



Independent Pricing and Regulatory
Tribunal, NSW

**Asset Management Requirements
For Operating Licences**

Sydney Water Corporation
Sydney Catchment Authority

Final Report

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Executive Summary

The Scope

GHD has been engaged by the Independent Pricing and Regulatory Tribunal (the Tribunal) to provide advice on asset management requirements for possible inclusion in the Operating Licences for Sydney Water Corporation (SWC) and the Sydney Catchment Authority (SCA).

Definition of Asset Management

In this report, the term **asset management** is considered holistically and defined as:

“Processes, practices, systems and plans, which are used to manage the life cycle of assets.”

In this report, assets are physical system and non-system assets and do not include the catchment and natural resource assets of SCA or SWC, as these natural assets are monitored through the environmental programs and Operating Licence provisions of the respective agencies.

Why Asset Management Is Important

SWC manages water supply, sewerage and drainage assets while SCA manages water headworks assets with a combined total written down replacement value of some \$18 billion. Most of these assets have long service lives, and require ongoing attention to satisfy maintenance, replacement, expansion and retirement needs, as well as meeting changing expectations of service levels. Running down the assets can result in gradual degradation of performance, and can carry significant risks of failure to deliver the required service levels and broader consequences to people, property, the environment and the economic well being and comfort of the community.

Establishing the Need for Asset Management Licence Provisions

GHD has undertaken a review of current legislation, Operating Licence provisions and other means of regulating asset management in NSW, and considered submissions to the Licence Review process undertaken by the Tribunal. GHD also briefly reviewed asset management regulation in other jurisdictions.

The review establishes a need for asset management provisions in Operating Licences for SWC and SCA. The need can be summarised as follows:

- ▶ The effective and efficient management of assets is a critical component of the business of SWC and SCA, and has a major impact on the services delivered and the cost of those services.
- ▶ The Tribunal, as the Licence Regulator on behalf of the Government and representing the community, has an interest in ensuring that the agencies' assets meet required service levels at an efficient, sustainable and affordable cost, and are effectively managing asset risk.



- ▶ Effective long-term management of the infrastructure assets is required if SWC and SCA are to meet the objectives of their respective enabling Acts and other regulatory and government objectives.
- ▶ While there are specific provisions relating to some assets in the SCA Licence (for dam safety and catchment infrastructure) there are currently no clear overall regulatory principles or objectives for asset management in the SWC and SCA Licences or other regulatory instruments.
- ▶ For SWC, there are no regular or systematic reporting regimes or audits for asset management to communicate information about asset management practices to stakeholders and provide confidence in asset management. Asset management issues currently arise irregularly from pricing reviews, operational audits and other reviews, which may then give rise to specific requests by the Tribunal or the Minister for submission of documentation relating to asset management planning or strategies.
- ▶ For SCA, the annual Operational Audit reviews and reports on management and operation of catchment infrastructure works and dams, and covers a range of asset management areas. The audit is undertaken at an overall level, and does not involve any specific or public reporting by SCA on asset management.
- ▶ While there do not appear to be any major asset management issues with either SCA or SWC, previous reviews found particular areas where there is insufficient external understanding, including maintenance and renewals programs and expenditure, and long term planning to meet service standards. Risk management for critical assets (apart from dams) has also been identified as a gap in external understanding.
- ▶ Successful long-term asset management requires continuing vigilance, and on-going application to considering future needs. The NSW Government expects regulation, via the Operating Licences, to help minimise any adverse outcomes. The agencies, on the other hand, benefit from the regulator keeping them focussed on their obligations, year after year, into the future.
- ▶ Government and non-government stakeholder responses to the Licence review process generally are seeking assurance that asset management within SWC and SCA is part of an integrated approach to water cycle management. Further, that the agencies are applying least cost planning, and provide confidence in the future security of service provision and management of failure risk. This assurance and confidence does not exist at present, in part due to a lack of transparency, and stakeholders support asset management provisions in Licences as a means to achieve this.

These findings indicate that the current means of regulating asset management do not provide a consistent framework for establishing overall and continuing confidence to the Tribunal, NSW Government or other stakeholders that assets are being managed to meet best appropriate practice, or achieve optimal outcomes in terms of efficiency, effectiveness and management of risk.



Providing this confidence would also assist both water agencies in supporting and justifying pricing submissions, and assist through simplifying asset management considerations.

A number of other jurisdictions, both in Australia and overseas, have asset management regulatory requirements, including in Operating Licences for utility businesses. These are tending to evolve over time with the objective of providing a more holistic understanding of asset management in the context of performance and pricing regulation.

In order to provide overall confidence to stakeholders that SWC or SCA are applying good governance practices and assets are being managed appropriately, it is considered important that asset management be specifically (or more specifically, in the case of SCA) addressed as regulatory provisions. It is further considered that the Operating Licences are the most appropriate place for these provisions.

SWC, in its submission to the Licence review, questioned whether the Licences are the most appropriate place for regulating asset management. Rather, SWC indicated that confidence in asset management can be improved through increased transparency, which does not necessarily require inclusion in the Operating Licence. In response, it is considered that the Operating Licence, as the legal basis to enable and require these agencies to provide services, is the most appropriate place for asset management provisions. The Licences are the main mechanism set in place by the NSW Government to achieve both transparency and public confidence in the agencies, and require the agencies to report performance against the Licences and for this in turn to be independently audited through the Tribunal.

SWC also proposed that instead of asset management requirements in the Licence, SWC would independently audit its asset management performance against the Water Services Association of Australia (WSAA) Asset Management Framework, and that the Tribunal audit this as part of the pricing review. WSAA is a water industry association with members comprising major water agencies across Australia. Currently, Water Agencies self possess their performance against this framework, and a consultant appointed by WSAA provides independent validation. While the WSAA Framework is a comprehensive tool for benchmarking of water business processes and can provide some assurance of good asset management practice in a generic sense, it is not, in itself, considered sufficient to provide confidence in performance and sustainability of asset management practices as applied by SCA or SWC to meet their specific business objectives. A WSAA benchmarking review could, however, be offered by the agencies to the Tribunal to support their asset management documentation.

Asset Management Objectives

The following are proposed as the key objectives of asset management provisions in Operating Licences for SWC and SCA.

1. The primary regulatory objective is **to provide confidence to the Tribunal and stakeholders that SWC and SCA are managing their assets sustainably and efficiently over their whole life cycle**. The provisions should create this obligation to manage assets.



2. The three aspects proposed as the basis for provisions in amended Operating Licences for SWC and SCA are to seek assurance that:
 - ▶ Their assets will meet **required service levels** now and into the future.
 - ▶ Assets are provided at an efficient, sustainable and affordable cost.
 - ▶ **Asset risk** is effectively managed to remain viable and to minimise the risk to customers and the regulator/government from major asset or whole system failures, or operational malfunctions and their consequences.
3. Provisions should drive or facilitate *continuous improvement* in asset management.
4. Adequate communication and transparency should be provided through appropriate reporting and independent auditing of asset management.

Recommended Asset Management Provisions

Four options were considered for asset management provisions in Operating Licences, ranging from the current situation to extensive asset management regulation as practiced by the Office of Water Regulation (Ofwat) in the UK. Having assessed the benefits and costs of these options the following recommendations are made.

Recommendation 1: Asset Management In the Operating Licences.

It is recommended that the Operating Licences for both SWC and SCA be amended to:

- 1.1 *Create asset management obligations in the Operating Licences,*
- 1.2 *Require the provision of a regular strategic asset management overview or “State of the Assets” report, and*
- 1.3 *Require auditing of asset management obligations as part of the operational audit.*

This approach is considered to be the most appropriate to meet outputs in terms of confidence, and transparency from regulation while minimising costs and resource needs.

The recommended outline provisions for SWC are summarised below. The recommended provisions for SCA are similar, but with changes to reflect the different asset base and service obligations. There is a need to refine the outline provisions recommended, ensure legal definitions are correct, and seek feedback on the final wording from relevant stakeholders and the agencies. Some aspects of the recommended outline provisions may be more appropriate to include in separate clarifying documentation (possibly a Monitoring and Reporting Protocol or similar document) to provide definitions, interpretations and agreed details about communications and management of the process. The adopted provisions should be reviewed at the next Licence review to reassess if objectives have been met, and if necessary to make appropriate amendments to the provisions.



Recommendation 2: The Operating Licence Obligations.

It is recommended that obligations be created in the SWC Operating Licence to:

2.1 *Require SWC to have in place asset management processes, practices, systems and plans which enable it to effectively and sustainably achieve service performance requirements including requirements specified in legislation, the Licence, the Customer Contract, by other regulators, government direction and memoranda of understanding, both now and into the future; manage the risks of potential failure or reduced performance of assets; and respond to incidents and emergencies.*

2.2 *Require SWC to integrate the asset management requirements with corporate and service obligations to meet those obligations at the lowest life cycle cost and acceptable risk.*

2.3 *Require SWC to have in place asset management systems, processes and plans covering the whole of life of assets.*

2.4 *Require SWC to meet the asset management requirements for all the assets of SWC including water supply, sewerage, drainage, and corporate or non-system assets.*

Recommendation 3: The Reporting Requirements.

It is recommended that:

3.1 *SWC be required to provide a strategic asset management overview or "State of the Assets" report containing specified information on its performance against the above provisions (recommendations 2.1-2.4). This report is required twice in the Licence period (currently 5 years), at times agreed jointly between the Tribunal and SWC.*

The above report should be of sufficient detail to provide a basis for independent audit of the Licence provisions. The extent of information in the report may need to be determined by agreement or over time, taking into account the need for transparency, balanced by consideration of issues such as security.

Recommendation 4: The Audit Requirements.

It is recommended that the auditing of the Operating Licence be extended to:

4.1 *Cover SWC's performance in relation to the asset management obligations.*

4.2 *Cover asset management processes, practices and plans in relation to specified asset management areas of interest.*

The purpose of the specified asset management areas of interest is to incorporate a risk-based approach to asset management regulation and provide some flexibility in the application of regulatory requirements. The specified areas could include where:

- ▶ The previous audit identified inadequate performance or an improvement need;
- ▶ There is specific evidence of a failure of the asset management systems to meet requirements, such as in the event of a major foreseeable failure of a critical asset; and,



- ▶ The Tribunal desires to obtain a more detailed level of assurance that the agency is appropriately managing specific assets or issues.

Recommendation 5: Asset Management Audit Period.

5.1 It is recommended that the asset management component of the operational audit be undertaken twice in each Licence period, following submission of the strategic asset management overview or ‘State of the Assets’ report. This should be reviewed in the next Licence period.

Recommendation 6: Operational Asset Management Audit Requirements.

It is recommended that the operational audit requirements for asset management be to provide an independent report on the:

- 6.1 Robustness of SWC’s processes, systems and plans to meet Licence obligations.*
- 6.2 Asset management improvements proposed by SWC to address deficiencies in 1.*
- 6.3 Progress on implementation of improvements.*
- 6.4 Include the review of the strategic asset management overview or ‘State of the Assets’ report.*

Auditors should have access to all required supporting information for the purposes of the audit, as determined by the auditor. The audit information must address the Operating Licence Obligation set out in Recommendation 2. The audit submissions by SWC may be supported by an independently verified and industry-accepted benchmarking report, such as the WSAA Asset Management Benchmarking Framework.



1. Introduction

GHD has been engaged by the Independent Pricing and Regulatory Tribunal (the Tribunal) to provide advice on asset management requirements for possible inclusion in the Operating Licences for Sydney Water Corporation (SWC) and the Sydney Catchment Authority (SCA).

A copy of the Terms of Reference for the assignment is provided in Appendix A.

This report:

- ▶ Outlines the existing provisions for regulation of asset management in the New South Wales water sector and other utility sectors,
- ▶ Reviews asset management in other Australian States and a limited selection of international locations,
- ▶ Reviews submissions to the Tribunal as part of the Licence review process currently underway,
- ▶ Proposes a framework for asset management regulation for SWC and SCA,
- ▶ Evaluates options for asset management regulation for SWC and SCA, and
- ▶ Recommends suitable asset management provisions for inclusion in Licences for SWC and SCA, following discussions and workshops with the Tribunal, the Licensees and stakeholders.

2. The Relevance of Asset Management

2.1 What is Asset Management?

People interpret asset management to mean many different things, depending on their perspective, knowledge and level of interest and application of the subject. Commonly, asset management is considered to only apply to maintenance and renewal of assets.

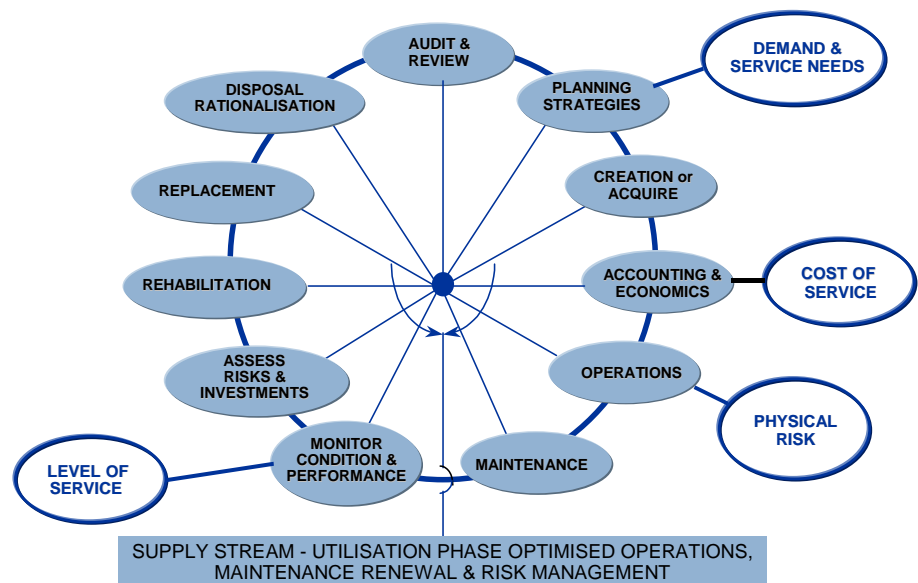
In this report, for clarity and for the purposes of considering asset management provisions in Licences, asset management is considered holistically with the following definition:

“Asset management is the processes, practices, systems and plans which are used to manage the life cycle of assets.”

The life cycle of assets relates to the cycle of planning, creating, operating and maintaining assets throughout their period of service or life, ultimately to be demolished, removed from service, replaced or upgraded.

The following diagram outlines in more detail the life cycle of assets, taking into account the external influences of the demand for services the assets provide, and their cost and risk implications.

Asset Management Life Cycle





In this report, assets are physical system and non-system assets and do not include catchment and natural resource assets, as these natural assets are monitored through the environmental programs and Operating Licence provisions of the respective agencies.

2.2 Why is Asset Management Important?

Water agencies provide assets to enable them to deliver services or products, for example:

- ▶ Store, treat or convey water;
- ▶ Convey, treat and dispose of or reuse sewage; or
- ▶ Convey stormwater.

Most assets are designed to provide these services for long periods of time, commonly 40 to 100 years, and over 100 years in the case of major dams.

These assets require ongoing expenditure on operations, maintenance, planning and management. This expenditure comprises the majority of operating costs associated with water agencies.

The assets require capital investment to service new growth, ensure compliance with standards of service, improve operational efficiency, or for renewal or refurbishment.

The assets also require ongoing assessment in terms of their capacity to deliver to contemporary standards, which historically have become more demanding over time.

To provide some perspective of the value of SWC and SCA assets and their associated costs, some key asset statistics are presented in Table 2-1.

Table 2-1 Asset Values, Operating Costs and Capital Expenditure

Parameter	SWC \$M	SCA \$M
Approximate written down replacement value	16,748 ³	1,700
Total operating cost (2002/03)	774 ¹	67 ²
Maintenance and renewals capital expenditure (2002/03)	173 ¹	N/A
Total capital expenditure (2002/03)	523 ¹	24 ²

Source: 1. IPART SWC Pricing Determination

2. IPART SCA Pricing Determination

3. SWC 2003 Annual Report



Managing the assets also carry risks, including:

- ▶ Risk of failure and loss of service, possibly with further consequences such as death or injury of persons, or damage to property or the environment. For major assets these consequences can potentially be very large;
- ▶ Risk of insufficient capacity or capability to meet demand for the service or provide the required service quality; and
- ▶ Risk of loss of public confidence and community amenity due to performance failures.

In order to deliver the services and manage these costs and risks in an efficient manner, water agencies should have processes and systems in place which answer questions such as:

1. Do we know the required service level of our assets in terms of meeting demand, quality of output and service life, both now and in the future?
2. Do we know what assets we own or manage, and their ability to deliver the required service?
3. Do we know the risks associated with our assets (failure, financial, legal) and what risks we are prepared to accept?
4. Do we know what our assets cost to operate and maintain, and whether this is as efficient as possible?
5. Are our new asset investment decisions soundly based on sustainable principles?
6. Do we have a robust overall strategy, with the right quantum of operating expenditure and capital expenditure, and the right balance between the two?
7. Do we have the appropriate organisation structure, people, tools and commercial approach to effectively and efficiently deliver services through our assets?
8. Do we regularly review our practices, technology employed and performance, compare them with others by way of exercises such as benchmarking, and implement improvement plans to remain competitive in our business?
9. Do we have plans in place to address current and future service needs?
10. Do we have plans to minimise the risk and impact of failures to critical assets, and to respond to foreseeable and unforeseeable emergencies?

Answering these questions can be complex and requires interaction between the agency, its customers, other utilities businesses, and other external stakeholders to achieve the appropriate balance or trade-off between service level, performance, cost, and risk.



In summary, the effective and efficient management of assets is a critical component of the business of water agencies, and has a major impact on the service delivered and the cost of that service. Good governance and due diligence principles also dictate that water agencies be capable of providing appropriate responses to these questions.

2.3 How is Asset Management Relevant to Regulators?

Regulators oversight performance and/or prices of both public and privately owned utilities which provide services to the community, where there are monopoly or competition issues involved, on behalf of the responsible State or Federal Government.

In order to discharge their responsibilities to their communities, regulators are required to oversee the utilities, which may be in terms of ensuring that services are delivered to the required standards, meet demand, minimise impact on the environment and do so at reasonable and affordable cost. In addition, major failures to deliver services to the community can result in unfavourable repercussions on the regulator or the government, and regulators expect to have confidence that major failure risks are minimised.

The problem often comes to the attention of the community at some point in the future when a major failure occurs. Correction strategies may result in rapid, large increases in expenditure in order to quickly address backlogs in maintenance or capital works, accompanied by communication strategies and personnel changes to restore confidence in the utility. On the other hand, “gold-plating” of assets results in a continuing unnecessary cost to consumers, and an economic burden on society. The temptation to gold plate can be reduced by appropriate asset management strategies, which provide the knowledge to manage the risks at least cost.

Consequently, there are three aspects of utility asset management, which are generally of relevance and importance to regulators:

- ▶ Utilities ensure their assets meet **required service levels** now and into the future.
- ▶ Utilities provide assets at an **efficient, sustainable and affordable cost** – neither being run down nor “gold-plated”.
- ▶ Utilities are effectively managing **asset risk** – both to remain viable in the long term and to protect customers, the regulator and the government from major asset failures or operational malfunctions and their consequences.

These three aspects incorporate the key elements of asset management - service, risk and cost - which must be balanced or traded-off against one another to achieve appropriate and sustainable long-term performance of assets. Addressing these aspects will provide confidence to a regulator that assets are being appropriately managed.



3. Existing Asset Management Regulatory Provisions

3.1 Introduction

This section reviews existing provisions in legislation, Licences, government policies or guidelines, or other requirements for asset management by SWC and SCA, and considers how these provisions address the key aspects of relevance to regulators.

3.2 Legislation

Legislation of the water sector in NSW has few specifically mandated requirements referring to asset management, although there are numerous general references to operating, maintaining and managing systems and references to services, such as “supply water” – all of which require appropriate and sustainable management of the service delivery assets. These activities come within the definition of asset management, but there are no requirements, which holistically draw together all the elements of asset management. In addition, Sydney Water is required to be a successful business, for which appropriate asset management is necessary, given the dependence of the business on the operating assets.

Some relevant sections of the Sydney Water Act are:

Sec 14 Terms and Conditions of Operating Licence

1(a) “To provide, construct, operate, manage and maintain efficient, co-ordinated and commercially viable systems and services for supplying water, providing sewerage services and disposing of wastewater.”

1(c) “To ensure that the systems and services meet the quality and performance standards specified in the operating licence in relation to water quality, service interruptions, pricing and other matters determined by the Governor and set out in the operating licence”

Sec 21 Objectives of Corporation

“(1) to be a successful business and, to this end:

(i) to operate at least as efficiently as any comparable businesses, and

(ii) to maximise the net worth of the State’s investment in the Corporation.”

For Sydney Catchment Authority, the Sydney Water Catchment Management Act 1998, contains a range of references, including:

Sec 13 Role

The role of the Authority is, subject to and in accordance with this Act:

“(a) to manage and protect the catchment areas and catchment infrastructure works....”



Sec 14 Objectives

The principal objectives of the Authority include as follows:

- (1) *“(a) to ensure that the catchment areas and the catchment infrastructure works are managed and protected so as to promote water quality, the protection of public health and public safety, and the protection of the environment....”*

Sec 16 Specific Functions

- (1) *“(d) To manage and protect the catchment areas and the catchment infrastructure works vested in or under the control of the Authority”*

The Water Management Act 2000 principally deals with the sharing of water and protecting the environment, rather than with infrastructure issues:

Sec 3 Objects

“The objects of this Act are to provide for the sustainable and integrated management of the water sources of the State for the benefit of both present and future generations.”

3.3 Licences

The Operating Licences for both SWC and SCA are the legal authority from the NSW Government, as owner, to enable and require these agencies to lawfully provide services. Both Licences have general provisions that require the relevant agency to provide, construct, operate and maintain systems for providing the relevant services and ensure the specified performance standards are met. Both agencies have general obligations to meet the requirements of the relevant enabling Act and other legislation. Specific provisions relate to risk management for water quality.

Both Licences require the agencies to develop a draft list of environmentally sustainable development (ESD) indicators. Specifically:

“The draft list must have regard to:

- (a) Corporate management (including corporate policy and planning, and corporate asset management);*
- (b) Management of the system; and*
- (c) The planning, design and construction of:*
 - (i) new Systems;*
 - (ii) the upgrading of existing Systems; and*
 - (iii) depots.”*

The SWC Operating Licence includes general provisions which require the agency to “exhibit a sense of social responsibility by having regard to the interests of the community in which it operates”, and to protect the environment and public health. A specific provision is in Section 4:



“4.1.1 This Licence is granted to enable and require Sydney Water to provide, construct, operate, manage and maintain efficient, co-ordinated and commercially viable Systems for providing the Services throughout the Area of Operations.”

The SCA Operating Licence has specific clauses as follows:

“3.2 1 The Authority acknowledges that its principal objectives under Section 14(1) of the Act are:

(a) to ensure that the Catchment Area and Catchment Infrastructure Works are managed and protected so as to promote water quality, the protection of public health and public safety, and the protection of the environment” and

(d) to manage the Authority’s Catchment Infrastructure Works efficiently and economically and in accordance with sound commercial principles.”

and

“8.1 Management of Catchment Infrastructure Works.

8.1.2 The Authority must ensure that Catchment Infrastructure Works are designed, operated and managed to provide Sydney Water Corporation with a long-term standard of services which accords with the performance criteria set out in Schedule 2.”

The relevant performance criteria relate to reliability, robustness and security of the water supply to SWC by SCA.

In addition, the SCA Operating Licence has a specific clause relating to its major assets:

“8.2 Dam Safety

The Authority must comply with the guidelines of the Australian National Committee on Large Dams and the NSW Dam Safety Committee.”

A water quality Risk Management Plan and Incident Management Plan are required of SCA.

In relation to audits, both Operating Licences have general requirements that cover the Licence provisions, which could be interpreted to include but do not specifically reference asset management. For example, the SWC Operating Licence contains:

“10.2.1 The Licence Regulator or the person undertaking the Annual audit must investigate and prepare a report on the following:

a range of items covering the specific provisions of the Licence, plus

(r) any other matter required by this Licence or the Act to be assessed or considered as part of the Annual audit.”

For comparative purposes, the Licence for Hunter Water Corporation was also reviewed. This Licence contains very similar provisions to the SWC Licence, with no specific asset management requirements.



3.4 Other Regulatory Provisions

There is a range of other regulatory provisions, including:

- ▶ Statements of Obligations between SWC/SCA and the NSW Treasurer. These documents have not been provided for review.
- ▶ Water Management Licence, granted to the SCA by the Department of Infrastructure, Planning and Natural Resources (DIPNR) under the Water Act 1912, to enable the SCA to extract and use water from identified water sources (for example: rivers) and water management works (for example: dams).
- ▶ Bulk Water Supply Agreements. These address both the quality and quantity of bulk water supply and exist between the SCA and SWC, and are also required between SCA and its other customers.
- ▶ Memoranda of Understanding (MoU). SCA and SWC maintain agreements which regulate a range of interface issues such as pricing, service standards and operating protocols. MoU are required with NSW Health; Department of Environment and Conservation (formerly EPA); and the Water Administration Ministerial Corporation (DIPNR).
- ▶ General regulators or authorities, including Workcover, Auditor-General; Cabinet Office; Community Relations Commission; ICAC; Ombudsman's Office; Privacy Commission.

The above regulatory provisions or agreements may be drivers of asset management practices, but have not been reviewed specifically for asset management provisions. Consequently they have not been dealt with any further in this report.

However, there is potential for overlaps to occur between the "technical regulators" for water agencies (Department of Health, the Dams Safety Committee and Department of Environment and Conservation (DEC)) and the Tribunal as Licence Regulator. These issues should be addressed over time, through mechanisms such as agreements or Memoranda of Understanding between the Licence Regulator and technical regulators.

3.5 Other Asset Management Guidelines or Tools

Other tools were reviewed for potential to assist asset management regulation, and more detailed comments are included in Appendix B.

Summary conclusions are that:

- ▶ There are no specific Australian Standards (AS) which cover the life cycle management of assets. Various AS' cover related and useful management systems which can be integrated with asset management, but none of these are considered appropriate to reference in regulatory provisions.



- ▶ The International Infrastructure Management Manual produced by the Institute of Public Works Engineers Australia provides a structure for infrastructure asset management in both the private and public sectors, and provides guidance and practical examples on best practices to apply across the life cycle of assets. It is not considered appropriate to require the use of this Manual or similar knowledge-based systems: rather they can be used as references to generic sets of tools to apply across a wide range of industries.
- ▶ The NSW Total Asset Management (TAM) Guidelines are applied by government infrastructure businesses with reference to whole-of-government planning. As guidelines, they provide a structure for asset management and a set of assessment and decision tools, but are not enforced by Government. SWC and SCA have well-developed systems of their own which appear to be generally consistent with the Guidelines and which they regard as superior for their own business requirements. However, the TAM Guidelines, as a generic guide to asset management, do not relate to the specific business obligations of SWC or SCA and are insufficient to use as a basis of regulatory provisions for asset management. To ensure consistency with other NSW Government agencies, the TAM Guidelines could possibly be referenced as a minimum level of coverage of asset management plans in the Licence.
- ▶ The Water Services Association of Australia (WSAA) Asset Management Benchmarking Framework is a comprehensive tool specifically designed for benchmarking of water businesses. WSAA is a water industry association with members comprising major water agencies across Australia. Currently, Water Agencies self possess their performance against this framework, and a consultant appointed by WSAA provides independent validation. The tool is not developed to provide a prioritised improvement program focused on a business's specific needs or obligations, although it can be used to identify areas of improvement. The WSAA Framework at this stage is undergoing its first benchmarking exercise across many of the major water agencies in Australia, and some international agencies. It appears to be widely accepted, and is likely to become the water industry standard tool for asset management benchmarking in the future as it matures. The Framework is expected to be able to provide valuable insights into best practice in asset management and, over time, measure improvement in a water business' asset management practices. The importance from a regulator's point of view, however, is how the information from benchmarking is integrated with specific business needs and obligations to drive improved performance in asset management. This is considered to require more specific inputs relating to the agency's performance from a range of sources – including internal inputs and performance monitoring, operational audits, pricing and other external reviews. Consequently, while it can provide some assurance of good asset management practice in a generic sense, the WSAA Framework in itself is not considered sufficient to provide confidence in performance and sustainability of asset management practices as applied by SCA or SWC to meet their specific business objectives.



3.6 Monitoring and Review of Asset Management

Monitoring and review of asset management by SWC and SCA has been undertaken through various means, including mandated reviews on dam safety, operational audits, and specific reviews required by the Minister. Comments on each of these are provided below.

3.6.1 Requirements of Australian National Committee on Large Dams (ANCOLD) and the NSW Dams Safety Committee

SCA has an obligation under its Licence to comply with the guidelines of ANCOLD and the NSW Dams Safety Committee (DSC).

The DSC was created by the Dams Safety Act 1978, and is constituted a corporation under the Act. Its powers are directed at ensuring the safety of dams prescribed by the Act. It effectively acts as the regulator on the Government's behalf, and may issue directives. It relies substantially on the general guidelines of ANCOLD, which mirror the guidelines of the International Committee on Large Dams (ICOLD).

The DSC assesses each prescribed dam individually, with a major review every five years. The safety requirements for each dam depend on the particular dam's size and hazard rating. "Safety" means that the dam complies with the Committee's current requirements and conforms to current accepted national and international practices.

The DSC takes an essentially standards based approach, but is believed that there is a move to incorporate a greater degree of risk assessment in making decisions. This approach may lead to trade-offs which would deliver a substantial portion of the desired risk reduction, but at considerably reduced cost in some cases. This approach would require Government approval, with other measures such as community consultation and agreement.

The DSC mitigates its own risk and the risk of others by ensuring that dam owners use experienced and competent practitioners to oversee the safety of their dams.

The DSC also regularly compares itself with the approach taken by regulators in other appropriate industries, such as the nuclear industry.

Since the 1970's, all the SCA's large dams (except the Shoalhaven dams which were built around that time) have undergone substantial upgrades to ensure their safety. These upgrades have been driven by requirements of the Committee (or its predecessor), and have been major cost drivers.

The main reasons for the upgrades have been changing standards, increased knowledge and understanding of structural stability factors, increased understanding of rainfall and flood phenomena, and the aging of dam materials and foundations as revealed by mandated surveillance activities.

Other factors taken into account include developments downstream, activities in the vicinity of dams, and risks due to terrorism or vandalism.



These mandated requirements are considered to be fully adequate and considerably more stringent than would be required of most other assets, largely because of the major consequences of dam failure. The requirements of the Dams Safety Committee address both short term and long term aspects of the management of these assets.

3.6.2 Operational Audits

For SWC, the operational audits largely consider past performance and compare actual performance against Licence requirements over the preceding 12 months, with some analysis of trends over longer periods. There is no specific coverage of asset management

The relevant areas audited included:

- ▶ Auditing SWC's reported results for service performance standards (water continuity, water pressure and sewage overflows) and reviewing some asset management aspects when considering how the agencies "ensure" performance standards are being met. The SWC 2003 Operational Audit report found that SWC needed to review the effectiveness of some of its programs to ensure system performance standards could be sustained in the long term as the asset base ages.
- ▶ Requirements for SWC to update its Asset Management Framework and provide this to the Minister, but there was no audit review of the quality of its contents or for its implementation (refer to Asset Management Systems Reviews below).

There were no specific aspects of the audit that considered asset management in an holistic sense, to provide confidence to the Tribunal that SWC is managing and balancing the three key areas of service risk and cost, both now and into the future.

For SCA, the audit scope was more specific in covering asset management due to the Licence requirements relating to dam safety and catchment infrastructure. Audit findings in 2003 included:

- ▶ Catchment Infrastructure - SCA has an excellent catchment infrastructure management system, including Qualitative Risk Assessments, System Management Plans and Procedures, Operations and Maintenance Manuals, Maintenance Management Manuals, Asset Maintenance Management Strategy, and a 5 year Capital Works and Renewals Program. The system is in place and fully functional, but with some additional integration still to take place with other risk management activities being developed in SCA as well as in SWC. An Asset Management Strategy exists for managing catchment infrastructure in line with the NSW Government's Total Asset Management (TAM) Manual.
- ▶ Dam Safety - SCA fully complied with the DSC requirements, which included production of five yearly surveillance reports, operational and maintenance manuals and the finalisation of the dam safety emergency plans, albeit with minor slippage on programs.

As a direct result of the more specific Licence obligations for asset management, this audit was able to demonstrate an improved understanding of the asset management systems, processes and plans in place in the SCA, and their implementation.



Consequently this provided some confidence to interested parties that SCA has the capability to manage its assets, and in particular, to manage risks associated with its critical dams assets.

3.6.3 Asset Management System Reviews

The Minister of Energy and Utilities required SWC, in 2002, to develop and provide a strategic Asset Management Framework for review. The Framework was submitted to the Minister and was reviewed internally at the Ministry, but the findings are unpublished.

During 2002/3, an asset management review of SCA's systems was undertaken by the former NSW Department of Public Works and Services (now Department of Commerce) at the request of SCA. This confirmed that the *"documents are consistent with the TAM guidelines and will provide the Division with the framework for effective asset planning and management"*.

3.6.4 Review of Prices

Pricing reviews by the Tribunal for both SCA (bulk water – mid term review) and SWC (retail water supply, wastewater and stormwater services for the period 1 July 2003 to 30 June 2005) were conducted in late 2002. Independent consultants were appointed to review the efficiency of operating costs and capital investment and affordability. The consultants briefly reviewed asset management practices as part of the process of investment decision-making and the building of operating and capital budgets.

Both reviews pointed to improvements needed in asset management planning to justify renewals expenditure. The reviews also raised a number of broader policy issues for consideration by the Tribunal before the 2005 price reviews, including examining long run asset management and renewals funding.

The Tribunal also required both SCA and SWC to consider and report back to the Tribunal before the 2005 price review on a number of items, including their approach to capital expenditure programs, and *"The development of robust asset management planning processes to justify capital expenditure projects and demonstrate that sufficient expenditure is being made on essential infrastructure maintenance and renewals."*

It is apparent then, that there is a case for both agencies to provide further and more holistic confidence to the Tribunal in their asset management processes as a separate matter but also as an input to the next pricing review. There are clearly aspects of asset management that are outside the normal pricing review process, including management of risk for critical assets.

3.7 Summary of Existing Asset Management Regulatory Provisions

There are currently no clear overall regulatory principles or objectives for asset management for SWC. There are some specific requirements in the Operating Licence for SCA.



The legislation, Operating Licences and other relevant documentation contain general references to planning, constructing, operating and maintaining assets efficiently, and some specific requirements and external reviews address some aspects of asset management in detail, but none are directed towards providing overall confidence to the Tribunal or stakeholders that assets are being managed appropriately within SWC or SCA as a foundation for sustainable business success.

Whilst specialist/technical regulators assess specific areas of performance, there is no ongoing reporting requirement on either SCA or SWC relating to total or integrated asset management strategies or plans, nor a specific requirement to implement or report on progress to the Tribunal with respect to asset management plans or improvement programs. There are also no measures in place to start building long-term indicators of asset management performance.

Recent relevant reviews of SWC made findings which developed some common themes – the need to provide appropriate linkages between service performance, asset management and corporate goals, and to provide confidence that asset management planning will sustain long term service performance.

For SCA, there were similar findings from the pricing review to SWC. The operational audit, DSC and Department of Commerce reviews generally reported favourably on the specific regulatory requirements of SCA's catchment infrastructure and dam safety management systems.

There is a generally low level of documentation, that is readily or publicly available, and a low understanding of asset management practices by external parties to SWC or SCA. Whether this is appropriate will be discussed in this report.

Comparing the current legislation, Licences and monitoring and review activities with the asset management aspects considered to be of relevance and importance to the Tribunal, as described in Section 2.3, the following is concluded:

To ensure assets meet required service levels now and into the future.

Both SWC and SCA are obliged to meet service levels specified in legislation, the Operating Licences and other agreements, and to provide for “long-term” and “commercially viable” systems. There is some review of practices relating to SWC system performance standards, environmental compliance and water quality management through the operational audits, which identified a need for SWC to provide confidence in asset management practices relating to long-term compliance with system performance standards. However, there are no general requirements to provide ongoing confidence in asset management planning to meet service levels, and stormwater does not appear to be covered in terms of system performance. SCA has specific asset management obligations for catchment infrastructure. A recent asset management review found that SCA's asset management systems generally met TAM guidelines. There are no general requirements on either SWC or SCA to implement or report on progress with respect to asset management plans or improvement programs.



To ensure assets are provided at an efficient, sustainable and affordable cost.

This is a general requirement of legislation and the Licences. Asset management processes and practices are reviewed as part of the pricing review process. In 2003, the pricing review identified some key issues relating to asset management, noted that the Tribunal would review them, and also required both SWC and SCA to report on the development of robust asset management planning processes as a basis for justifying renewals expenditure.

This requirement can remain part of the pricing review process, but it does not cover beyond maintenance and renewals and the justification of expenditure as efficient.

To ensure utilities are effectively managing asset risk.

SCA is required to comply with the ANCOLD guidelines and NSW Dams Safety Committee directives, and the Operating Licences for both agencies include requirements for risk management relating to water quality and protection of public health and the environment. While risk management is implicit in these requirements and the general Operating Licence conditions, and reflects good practice, there are no current overall provisions to ensure SCA and SWC are managing asset risk, specifically the risk of major asset failures (other than dams) or the provision and implementation of Emergency Management Plans. There is no coverage of stormwater assets in the SWC Operating Licence.



4. Submissions to SWC and SCA Licence Review

4.1 Sydney Water

SWC's submission to the End of Term Review of its 2002-2005 Operating Licence made a number of recommendations, generally and specifically related to asset management, which include:

- ▶ Remove regulatory overlap between the Tribunal and other “primary regulators” (Department of Environment and Conservation, NSW Health and Department of Infrastructure, Planning and Natural Resources.) and confine the Licence to matters covered under the Sydney Water Act.
- ▶ Adopt best practice regulatory principles in the new Licence, in accordance with the Utility Regulators Forum “Best Practice Utility Regulation” principles.
- ▶ Not include asset management requirements in the Licence, but SWC would independently audit its asset management performance against the Water Services Association of Australia (WSAA) Asset Management Framework, and that the Tribunal audit this as part of the pricing review.
- ▶ Stormwater should not be included in the new Licence.
- ▶ A sustainability scorecard developed to provide a holistic operating context for SWC, with headline indicators in the Licence that are audited as part of the operational audit.

4.2 Sydney Catchment Authority

SCA's submission to the End of Term Review of its 2002-2005 Operating Licence (November 2003) raised a number of issues which are relevant to asset management:

- ▶ There is duplication between the requirements of the Licence and other regulatory agencies, particularly Department of Environment and Conservation (DEC), Department of Infrastructure, Planning and Natural Resources (DIPNR) and NSW Health. While no specific asset management issues were raised, the issue of duplicating dam safety requirements is separately addressed below.
- ▶ SCA supports including conditions in the Licence requiring it to develop and maintain an asset management strategy. SCA suggests, rather than a prescriptive approach, the Licence conditions should allow SCA flexibility to adopt an appropriate methodology.
- ▶ SCA proposes removal of public reporting of dam safety activities from the Licence. Sufficient regulation of dam safety is in place through current regulation, and public reporting is through the Dams Safety Committee.



- ▶ SCA suggests that it is not appropriate to integrate analysis and assessment of customer complaints with asset management. SCA considers the SWC/SCA Bulk Water Supply Agreement addresses this issue for SWC, which is the major customer for bulk water. As attending to infrastructure management on the basis of complaints is too reactive, SCA suggests that proactive condition-based assessment and risk management is preferred.

4.3 Other Stakeholders

4.3.1 Department of Industry, Planning and Natural Resources (DIPNR)

DIPNR's submission dated 4th March 2004, made the following key points:

- ▶ DIPNR generally agrees with SCA and SWC that the Tribunal should not duplicate responsibilities of other Departments, and suggests a review of Operating Licences based on the "Best Practice Utility Regulation" principles.
- ▶ SWC's Licence should clarify its role in the management of trunk drains in green field and existing areas, given current institutional arrangements.
- ▶ The Licence must contain asset management conditions and provide links to IPART's pricing functions if improvements or major modifications are required. DIPNR suggests that leaving this important aspect in the hands of the operator is not advisable, and that there is greater risk to the owners (Government) and the community if investment is not kept up.
- ▶ Dam safety activities should be regulated by the Dam Safety Committee, but if retained in the SCA Licence, SWC's Licence should include the Manly Dam.
- ▶ DIPNR agrees with a move to compliance and exception reporting, coupled with smaller targeted audits to ensure appropriate and focused regulatory oversight.

4.3.2 Department of Environment and Conservation (DEC)

The DEC submission dated February 2004 made a range of relevant recommendations:

- ▶ A key recommendation is that the SWC Licence should be aligned with IPART's Price Path Review, as DEC provides input to environmental priorities that impact SWC's capital expenditure and in turn the terms of the Pricing Review.
- ▶ That "Asset management requirements in the Operating Licence should incorporate both performance based criteria and procedural requirements. This will facilitate the development of performance based targets and allow IPART to assess whether expenditure is consistent with least cost planning, integrated water cycle management, risk minimization and whether it has taken into account demand management options." DEC noted that SWC has asset management plans in place but "considers that there is scope to improve the existing framework, integrating it across SWC's operations, linking it to higher level corporate objectives, ensuring it is robust enough to safeguard against gradual asset deterioration and to communicate information necessary to prevent failures."



- ▶ That the Licence requires SWC to demonstrate annually how capital and operating expenditure relates to the Price Path allocation for asset management.
- ▶ That the SWC Licence include stormwater management provisions to give effect to the requirements of the Act, including addressing stormwater management as part of an integrated approach to asset management and water cycle planning.
- ▶ That there is scope for reducing the administrative burden associated with auditing, but this should be balanced against the need for transparency and integrity of licensing. Annual audits could be reduced to a minimum of every two years with exception reports in the interim to ensure problems are addressed.

4.3.3 Public Interest Advocacy Centre (PIAC)

PIAC supported strongly the proposal to include explicit requirements in the Licence for asset management by SWC, recognising the interest of the community in having confidence in the future security of supply of water and sewerage services.

4.3.4 Nature Conservation Council of NSW Inc (NCC)

NCC recommended that:

- ▶ IPART should require SWC and SCA to propose asset management schemes similar to the Victorian model for inclusion in their Licences and annual auditing. This was considered necessary as other reviews suggested that asset renewals investment may not be adequate, and there were areas of concern relating to asset failures and consequent water loss and pollution.
- ▶ Public reporting of dam safety should remain in the SCA Licence.
- ▶ Specific obligations for stormwater be included in the Licence of SWC, including a specified length of stormwater system (streams) to be rehabilitated.
- ▶ The annual audit process should be flexible to allow for changes from year to year, allowing a focus on those areas needing more attention due to higher risk, poor performance or emerging issues. Comprehensive audits are proposed every two years.

4.3.5 Total Environment Centre (TEC)

TEC considers that the Licence is the overarching instrument that sets out obligations and performance requirements. With respect to asset management, TEC:

- ▶ Recommends that the Licence include a requirement for SWC and SCA to maintain an asset management system and for this to be assessed as part of the operational audit. TEC rejects moves to establish a self-reporting framework and limit the Tribunal's role in auditing performance.
- ▶ The SCA Licence should retain references to meeting dam safety standards, as this is a core SCA responsibility. Performance should be included in the operational audit.



- ▶ Stormwater requirements should be expanded to include harvesting, reuse as well as rehabilitation of streams and canals.
- ▶ Annual audit reports should continue as they provide a valuable and accessible source of information. More frequent exception reports should be required as an adjunct to the audit reports. Reduced audits could apply in parts of the Licence where high levels of performance are demonstrated.

4.4 Discussion on Review Submissions

SWC submits that asset management provisions not be included in the Licence, and instead proposes that the WSAA Framework be used as the basis of asset management assessment. The WSAA Framework is separately discussed in Section 3.5, but the application of this Framework alone is not considered sufficient to supply the required transparency and assurance.

SWC's proposal leaves the agency as the only body that effectively understands the impact of all the "regulation areas" and the inter-relation between them and the other business drivers. No other body would then be in a position to independently assess the holistic effectiveness of the management of the assets, factoring in all the regulatory, customer service, risk and other drivers – and the impact of the costs of each. In these circumstances, how would other stakeholders know whether this complex undertaking is performing as well as it might, is making improvements in line with industry elsewhere, is providing value for money, and is managing short term and long term risk adequately?

It is suggested that these agencies benefit from external forces to "keep them on their toes" – whether it be market forces, or in the case of a monopoly, transparent and effective regulation and comparative benchmarking.

4.5 Summary and Conclusions

SWC perceives little need for asset management requirements in its Licence and submitted that these are best managed through a range of existing provisions. SWC instead proposed that the WSAA Framework be used as the basis of asset management assessment. This matter is considered further in Section 6.1.

SCA supported conditions in the Operating Licence requiring it to develop and maintain an asset management strategy, but rather than being prescriptive the Licence conditions should allow SCA flexibility to adopt an appropriate methodology. SCA recommended removing requirements for dam safety in the Licence.

Other stakeholders who made submissions to the Licence review process, whether government or non-government, were generally consistent in supporting or seeking explicit asset management provisions in the Licences for both SWC and SCA. This was based on a range of reasons that can be summarised into two main areas:

- ▶ Asset management is part of an integrated approach to water cycle management and least cost planning, and provides an important link and input to pricing, and



- ▶ Asset management requirements can provide confidence in the future security of service provision, including investment in renewals and potential for failures.

These reasons broadly parallel the reasons for a regulator's or stakeholder's interest in asset management, outlined in Section 2, and are consistent with the findings of other reviews of other SWC or SCA.

Regulatory overlap was generally recognised by most submissions as an issue, including those of SWC and SCA, which needed to be addressed in an integrated fashion between regulators.

There was some consistency of views recommending retention of dam safety requirements in the SCA Licence, but also an alternative view leaving this to the Dams Safety Committee.

Stormwater was recommended by all other stakeholders for inclusion in the Licences, as part of an integrated water cycle management approach.

A range of views were expressed on annual audits, with some advocating retention of the current regime as providing an independent, valuable and accessible source of information to stakeholders, and others recommending flexibility in requirements, with reduced audits in conjunction with exception reporting or following high levels of performance. Some of these views specifically related to auditing asset management provisions.



5. Asset Management Regulation in Other Jurisdictions

5.1 Introduction

This section provides a brief information review of asset management regulation in other jurisdictions in Australia and a limited review of international practices in New Zealand, the United States and the United Kingdom, across a range of water, gas and electricity utilities.

Review information is included in Appendix B, with a summary and conclusions provided below.

5.2 Other Jurisdictions

A wide range of asset management regulatory practices were found, from virtually none to a very extensive, or “heavy-handed” process in the UK.

In the **UK** asset management regulatory provisions are the most mature, having existed since 1991 when privatisation of the water sector and specific imperatives for renewals investment were drivers. This appeared to give rise to an extensive regulatory regime through the Office of Water Regulation (Ofwat), with a major focus on asset management plans as a basis for pricing and investment. Ofwat also has a focus on ensuring that the privately owned monopoly service providers never become insolvent, which involves ring-fencing the water company from the remainder of a parent company’s assets, and ensuring a pricing regime which supports this aim. Ofwat also have the imperative of progressively making the companies more efficient to minimise costs to the consumers. Ofwat uses comparative competition techniques, and various other carrots and sticks to encourage the companies in this regard.

There is an extensive reporting regime and rigorous ongoing scrutiny of asset management and investment plans, with major reviews and pricing decisions every five years. The resource requirements of Ofwat, the water companies and external consultants to support this regime are significant. Ofwat, we believe, have about 150 staff full-time on regulation of the ten major companies, and a number of smaller companies.

In **Australia**, the water sector is not privatised, although gas and electricity have been in some States. There are no Australian asset management regulatory requirements as extensive as in the UK.

Asset management regulation in the water sector is not developed to any significant extent in Tasmania or South Australia, and has only recently begun in Queensland.

In Western Australia and Victoria asset management is considered as part of a “light-handed” regulatory regime.

In **Victoria**, “competition by comparison” is used in the water sector as a surrogate for privatisation and market competition where service provision is effectively by monopoly



government-owned agencies. To date, regulation of performance has been through the Essential Services Commission for the three metropolitan water retailers only. Asset management requirements including life cycle management are specified in Operating Licences and selected aspects are audited annually for the metropolitan retail water businesses. The regulatory regime has recently been extended to include price regulation across the water sector and to include Melbourne Water and the 15 regional water and three rural authorities under Licences or Statements of Obligations. The form of asset management regulation for these authorities has yet to be decided, but is likely to be in a similar form to current arrangements for metropolitan retailers.

Western Australia is dominated in the water sector by the Water Corporation, with two small water utilities in Bunbury and Busselton, all regulated by the Economic Regulation Authority (ERA). Audits under the Licences for the water businesses cover two levels of review: performance measures which look back over the review period; and review of the asset management systems and their effectiveness. The asset management system reviews are carried out every two years by an independent consultant, and to date have consisted of a quite detailed set of parameters and a scoring system formulated by Water Corporation, and agreed with amendments by the regulator. ERA is currently considering improvements to the review methodology.

Tasmanian electricity utilities are required to submit a suite of plans, including asset management plans, to the Office of the Tasmanian Energy Regulator (OTTER), for independent review. There is no specific regulation of water agencies in Tasmania.

In Queensland, the Department of Natural Resources and Minerals (DNRM) regulates water authorities under the Water Act 2000. The Act requires the production of Strategic Asset Management Plans, aimed at ensuring continuity of supply, and that utilities use the plan to manage their delivery. The Act specifies the content of the Plan and associated performance reporting, but is not as prescriptive as the NSW TAMP model. The approach is at the self-regulatory end of the scale, and is based on requiring the utility to do its own planning to the level required by the complexity of the business. DNRM is relatively new to this type of regulation, and is progressively developing its ideas.

In **New Zealand** the statutory requirements for asset management have been set down in the Local Government Act passed in late 2002. The legislation stresses the identification of 'levels of service' and the need for performance measures. The NZ National Asset Management Steering Group (NAMS) has recently put out a publication "Creating Customer Value- agreeing levels of service with customers" as a start in getting better performance measures. Audit NZ is tasked with annual audits of the performance information and also, from 2006, the audits of ten year plans of Councils. Audit NZ has indicated its belief that, to achieve robust financial forecasts, Councils will need to implement advanced asset management systems for all asset based activities that they provide. Our advice at this stage is that the audits are still in their early days and are fairly cursory. Some water utilities are considering the use of the WSAA benchmarking tool at present.



We have not undertaken a detailed review of asset management regulation in the **USA**, but our research has indicated that there is no structured or complete form of regulation, auditing or assessing sustainable asset management in the water industry by any regulators. The water and sanitation sectors are fragmented with some 85,000 agencies in existence. The industry completes good asset management however it is in a form that is similar to where the Australian water industry was in the 1980's.

The benefits and problems/costs associated with these different regimes are difficult to analyse, as the specific needs of regulation of asset management is still relatively new and understanding is evolving. Different jurisdictions are at different stages of development. The approach in Australia in general appears to be "light-handed" and to encourage continual improvement by utilities. The most developed asset management provisions in water and utility regulation are in Victoria, Western Australia and Queensland. Other jurisdictions either do not have separate regulators for water services and/or asset management regulatory requirements are not highly developed.



6. Proposal for Asset Management Regulation

6.1 Rationale for Including Asset Management Provisions

The foregoing text establishes a need for asset management provisions in Operating Licences for SWC and SCA. The need can be summarised as follows:

- ▶ The effective and efficient management of assets is a critical component of the business of SWC and SCA, and has a major impact on the services delivered and the cost of those services.
- ▶ The Tribunal, as the Licence Regulator on behalf of the Government and representing the community, has an interest in ensuring that the agencies assets meet required service levels at an efficient, sustainable and affordable cost, and are effectively managing asset risk.
- ▶ Effective long-term management of the infrastructure assets is required if SWC and SCA are to meet the objectives of their respective enabling Acts.
- ▶ While there are specific provisions relating to some assets in the SCA Licence (for dam safety and catchment infrastructure) there are currently no clear overall regulatory principles or objectives for asset management in the SWC and SCA Licences or other regulatory instruments.
- ▶ There are no regular or systematic reporting regimes or audits for asset management to communicate information about asset management practices to stakeholders and provide confidence in asset management. Asset management issues currently arise irregularly from pricing reviews, operational audits and other reviews, which may then give rise to specific requests by the Tribunal or the Minister for submission of documentation relating to asset management planning or strategies.
- ▶ While there do not appear to be any major asset management issues with either SCA or SWC, previous reviews found particular areas where there is insufficient external understanding, including maintenance and renewals programs and expenditure, and long term planning to meet service standards. Risk management for critical assets (apart from dams) has also been identified as a gap in external understanding.
- ▶ Successful long-term asset management requires continuing vigilance, and on-going application to considering future needs. The NSW Government expects regulation, via the Operating Licences, to help minimise any adverse outcomes. The agencies, on the other hand, benefit from the regulator keeping them focussed on their obligations, year after year, into the future.



- ▶ Government and non-government stakeholder responses to the Licence review process generally are seeking assurance that asset management within SWC and SCA is part of an integrated approach to water cycle management. Further, that the agencies are applying least cost planning, and provide confidence in the future security of service provision and management of failure risk. This assurance and confidence does not exist at present, in part due to a lack of transparency, and stakeholders support asset management provisions in Licences as a means to achieve this.

These conclusions indicate that the current means of regulating asset management do not provide overall and continuing confidence to the Tribunal, Government or other stakeholders that assets are being managed to meet best appropriate practice, or achieve optimal outcomes in terms of efficiency, effectiveness and management of risk. Further, the current means neither provides consistency or predictability for the water agencies in their planning or reporting. Providing this confidence would also assist both water agencies in supporting and justifying pricing submissions, and assist through simplifying asset management considerations.

A number of other jurisdictions, both in Australia and overseas, have asset management regulatory requirements, including in Operating Licences for utility businesses. This is a relatively new activity, and the approaches are tending to evolve over time with the objective of providing a more holistic understanding of asset management in the context of performance and pricing regulation.

In order to provide overall confidence to stakeholders that SWC or SCA are applying good governance practices and assets are being managed appropriately, it is considered important that asset management be specifically addressed as regulatory provisions. It is further considered that the Operating Licences are the most appropriate place for these provisions.

SWC questions whether the Licences are the most appropriate place for regulating asset management. Rather, SWC has indicated that confidence in asset management can be improved through increased transparency, which does not necessarily require inclusion in the Operating Licence. In response, it is considered that the Operating Licence, as the legal basis to enable and require these agencies to provide services, is the most appropriate place for asset management provisions. The Licences are the main mechanism set in place by the NSW Government to achieve both transparency and public confidence in the agencies, which require the agencies to report performance against the Licences and for this in turn to be independently audited through the Tribunal.

SWC also proposed that instead of asset management requirements in the Licence, SWC would independently audit its asset management performance against the Water Services Association of Australia (WSAA) Asset Management Framework, and that the Tribunal audit this as part of the pricing review. While the WSAA Framework is a comprehensive tool for the process benchmarking of water businesses, it is not, in itself, a driver for asset management improvements or sufficient to provide confidence in asset management practices as applied by SCA or SWC to meet their business objectives.



Framework for Asset Management Provisions

In considering how best to provide for asset management in Operating Licences for SCA and SWC, a framework is suggested by GHD that provides a clear path to asset management regulation in context with other regulatory requirements. The suggested framework comprises four critical components:

1. **An explanation of the rationale for including asset management requirements in the Operating Licences**, which needs to be clearly articulated. This rationale is explained above.
2. **Regulatory principles**, under which the proposed asset management provisions will be structured. These principles are outlined in Section 6.3.
3. **Objectives of asset management provisions**, establishing the key outcomes for the Tribunal and stakeholders. These objectives are outlined in Section 6.4.
4. **The recommended asset management provisions**, outlining what asset management aspects are to be regulated and how they are to be reported and audited. These provisions may be supported by protocols which include definitions and interpretations as to how the Tribunal and agencies will apply the provisions. Options for these provisions are considered in Section 7.

6.2 Regulatory Principles for Asset Management Regulation

The principles for asset management regulation should be consistent with the “Principles of Good Regulation” as defined by the Australian Utility Regulators’ Forum (AURF), and to which the Tribunal subscribes.

In summary, these principles are:

1. **Communication** (information to stakeholders on a timely and accessible basis);
2. **Consultation** (participation of stakeholders in meetings);
3. **Consistency** (across market participant and over time);
4. **Predictability** (a reputation that facilitates planning by suppliers and customers);
5. **Flexibility** (by using appropriate instruments in response to changing circumstances);
6. **Independence** (autonomy, freedom from undue political influence);
7. **Effectiveness and efficiency** (cost-effectiveness emphasised in data collection and policies);
8. **Accountability** (clearly defined processes and rationales for decisions, with appeals); and
9. **Transparency** (openness of the process).



SWC supported the use of these principles in conjunction with additional principles for effective licensing, which were outlined in its submission to the Licence Review process. The Nature Conservation Council of NSW Inc. endorsed the AURF principles but did not support SWC's additional principles.

Ensuring that provisions will meet all of these principles is beyond the scope of this report, but wherever possible the recommended provisions will be designed to meet their intent.

In addition, drawing from the review process and the various submissions, specific provisions should also be designed to be:

- ▶ **Sustainable**, so that activities are implemented with continuing vigour, enthusiasm and application into the future with ongoing high levels of success;
- ▶ **Measurable**, so that progress and improvements can be verified consistently and as objectively as possible;
- ▶ **Practical** and reasonable for SWC and SCA to implement and comply with;
- ▶ **Clear**, understandable and in plain English; and
- ▶ **Avoid overlap** with other regulatory requirements including between pricing and licensing or other operational performance aspects.

6.3 Objectives of Asset Management Provisions

From a policy perspective, there is a need to be clear about the purpose of asset management provisions in the Licences. The following are proposed as the key objectives of asset management provisions in Operating Licences for SWC and SCA.

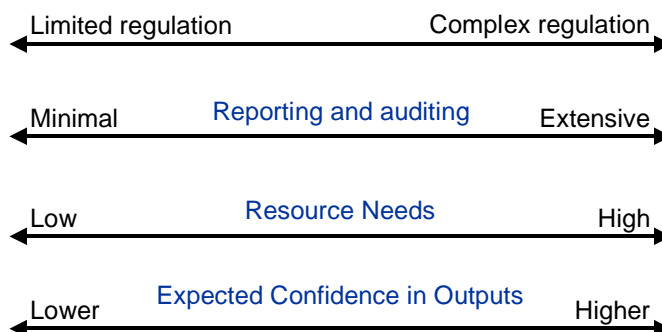
1. The primary regulatory objective **is to provide confidence to the Tribunal and stakeholders that SWC and SCA are managing their assets sustainably and efficiently over their whole life cycle**. The provisions should create this obligation to manage assets.
2. The three aspects proposed as the basis for provisions in amended Operating Licences for SWC and SCA are to seek assurance that:
 - ▶ Their assets will meet **required service levels** now and into the future.
 - ▶ Assets are provided at an efficient, sustainable and affordable cost.
 - ▶ **Asset risk** is effectively managed to remain viable and to minimise the risk to customers and the regulator/government from major asset or whole system failures, or operational malfunctions and their consequences.
3. Provisions should drive or facilitate continuous improvement in asset management.
4. Adequate communication and transparency should be provided through appropriate reporting and independent auditing of asset management.

7. Development of Asset Management Provisions in Licences

7.1 Development of Options for Provisions

Discrete options for regulatory provisions are not clearly evident – the level of regulation can exist along a continuum from limited (or no) regulation through to extensive regulation, reporting, monitoring and auditing. An increasing level of regulation has an increased expectation of a higher level of confidence in the outputs, but also results in increasing resource needs and attendant costs, as depicted in Figure 1 below. Increasing regulation also shifts the role of the regulator and may increase the responsibility of the regulator for the management decisions and performance of the agency. This introduces ambiguities in overall responsibility. It is important to get the right balance in responsibilities and achieve the required outputs at minimum cost to all parties.

Figure 1.
Asset Management Regulation –
Getting the balance right



For the purposes of this report, it is necessary to select an appropriate set of options for analysis. In addition to the current situation, three new options have been selected representing levels of regulation which increase in complexity from the current situation towards complex regulation (similar to the Ofwat approach in the UK) to the right on the continuum shown above.

The options are expressed in terms of their components, comprising the provisions, the associated monitoring and reporting requirements, and auditing requirements. Their relationship and purpose is depicted in Table 7-1 below.



Table 7-1 Components of Asset Management Licence Provisions

Component	Purpose
Licence Provisions	Create the obligation and accountability
Monitoring and Reporting Requirements	Communication to the regulator and stakeholders
Auditing Requirements	Provide independent review and transparency

7.2 Selected Options

Option 1. Current Situation. This means no change to the current Licence requirements.

Option 2. Asset Management in Operating Licences. Licence provisions are in the form of required asset management objectives that cover the asset life cycle, with reporting outputs at a strategic level and moderate auditing requirements specified.

Option 3. Asset Management Plan Reporting/Monitoring. Licence provisions for asset management are more extensive and detailed than Option 2 with respect to principles and objectives across the asset life cycle. A higher level of reporting is prescribed including asset management plans (AMPs) down to a specified level, progress monitoring and implementation.

Option 4. Ofwat Approach. This option aligns with current practice in the UK, which is more extensive than in any jurisdiction in Australia.

These options are developed to outline the essential requirements, and shown in Table 7-2.

Table 7-2 Essential Requirements of Asset Management Provisions Options

Option	Licence Provisions	Monitoring/ Reporting	Auditing
1. Current Situation	No specific requirements in SWC Licence. Specific requirements in SCA Licence for dams and catchment infrastructure works. The Act and Licences contain general requirements for operating and maintaining systems. There is an implied requirement for sustainable practices and ensuring long term performance of systems.	No formal reporting of asset management areas or progress reporting. Ad-hoc reports may be requested arising from operational audits, pricing or other reviews.	No formal requirements for asset management audits. Operational audits and pricing reviews may raise some asset management issues. The Tribunal may have limited capacity to review asset management practices under interpretation of the Licence.



Option	Licence Provisions	Monitoring/ Reporting	Auditing
2. Asset Management in Licences	Require the existence of asset management processes, systems and plans covering the asset life cycle. Specific risk management and emergency response requirements. Covers all asset groups.	No formal reporting of AMPs, but strategic overview or “State of the Assets” report may be required. Information made available to auditors. Audit findings may initiate requirements for specific reporting of improvements or implementation of asset management.	Regular independent AM audits cover Licence requirements and/or specific areas of interest. Flexibility to amend scope of audit from year-to-year, depending on performance and issues.
3. Asset Management Monitoring/ Reporting	Require the existence of asset management processes, systems and plans covering the asset life cycle. More prescriptive requirements than Option 2. Specific risk management and emergency response requirements. Covers all asset groups.	AMPs are provided to the Tribunal for review and comment, along with asset management improvement plans. Regular reporting of performance against plans. Audit findings may initiate requirements for specific reporting of improvements or implementation.	AMPs reviewed by Tribunal. Regular independent AM audits cover Licence requirements an/or specific areas of interest. Flexibility to amend scope of audit from year-to-year, depending on performance and issues.
4. Ofwat Approach	Asset management provisions fully linked to extensive 5 yearly process for submission and review of Asset Management Plans and proposed budgets.	Major submission of AMPs/ business plans. Extensive reporting and monitoring of progress.	Regulatory reporter role to validate AMPs. Detailed ongoing reviews of works plans in the context of efficiency and pricing. Major 5-yearly reviews.

These options are not fully developed but are considered sufficient to make an in-principle decision and then move to clarifying the specifics in the selected option.

7.3 Comparison of Options

A preliminary comparison of options for relative advantages and disadvantages is provided in Table 7-3.



Table 7-3 Comparison of Asset Management Regulatory Options

Regulatory Option	Advantages	Disadvantages
1. Current Situation	<ul style="list-style-type: none"> ▶ Minimal cost and resource needs. ▶ Responsibility for outcomes remains with agencies. ▶ Some coverage of asset management and identification of issues through operational audits, pricing and other reviews. ▶ Use of other requirements to support some areas of asset management, eg. ANCOLD guidelines for large dams. 	<ul style="list-style-type: none"> ▶ Ad-hoc identification of issues provides no continuity or certainty for any party. ▶ Little assurance (confidence) to stakeholders of medium or long-term performance of assets, or management of current or future asset risks. ▶ No regulator/stakeholder understanding of link between corporate goals, service and asset management. ▶ No independent view of whole of business performance. ▶ No transparency in process.
2. Asset Management in Licences	<ul style="list-style-type: none"> ▶ Relatively low cost and resource needs. ▶ Responsibility for outcomes remains with agencies. ▶ Provides consistency and predictability for agencies and stakeholders. ▶ Can provide an acceptable level of confidence in most cases, especially with flexibility to include high risk areas of interest. ▶ Can provide the ability to drive asset management improvements and efficiencies (this model may work better than below). 	<ul style="list-style-type: none"> ▶ May not provide enough assurance or confidence to the Tribunal or stakeholders/ community interest in some cases. This is a matter of judgement to achieve an acceptable balance. ▶ Not suitable for poorly performing agencies.
3. Asset Management Monitoring/ Reporting	<ul style="list-style-type: none"> ▶ Moderately low cost and resource needs. ▶ Provides consistency and predictability for agencies and stakeholders. ▶ Communicates asset management strategies to stakeholders ▶ Can provide an increased level of confidence, especially with flexibility to include high risk areas of interest. ▶ Can provide the ability to drive asset management improvements and efficiencies. 	<ul style="list-style-type: none"> ▶ Some risk and responsibility transferred to Tribunal with requirement to review and endorse AMPs. ▶ Additional Tribunal and agency resource needs over Option 2. ▶ Possibly limited benefit from additional reporting requirements.



Regulatory Option	Advantages	Disadvantages
4. Ofwat Approach	<ul style="list-style-type: none"> ▶ High level of confidence / assurance of short and long term viability and performance. ▶ High level of knowledge and processes to drive economic efficiencies in monopoly markets, and facilitate tradeoffs between service, cost and risk. 	<ul style="list-style-type: none"> ▶ No demonstrated driver for this level of regulation. ▶ High cost and high resource needs of regulation. ▶ Regulator needs to maintain an ongoing capability to understand the business in detail. ▶ Responsibility for outcomes split between the parties – regulator may take on increased responsibility. ▶ May lead to conservative business approach, with higher costs and possibly lost opportunities.

7.4 Discussion

Option 1 to remain with the current situation is not considered appropriate, as a need for change was demonstrated in Section 6.1. The option does not provide confidence that assets are being managed holistically; that asset management planning will sustain long-term performance; and that major risks are being managed.

Option 4. Ofwat Approach, is also not considered to be an appropriate option. The benefits of a high level of investment in asset management regulation are not evident in the Australian context, and the drivers for such a move (such as in the UK for privatisation of the water monopolies and the need to manage insolvency risk by ring-fencing the water companies from the other activities of their owners, or evidence of extremely poor asset management practices requiring strong intervention) do not exist. There is also no experience of either the Tribunal or NSW water agencies in such a regime, or indeed in Australia.

SCA proposed in its submission to the Licence review that it be required to maintain an asset management strategy. This proposal, while not detailed, was indicated by SCA as not too dissimilar to Options 2 or 3.

Option 2 provides a balance between the SWC proposal for no asset management Licence provisions, and the Tribunal and external stakeholders' need for transparency and confidence in the agency's asset management practices at a minimum cost. The requirements on the agencies are not considered to be onerous or very much different to what the agencies should undertake as good asset management practice in any case. In SCA's case, the asset management Licence requirements already exist to some extent and Option 2 only provides a more structured framework for asset management regulation. Some costs may be incurred initially if asset management plans are not holistic or do not address the life cycle management of assets.



The costs and benefits will also change over time as business performance changes. Independent auditors will provide further objective assessment and an opinion on the robustness of asset management practices, which should be sufficient with the reporting requirements to provide adequate confidence to the Tribunal and stakeholders.

Option 3 provides for more extensive reporting of asset management strategies and plans to the Tribunal than Option 2. At this stage, there is no demonstrated benefit from detailed reporting and review of asset management plans. An asset management strategic overview or “State of the Assets” report as proposed for Option 2 is considered to provide sufficient information to interested stakeholders for most purposes. Audit provisions for Option 3 are similar to those for Option 2.

These options were explored in a workshop with SWC, SCA and some government stakeholders. There was a general view that either Option 2 or Option 3, depending on the details of reporting and auditing requirements, were the most appropriate means of providing the accountability, transparency and confidence considered necessary. This was subject to the proposed wording of the provisions for the Licences.

7.5 Recommended Level of Asset Management Regulation

Option 2. Asset Management in Operating Licences, is considered to be the most appropriate, to obtain appropriate outputs in terms of confidence and transparency from regulation while minimising costs and resource needs. At this stage in the evolution of asset management regulation, the provisions should reflect minimum requirements to meet the objectives. The adopted provisions should be reviewed at the next Licence review to reassess if objectives have been met, and if necessary to make appropriate amendments to the provisions.



8. Outline Asset Management Provisions for Recommended Option

8.1 General

Recommended asset management provisions are developed here in outline only. There is a need to refine the provisions, ensure legal definitions are correct, and seek feedback on the final wording from relevant stakeholders and the agencies. The provisions suggested are considered a minimum to reflect the intent of Option 2. The provisions draw on similar provisions in the Victorian and Western Australian Licences for regulated water businesses. Some aspects of the recommended outline provisions may be more appropriate to include in separate clarifying documentation (possibly a Monitoring and Reporting Protocol or similar document) to provide definitions, interpretations and agreed details about communications and management of the process.

The provisions are outlined separately for SWC and SCA, as the specific needs of the businesses are different. The provisions cover the components outlined earlier:

- ▶ **Licence Obligations.** Create the asset management obligation and the accountability of the agency. The provisions reflect the definition of asset management and set out the key requirements to provide sustainable asset management over the life cycle of assets. They also provide the essential link between assets and service provision, risk, cost and overall corporate objectives.
- ▶ **Reporting requirements.** Minimum reporting requirements to meet needs for communication of appropriate information to stakeholders.
- ▶ **Audit requirements.** Audits have become internationally accepted practice to provide independent assessment or validation of an agency's performance, in relation to financial management, operations, management systems, and most recently for asset management. A rigorous and independent audit regime is considered an important supplement to asset management provisions to provide confidence to stakeholders and opportunities for continuous improvement, as well as identifying potential problem areas and risk issues for action.

8.2 Stakeholder Review Comments

The draft version of this report was presented to a public hearing on the SWC Licence Review held on 1st April 2004. Review comments were requested from the agencies and other stakeholders, and responses were received from:

- ▶ Sydney Water Corporation,
- ▶ Sydney Catchment Authority,
- ▶ Department of Environment and Conservation (DEC),
- ▶ Public Interest Advocacy Centre (PIAC), and



- ▶ Total Environment Centre (TEC),

along with correspondence from the Department of Infrastructure, Planning and Natural Resources.

All the responses were very constructive and aimed to clarify the recommendations and improve the robustness of the outcomes from this review.

The key response issues raised by the agencies and stakeholders are summarised below:

- ▶ There is general support for the inclusion of asset management provisions in the Operating Licences, including from SWC.
- ▶ SWC proposed alternative draft clauses for the Operating Licence, incorporating requirements for whole-of-lifecycle management of assets and proposing one asset management report and a subsequent review during the Licence period.
- ▶ SCA requested some corrections and clarifications, and believed that the reporting requirements were onerous and could compromise security. SCA advised, in relation to retaining requirements for dams in SCA's Licence, that SWC also has many prescribed dams.
- ▶ DEC sought to ensure that overarching regulatory or government objectives were given due consideration in asset management, such as integrated water management, and appropriate prioritisation between competing objectives. DEC also sought clarification of definitions, details of reporting outputs, and seeking information on how the asset management provisions will link in to water pricing.
- ▶ TEC strongly supported the introduction of asset management provisions as recommended, particularly in relation to assessment of performance through the operational audit.
- ▶ PIAC supported the need for continued vigilance on asset management to address any concerns on future community needs and asset performance.

Given that the inclusion of asset management provisions in the Operating Licences is reasonably new, it is difficult to provide responses to some of the issues raised, especially by DEC. It is expected that the information needs and audit requirements will evolve over time, as the various stakeholders review the outputs of this initial proposal and develop a level of confidence in the framework and the transparency of the process.

The recommended provisions in the draft version of this report have been amended following the public hearing and receipt of the above responses. The significant review comments are considered in Appendix C, and are referenced to the relevant sections of this report.



8.3 Sydney Water Corporation Specific Provisions

8.3.1 Operating Licence Obligations

The following provisions are not overly prescriptive, but are considered to be sufficient for these agencies, which are at a reasonably high level of practice in asset management.

It is recommended that the SWC Operating Licence be amended to:

1. *Require SWC to have in place asset management processes, practices, systems and plans which enable it to effectively and sustainably-*
 - a) *Achieve service performance requirements including requirements specified in legislation, the Operating Licence, the Customer Contract, by other regulators, Government direction and memoranda of understanding, both now and into the future;*
 - b) *Manage the risks of potential failure or reduced performance of assets; and*
 - c) *Respond to incidents and emergencies.*
2. *Require SWC to integrate the asset management requirements with corporate and service obligations to meet those obligations at the lowest life cycle cost and acceptable risk.*
3. *Require SWC to have in place asset management systems, processes and plans covering the whole of life of assets, from conception and planning; acquisition and creation; operations and maintenance; replacement or rehabilitation; decommissioning and disposal to performance monitoring and review.*
4. *Require SWC to meet the asset management requirements for all the assets of SWC including:*
 - a) *Water supply assets,*
 - b) *Sewerage assets,*
 - c) *Drainage assets, and*
 - d) *Corporate or non-system assets.*

8.3.2 Reporting Requirements

The reporting requirements are recommended to communicate a minimum level of information to stakeholders on the level of asset management practices in SWC, and engender confidence that assets are being appropriately managed. This information would be used as a starting basis for the operational audit.

It is recommended that the SWC Operating Licence be amended to require SWC to provide a strategic asset management overview or "State of the Assets" report. This report is required twice in the Licence period (currently 5 years), at times agreed jointly between the Tribunal and SWC. This document would outline, for all significant asset groups:



1. *Asset management processes, practices, systems and plans as required by the Licence.*
2. *A description of each asset group and the current and expected capability of assets to deliver required services.*
3. *Major issues or constraints impacting on current and future performance.*
4. *The strategies proposed and expected costs associated with future asset investment.*
5. *Progress on implementation of asset management process, practice and system improvements.*

The extent of information in the report may need to be determined by agreement or over time, taking into account the need for transparency, balanced by consideration of issues such as security.

8.3.3 Audit Requirements

The SWC Operating Licence currently has extensive provisions for auditing of Licence requirements in Clause 10.

In order to accommodate the additional asset management obligations, it is recommended that the operational audit requirements be amended to:

1. *Cover SWC's performance in relation to the asset management obligations, and*
2. *Cover asset management processes, practices and plans in relation to specified asset management areas of interest.*

The purpose of the specified asset management areas of interest is to incorporate a risk-based approach to asset management regulation and provide some flexibility in the application of regulatory requirements.

A "specified asset management area of interest" may include an asset management area where:

- ▶ Inadequate performance or an improvement need was identified in the previous audit.
- ▶ There is specific evidence of a failure of the asset management systems to meet requirements, such as in the event of a major foreseeable failure of a critical asset.
- ▶ The Tribunal desires to obtain a more detailed level of assurance that the agency is appropriately managing specific assets or issues. This may relate to, for example, management of critical assets or those of high consequence of failure; adequately catering for growth; appropriate management of pipeline assets which comprise the majority of asset value and are underground; infrastructure security; or emergency management.



It is recommended that the asset management component of the operational audit be undertaken twice in each Licence period, following submission of the strategic asset management overview or 'State of the Assets' report. This should be reviewed in the next Licence period.

There is also a need for clarity of purpose of the operational audit with respect to asset management requirements.

It is recommended that the operational audit requirements for asset management be to provide an independent report on the:

- 1. Robustness of SWC's processes, systems and plans to meet Licence obligations*
- 2. Asset management improvements proposed by SWC to address deficiencies in 1.*
- 3. Progress on implementation of improvements.*

The audit would use the strategic overview or "State of the Assets" report as a starting basis, and auditors should have access to all required supporting information for the purposes of the audit, as determined by the auditor. The audit submissions by SWC may be supported by an independently verified and industry-accepted benchmarking report, which assesses the level of practice of SWC in asset management. The WSAA Asset Management Benchmarking Framework is currently considered appropriate for this purpose.

8.4 Sydney Catchment Authority Specific Provisions

8.4.1 Licence Provisions

Specific provisions in the Licence already cover many aspects of asset management. It is considered appropriate to build on these existing provisions to provide a more holistic approach to reflect the definition of asset management and set out the key requirements to provide sustainable asset management over the life cycle of assets.

The recommended outline provisions are:

- 1. Require SCA to have in place asset management, processes, practices, systems and plans which enable it to effectively and sustainably-*
 - a) Achieve the long-term service performance criteria set out in Schedule 2 of the Licence;*
 - b) Achieve other requirements specified in legislation, the Licence, by other regulators, government direction and memoranda of understanding, both now and into the future;*
 - c) Manage the risks of potential failure or reduced performance of assets; and*
 - d) Respond to incidents and emergencies.*
- 2. Require SCA to integrate the asset management requirements with corporate and service obligations to meet those obligations at the lowest life cycle cost and acceptable risk.*



3. *Require SCA to have in place asset management systems, processes and plans covering the whole of life of assets, from conception and planning; acquisition and creation; operations and maintenance; replacement or rehabilitation; decommissioning and disposal to performance monitoring and review.*
5. *Require SCA to meet the asset management requirements for all its assets including:*
 - a) *Dams assets,*
 - b) *Catchment infrastructure works and other system assets, and*
 - c) *Corporate or non-system assets.*

The dams assets are included as they are considered to reside under the same overall asset management processes as other assets, albeit as a special case.

For dam safety issues, it is recommended that the audit be limited to verifying that the requirements of the Dams Safety Committee have been met.

8.4.2 Reporting Requirements

It is recommended that reporting requirements be the same as for SWC.

8.4.3 Audit Requirements

The SCA Licence currently has extensive provisions for auditing of Licence requirements in Clause 10. These requirements may adequately cover the addition of new asset management obligations, with an additional outline provision.

It is recommended that the operational audit be extended to cover SCA's asset management processes, practices and plans in relation to specified asset management areas of interest.

The recommendations for SWC in relation to the audit requirements and the frequency of audits, also apply to the SCA.



Appendix A
Terms of Reference



INDEPENDENT PRICING AND REGULATORY TRIBUNAL
OF NEW SOUTH WALES

I N V I T A T I O N T O T E N D E R

**ASSET MANAGEMENT REGULATORY REQUIREMENTS FOR
SYDNEY WATER CORPORATION AND SYDNEY CATCHMENT
AUTHORITY**

1 Background

The Independent Pricing and Regulatory Tribunal of New South Wales (the Tribunal) is seeking suitably qualified and experienced consultants to provide advice on asset management requirements for possible inclusion in the Operating Licences for Sydney Water Corporation (SWC) and the Sydney Catchment Authority (SCA).

The SCA manages catchments and supplies bulk water to a range of customers, including Sydney Water. It maintains substantial water supply infrastructure. SWC provides water and sewerage services to customers in Sydney, the Blue Mountains and the Illawarra region. The Corporation manages extensive water distribution and sewerage collection assets, many of which are below ground. It is also responsible for some drainage assets in the Sydney Metropolitan Area.

The existing Operating Licences for both of these utilities will expire on 31 December 2004. The Tribunal is undertaking a review of these Licences to recommend to Government the terms of new licences to take effect from 1 January 2005.

Both SWC and the SCA already have substantial asset management systems. The existing Licences for both of these utilities include provisions that relate to asset management, such as system performance standards. However, neither Operating Licence includes explicit asset management provisions.

2 Objectives of Consultancy

The objective of this consultancy is to provide the Tribunal with expert advice on appropriate Operating Licence provisions with respect to asset management that require these utilities to:

- ▶ maintain service delivery capacity at an appropriate standard in the short and long term;
- ▶ effectively manage asset risks, both to remain viable and protect against major failures or malfunctions; and
- ▶ invest in assets prudently and at an efficient cost.



In providing the expert advice, the consultant must:

- explain the role of asset management in the Operating Licences of SWC and the SCA
- present and evaluate options for including asset management requirements in the licences
- explain how the options could be audited as part of the licence.

In undertaking this study the consultant must:

- review recent assessments of the asset management systems, processes and management practices used by these utilities (these are available from the Secretariat);
- consider the requirements in the Sydney Water Catchment Management Act 1998, the Sydney Water Act 1994, the requirements of the respective Operating Licences and findings of past Operating Licences audits of these utilities;
- comment on the applicability of any Australian Standard;
- research and evaluate asset management requirements of regulators in other jurisdictions, both in Australia and elsewhere in the world;
- take account of NSW Government guidelines for asset management, as they apply to SWC and SCA; and
- take account of views and submissions provided to the Tribunal by SWC and the SCA (due 28 November 2003), the views of other stakeholders (due 2 February 2004) and the views of NSW Treasury, Ministry of Energy and Utilities.
- provide comment on whether the Asset Management framework developed by WSAA, the Water Services Association of Australia is consistent with Operating Licences requirements.

2.1 Outputs

The main outputs from the Audit are:

- one draft report and a final written report addressing the objectives of the consultancy;
- discussions and meetings with the Tribunal and/or Tribunal Secretariat;
- presentation to a public workshop outlining the major issues and findings.

The draft and the final reports should be provided in three bound copies and a loose leaf copy. The final report should also be provided in electronic form (MS Word).

The consultant should note that the final report will be publicly released. As such the report should be clearly and logically set out and written in plain English, avoiding the use of unnecessary technical terms. On completion of the project, the consultant's reports, working papers and advice provided to the Tribunal will become the property of the Tribunal.



3 Conditions of Tender

3.1 Timing

The successful tenderer must be able to meet the following work schedule:

Contract Program

Month	Date	Activity
February 2004	Fri 13	Delivery of first draft Report (First milestone)
	Tues 17	Discussion of first draft Report with Tribunal Secretariat
March	Mon 15	Delivery of final Report (Second milestone)
	TBA	Discussion of final Report with IPART, SWC & SCA
April	TBA	Presentation to public workshop (Third milestone)

The dates in the table are indicative and may be subject to negotiation between the Tribunal Secretariat and the consultant. The Tribunal will require that written progress updates are provided to the Secretariat. Progress meetings in addition to those in the above table are expected. The detailed consultancy work plan should reflect these.

3.2 Fee

The fee quoted is to be inclusive of all costs including Goods and Services Tax, incidental expenses and disbursements. Payments will be due within 28 days of receiving an invoice as per an agreed payment schedule. The consultant may wish to outline a draft payment schedule.

A detailed breakdown of the consultancy costs is required with the proposal. The proposal should include estimates of the time required for the project, consultants to be involved in the project, their rates, and a total fee estimate. Staff costs should be clearly reconciled to the detailed work plan. Costs should allow for presentations to the Tribunal, discussion and meetings with staff of the Tribunal, and stakeholder meetings as required.

3.3 Proposal

The consultancy proposal should demonstrate an appreciation for the task as well as describe the intended approach for carrying it out. The personnel to be involved, including resumes detailing their experience should be listed. A detailed work plan is also required. Details of previous clients who can be contacted are also desirable.

3.4 Presentation

Shortlisted tenderers may be required to make a presentation on their proposal as part of the tender evaluation process.



3.5 Criteria for selection

In selecting the successful consultant the Tribunal will consider the following matters:

- in-depth understanding and expertise in asset management of large, “asset driven” organisations;
- extent of knowledge about operation and management of bulk water, water distribution and sewerage collection systems and stormwater;
- experience in similar projects;
- understanding of the regulatory framework for both utilities;
- proposed consultancy fee;
- adequate resourcing and ability to provide results within the stated time frame;
- guaranteed availability of key staff;
- demonstrated ability to enlist the agencies’ cooperation whilst engendering a sense of acceptance of the relevant outcomes.

3.6 Acceptance of Tender

The Tribunal reserves the right to:

- accept no tender at all
- postpone indefinitely the acceptance of a tender
- call for new tenders
- appoint one or more tenderers to undertake the review
- approve or reject any sub-contractors the tenderer may wish to appoint.

3.7 Disclosure of information on Government Contracts

Potential tenderers should note that Government contracting guidelines may require the routine disclosure of the following information:

- details of contract (description of project to be completed or goods / services to be provided or property to be transferred; commencement date of the contract; the period of the contract);
- the full identity of the successful tenderer including details of cross ownership of relevant companies;
- the price payable by the agency and the basis for future changes in this price;
- the significant evaluation criteria and the weighting used in tender assessment; and
- provisions for re-negotiation (where applicable).

3.8 Consultancy Contract

The successful tenderer will be obliged to enter into a contract with the Tribunal prior to commencing the project.



The Tribunal has a consultancy contract that covers issues including, but not limited to:

- consultancy information and documentation;
- ownership of intellectual property;
- conflicts of interest;
- confidentiality; and
- insurance.

The Tribunal reserves the right to modify contract terms for the final contract as it considers appropriate. A copy of the Tribunal's draft contract is available on request.

4 Parties to the consultancy

The party managing and commissioning the consultancy is the Independent Pricing and Regulatory Tribunal of New South Wales. The primary contact is:

Bob Burford (02) 9290 8487
e-mail: bob_burford@ipart.nsw.gov.au

5 Lodgement of Tender

Three bound copies and 1 loose-leaf copy of the tender should be lodged in a sealed envelope marked 'ASSET MANAGEMENT REGULATORY REQUIREMENTS FOR SYDNEY WATER AND SYDNEY CATCHMENT AUTHORITY' and addressed to:

Ms Meryl McCracken
General Manager, Support Services
Independent Pricing and Regulatory Tribunal of NSW

at, PO Box Q290
QVB POST OFFICE NSW 1230

or, Level 2
44 Market Street
SYDNEY NSW 2000

so that it is received by no later than 5.00 pm Sydney time, on Friday 19 December 2003.



Appendix B
Information Review

Review of Regulatory Requirements in Other Jurisdictions



B.1 Other NSW Regulatory Asset Management Provisions

1.1 Hunter Water Corporation

The Operating Licence for Hunter Water contains very similar clauses to the SWC Licence. There are similar general provisions for operating and maintaining systems, and no specific clauses relating to asset management.

1.2 Interstate Regulatory Asset Management Provisions

1.2.1 Victoria

In Victoria, the Essential Services Commission regulates water, gas distribution and retail and electricity distribution and retail businesses.

Water

From 1 January 2004, regulation of the water sector extended from the three metropolitan State-owned water retail businesses to include Melbourne Water, the regional urban water authorities and the rural water authorities.

The Licence requirement for asset management between the Essential Services Commission, Victoria and the three metropolitan retail water businesses has been established for some years, and is quoted below.

“8D.1 The licensee must have in place asset management systems, processes and plans which enable the licensee to effectively and efficiently-

- d) Achieve the licensee’s performance requirements including requirements specified in legislation, this licence and the implied customer contract;*
- e) Cater for growth;*
- f) Manage the risks of potential failure or reduced performance of assets; and*
- g) Respond to potential emergencies.*

8D.2 The licensee must have in place asset management systems, processes and plans covering the whole of life of assets, and more particularly which cover-

- a) Conception and planning;*
- b) Acquisition and creation;*
- c) Operations and performance monitoring;*
- d) Maintenance and repairs;*
- e) Replacement, refurbishment or rehabilitation; and*
- f) Decommissioning and disposal.*

8D.3 The licensee must have in place asset management systems, processes and plans which have been developed in accordance with quality management principles, and more particularly which –

- a) Assess and record the nature, location, condition, predicted deterioration, current performance, performance capability and risk position of the licensee’s assets;*



- b) *Assign clear roles, responsibilities and accountabilities;*
- c) *Embrace innovation and continuous improvement;*
- d) *Utilise management tools such as strategic planning, emergency planning and risk assessment;*
- e) *Utilise appropriate procurement practices;*
- f) *Ensure staff and contractors have appropriate competencies;*
- g) *Ensure performance requirements, practices and processes are documented in a readily accessible form which can be readily updated; and*
- h) *Include review and independent audit to verify the accuracy and adequacy of systems, processes and plans and compliance with performance requirements.*

8D.4 The licensee must comply with any requirement specified by the Minister for the purpose of addressing any matter identified by an audit, conducted under clause 8A, of the licensee's compliance with its asset management obligations.

8D.5 The licensee must provide specified information to the Minister, in the manner and form determined by the Minister, concerning the management of the licensee's assets."

This licence requirement covers the general areas of importance described in Section 2.3, as well as specifying a life-cycle approach to asset management. Note that the element of cost is referenced through the need to "effectively and efficiently" meet requirements.

Operational audits are undertaken annually and may include any asset management audit requirements specified by the relevant Minister. In the past, these audits have been focussed on specific areas, including for example:

- ▶ Maintenance and renewal decision-making,
- ▶ Emergency planning,
- ▶ Water conservation and demand management,
- ▶ Asset management for major assets,
- ▶ Sewer inflow and infiltration,
- ▶ Land and easement management.

At this stage, the Statement of Obligations (instead of Licences) for the newly regulated businesses have not been finalised, but discussions with the ESC indicated that asset management clauses will be included. These are expected to be of a generic nature and expressed more briefly than the existing Licence clauses, but with specific requirements relating to aspects such as dam safety.

Electricity

Electricity distribution business (EDB) Licences do not include explicit conditions relating to asset management, but refer to compliance with the Electricity Distribution Code (EDC). The EDC contains the following provisions for asset management:

"3.1 Good Asset Management

Explanatory Note: Clause 3.1 defines elements of good asset management which are designed to encourage innovation in the provision of distribution services and not prescribe distributor's practices in



detail. The Office may, however, undertake detailed examination of a distributor's practices if there is a substantial decline in the quality or reliability of supply, or evidence of a significant risk that such a decline may occur in the future when compared to the licensee's historical performance and its performance targets.

A distributor must use best endeavours to:

- ▶ *Assess and record the nature, location, condition and performance of its distribution system assets;*
- ▶ *Develop and implement plans for the acquisition, creation, maintenance, operation, refurbishment, repair and disposal of its distribution system assets and plans for the establishment and augmentation of transmission connections:*
 - *To comply with the laws and other performance obligations which apply to the provision of distribution services including those contained in this Code;*
 - *To minimise the risks associated with the failure or reduced performance of assets; and*
 - *In a way which minimises costs to customers taking into account distribution losses; and*
- ▶ *Develop, test or stimulate and implement contingency plans to deal with events which have a low probability of occurring, but are realistic and would have a substantial impact on customers.”*

Clause 23 of the Licences require EDB's to appoint independent auditors to audit compliance with Licensee obligations, which may include the provisions of the Code above. Discussion with the ESC indicates that there have been few significant issues associated with these clauses in their application or audit.

Gas

Similar to electricity, gas distribution business Licences do not contain asset management clauses but require compliance with the Gas Distribution System Code and various safety regulations.

1.2.2 Western Australia

The regulatory framework for the water industry was established under the Water Services Coordination Act 1995. The Act provides for a licensing system for water services, which is administered by the Economic Regulation Authority (ERA), formerly the Office of Water Regulation.

The Water Corporation of Western Australia covers the full gamut of activities from headworks to disposal for virtually the whole state. The ERA conducts two levels of review:

- ▶ Lagging performance measures which look back at the performance over the review period
- ▶ Review of the Asset Management systems and their effectiveness

The Review of the Asset Management systems is carried out every two years by an independent consultant. Two reviews have been completed, the last being in 2002. The two reviews to date have consisted of a quite detailed set of parameters and a scoring system, which was formulated by Water Corporation, and agreed with amendments by the regulator.

The Water Corporation provides a report on lagging indicators (about 20 pages) to the Regulator on performance every quarter, with any significant incidents reported on a daily basis.

The next review is due later this year, and ERA is currently considering changes to the review methodology, with a view to taking the next step in evolving asset management regulation.



1.2.3 Queensland

The Queensland Competition Authority has oversight of pricing. The QCA does not have formal review periods, but generally keeps an eye on utilities, looking for anti-competitive behaviour, cross-subsidies, and under or over recovery of costs. The QCA holds formal reviews on a needs basis.

The Department of Natural Resources and Minerals (DNRM) regulates water authorities under the Water Act 2000. The Act provides a regulatory framework for the provision of both water and sewerage services and the establishment of water service provider obligations.

Strategic Asset Management Plans, aimed at ensuring continuity of supply, must be prepared, certified, approved by DNMR, complied with, audited for compliance, and supported by an annual performance report.

The Strategic Asset Management Plan must contain the following:

- ▶ The services to which the plan applies;
- ▶ The infrastructure for the provision of the services;
- ▶ Standards for appropriate levels of service, including customer service;
- ▶ Performance indicators for the service; and
- ▶ An operation, maintenance and renewals strategy that demonstrates how each standard will be achieved.

The annual performance report must:

- ▶ Measure the service provider's performance for the financial year against the strategic asset management plan;
- ▶ Document the actions taken by the service provider to implement the plan, including the application of funds to support implementation of the plan;
- ▶ State the outcome of any review of the plan and how the service provider addressed the matters raised in the review; and
- ▶ Contain a summary of finding of and any recommendations stated in an audit report given to the regulator in the financial year to which the report relates.

DNRM's approach to-date is to require utilities to set their own 10 - 12 performance targets, based on their Customer Service Standards which they also must submit to the regulator, and to produce a 10-year Strategic Asset Management Plan covering what infrastructure they own, operations, maintenance and renewals, along with a matching financial plan.

The approach is at the self-regulatory end of the scale, and is based on requiring the utility to do its own planning to the level required by the complexity of the business. The decisions are therefore made by those people who know the business best, and the transparent availability of the plans and standards to both the regulator and others provides a mechanism for early detection of long term problems.

The DNRM initially concentrated on receiving plans from the "Big 23" organisations with equivalent connections above 25,000. The next tier, about 63 medium sized authorities with connections ranging from 1,000 to 25,000 connections, had to submit their plans for the first time towards the end of 2003, with the remaining 136 service providers due in late 2004.



The DNRM, as is the case with most regulators, is relatively new to this type of regulation, and is progressively developing its ideas.

1.2.4 Tasmania

The water sector is not heavily regulated in Tasmania, with responsibility for water, sewerage and drainage sitting with municipal Councils through local government legislation. A consortium of metropolitan Councils in Hobart own and manage Hobart Water.

Electricity is regulated by the Office of the Tasmanian Energy Regulator (OTTER). The electricity transmission and distribution businesses are required to submit a suite of management plans to OTTER every two years, comprising:

- ▶ Asset Management Plan,
- ▶ Compliance Plan,
- ▶ Vegetation Management Plan, and
- ▶ Service Plan.

The businesses are required to report progress and improvement actions annually against these Plans, and quarterly against the Service Plan. The businesses are also required to consult on the Plans and incorporate amendments by OTTER. Every two years, the businesses are to engage a Reporter, an independent consultant approved by OTTER, to report on compliance with and adequacy of the Plans.

1.2.5 South Australia

South Australia Water services the whole of the State, and is a government-owned entity reporting through the relevant Minister. There is no separate or independent regulator for water. No review of legislation for asset management requirements has been undertaken.

Electricity and gas are regulated by the Essential Services Commission of South Australia (ESCOSA) through Licences issued to generators, transmission companies, distributors and retailers. The Licences for electricity distribution and transmission companies include requirements for annual submission of a Safety, Reliability, Maintenance and Technical Management Plan to ESCOSA. The Plan must cover matters prescribed by regulation. The businesses must comply with this Plan and undertake annual audits and report the results to the Technical Regulator. The businesses must also undertake periodic operational and compliance audits, which may be required to be independent, for submission to ESCOSA.

1.3 International Asset Management Regulatory Requirements

1.3.1 UK

Asset management regulatory provisions are the most mature in the UK, having existed since 1991 when privatisation of the water sector and specific imperatives for renewals investment were drivers. This appeared to give rise to an extensive regulatory regime through the Office of Water Regulation (Ofwat), with a major focus on asset management plans as a basis for pricing and investment. Ofwat also has a focus on ensuring that the privately owned monopoly service providers never become insolvent, which involves ring fencing the water company from the remainder of a parent company's assets, and ensuring a pricing regime which supports this aim. Ofwat also have the imperative of progressively making the companies more efficient to minimise costs to the consumers. Ofwat uses comparative competition techniques, and various other carrots and sticks to encourage the companies in this regard.



Ofwat applies a “heavy handed” regulatory regime. There is an extensive reporting regime and rigorous ongoing scrutiny of asset management and investment plans, with major reviews and pricing decisions every five years. The resource requirements of Ofwat, the water companies and external consultants to support this regime are significant. Ofwat have about 150 staff full-time on regulation of the ten major companies, and a number of smaller companies.

1.3.2 New Zealand

Water

Water regulation in New Zealand is drawn through local government regulation and is not specific to the water industry. The statutory requirements in NZ for asset management in local government have been set down in the Local Government Act passed in late 2002. The Asset Management requirements do not distinguish between water and any other asset based activity that a Council undertakes (most water is still managed by local Councils). The legislation stresses the identification of 'levels of service' and the need for performance measures which compare intended levels of service with actual levels of service .

There is no prescription in the Act as to what performance indicators to use. The NZ National Asset Management Steering Group (NAMS) has recently put out a publication "Creating Customer Value-agreeing levels of service with customers" as a start in getting better performance measures. The other major player regarding water is the Ministry of Health, which has stipulated that Water service providers have to put in place risk management plans for almost all public water supplies.

Each local authority (most water is still managed by local authorities) is annually audited on behalf of the Auditor General (Audit NZ) of the performance information and also, from 2006, the audits of ten year plans of Councils. This audit is supposed to include an audit of all their asset management plans. Audit NZ has indicated its belief that, to achieve robust financial forecasts, Councils will need to implement advanced asset management systems for all asset based activities that they provide. Our advice at this stage is that these audits are still in their early days and are fairly cursory. Some work has been done on comparative benchmarking, but not much. Some utilities are considering the WSAA benchmarking tool at the present time.

1.3.3 USA

Background.

The provision of water and wastewater services in the USA (North America) is fragmented with significant differences occurring in every State, County and City.

The US EPA estimates that there are over 85,000 agencies and legislated bodies with responsibilities in this service function and they do not believe they have accounted for all such agencies. These numbers are split as follows:

- ▶ Wastewater Agencies, approx 17,500
- ▶ Water Agencies, approx. 67, 500

Some 3,000 major agencies serve approximately 50% of the USA population through the major metropolitan areas. It is also important to note that very few agencies have dual responsibilities for both Water & Wastewater.



This state of affairs has come about through the application of old laws similar to the British Water Act, involving the development of Waterworks Trusts and Sewerage Authorities. These were initially based on Townships and Villages who eventually grew into Metropolis', Cities and Counties. However it must be noted that with the wide distribution of arable land the US population is still widely dispersed and many small towns, villages and townships still operate as they have to this day.

The other key factor in this existing model is that American culture is orientated towards individual freedoms and the rights of groups to do 'their own thing' far more than exists in Europe and Australia. This has resulted in sub dividers and developers being allowed to create 'body corporate' agencies that have responsibilities for water & sewer provision even within one large development. For example a massive subdivision in Houston has 360 separate sewer and water reticulation 'corporate bodies' that administer the assets once the subdivision is fully developed. In many cases the water supply head-works and wastewater disposal system is operated by a larger local agency, but in some cases it is just a larger 'corporate body' operating under state legislation.

Regulatory Frameworks

The regulatory framework for each agency is therefore in two main areas, namely Performance & Price.

Agency Performance (Service Delivery)

In parallel with the above historical development there is a Federal Government framework in regards to Drinking Water Quality and for Wastewater Discharge Quality Standards. These are administered and enforced by the Federal EPA and are quite stringent and overrule state legislation. However all other regulatory functions (and the day to day administration of the above) are left to each individual State Government generally through their own Department of Environment or Water Resources.

There are very few (if any) agencies with clear levels of service outlined and none to our knowledge that have a 'customer charter' common in Australia & NZ. Therefore the key performance regulatory requirements are:

- ▶ Drinking Water Quality Regulations
- ▶ CMOM – capacity assurance, maintenance and operations management.
- ▶ SSO's – Sanitary Sewer Overflows, a regulation to reduce these to satisfactory levels. These are linked closely to the CMOM program (which has still not be signed into law).

All other regulatory standards such as:

- ▶ Design standards for electrical installations.
- ▶ Occupational Health & Safety.
- ▶ Other similar ones.

Pricing / Economic Regulation.

The regulatory framework for pricing is similar to what existed in Australia prior to National Competition Policy.

That is, the prices are set by the Elected Boards who manage these agencies, from the Metropolitan Agencies down to the smallest township or village.



Some of the larger Metropolitan Agencies are subjected to greater scrutiny however this is generally just politically driven for other purposes rather than for driving efficiency or effectiveness. In the privatized areas the County or city council plays the role of pricing regulator, however some have a fixed price path for 15 or 20 years.

There is no uniform policy on the pricing of infrastructure services and these agencies complete their accounts in line with Generally Accepted Accounting Practices (GAAP) and the relevant Accounting Standards.

Up until 2002 there was no standard that required the depreciation of assets. However in 2002 a new Accounting Standard, GASB 34 was introduced to accommodate the proper reporting of their physical assets. The original draft replicated our Australian standards AAS27 & 29, however the finally released standard was significantly altered in the following critical areas:

Agencies are only required to value their assets based on historical cost. The resulting depreciation is not of much use considering the age of the assets, the inflation in cost and the fact that no allowance is made for the 'brown-fields effect'.

Agencies only have to depreciate assets constructed since 1985, and as such the older more critical assets may not even be accounted for.

There is a long time line for the introduction of the standard starting with businesses with a turnover of over \$100 million per annum. This means that smaller agencies may not develop asset registers or any allowances for depreciation until 2010.

GASB 34 contains recommendations for performance audits, however they are neither specified nor compulsory.

The greatest step forward in the standard is an acceptance of the principle of 'modified depreciation' (the preservation method). This allows an agency to use average annual renewal annuity and appropriate maintenance to be the basis of 'preserving the service potential' but the standard doesn't show the way in which an agency should do this.

Regulation of Asset Management

In regards to asset management, the USA scene is very similar to Australia in the early 1980's. They have concentrated on the efficiency aspects of running their agencies by:

- ▶ Significant system automation (SCADA)
- ▶ Reducing operational & maintenance staff through benchmarking to match the levels perceived to be attained in privately owned utilities in the USA and around the world.
- ▶ Installing large information systems including some computerized maintenance management systems (CMMS) and significant numbers of Geographical Information Systems (GIS).
- ▶ Electronic operations manuals linked to their SCADA or asset registers
- ▶ Expert operating systems for water, wastewater and electrical distribution systems where load shedding is now fully automated.
- ▶ Sewer renewal processes & specialized equipment
- ▶ Great project and program management skills (on time on budget)



However they have not really addressed life cycle asset management and the associated issues of:

- ▶ Life Cycle Asset Management
- ▶ Failure Mode, Effects and Criticality Analysis (FMECA) and the associated
- ▶ Reliability Centered Maintenance (RCM)
- ▶ Full Economic Cost of the Consequence of Failure (CoF)
- ▶ Optimized condition assessments & performance assessments (LoS) and accurate predictions of the Failure Mode (FM) and Probability of Failure (PoF)
- ▶ Understanding Business Risk Exposure (BRE)...this is really reflected in the fact that they take few risks and have significant redundancy that is not justified economically. Whereas in other areas they are not aware of the risks they are taking e.g. trunk sewer conditions.
- ▶ Life cycle Cost Analysis (LCCA) using Triple Bottom Line (TBL) activities (Economic, Social & Environmental)
- ▶ Full Economic Cost of Service Delivery (FECSD) including appropriate allowances for the use of the Opportunity Cost of Capital (OCC) or Return on Assets (RoA)
- ▶ A clear understanding of the need for Replacement Cost Accounting and 'modified depreciation' or Average Annual Renewal Annuity (AARA) and accurate 'brown fields' replacement costs for valuation purposes.
- ▶ Justifying the optimal balance between maintenance and capital or more particularly, determining the right maintenance budgets.
- ▶ Triple Bottom Line reporting frameworks (TBL see above) and 'Sustainable' infrastructure management principles.
- ▶ Asset Management Plans (AMP's) or State of the Asset Reports that enable all stakeholders to truly understand the condition and performance of the entire asset stock or portfolio. Remembering that a score of D+ in an infrastructure report card tells you nothing.
- ▶ Sound capital expenditure evaluation & approval processes that uses BRE and TBL allowances to ensure – 'the right option at the right time for the right reasons', and not just on time on budget. .
- ▶ Sustainability - A sound logic and philosophy by which to assess all LCAM investments and drive AM improvements to ensure that they are capable of providing sustainable services over a 25 year timeframe, that recognizes intergenerational equity and report in terms of TBL.
- ▶ Asset Management input (process) benchmarking and determination of justifiable improvements.

Conclusions

There is no structured or complete form of auditing or assessing sustainable asset management in the US Water Industry by any regulators.

The industry completes good asset management however it is in a form that is similar to where Australian water industry was in the 1980's.

The critical nature of life cycle asset management and its role in water infrastructure service delivery is now being addressed by key stakeholders in the industry including:

- ▶ US EPA and their associated state agencies.



- ▶ The General Accounting Office (the Auditor General for the USA)
- ▶ Major Water Industry organizations such as WERF, WEF, AWWA.

The key Regulators and Stakeholders are closely reviewing the processes used in Australia, New Zealand, the United Kingdom and Europe. We anticipate that it will gain considerable impetus over the next few years, however it will be the overall national culture and the multitude of agencies that will be the greatest impediment to change in this area.

1.4 Codes, Guidelines and Assessment Tools

1.4.1 Australian Standards

There are no specific Australian Standards (AS) which cover the life cycle management of assets. Various AS' cover related and useful management systems which can be integrated with asset management, including:

ISO/AS/NZS 9000 Series: Quality Management

AS 4360: Risk Management

ISO 14000 Series: Environmental Management

Numerous AS provide materials, design and construction standards.

While the AS provide a consistent and nationally accepted (internationally in some cases) standard of practice, none of these are considered appropriate to mandate at a Licence level.

1.4.2 International Infrastructure Management Manual

The International Infrastructure Management Manual (IIMM) has evolved over a number of years from an Australian National Asset Management Manual (published by the Institute of Public Works Engineering Australia (IPWEA) in 1994) and the New Zealand Asset Management Manual (published by the New Zealand National Asset Management Steering Group (NAMS) in 1992), which were integrated through a partnership between IPWEA and NAMS into the IIMM Australia/New Zealand Edition in 2000. Subsequent updates have been issued.

The IIMM provides a structure for infrastructure asset management in both the private and public sectors, and provide guidance and practical examples on best practices to apply across the life cycle of assets.

Current technology has moved to web-based frameworks and knowledge management systems for asset management, which have been implemented in Queensland and the Northern Territory.

It is not considered appropriate to require the use of this Manual or knowledge-based systems, as they are generic set of tools to apply across a wide range of industries. It can be used as a reference if required.

1.4.3 NSW TAM Guidelines

The NSW Total Asset Management (TAM) manual was first published in 1992, and has been revised several times since. It was developed and is maintained by the Department of Commerce (formerly the NSW Department of Public Works and Services), in collaboration with infrastructure owning agencies in NSW.



TAM is now part of the broader NSW Government Strategic Management Framework that summarises and defines the various processes used by the government and its agencies to plan activities and services, to allocate resources, and to report on performance. TAM is also an integral part of the NSW Treasury's Financial Management Framework.

TAM is overseen by the Government Asset Management Committee (GAMC), a high powered group chaired by the Director-General of the Premier's Department. Members comprise the CEOs of Treasury, Department of Commerce, Attorney General's Department, Roads and Traffic Authority and a representative from the Public Sector CEOs Committee. The Treasury provides executive support and a dedicated secretariat. The GAMC is supported by a reference group of asset-holding agencies, but does not include SWC or SCA.

Agencies are required to submit Asset Strategies to Treasury annually to support their bids for both capital and recurrent funding. These strategies must clearly identify links between an agency's corporate and service delivery strategies, and asset planning.

The use of the Manual for agencies has been mandated through a Premier's memo dated 10th July, 2002. Quoting from the memo, State-owned corporations are "to give consideration to adopting the principles of TAM as part of their Statements of Corporate Intent, where they are not already in place, and advise the NSW Treasury of the extent to which they will be or have been implemented".

Given the approach of Government and Treasury, it is clearly in the interests of both agencies and State-owned Corporations to use the TAM Manual approach, particularly in the area of obtaining Treasury approvals.

Sydney Water, Sydney Catchment Authority and Hunter Water have well-developed systems of their own which they believe follow the spirit of the TAM manual, and which they regard as superior for their own business requirements. Areas where their approach may exceed requirements include risk management, demand management and in economic life considerations. The SCA has recently undergone an exercise in having their approach "audited" against the TAM Manual by the Department of Commerce.

The Manual defines Total Asset Management as the strategic management of physical assets to best deliver agency services.

The manual says that plans are to be prepared with reference to whole-of-government planning, the agency's Corporate Plan, and its Service Delivery Strategy, and should contain the following elements:

- ▶ An Asset Strategy, which determines which assets are to be acquired, upgraded, maintained or disposed.
- ▶ A Capital Investment Strategic Plan for new or upgraded assets.
- ▶ An Asset Maintenance Strategic Plan which provides a structured process for the maintenance of existing assets.
- ▶ An Asset Disposal Strategic Plan.
- ▶ An Office Accommodation Strategy.

The TAM Manual also contains guidelines on how to select and use various assessment and decision tools, including Demand Management; Life-cycle Costing; Economic Appraisal; Value management; Risk management; Post Implementation Review; and Performance Evaluation.



It is left to the agencies and corporations to decide on the specific systems and procedures to be used in implementing TAM, and the specifics of implementation will vary with complexity, risk, and other specific circumstances.

The TAM Guidelines could possibly be referenced as a minimum level of coverage of asset management plans in the Licence.

1.4.4 WSAA Asset Management Benchmarking Tool

The WSAA Asset Management Benchmarking tool was released towards the end of 2003. WSAA hopes to have most of the major urban water authorities self-assessed and independently externally audited in 2004 through a contract, which has been let to consultants. The first audit is expected to start in April, 2004. This project will provide information back to the participants regarding their relative performance against others in the program.

The tool seeks to measure performance across a range of inputs to Asset Management. There are approximately 600 measures applied to 250 sub-processes. These measures are aggregated up through 50 processes, and reported through seven Functions, namely:

- ▶ Corporate Policy & Business Planning
- ▶ Asset Capability Planning
- ▶ Asset Acquisition
- ▶ Asset Operation
- ▶ Asset Maintenance
- ▶ Asset Replacement and Rehabilitation, and
- ▶ Business Support Systems, which includes Information Systems.

The design of the tool is quite complex, and requires experienced auditors to ensure correct interpretation and scoring, and consistency between audits. WSAA has a training program for accrediting auditors. It can be expected that there will be some teething problems with the tool initially.

As presently constituted, the tool treats all key functions as equally important, with no mechanism for differentiating between functions on the basis of importance to the business. Potentially critical shortcomings to a specific business can be hidden within an aggregate score. The tool also does not have the ability, at present, to produce a prioritised improvement program based on priority to the business, the current performance level, and a desired or appropriate target performance level.

Nevertheless, the initial audits will provide the business and possibly a regulator with useful information on which to move forward. Information gained should be useful in helping to develop a suite of “clever” forward looking asset management indicators, if it is decided that this is the preferred approach for IPART. If the tool is to be used as part of the system of regulation, it would need to be used in conjunction with techniques which allow areas of critical weakness to be pin-pointed; the impact of these weak points to be assessed; short term measures to manage risk and process improvement plans identified; and actions arising implemented and tracked.



Appendix C

Stakeholder Review Comments

Relating to the Draft Report on Asset Management
Requirements for Operating Licences.



C.1. Submission received.

Review comments on GHD's Draft Report were received from the following agencies:

- ▶ Sydney Water Corporation (SWC)
- ▶ Sydney Catchment Authority (SCA)
- ▶ Department of Environment and Conservation (DEC)
- ▶ Public Interest Advocacy Centre (PIAC)
- ▶ Total Environment Centre (TEC)

The key issues outlined by each agency are tabulated and discussed below, and relevant amendments to the report referenced.

In addition, correspondence from the Department of Infrastructure, Planning and Natural Resources (DIPNR) to the Tribunal provided some information of relevance to the review process and is considered below.



C.2. Consideration of Submission Comments

Submission Reference	Key Issue	Discussion	Report Amendment Reference
SWC	1. Proposed draft clauses for inclusion in SWC Operating Licence. Generally in line with GHD's draft report, with modification believed by SWC to make process and outcomes robust and workable.	Detailed drafting of clauses will be undertaken by the Tribunal. Policy issues raised are discussed below.	Sec 8.1. Refers to need to refine and define the agreed provisions.
SWC	2. SWC does not support annual auditing, due to long term focus of asset management processes and outcomes, and proposes one report and audit in a Licence period.	GHD agrees that annual auditing is not necessary. However, one report and audit in a 5 year Licence period may not be sufficient to provide relevant and timely information (for transparency) to stakeholders and engender adequate confidence in asset management decision-making. This is a subjective judgement without the input of relevant stakeholders, and without the benefit of an SWC reporting/auditing precedent for asset management. The difficulty is in striking the most appropriate balance between costs / effort in preparing and auditing the asset management aspects, and the benefits to stakeholders in terms of transparency and confidence. Regular asset management reporting and review can provide a clear link between the reported historic performance and the proposed actions to address performance shortfalls (existing or potential) i.e. greater transparency. It is considered that a 2 to 3 year reporting and auditing cycle, or twice in the Licence period would be a reasonable balance. The frequency should be reviewed at the next Licence review. The asset management reporting would be supported by trend analysis and information on proposed programs to address performance shortfalls as part of the annual compliance report. The Tribunal is separately considering this latter aspect.	Executive Summary - Recommendations 3.1 and 5.1. Sec 8.3.2 and 8.3.3. Amendments made.
SWC	3. SWC does not support selective auditing of asset management.	GHD considers that the Tribunal should have the flexibility to selectively audit specific asset management aspects under defined circumstances, as part of the proposed audits. The circumstances are outlined in the report (Section 8.3 Subheading - Audit Requirements).	Executive Summary Recommendation 4. Sec 8.3.3.



SWC	4. SWC believes the key focus should be on water, wastewater and stormwater assets and key support systems.	This comment appears to imply that other corporate assets should be excluded. The vast majority of SWC's assets relate to the operating networks, and the support systems are critical to asset management decision-making. Nevertheless, there are significant investments in corporate assets including offices and depots. The same asset management decision processes are relevant to these assets to ensure they meet functional requirements and there is efficient investment.	Executive Summary Recommendation 2.4. Sec 8.3.1. No change to text.
SWC	5. SWC proposes a report once in the Licence period with a focus on improvements and investments required to ensure assets will continue to deliver service outcomes, rather than on the "State of the assets".	With respect to the frequency of reporting, this is considered in SWC Item 1 above. The frequency of reporting and auditing should be aligned. With respect to the content of reports, GHD considers that providing an understanding of the "State of the assets" is an important precursor to establishing the need for the improvements and investments proposed. The need is defined by the risk of failure of the asset to meet service requirements (eg. Physical failure, service or capacity failure or cost (efficiency) failure). While the term "State of the assets" is not necessary, all the reporting elements described in the report are considered relevant and valuable for communication to stakeholders and transparency in decision-making.	Executive Summary Recommendation 3.1. Sec 8.3.2. Amendments made.
SWC	6. Tribunal reporting requirements should consider reporting requirements of other agencies including proposed DIPNR requirements.	This issue is beyond the scope of this report. The DIPNR requirements have not yet been defined. It is considered highly desirable to reach agreement on required reporting requirements and attempt to minimise any duplication in reporting to government agencies.	
SCA	1. Amendment to statement regarding current level of reporting and auditing.	This statement has been amended.	Executive Summary, pages ii and iii.
SCA	2. SCA considers GHD's view of the WSAA asset management framework is not objective.	GHD has accredited auditors for the WSAA asset management benchmarking framework, and has considerable experience in applying asset management review and assessment tools to utility businesses including water. GHD's view has been formed from this experience and its understanding of the regulatory needs as outlined in this report. Some text changes made.	Executive Summary page iii. Sec 3.5 and Appendix B.



SCA	3. Reporting requirement in Recommendation 1.2 is onerous, and SCA is currently audited on the requirements in Recommendation 1.3.	Refer to responses to SWC Items 2 and 5 above.	Executive Summary - Recommendation 3.1. Sec 8.3.2.
SCA	4. Clarify what is meant by "specified asset management areas of interest"	Refer to response to SWC Item 3 above.	Executive Summary Recommendation 4. Sec 8.3.3.
SCA	5. Various regulatory provisions cannot be met without good asset management.	Concur with this view. Text modified.	Sec 3.4.
SCA	6. Inconsistency between conclusions in Sections 3.6.2 and 3.6.4.	GHD considers there is no inconsistency. The Operational Audit provided confidence in SCA's asset management practices, while the pricing review specifically highlighted processes relating to justification for renewals. A more comprehensive framework for review would assist to improve transparency and confidence in asset management.	Sec 3.6.4. Minor change.
SCA	7. A large amount of documentation is available to the operational auditors on asset management, but for security reasons these documents are not made publicly available.	GHD considers that the issue of infrastructure security is important, and the level of information provided into the public domain should not compromise security. There is currently a considerable amount of information on the agencies' operations and assets available in the public domain through annual reports, compliance reports, operational audits, pricing reviews, specific project and program reports, media reporting and consultation programs. Consequently, a balance needs to be struck between the further information required to provide adequate transparency, and any information which could compromise security. This balance is difficult to determine, and may require further discussion between the relevant parties, as well as an initial licence period of reporting, to achieve. It is considered that the level of information required in Section 8.3.2 can be structured so as not to present a security risk. This point is noted in the text.	Sec 8.3.2.



SCA	8. SCA notes that SWC has many prescribed dams.	The asset management provisions recommended refer to all asset groups for both SWC and SCA. While specific requirements of the Dams Safety Committee have been included in the Licence for SCA, no similar provisions exist for SWC. Consideration of such specific requirements for SWC is not part of the scope of this review by GHD, but could be separately considered by the Tribunal.	No change.
SCA	9. Draft report Sec 8.3, 1 b) and 5 (c) are not clear.	<p>Clause 1 b) stated:</p> <p><i>1. Require SCA to have in place asset management, processes, practices, systems and plans which enable it to effectively and sustainably-</i></p> <p><i>b). Achieve other requirements specified in legislation, the Licence, by other regulators, government direction and memoranda of understanding, both now and into the future;</i></p> <p>Asset management will need to address all regulatory performance requirements. It is not necessary to specify these individually.</p> <p>Clause 5 c) stated:</p> <p><i>5. Require SCA to meet the asset management requirements for all its assets including:</i></p> <p><i>c). Corporate or non-system assets.</i></p> <p>Corporate or non-system assets include those remaining assets managed by the agency including corporate information systems, offices and depots. Refer response to SWC Item 4 above.</p>	No change.
DEC	1. The asset management objectives should have regard for overarching regulatory objectives. Also the need to meet other regulator objectives.	<p>Section 6.4 refers to objectives of asset management being to provide assets in a sustainable manner and meeting service levels.</p> <p>Overarching regulatory objectives should be stated as part of the required service levels. These are captured under the recommended Licence obligations.</p>	Sec 8.3.1 and Sec 8.4.1.



DEC	2. Asset management link to pricing.	Agree that pricing is closely linked to asset management, however GHD was not required to consider pricing links. Asset management information will assist to provide insight into programs and projects proposed for funding under the price review.	No change
DEC	3. Information availability to public, and on state of the assets.	Refer to comments under SCA Item 7 above.	
DEC	4. Other comments	Not specifically addressed by GHD. The comments mainly relate to detailed aspects of outputs, such as how investment programs are prioritised, and suggesting areas of priority focus. These are considered matters for the agency, and reviewed and audited by the Tribunal.	
PIAC and TEC	No specific comments requiring report changes.		



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Document Status

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		Name	Signature	Name	Signature	Date
A	Don Vincent, David Hope	Ian Garrard	*	Don Vincent	*	26/03/04
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*Denotes signature on original