies are set out below.

- *DoFA response*: Agree. The formation of the Year 2000 Steering Committee and the quarterly reporting requirements of OGIT will enable both governance and monitoring of the Year 2000 initiatives.
- *ASA response*: Agree. Airservices believes it has adequately addressed most of the governance principles detailed in Exhibit 4.1 of the report. The one area of some concern is external reporting. A communication strategy will be examined for the aviation industry and until 2001 the Airservices annual report will contain a situation report on the Year 2000 issue and works undertaken or proposed to manage this issue.
- *Centrelink response*: Agree. The Centrelink Year 2000 Project Office has been coordinating and monitoring project progress, and providing regularly reports to the Executive and the Board. Centrelink are also currently examining the performance agreements for senior executive staff with a view to including a measure against accountability for Year 2000 Compliance.
- *RBA response*: Agree with qualification. In our view, the Bank's Steering Committee provides an appropriate mechanism for ensuring effective governance of its Year 2000 activities.
- *DPIE response*: Agree. DPIE's approach incorporates the four key themes identified in the report: awareness, assessment, management and monitoring. The Department expects to be well positioned to provide assurances to stakeholders as the project develops further.
- *DHFS response*: Agree. The Departmental Audit Committee is oversighting the Department's Year 2000 Compliance Project.

## Exhibit 4.1
## Corporate Governance and the Year 2000 Problem

### 1. LEADERSHIP

This means that senior management should have a clear understanding of the implications of the Year 2000 problem for their organisation and the extent to which it could impact on each of the major elements of corporate governance in the organisation. Senior management also should be fully apprised of risks associated with the Year 2000 problem and act to ensure appropriate action is taken to minimise such risks.

### 2. STATUTORY ACCOUNTABILITY

Among the risks associated with the Year 2000 problem is the risk that agencies might be placed in breach of applicable statutes and regulations and relevant guidelines. As a result, senior management should ensure that statutory and regulatory compliance of their agencies is not compromised by Year 2000-related failures.

### 3. COMMUNICATION WITH CLIENTS AND OTHER STAKEHOLDERS

Agencies should identify the clients and stakeholders whose interests and needs might be affected by the Year 2000 problem and establish clear channels of communication to provide appropriate assurance and to seek information which might be instrumental in reducing risk and/or adverse effects. In this context, stakeholders should be taken to include the Parliament, Ministers, employees and third party providers of services or other inputs and the interests of Australian citizens as clients.

### 4. ROLES AND RESPONSIBILITIES

It is essential that agencies clearly define the division of responsibilities for managing aspects of Year 2000 work within a framework of strategic control. Senior management should ensure that each element of corporate governance in the agency has access to appropriate advice and resources to enable a realistic appraisal of their respective risk exposures; management and implementation processes should be clearly documented and the effective coordination and delivery of information and related technology ensured.

### 5. ACCOUNTABILITY FOR AGENCY RESOURCES

It is clearly essential to have an early assessment of the resource implications of any action needed to deal with the Year 2000 problem as well as to establish priorities. Senior management should ensure, for example, that Year 2000-related risks to employee health and safety are comprehensively addressed and that risks to the value and service potential of assets are minimised.

### 6. INTERNAL CONTROLS

It is important that Year 2000 related activity is subject to internal controls within the context of the agency's corporate plan or business charter. It is essential to ensure the provision of timely and appropriate management information to enable business managers to appraise Year 2000 related risks and acquit actions to reduce their risk exposure. The internal audit function should also be a key element of the agency's Year 2000 assurance mechanisms.

| 7. COMMITTEES |
| --- |
| The management and coordination of Year 2000 related activities could be maximised through the utilisation of the committee structures established to maximise effective governance of the agency. Care should be taken to promote effective linkages across business and/or administrative units and provide for independent external review of the systems of internal control used to address the Year 2000 problem. |
| **8. EXTERNAL REPORTING** |
| Agencies should ensure that timely, objective, balanced and readable information is available which provides assurance about the actions taken to minimise Year 2000 risks to stakeholders. Reference to action taken should be included as part of the organisation's Annual Report. |

Source: Adapted from ANAO, *Principles for Core Public Sector Corporate Governance,* Discussion Paper, Canberra 1997.

## Assessment

**4.8** The assessment phase is the most critical aspect of an agency's Year 2000 project. It is in this phase that agencies establish the parameters of their Year 2000 risks, determine their resource requirements and begin to put into place the strategies and frameworks that will guide their Year 2000 project to completion. Generally, considering the potential risks and costs involved, agencies have not demonstrated that sufficient internal resources have been assigned to address the Year 2000 problem or that they have adequately assessed the need for the procurement of products and services necessary to assist in becoming Year 2000 compliant. For most agencies this will be an exercise in priority setting as part of their overall risk management plan.

**4.9** The Management Advisory Board and the Management Information Advisory Committee (MAB/MIAC) have published Risk Management Guidelines for the Australian Public Service[50]. This approach can be applied by agencies in managing their risks in relation to the Year 2000 problem as they relate to establishing their risk context; identifying risks; analysing risks; assessing and prioritising risks; treating risks; and monitoring and reviewing risks (see Appendix B).

### *Prepare inventories*

**4.10** An important part of agencies' risk management of the Year 2000 problem involves the preparation of detailed inventories of applications, systems and third party services used to carry out business functions. Not all

[50] Management Advisory Board/Management Improvement Advisory Committee (1996), *Guidelines for Managing Risk in the Australian Public Service*, MAB/MIAC report No.22, AGPS, Canberra.

applications, systems or services are of equal importance in the fulfilment of an agency's mission or the delivery of its products. For this reason, it is essential that agencies identify the relative importance to their core business of the variety of business processes which are potentially Year 2000 affected. The object of this is to ensure that 'mission critical' business processes are given priority in any strategic targeting of agencies' Year 2000 resources.

**4.11** Fifty-nine agencies (80 percent) reported having begun the documentation of an inventory of IT services which are potentially affected by the Year 2000 problem. Of these, only 42 agencies (57 percent) provided specific detail about the number of items documented in their inventory. This suggests that many agencies are still in the process of compiling their inventories.

**4.12** In contrast to agencies' documentation of IT services, only 41 agencies (55 percent) had begun identifying and documenting an inventory of business functions which are potentially affected by the Year 2000 problem[51]. Only 22 agencies (30 percent) had begun documenting an inventory of the business services or other non-IT services they rely upon and which are potentially affected by the Year 2000 problem (although only two agencies provided specific detail about the number of products and services documented in the inventory) as outlined in Exhibit 4.2.

### *Identify, assess and set priorities for risks*

Agencies' responses to the questionnaire suggest a failure by some agencies to recognise Year 2000 risks to business processes and/or insufficient action to date to comprehensively assess the level of risk. Only 27 agencies (36 percent) reported that they have a documented corporate risk management plan[52]. Only 16 agencies (22 percent) reported that their agency's risk management plan includes advice and action to address the Year 2000 problem[53]. Notwithstanding these observations, 64 agencies (86 percent) reported that they have begun an assessment of how the Year 2000 problem affects their agency (although this does not appear to be occurring as part of an overall risk management framework).

Although many agencies recognise specific risks to their operations as a result of the Year 2000 problem, it appears that many agencies have not taken

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[51] Such as service delivery, income receipts, statutory, regulatory, fiduciary and other legal requirements.

[52] Eight agencies which reported that they are not affected by the Year 2000 problem did not have the opportunity to answer this question. When these are excluded from the sample, only 42 percent of the remainder report having a risk management plan.

[53] This equates to 22 percent of all agencies, or 25 percent of agencies excluding those which reported that they are not affected.

sufficient action to assess the scale or potential effect of various risks. Agencies were asked to identify whether they had documented an examination of the effects of the Year 2000 problem on a number of issues affecting their business. Agencies reported having examined the potential effects of the Year 2000 problem on the following:

- key customers and stakeholders (36 percent of agencies);
- key products and services (53 percent of agencies);
- how staff perform their work (46 percent of agencies);
- business functions (51percent of agencies);
- IT systems and applications (72 percent of agencies); and
- non-IT business inputs (42 percent of agencies).

The above observations are illustrated in Exhibit 4.3.

**4.13** Year 2000 risks associated with non-IT business services and equipment are the least comprehensively addressed of the acknowledged sources of Year 2000 risk. Non-IT related risk affects any electronic equipment whose operating mechanism uses a date-field. This includes building lifts, safety and security systems, some vehicles, facsimile machines, telephones and environmental control systems, among others. Failure of these systems could potentially result in a risk to personal safety, damage to premises and/or breaches to the security of premises.

**4.14** Agencies also need to take account of Year 2000 risks which might arise as a result of the reorganisation of work processes. One example is the outsourcing of non-core functions, including the outsourcing of IT services (see Exhibit 4.4).

**Exhibit 4.4**
**Outsourcing IT**

In October 1996 the Government announced a whole-of-government approach to the provision of selected IT services. The Government indicated that outsourcing would provide opportunities to achieve savings, rationalise technical solutions and support enhanced service delivery to clients.

Outsourcing IT represents a potential source of uncertainty for agencies' Year 2000 projects. Agencies which outsource IT service provision and management (in whole or in part) should ensure that their contract with the service provider addresses the Year 2000 issue and anticipates any Year 2000-specific costs and mechanisms for rectification and redress. Agencies should also take into account the possibility that IT outsourcing arrangements may involve the transfer of in-house IT personnel to the external provider, resulting in a transfer of skills and corporate knowledge.

Agencies should ensure that their systems are properly documented. In addition, agencies should recognise that some sources of Year 2000 risk exist outside the IT environment and, therefore, cannot be transferred to an IT service provider. Examples of these include building services and third party providers of non-IT goods and services.

Agencies should be aware that responsibility to provide assurance about the Year 2000 compliance of their business processes and systems remains with senior management. Agencies also should ensure the integration of their Year 2000 projects with the implementation of IT outsourcing arrangements in order to obtain the most efficient and effective use of resources from both functions.

**4.15** DEETYA has advised the ANAO in relation to the management of risks which arise when complex IT market testing processes are conducted in parallel with a program of the scale of the Year 2000 activites that:

> *In DEETYA's experience, the market-testing exercise is having two undesirable effects on the Year 2000 program. Firstly, the misconception that the Year 2000 problems may be solved by the successful outsourcer has been promoted by such documents as the Department of Finance's Estimates Memorandum (1997/13*), Year 2000 Date Change - Financial Implications. *Secondly, uncertainty about career options is leading to an increased level of resignations of agencies' technical staff. This is diminishing agencies' capacity to meet the increased demands of Year 2000 activities, market testing processes and normal production activities. There is significant risk that outsourcing of IT services may not deliver adequate assurance of Year 2000 compliance for individual agencies or the Government and public as a whole.*

**4.16** Agencies should also recognise the potential legal risks associated with the Year 2000 problem[54]. The legal issues surrounding the Year 2000 problem are extensive and merit serious consideration (see Exhibit 4.5).

### Exhibit 4.5
### Year 2000 legal considerations

The Year 2000 problem may involve legal risks to the Commonwealth, including risks associated with:

- litigation taken against the Commonwealth by clients and the public whose finances and investments have been damaged; and/or litigation associated with any deaths or injury derived from Year 2000 transition; and
- litigation taken by the Commonwealth against outsourced vendors, contractors, consultants engaged to rectify Year 2000 problems which have been missed and which have caused damage; and/or litigation against hardware manufacturers such as computer companies and contractors if the problem resides in hardware or embedded microcode as well as software.

Careful planning and remedial action implemented until the Year 2000 may greatly reduce the likelihood that the Commonwealth will either be, a party to, or exposed to litigation. Failure to address legal issues may lead to:

- loss of claims against vendors who otherwise might be required to pay for Year 2000 corrective costs;
- delays from third party vendor lawsuits;
- legal liabilities for breach of contract, negligence, economic loss; and
- breach of statutory obligations.

A sound administrative approach to solving the potential Year 2000 problem is to take early steps to reduce possible losses, not wait to recover losses once the Year 2000 problem arises. Preparation should include:

- recognising the Year 2000 problem and the legal liabilities it creates;
- identifying how Commonwealth agencies are vulnerable to the Year 2000 problem and assessing potential effects;
- planning a strategy including contract review and identifying legal restraints;
- implementing remedial action including contract renegotiation; and
- ensuring all future software licences and relevant contracts specifically deal with Year 2000.

[54] OGIT has advised the ANAO that it has *in conjunction with the Attorney General's Department … addressed the issue of public sector liability in terms of defining the Commonwealth's own liabilities as distinct from third party suppliers and business partners.*

### *Test for compliance*

**4.17** Compliance testing is an essential step in the provision of assurance about the correct functioning of business systems through to the turn of the century. Testing is necessary to identify any remaining problems and action required to rectify problems. It is significant that only 42 agencies (57 percent) reported that they have determined the date by which Year 2000 compliance will be achieved. Twenty-five agencies (34 percent) indicated that they do not yet know when they will achieve compliance. This suggests a relatively high level of uncertainty.

**4.18** Agencies were asked whether they had undertaken any 'real life' compliance testing for broad categories of business inputs and functions. The results for this question were:

- eight agencies (11 percent) reported that they had carried out real-life compliance testing of major business functions;
- 15 agencies (20 percent) reported that they had carried out real-life compliance testing of externally supplied IT products;
- 20 agencies (27 percent) reported that they had carried out real-life compliance testing of internally supplied IT products; and
- two agencies (three percent) reported that they had carried out real-life compliance testing of externally supplied non-IT products (see Exhibit 4.6).

**4.19** The ANAO survey revealed that:

- no agency has carried out testing in all four areas of major business functions, externally supplied IT, internally supplied IT or externally supplied non-IT services;
- two agencies (three percent) have carried out testing in three of the four areas;
- ten agencies (13 percent) have carried out testing in two of the four areas; and
- twelve agencies (16 percent) have carried out testing in one of the four areas (see Exhibit 4.7).

**4.20** These observations indicate that the majority of agencies have not reached a point in the progress of their Year 2000 projects where they are in a position to undertake compliance testing. Compliance testing of agencies' business systems is an essential element of their overall Year 2000 program (see Exhibit 4.8).

**Exhibit 4.8**
**Compliance Testing**

OGIT recommends that the 'end to end' testing of business-critical systems should be completed by June 1999 and the testing of less critical systems and end to end testing of external interfaces completed by September 1999.

The Australian Maritime Safety Authority (AMSA) and Centrelink are preparing to commence 'real life' testing which simulates actual operating conditions of their core business delivery systems. AMSA has plans to bring forward its testing of two mission-critical systems to ensure the timely completion of testing and any necessary remedial action.

Centrelink is in the process of developing a 'time machine' to enable compliance testing of its systems in a safe testing environment. This is in recognition of the complex nature of Centrelink's business-critical systems and the likelihood that a number of systems may experience date-related errors before 1 January 2000.

**4.21** Testing provides an assurance about the effectiveness of measures taken to treat the Year 2000 problem as well as an opportunity to identify previously undiagnosed problems and take appropriate action. After identifying at-risk business-critical systems (through the preparation of inventories) and taking appropriate action to treat the problem, agencies should undertake internal testing of their systems.

**4.22** Internal testing should be followed by the testing of key external interfaces. The latter may involve cooperative approaches involving two or more agencies and relevant private sector organisations with which agencies have a strategic relationship. The ANAO's survey revealed that some two thirds of agencies recognised a risk that they could be adversely affected by another agency's failure to resolve the Year 2000 problem. Despite this, only one third of agencies surveyed have addressed their strategic relations with Commonwealth, State and Territory Government agencies as a part of their assessment of Year 2000 effects.

**4.23** Agencies need to take into account the probability that testing activities may require generous lead times and in some cases will require the re-direction of internal resources and re-allocation of priorities which, in the short term at least, may affect the efficiency and effectiveness of some business operations. However, there is no real substitute for proven performance under operational conditions.

### *Contingency and disaster recovery plans*

**4.24** Contingency and disaster recovery planning is a necessary extension of agencies' overall risk management of the Year 2000 problem. Even where agencies have achieved a high level of confidence about their compliance, there is a possibility that some unforeseen, or uncontrollable source of risk might cause a disruption of their operations. Possible examples of uncontrollable risk include interruptions of telecommunications, electricity or water and sewerage services.

**4.25** Although twenty agencies (27 percent) have indicated that the first effects of the Year 2000 will occur within the next 12 months, only 11 agencies (15 percent) reported having commenced documentation of a Year 2000 contingency plan providing workable alternatives in the event of their being affected by the Year 2000 problem.

**4.26** The ANAO considers that agencies should be preparing contingency plans which assess the likelihood of key business systems failure; outline options and related costs for the substitution of business processes; and assess the effects of Year 2000 related failures of key business systems[55]. The ANAO considers that agencies approach to the Year 2000 problem should focus on maintaining their viability as a 'going concern'[56].

**4.27** Agencies responded to the recommendation as follows:

- *Agree*: DoFA; DIST; ATO; Centrelink; ASA; AMSA; HIC; DoD; DEETYA; DPIE; DHFS; ASC; and DVA.
- *Agree with qualification*: RBA.

[55] Some private sector firms advised the ANAO that the Year 2000 problem should be approached from a disaster recovery perspective. They stress that, unlike other forms of major corporate expenditure, investment in Year 2000 activities is a net cost to the organisation and does not necessarily lead to improved productivity or profitability. In essence, Year 2000 expenditure is the cost of remaining in business. To the extent that firms systematically address the Year 2000 problem, and so ensure their survival, there is a chance that their market share may increase as potential customers make Year 2000 compliance a part of their selection criteria and as firms take over the markets of competitors which fail during/after the Year 2000. In order to ensure their survival, these private sector firms are investing effort in the development of disaster recovery plans and business resumption plans.

[56] A failure of business-critical systems is likely to impair productivity and the achievement of program objectives. There may be few options to substitute alternative business processes and even where business processes are capable of being substituted, this is likely to involve additional costs.

***Finding:*** It is essential that agencies assess their Year 2000 risks in the context of an overarching corporate risk management plan in order to ensure that the problem is treated as a business risk affecting the whole agency. The ANAO found that approaches used by agencies surveyed to assess Year 2000 risks reflect general deficiencies in risk management, as evidenced by the small proportion of agencies which report having a corporate risk management plan. It is generally accepted that the Year 2000 issue is a whole-of-business problem and needs to be addressed corporately to ensure a comprehensive and timely outcome. Agencies' responses to questions about the preparation of inventories, risk assessment, resource requirements, compliance testing and contingency planning are generally suggestive of an unstructured approach to the Year 2000 problem.

Agencies have generally commenced the preparation of inventories of information technology, business functions, business services and other non-IT services. However, this work is not well advanced in most cases and, unless agencies take a systematic approach to the problem, potentially significant sources of risk requiring early action may not have been identified or could even be overlooked. The majority of agencies have not reached a point in the progress of their Year 2000 projects where they are in a position to undertake compliance testing of their systems and business applications and, as a result, are not yet in a position to offer assurances that their systems will operate as required in the year 2000 (or earlier, in the case of software applications which will need to use '2000' dates before 1 January 2000).

**Recommendation No. 6**

The ANAO recommends that agencies develop and document, as part of their overall risk management approach, a strategy for the management of Year 2000 risks that incorporates an analysis of the aspects of the operating, compliance and external environment that are potentially affected by the Year 2000 problem; the identification of possible sources of risk; an assessment and ranking of risks; options for the treatment of identified risks; and measures to monitor and review identified risks.

**4.28** Specific comments by agencies are set out below.

- *DoFA response*: Agree. A strategy for management of Year 2000 issues is nearing completion. This strategy will bring together the previous DoF strategy developed by UNISYS and the previous DAS strategy

developed by Coopers & Lybrand. The new strategy will be presented to the Year 2000 Steering Committee as part of the overall analysis of the combined Departments' review. A risk analysis and assessment from both management and technical points of view will form part of the current review and will be included in the presentation to the Steering Committee. This assessment will include a risk analysis of the total environment for which DoFA has carriage.

- *ASA response*: Agree. Airservices will develop a strategy for the development of risks utilising the key areas outlined in Appendix B of the report.
- *Centrelink response*: Agree. Centrelink have a well developed compliance strategy which addresses risk and project management. We are also currently reviewing the overall Centrelink Business Contingency Plan to take account of the risks to business operation of Year 2000.
- *RBA response*: Agree with qualification. However, for those agencies which do not already have one, the development of a comprehensive risk management approach may be a substantial undertaking at this stage; in such cases, individual business areas should assume responsibility for Year 2000 risk assessment and management.
- *DPIE response*: Agree. The Department's common inventory of affected systems are each assessed against common standards for business impact and risk of failure, resulting in prioritised activity aimed at risk mitigation.
- *DHFS response*: Agree. Many of the issues and related risks, perceived to be uniquely associated with Year 2000 compliance, are more appropriately ongoing business risks, many of them in the business resumption planning and management context. Accordingly, the Department is of the view that the risk management approach for Year 2000 issues should not be isolated from an overall agency approach to business risk assessment and management. It is in this whole-of-business corporate risk management context that DHFS will address the Year 2000 issues.

## Management

**4.29** Agencies' Year 2000 projects appear to be at differing stages of maturity, although there does not appear to be a strong relationship between the level of an agency's preparedness and the length of time it has been aware of, or actively working on its Year 2000 project. Timetables for phases of Year 2000 compliance activity may vary for agencies with different profiles. By

extension, agency profile (size, complexity, geographical distribution, nature of business) will influence the range and magnitude of risks relating to Year 2000 failure.

**4.30** A small number of agencies actually began their Year 2000 planning at a relatively early stage (17 agencies, or 23 percent, began in 1995 or earlier). Forty-one agencies (55 percent) commenced their assessment of potential Year 2000 effects in 1996 and 16 agencies (22 percent) began their assessment in 1997. It is significant that almost a quarter of agencies (22 percent) started their Year 2000 work relatively late (see Exhibit 4.9). Centrelink and the Australian Taxation Office advised the ANAO that the Year 2000 issues came to their attention some years ago, although the formal establishment of Year 2000 projects occurred more recently. These agencies view the issue of Year 2000 compliance as being, in part, an ongoing maintenance issue requiring specific management and resource inputs.

**4.31** Agencies should clearly define the division of responsibilities for managing aspects of Year 2000 work within a framework of strategic control. Agencies' senior management should ensure that each element of corporate governance in the agency has access to appropriate advice and resources to enable a realistic appraisal of their respective risk exposures; management and implementation processes should be clearly documented and the effective coordination and delivery of information and related technology ensured. The ANAO observed that a number of agencies, including the Reserve Bank of Australia, Centrelink and the Department of Finance and Administration, have established Year 2000 steering committees chaired by a member of the senior executive and involving senior managers of core business units.

**4.32** Fifty-seven agencies (77 percent) have established a Year 2000 project. In some agencies managers of business units have been enlisted in the process of analysing and ranking sources of Year 2000 risk; while, in many, the Year 2000 problem is being managed virtually exclusively within an IT functional area with little or no input from business unit managers. As a result there is, apparently, insufficient attention being given in many agencies to the non-IT risks and effects of the Year 2000 problem, including risks associated with the Year 2000 compliance of suppliers of business critical goods and services. The survey revealed that:

- 50 agencies (68 percent) reported having an overall Year 2000 project manager (including 16, or 80 percent, of long form respondents)[57];
- 49 agencies (66 percent) report that their Year 2000 project is primarily accountable through their IT functional area (this was also the case for 16 (22 percent) long form respondents); and
- 41 agencies (55 percent) reported that they have formally defined the roles of the individuals responsible for resolving the agency's Year 2000 problem (see Exhibit 4.10).

**4.33** The ANAO considers that there is a heightened risk that agencies' Year 2000 projects may not take a whole-of-business view of Year 2000 risks. This may mean that estimates of risk exposure and the potential for business system failure may be underestimated. This also suggests an impaired capacity to inform chief executive officers, Ministers and the Parliament about emerging Year 2000 issues and take decisions which will mitigate business risks.

***Finding:*** The ANAO found that almost one quarter of agencies surveyed reported that they do not have a Year 2000 project in place; approximately one third reported that they do not have an overall Year 2000 project manager or some designated coordinator; and nearly half reported that they have not formally defined the roles and responsibilities of individuals responsible for responding to the Year 2000 problem. In addition, almost one third of agencies reported that they do not provide periodic reports on Year 2000 progress to their chief executive or executive board of management. Mandatory quarterly reporting through OGIT should reinforce the involvement and responsiveness to the Year 2000 issue on the part of agencies' senior management. However, the ANAO considers that the potential business impact of the problem on the agency should be the more compelling catalyst to action.

**Recommendation No. 7**

The ANAO recommends that agencies review their Year 2000 project management and take remedial action to ensure that the project is governed by clear and achievable milestones which are regularly reviewed; all staff responsible for aspects of the Year 2000 project operate within clear authorities and lines of accountability; and the

[57] It should be noted that these are not necessarily full-time resources.

project has top level commitment, including for adequate resources and strategic direction.

**4.34** Agencies responded to the recommendation as follows:

- *Agree*: DoFA; DIST; ATO; RBA; Centrelink; ASA; AMSA; HIC; DoD; DEETYA; DPIE; DHFS; ASC; and DVA.

**4.35** Specific comments by agencies are set out below.

- *DoFA response*: Agree. Milestones and deliverables are included in the current review and will be stated in the Year 2000 project plan. The project will be managed by a dedicated project manager who is answerable to the Steering Committee. The formation of the Year 2000 Steering Committee, chaired by the Secretary and the provision of a project office with dedicated staff, will enable this recommendation to be addressed.
- *ASA response*: Agree. The Airservices Australia Year 2000 Project plan has clear and achievable milestones and has a Project Manager dedicated to the task. The project has Senior Management commitment and provides a clear strategic direction. The strategic direction and Project Management of the plan are scheduled to be reviewed at appropriate intervals.
- *Centrelink response*: Agree. Centrelink are following the compliance methodology as specified in the Year 2000 Compliance Plan.
- *RBA response*: Agree. The Bank's Year 2000 Steering Committee, which has the commitment of the Governors, has established clear reporting lines through existing line management and has set project milestones.
- *DPIE response*: Agree. The Department's Year 2000 project has the complete support of senior management. The project structure includes a dedicated project coordinator, business and technical contacts throughout the Department, legal and internal audit representatives.
- *DHFS response*: Agree. The Department's Information Technology Group (ITG) has appointed a high level Project Manager to manage the Year 2000 issues across the Department. A project plan for this purpose is in place. It is anticipated that compliance certification for the Department as a whole will be completed by December 1998.

## Monitoring

**4.36** Continued monitoring and review are necessary for the successful management of Year 2000 related risks because of the possibility that they may change over time both in terms of their nature and their relative significance, as may the mechanisms and tools to manage the Year 2000 risks efficiently and effectively.

**4.37** It is important that Year 2000 related activity is subject to internal controls within the context of the agency's corporate plan or business charter. It is essential to ensure the provision of timely and appropriate management information to enable business managers to evaluate Year 2000 related risks and take action to reduce their risk exposure. Agencies should also ensure that timely and objective information is available to stakeholders about the action taken to minimise Year 2000 risks.

**4.38** Few risks remain static and in a dynamic public sector environment agencies will need to be capable of responding to new sources of Year 2000 risk such as:

- administrative restructures, the transfer of functions and organisational amalgamations;
- requirements to implement new policies and programs and attendant business systems; and
- the on-going outsourcing of non-core functions and increasing levels of third party contracting.

**4.39** Many business systems will reach their 'critical event horizon' before the year 2000. For example, some applications supporting licensing functions already require a capacity to enter dates from 2000 onwards. This means that in some cases, business systems will start to fail even before 2000. For example, Centrelink has advised the ANAO that 1 January 1998 is a 'critical event horizon' for one of its major systems.

**4.40** While agencies which responded to the long form questionnaire are marginally more advanced than those responding to the short form questionnaire, these results suggest that all agencies should be further advanced than they are at this time. According to the Year 2000 project milestones issued by OGIT, agencies should have completed the testing of their business-critical systems by June 1999 and their less critical systems by September 1999[58]. Formal testing can uncover a high proportion of software errors with the remaining errors discovered during operations. This means that

[58] OGIT, *Year 2000 Accountability and Reporting Framework for Heads of Departments and Agencies*, Appendix B, 1997.

sufficient time should be allowed for the correction of software errors discovered following implementation[59].

**4.41** Before testing can occur, however, agencies will have to complete the conversion (repair or replacement) of their business-critical systems and completed assessment of non-IT products and services (by December 1998). The conversion of non-critical IT systems should be completed by May 1999. The lead times required for implementation will vary significantly, and agencies should be mindful of the propensity for 'slippage' in IT project implementation.

**4.42** OGIT suggests that scoping, initial assessment of likely effects and identification of business-critical and other systems should have been completed by June 1997. OGIT also suggests that by this date, cost estimates should have been established, critical event horizons determined and compliance plans completed[60]. Until these activities have been completed, implementation cannot proceed and testing cannot begin. Agencies' responses to the questionnaire suggest that few agencies have met these milestones and are, therefore, at risk of not meeting the recommended time frames for implementation and testing.

### *Documenting Year 2000 activity*

**4.43** From commencement to final implementation, an agency's Year 2000 project could span four to five years. Continuity and consistency in strategic approach and decision-making will be critical in bringing Year 2000 projects to successful completion. The documentation of decisions and action is an essential safeguard against the risks of loss of personnel, loss of corporate knowledge, changes in management and organisational changes.

**4.44** Field work conducted for the audit revealed a need for improved documentation of agencies' Year 2000 projects. Comprehensive documentation is essential in the event that agencies become the subject of legal actions, or if agencies initiate legal action, as a result of Year 2000 related systems failure, product failure or data error. Agencies may be required to demonstrate that appropriate action was taken to mitigate foreseeable Year 2000 risks when pursuing claims against (or defending claims by) third parties. Agencies may also be required to respond to new circumstances, or emerging problems in ways which will require them to re-trace some of the actions or decisions taken to date. Comprehensive

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[59] United States General Accounting Office, *Year 2000 Computing Crisis: An Assessment Guide*, Exposure Draft, February 1997, page 19.

[60] These time frames appear to be broadly consistent with those suggested by the US General Accounting Office and the UK National Audit Office, as well as with the time frames which are generally agreed by the private sector.

documentation makes this task much easier and assists in avoiding duplication of effort.

### *Quality assurance*

**4.45** Agencies rely to varying degrees on external assistance when undertaking aspects of their Year 2000 activities. Because the specifications for the renovation and testing of applications are based upon agencies' initial assessments of impact and risk, it is critical that the initial scoping activity be subject to rigorous quality assurance review. Many agencies appear to have carried out the initial stages of their Year 2000 work internally, using their own resources and personnel. A number of agencies, including the Department of Finance and Administration and the Australian Maritime Safety Authority, have engaged contractors to review their Year 2000 projects. Agencies may also use contractors to undertake renovation, testing and implementation activities.

**4.46** A number of factors can lead to a Year 2000 project team taking a narrow perspective on the risks to business of the Year 2000 problem. For this reason, it is important for agencies to seek some form of independent validation of their initial scoping and strategies[61]. Without a quality assurance process, there is an increased likelihood that significant risk exposures might go unrecognised and unaddressed. Few agencies appear to be utilising external expertise to provide quality assurance about the adequacy or appropriateness of their Year 2000 activities. This is surprising considering the limited experience to date in addressing the problem in the public sector.

**4.47** The Reserve Bank of Australia and the Australian Taxation Office have involved internal audit as a quality control mechanism for their Year 2000 project management. The potential also exists for internal auditors to take a 'lead role' in monitoring Year 2000 project management including assessing the quality of project documentation.

> ***Finding:*** The ANAO found that a majority of agencies surveyed have not yet reached a stage where they can confidently and reliably estimate their total exposure to the Year 2000 problem; identify the range and number of business inputs which are potentially affected; assign priority to systems, applications, infrastructure, products or services in terms of actual Year 2000 risk and potential effects on core business functions; provide assurance about the resolution of the Year 2000 problem for

[61] The Department of Employment, Education, Training and Youth Affairs (DEETYA) advised the ANAO that, in its experience, *the availability of external resources with demonstrable Year 2000 expertise is limited. In addition, many external audit organisations are reluctant to provide independent verification of Year 2000 compliance because of legal concerns.*

each of the business inputs upon which they rely; or offer assurances that their Year 2000 projects will be completed on time. The ANAO considers that agencies should establish an effective framework as soon as possible to monitor Year 2000 projects; provide quality assurance; improve accountability to clients and stakeholders; and enable timely adjustment or corrective action in relation to key project inputs or milestones. Ideally, this should be an integral part of their overall corporate governance framework.

**Recommendation No. 8**

The ANAO recommends that agencies establish a monitoring framework for their Year 2000 projects including independent review where considered appropriate; linkage with key corporate control systems; mechanisms which assure accountability for the implementation of the Year 2000 project on time and within cost and quality parameters; and internal and external reporting arrangements to monitor progress against key project milestones which are regularly reviewed.

**4.48** Agencies responded to the recommendation as follows:

- *Agree*: DoFA; DIST; ATO; RBA; Centrelink; ASA; AMSA; HIC; DoD; DEETYA; DPIE; DHFS; ASC; and DVA.

**4.49** Specific comments by agencies are set out below.

- *DoFA response*: Agree. The milestones and deliverables detailed in the current plan will enable both monitoring and audit procedures to be performed. The milestones and deliverables in the current plan detail timeliness and costings associated with the Year 2000 project. The structure of the reporting framework has been designed to imitate and extend the OGIT quarterly reporting requirements, not only for the Department as a whole but also for the individual business units within the Department. The established framework allows for costs to be adjusted and monitored over the life of the project.
- *ASA response*: Agree. Airservices Australia monitors the Year 2000 Project with periodic reporting to a Steering Group and Senior Management. This reporting framework provides internal controls to ensure the project achieves key project milestones.
- *Centrelink response*: Agree. Centrelink are also considering arranging an independent review process to ensure accountability of the Year 2000 activities.

- *RBA response*: Agree. The Bank's internal audit department is to provide an independent review of Year 2000 compliance activities and progress against project milestones.
- *DPIE response*: Agree. Responsibility for the year 2000 activities flow from the agency head, through operating group Executive Directors to key staff. Reporting occurs within these lines of responsibility, as well as overall project reporting on a monthly basis to the Executive Board by the Project Coordinator.
- *DHFS response*: Agree. As noted [in response to Recommendation 5], the Departmental Audit Committee will monitor and oversee the project within DHFS.

## Better administrative practices

**4.50** The Year 2000 date field changeover is a business problem with potentially significant implications for Commonwealth entities and their stakeholders. Year 2000 problems can be resolved satisfactorily provided they are accepted as issues to be addressed by the whole organisation as a matter of urgency. Resolving the Year 2000 problem requires the demonstration of effective corporate governance and the application of risk management disciplines. Commonwealth entities should act in ways which ensure business continuity and protect the interests of all their stakeholders.

**4.51** The problem is not just about IT, or computers, or software. Safeguarding business continuity will require the identification of the organisation's business-critical systems and other business inputs followed by an assessment of the extent of the Year 2000 exposure of these systems and the potential effects on the achievement of core business outcomes. Agencies subject to field work in the course of this audit acknowledged the tendency for Year 2000 projects to focus on specific IT-related Year 2000 risks, at the expense of overlooking larger business issues. Year 2000 project managers observed that this tendency can be mitigated by securing Year 2000 project sponsorship by senior executive management.

**4.52** A summary of the procedures identified in this report that can contribute to the effective management of the Year 2000 problem is presented in Appendix C. It should be noted that this approach is proposed as a generic example of sound administrative practice and should be adjusted to specific agency needs.

# Appendices

# Appendix A

## *Commonwealth agencies responding to ANAO Year 2000 questionnaire*

The questionnaires were sent out on 4 June 1997 with a request to submit completed returns by 4 July 1997. Only 19 completed returns were received by the closing date and the last return was received on 13 August 1997.

| **Breakdown of completed returns** | | |
|---|---|---|
| Number of questionnaires sent | **73** | |
| questionnaires received too late to be considered | | -1 |
| Questionnaires not received | | -4 |
| Additional responses | | +6 |
| Total number of completed returns | | **74** |

| **Long Form Questionnaires** | | ***Comment*** |
|---|---|---|
| 1) | Australian Bureau of Statistics | |
| 2) | Australian Customs Service | |
| 3) | Australian Maritime Safety Authority | |
| 4) | Australian Nuclear Science and Technology Organisation | |
| 5) | Australian Quarantine Inspection Service (AQIS) | *AQIS, a division of the Department of Primary Industries and Energy, was sent a long form questionnaire, but submitted its return in the short format as part of an overall DPIE submission* |
| 6) | Australian Securities Commission | |
| 7) | Australian Taxation Office | |

| | | |
|---|---|---|
| 8) | Bureau of Meteorology | |
| 9) | Civil Aviation Safety Authority | |
| 10) | Department of Defence | |
| 11) | Department of Employment, Education, Training and Young Affairs | |
| 12) | Department of Finance | *now the Department of Finance and Administration, incorporating functions of the former Department of Administrative Services* |
| 13) | Department of Foreign Affairs and Trade | |
| 14) | Department of Health and Family Services | |
| 15) | Department of Immigration and Multicultural Affairs | |
| **Short Form Questionnaires** | | ***Comment*** |
| 16) | Department of Industry, Science and Tourism | *now the Department of Industry, Science and Tourism* |
| 17) | Department of Social Security (DSS) | *references in this report are to Centrelink, the service delivery agency established to deliver functions formerly the responsibility of DSS* |
| 18) | Department of Veterans' Affairs | |
| 19) | Health Insurance Commission | |
| 20) | Reserve Bank of Australia | |
| 21) | Aboriginal and Torres Strait Islander Commission | |
| 22) | Administrative Appeals Tribunal | |
| 23) | Attorney-General's Department | |

| | | |
|---|---|---|
| 24) | Australian Agency for International Development (AUSAID) | *AusAID responded that it is Year 2000 compliant (agencies which reported being compliant were not required to complete the remainder of the questionnaire, however, AusAID did complete the questionnaire)* |
| 25) | Australian Archives | |
| 26) | Australian Broadcasting Authority | |
| 27) | Australian Broadcasting Corporation | |
| 28) | Australian Communications Authority | |
| 29) | Australian Competition and Consumer Commission | |
| 30) | Australian Electoral Commission | |
| 31) | Australian Federal Police | |
| 32) | **Short Form Questionnaires** | ***Comment*** |
| 33) | Australian Geological Survey Organisation (AGSO) | *AGSO is a division of the Department of Primary Industries and Energy* |
| 34) | Australian Industrial Property Organisation | |
| 35) | Australian National Audit Office | |
| 36) | Australian National Training Authority (ANTA) | *ANTA responded that it is Year 2000 compliant* |
| 37) | Australian Protective Service | |
| 38) | Australian Sports Commission | |
| 39) | Australian Trade Commission | |
| 40) | Australian Transaction Reports and Analysis Centre | |
| 41) | Comcare Australia | |

| | | |
|---|---|---|
| 42) | Commonwealth Grants Commission | |
| 43) | Commonwealth Superannuation Administration | |
| 44) | CSIRO | |
| 45) | Department of Administrative Services (DAS) | *DAS was abolished in October 1997, its functions have been absorbed into the new Department of Finance and Administration* |
| 46) | Department of Communications and the Arts | |
| 47) | Department of Industrial Relations | *now the Department of Workplace Relations and Small Business* |
| 48) | Department of Parliamentary Reporting Staff | |
| 49) | **Short Form Questionnaires** | ***Comment*** |
| 50) | Department of the Environment | *formerly, Department of the Environment, Sport and Territories* |
| 51) | Department of the House of Representatives | |
| 52) | Department of the Prime Minister and Cabinet (PM&C) | *PM&C responded that it is Year 2000 compliant* |
| 53) | Department of the Senate | |
| 54) | Department of the Treasury | |
| 55) | Department of Transport and Regional Development | |
| 56) | DPIE - Agriculture and Forestry | *separate return submitted - responded that it is Year 2000 compliant* |
| 57) | DPIE - Australian Bureau of Agriculture and Resource Economics | *separate return submitted - responded that it is Year 2000 compliant* |

| | |
|---|---|
| 58) DPIE - Bureau of Resource Sciences | *separate return submitted* |
| 59) DPIE - Resources and Energy | *separate return submitted - responded that it is Year 2000 compliant* |
| 60) Environment Australia | *includes functions of the former Australian Nature Conservation Agency (ANCA) and functionally a division of the Department of the Environment* |
| 61) Family Court of Australia | |
| 62) Federal Court of Australia | |
| 63) High Court of Australia | |
| 64) Industry Commission | |
| 65) Insurance and Superannuation Commission (ISC) | *ISC responded that it is Year 2000 compliant* |
| 66) **Short Form Questionnaires** | ***Comment*** |
| 67) Joint House Department - IT | *separate return submitted* |
| 68) National Crime Authority | |
| 69) National Gallery of Australia (NGA) | *NGA responded that it is Year 2000 compliant* |
| 70) National Library of Australia | |
| 71) Office of the Director of Public Prosecutions | |
| 72) Public Service and Merit Protection Commission (PSMPC) | *PSMPC responded that it is Year 2000 compliant* |
| 73) Special Broadcasting Services | |
| 74) Worksafe Australia | |

| |
|---|
| ***Questionnaires not received or considered*** |

| | | |
|---|---|---|
| 1) | Australia New Zealand Food Authority | *questionnaire received too late for consideration* |
| 2) | National Capital Authority | *completed questionnaire not submitted* |

# Appendix B

## *Risk Management of the Year 2000 Problem**

### 1. ESTABLISH THE RISK MANAGEMENT CONTEXT

| Establish the criteria which form the basis for controls and management options and which are fundamental to ranking risks. | |
|---|---|
| **Focus of Analysis** | Those aspects of the organisation's operating, compliance and external environment that would be affected by the Year 2000 problem |
| **Key Impact Areas** | • organisation's ability to fulfil statutory obligations<br><br>deliver programs and services; or provide financial assurance |

### 2. IDENTIFY THE RISKS

| Undertake a comprehensive examination of the Year 2000 problem. | |
|---|---|
| **Focus of Analysis** | *possible sources of risk* |
| **Key Impact Areas** | • breaches of contractual or statutory obligations<br><br>• social and political repercussions of any failure of key government functions such as payments or revenue collection<br><br>health and safety of employees or clients if building safety or environmental systems fail to operate. |
| **Focus of Analysis** | *possible areas of risk impact* |

| | |
|---|---|
| **Key Impact Areas** | • risks to assets and resources through the failure of safety or security systems such as locking and monitoring devices, sprinklers, climate control systems or fire alarms<br>• impacts on productivity and outcomes of direct costs and indirect costs of fixing the problem<br>• potential impacts on people and the community of any failure in the delivery of programs and services<br>impacts on individual and corporate performance of any failure of core business systems |
| **Focus of Analysis** | *possible methods of identifying risks* |
| **Key Impact Areas** | • audits and inventories of IT and non-IT systems<br>• conduct surveys or questionnaires of key suppliers and vendors<br>• examine local and overseas experience<br>• conduct modelling and testing of systems |
| **Focus of Analysis** | *key questions to be asked in identifying risks* |
| **Key Impact Areas** | • who are the stakeholders and how will they be affected?<br>• when, where and how are the risks likely to occur?<br>how reliable is the information used to assess the likelihood and impact of the risk? |

*Source: Adapted from Management Advisory Board/Management Improvement Advisory Committee (1996), *Guidelines for Managing Risk in the Australian Public Service*, MAB/MIAC report No.22, AGPS, Canberra.

## 3. ANALYSE RISKS

| Assess the likelihood and consequences of each risk factor and decide which risks will have the greatest potential effect. | |
|---|---|
| **Focus of Analysis** | comprehensive analysis of risks and likely impacts |
| **Key Impact Areas** | • repair, replacement or retirement of affected business-critical systems<br><br>repair, replacement or retirement of other affected business systems/equipment |

## 4. ASSESS AND PRIORITISE RISKS

| Decide whether risks are acceptable or unacceptable and then rank the risks in terms of management priorities. | |
|---|---|
| **Focus of Analysis** | Take account of the wider context of the risk |
| **Key Impact Areas** | • statutory requirements<br><br>• legal obligations<br><br>• degree of control over each risk<br><br>impact, costs and benefits involved |

## 5. TREAT THE RISKS

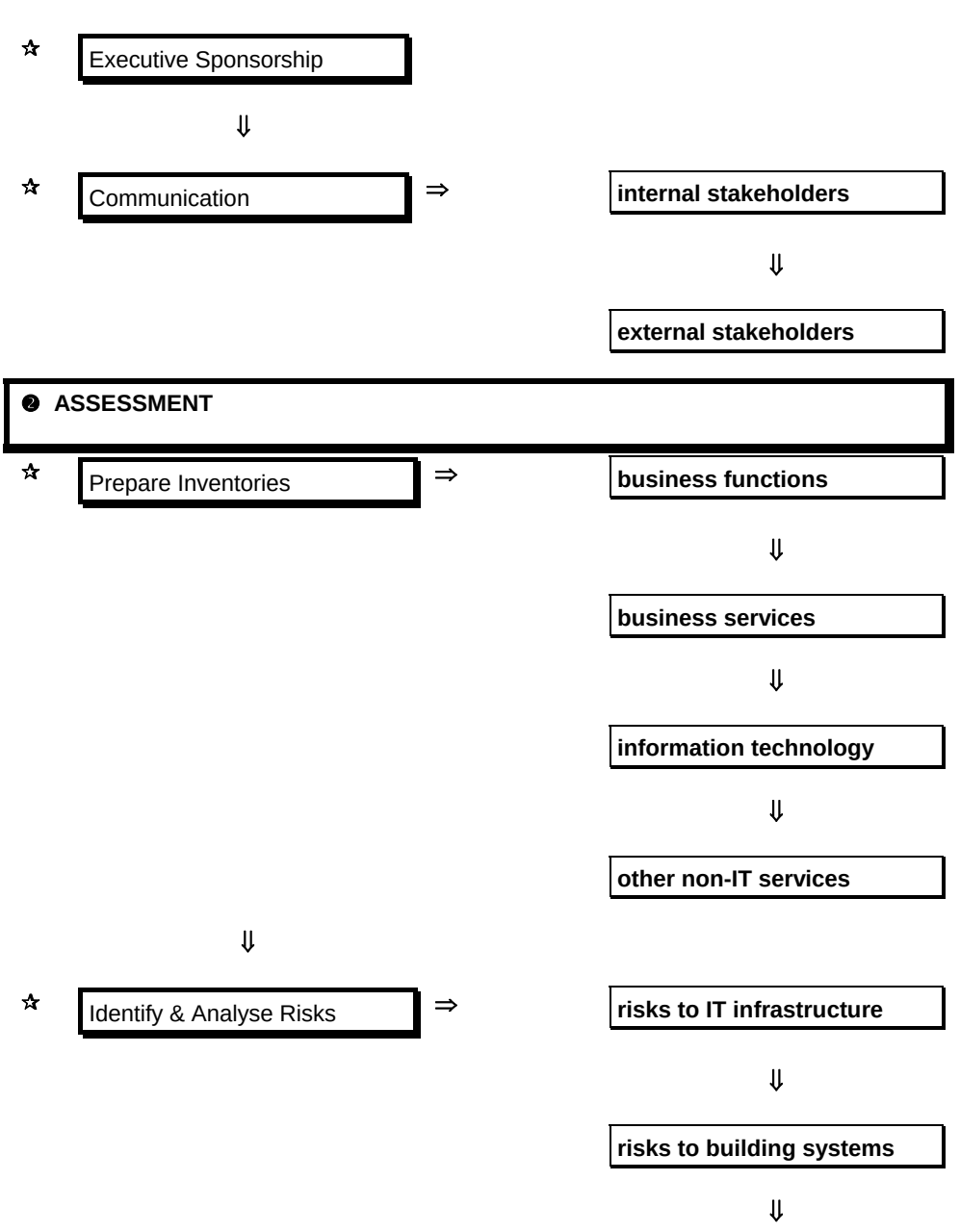
| Decide on and implement options for treating the risk. | |
|---|---|
| **Focus of Analysis** | *avoid the risk* |
| **Key Impact Areas** | • do not proceed with the activity that would incur the risk<br>• choose an alternative means of action that produces the same outcome (for example, by deciding not to add major new functionality to business systems which have not yet been made compliant) |
| **Focus of Analysis** | *reduce the level of risk* |
| **Key Impact Areas** | reduce either the likelihood of occurrence or the consequences or both (for example, through the repair, retirement or replacement of affected systems and equipment and through management controls to minimise adverse consequences, such as contract conditions or contingency planning) |
| **Focus of Analysis** | *transfer the risk* |
| **Key Impact Areas** | allocate responsibility to the party which can exercise the most effective control over the risk or by sharing some part of the consequences of the risk in an agreed manner. (Note: outsourcing IT does not amount to the transferral of the responsibilities for Year 2000 risk) |
| **Focus of Analysis** | *accept and retain the risks* |
| **Key Impact Areas** | where risks cannot be avoided, reduced or transferred, or where the cost to avoid or transfer the risk cannot be justified (ie. non-critical business systems might be allowed to remain in place until they fails to operate, after which a business decision can be taken about replacement or retirement). |

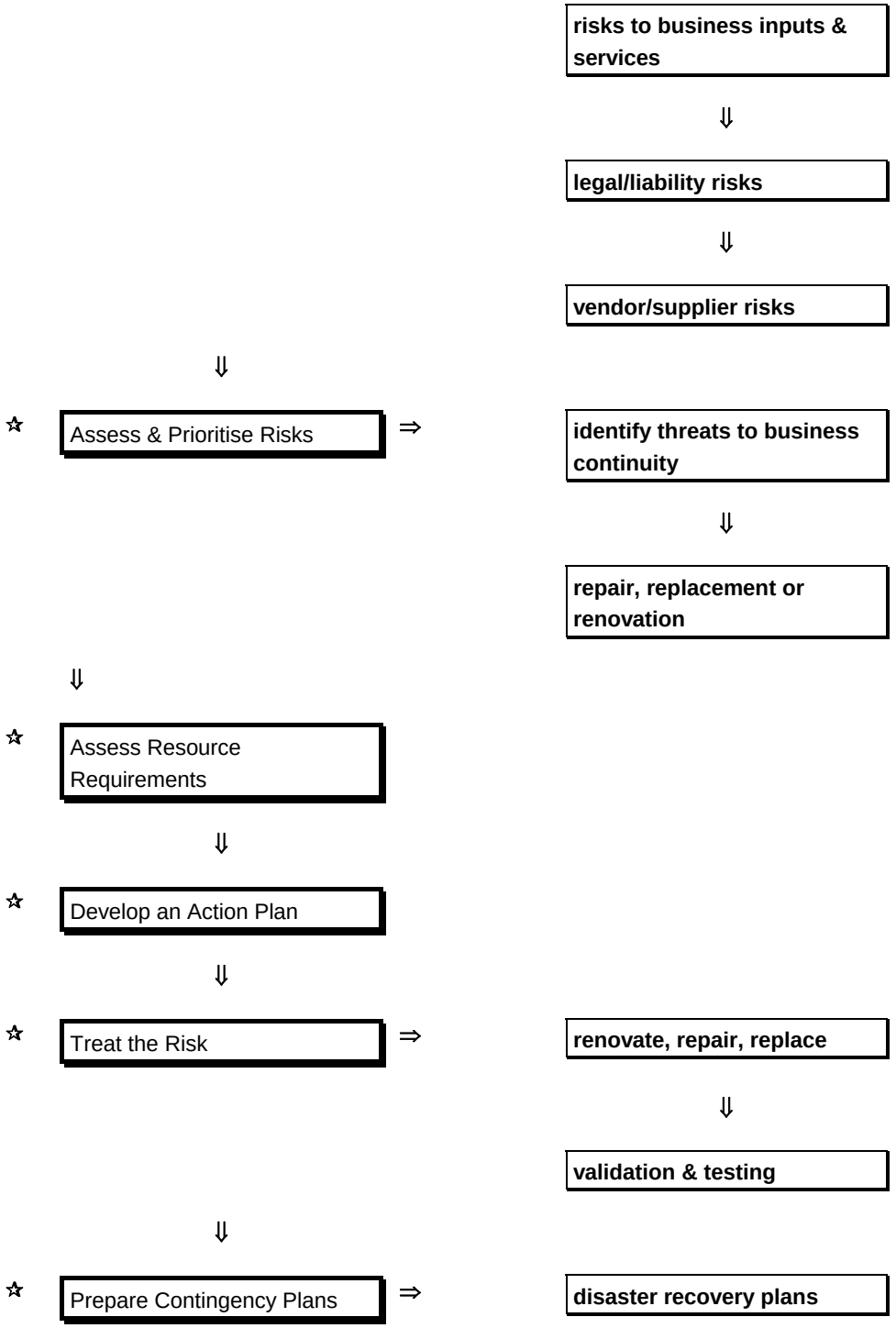
## 6. MONITOR AND REVIEW RISKS

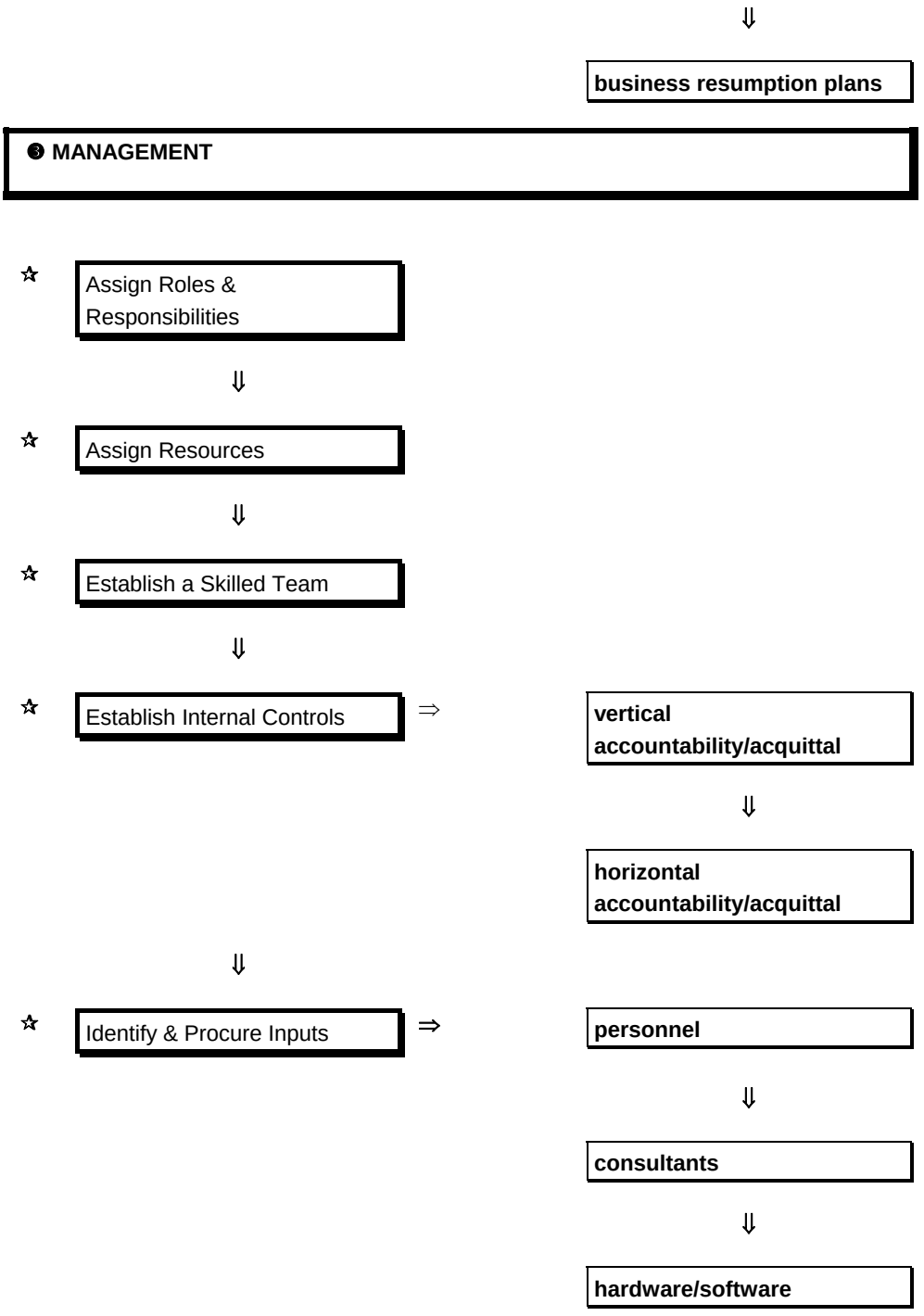
| Assess the effectiveness of the risk management plan and the strategies and systems established to control the implementation of the risk treatment. | |
|---|---|
| **Focus of Analysis** | ensure capability to respond to new sources of Year 2000 risk |
| **Key Impact Areas** | • administrative restructures<br>• transfer of functions and organisational amalgamations<br>• requirements to implement new policies and programs and attendant business systems<br>• out-sourcing of non-core functions and increasing levels of third party contracting declining affordability of Year 2000 related services<br>leakage of IT expertise and corporate knowledge to the private sector |

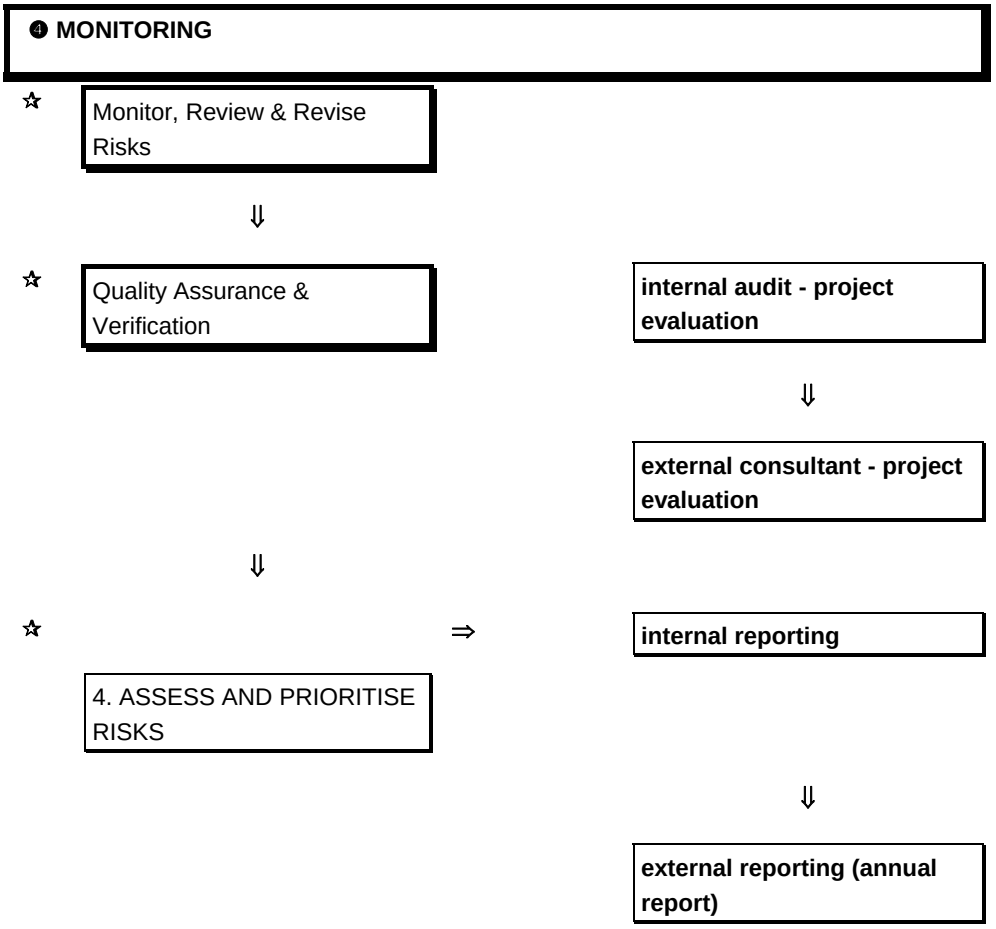
# Appendix C

## *Year 2000 Management Framework*




risks to business inputs & services
legal/liability risks
vendor/supplier risks
Assess & Prioritise Risks
identify threats to business continuity
repair, replacement or renovation
Assess Resource Requirements
Develop an Action Plan
Treat the Risk
renovate, repair, replace
validation & testing
Prepare Contingency Plans
disaster recovery plans


business resumption plans
❸ MANAGEMENT
Assign Roles & Responsibilities
Assign Resources
Establish a Skilled Team
Establish Internal Controls
vertical accountability/acquittal
horizontal accountability/acquittal
Identify & Procure Inputs
personnel
consultants
hardware/software


❹ MONITORING
Monitor, Review & Revise Risks
Quality Assurance & Verification
internal audit - project evaluation
external consultant - project evaluation
internal reporting
4. ASSESS AND PRIORITISE RISKS
external reporting (annual report)

Source: ANAO