IPART has published its consultant's draft report titled, 'Strategic Management Overview and Review of Operating and Capital Expenditure of State Water Corporation 2009' for the information of stakeholders. IPART is not seeking public submissions from stakeholders to this draft report.

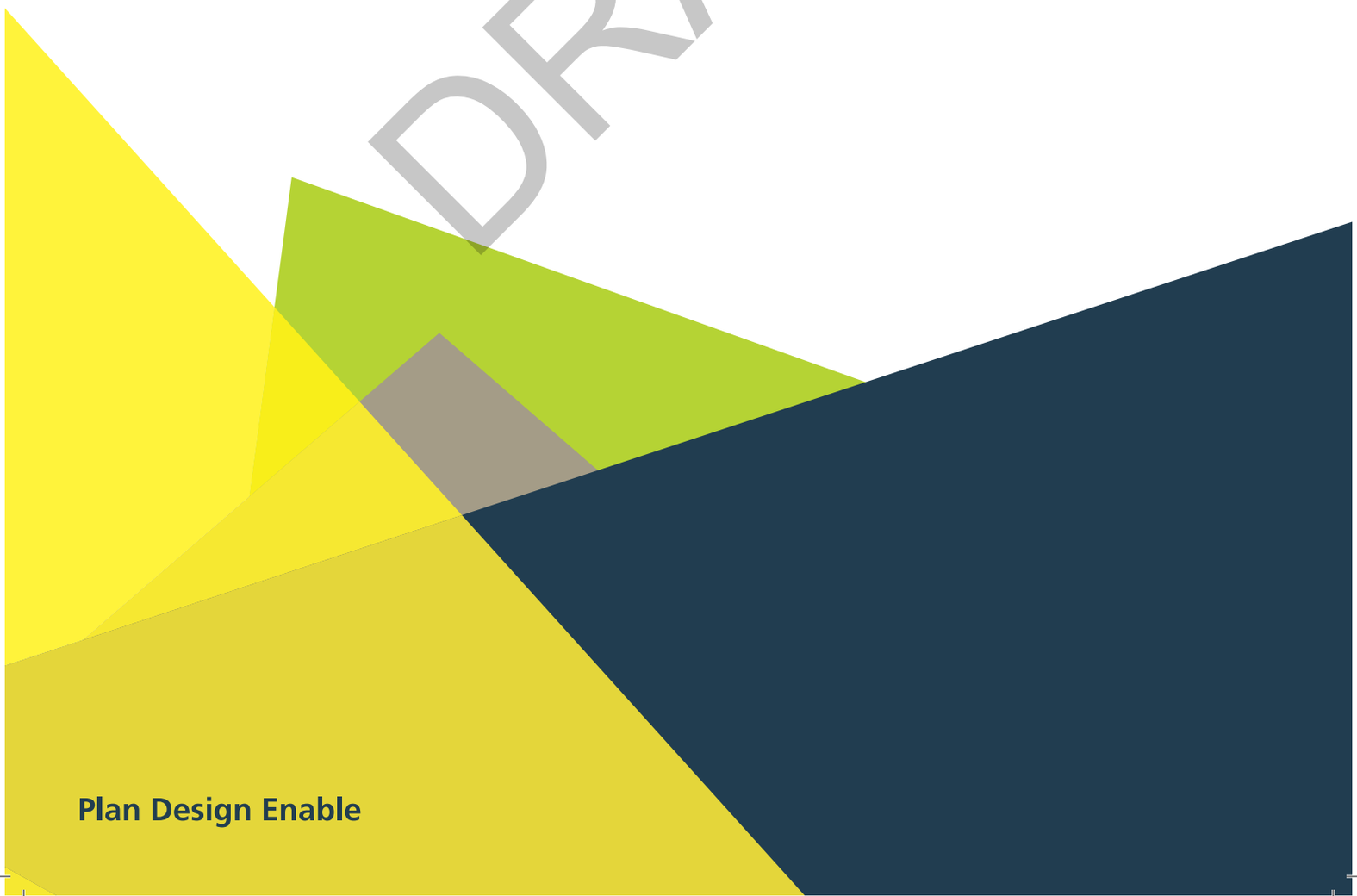
This report has been released to assist stakeholders in understanding the drivers of State Water's expenditure proposals. Parts of this report have been removed to protect State Water's commercial interests in negotiations with third parties.

This report is only draft but when finalised, the findings from it will be used to inform IPART's draft decisions on State Water's bulk water charges. IPART's draft decision will be published for comment in March 2010. Stakeholders will be encouraged to make comment on State Water's operating and capital expenditures as part of their comments to IPART's draft decision.

ATKINS

Strategic Management Overview and Review of Operating and Capital Expenditure of State Water Corporation 2009

Draft for Consultation



Plan Design Enable

Strategic Management Overview and Review of Operating and Capital Expenditure of State Water Corporation 2009

Draft Report for Consultation

6th November 2009

Notice

This document and its contents have been prepared and are intended solely for the *Independent Pricing and Regulatory Tribunal of New South Wales (IPART)'s* information and use in relation to *Strategic Management Overview, and Review of Operational and Capital Expenditure of State Water Corporation 2009*.

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Contents

Section Page

List of Tables

List of Figures

Appendices

Glossary

Term	Definition
ACCC	Australian Competition and Consumer Commission
AEP	Annual Exceedance Probability
ANCOLD	Australian National Committee on Large Dams
BERP	Budget and Expenditure Review Panel
BIC	Business Improvements Committee
CAIRO	Computer Aided Improvements to River Operations
CEO	Chief Executive Officer
CMP	Conservation Management Plan
COO	Chief Operating Officer
CRC	Current Replacement Cost
CSC	Customer Service Committee
CWP Cold	Water Pollution
DCF	Dam Crest Flood
DECCW	Department of Environment, Climate Change and Water
DII	Department of Industry and Innovation
DPI	Department of Primary Industries
DSC	Dam Safety Committee
ERA	Estimating Risk Analysis
FMMS	Facilities Maintenance Management System
FP Fish	Passage
FTE	Full Time Equivalent
GWMWater Gram	pians-Wimmera-Mallee Water
IFMS	Integrated Financial Management System
IPART	Independent Pricing and Regulatory Tribunal
IS	Information Services
MDBA	Murray Darling Basin Authority
MEERA	Modern Engineering Equivalent Replacement Asset
MOU	Memorandum of Understanding
NOW	NSW Office of Water
NSW	New South Wales

Term	Definition
NWI	National Water Initiative
OH&S	Occupational Health & Safety
P50 50th	Percentile
P90 90th	Percentile
PCG	Project Control Group
PDS	Project Delivery System
PMF	Probably Maximum Flood
PRA	Portfolio Risk Analysis
RAB	Regulated Asset Base
SCADA	System Control and Data Acquisition
SCI	Statement of Corporate Intent
SIR	Special Information Return
SWC State	Water Corporation
TAMP	Total Asset Management Plan
WAS	Water Accounting System

Executive Summary

This report presents the findings of our review of the capital and operating expenditure for the regulated bulk water services of the State Water Corporation for the period 2007 to 2015.

We have based our findings on the submission and information return presented to IPART by State Water Corporation, five days of structured interviews with agency staff, site visits and information provided by the Agency. Our findings are also informed from an assessment of State Water Corporation's business management and decision making, asset management and capital planning processes. We also reviewed operational activities and a representative number of capital projects in the current and future price paths.

State Water Corporation is responsible for bulk water supplies to all valleys in New South Wales excluding the metropolitan water supply area. It has 6,000 regulated river customers who are mainly irrigation corporations, individual farmers, small horticultural businesses and some large customers growing rice and cotton. The Fish River is a bulk treated water supply system. The Corporation's asset base comprises large impounding reservoirs and weirs and associated assets. It is responsible for managing demand for bulk water, delivery, billing and customer relations. Tariffs are set for individual valleys which require operating and capital expenditure to be allocated equitably across the operational area.

We noted that State Water Corporation has made significant changes to its business from the 2006 Determination. The major restructuring has moved the business from a regional organisation to a central functional structure. This has brought greater focus to the key business activities and consistency in approach across its operational area. There is a changing culture as the business refocuses and new managers with wide experience are brought in. We recognise that these changes SWC is likely to meet its 2010 target set in the 2006 Determination.

For the future price path, SWC has the ability through enhanced systems and processes to continue to make further efficiencies which can partly offset the increasing obligations it includes in its Submission. We assume that the additional operating expenditure proposals will follow a rigorous appraisal process as they progress through the business. We have made some adjustments to reflect the application of these processes while also noting that there are several new environmental and other obligations placed on the business.

We are required to make an assessment of an efficient level of capital and operating expenditure that SWC should achieve from its 2010 base year over the next price path period. Our focus has been on the business systems and processes used to monitor, forecast and control both capital and operating expenditure. We have assessed the supporting information to the SIR Submission to take a view on the timing of operational activities and capital projects, that the needs are defined and the costs represent reasonable central estimates of their likely cost.

Our view of efficiency is based on the concept of a frontier company competing in an open market where it has strong internal cost controls. The frontier company will continue to seek efficiencies from technological development and innovation. Other companies or agencies will seek greater efficiencies to catch up with the frontier company. This concept has been applied in previous efficiency reviews of Hunter Water 2008 and both Sydney and Hunter Water in 2004. It is also used by Ofwat, the economic regulator in England and Wales for water utilities.

Strategic Management Overview

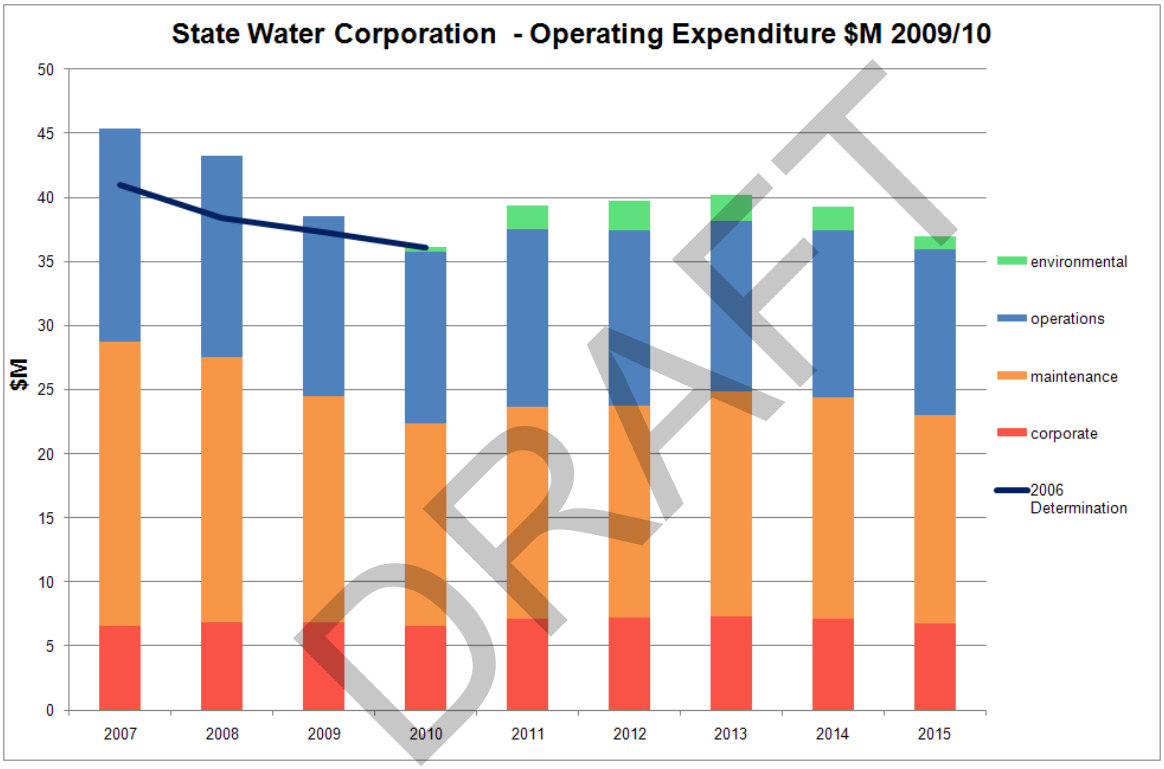
Our review has focussed on the systems and processes in place, under improvement or being developed. We formed the view that best practice business systems and processes are in place or being put in place. When fully implemented these process should enable the SWC to work more effectively and lever further efficiencies. The budget process is becoming more mature which should enable SWC to challenge the extent and timing of existing and new activities. The example of SWC reducing operating costs by 20% to meet the 2006 Determination target for 2010 is evidence itself that there has been rigour in the process. The

test will be to continue with rigour to challenge operating costs to contain and limit pressures to increase from the 2010 base year. SWC has recognised the need for greater rigour in the management of capital expenditure through the recently established Budget and Expenditure Review Panel (BERP) process.

Operating Expenditure

State Water's actual and planned operating expenditure over the period 2007 to 2015 is shown in Figure 1.1 below. This shows a reducing operating expenditure over the current price path period to achieve the 2010 target set in the 2006 Determination. The Figure also shows a step increase from this 2010 base year to the 2011 proposed operating expenditure and a relatively even profile thereafter, then reducing in 2015. Expenditure is disaggregated to operations, maintenance and corporate based on the SWC submission and grouping of activity codes.

Figure 1.1 – Operating Expenditure 2007 to 2015



Source: SWC AIR/SIR and Atkins/Cardno Analysis

Operating Expenditure in the Current Price Path

At the 2006 Determination, State Water was given challenging targets to reduce operating expenditure by 20% over the price path period. It has completed major restructuring moving from a regional organisation based on the operational valleys to a centralised functional structure. It has brought in external managers to several key positions. This has brought a new and enthusiastic approach enabling greater focus to be given to developing the core business. Cultural changes have been made and new working conditions agreed with employees to provide a more flexible workforce both in inputs and workload. Current forecasts confirm that SWC should achieve the 2010 operating expenditure target set in the 2006 Determination.

We found that State Water has implemented improved cost management systems in the current price path including an updated Integrated Financial Management System (IFMS) system to record, monitor, manage and budget operating expenditure using activity codes. This is now fully in place and will enable SWC to manage and control its operating expenditure base with greater effectiveness than has been in previous years.

Other systems and processes are either in place or partly developed which when fully implemented should allow SWC to operate more effectively and efficiently. An example is the Facilities Maintenance Management

System (FMMS) which needs enhancement for full application across the business. With this in place in the future price path period, the FMMS should enable SWC to plan and optimise its routine maintenance budget which forms one third of total operating expenditure.

Operating Expenditure in the Future Price Path

The Corporation has presented a submission for the future price path which includes additional activities set out in its Thematic Plan offset by further efficiencies identified at functional and corporate level. This impact is to increase operating costs from the 2010 base by 9% in 2011 and 11% by 2013. Operating expenditure in 2015 reduces from the previous year and is 2% above the 2010 base year. While there is no change in the level of service provided to customers, additional activities in its Thematic Plan, mainly environmental, have been included to meet SWC's overall obligations.

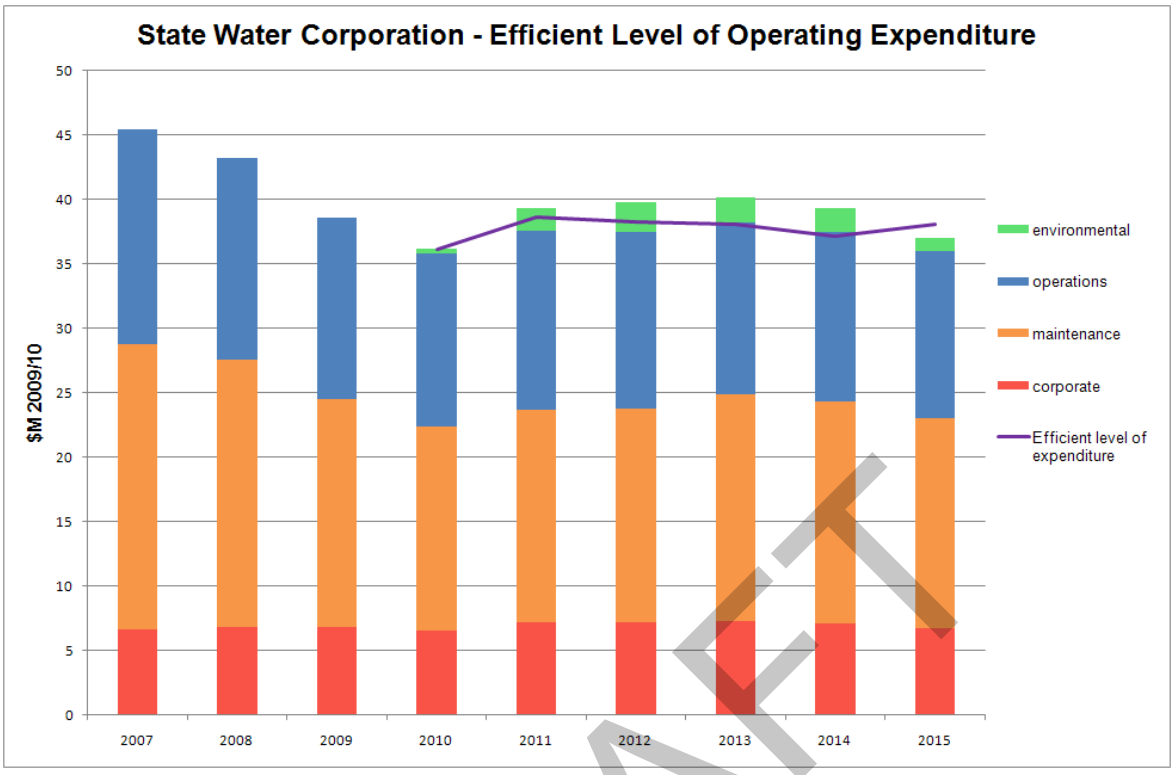
Our proposals for an efficient level of expenditure to deliver the same level of service to customers is to estimate the most likely cost of additional obligations taking into account the robustness of these costs in the Submission, the uncertainties in timing and the scope of absorbing some costs through re-prioritising base operating activities. We consider this is what a frontier company would challenge in order to maintain its competitiveness in an open market. We have also proposed levels of operating efficiency offset in part by those efficiencies proposed by SWC which we consider can be levered through the implementation of systems and processes now in place or being developed. Our proposals are summarised in Table 1.1.

Table 1.1 – Efficient level of operating expenditure

$M 2010	2011	2012	2013	2014	2015
Total Requested	39.3	39.8	40.2	39.3	37.0
Adjustment for the timing of expenditure	-0.2	-0.7	-0.4	-0.3	1.6
Adjustment for specific activities	-0.4	-0.4	-1.4	-1.4	0.0
Less efficiency	-0.2	-0.6	-0.5	-0.6	-0.6
Level of efficient expenditure	38.5	38.1	37.9	37.0	38.0

Figure 1.2 shows the impact of the proposed efficient level of operating expenditure on the SWC proposals. Tables are included in the report for operating expenditure for each valley.

Figure 1.2 – Efficient level of operating expenditure



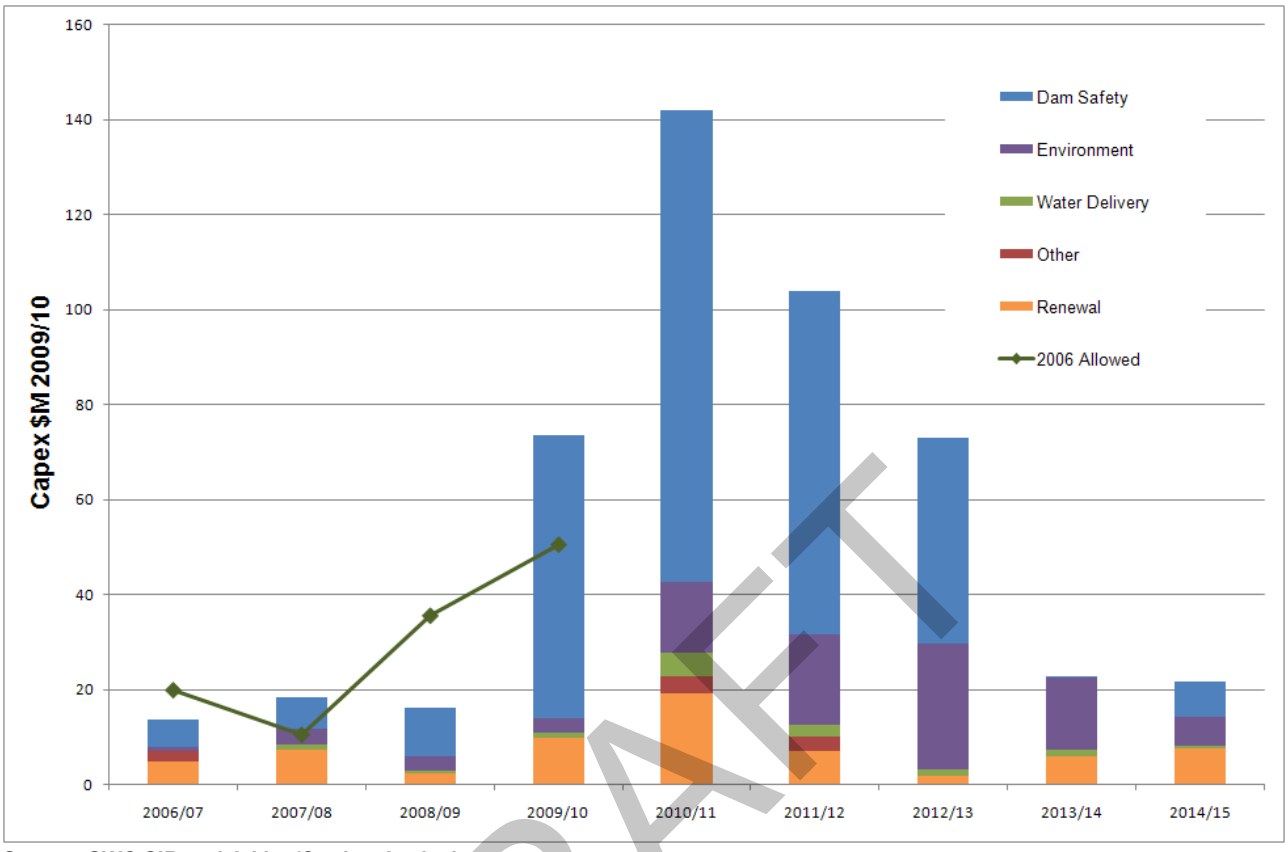
Source: SWC AIR/SIR and Atkins/Cardno Analysis

Capital Expenditure

State Water's actual and planned capital expenditure over the period 2007 to 2015 is shown in below. Capital expenditure in the first three years of the current price path period was below the 2006 Determination. A significant increase in expenditure is planned for the current year 2010 which would result in total capital expenditure for the period being close to the 2006 Determination. . This significant increase in expenditure is mainly driven by the Dam Safety driver.

SWC has proposed capital expenditure of $342M over the future period 2011 to 2014, against the drivers of dam safety, renewal and replacement, environmental planning and protection, water delivery and other operations. Dam safety comprises 63% of planned expenditure. Environmental expenditure comprises a further 22%.

Figure 1.3 – Capital Expenditure 2007 to 2015



Source: SWC SIR and Atkins/Cardno Analysis

Capital Expenditure in the Current Price Path

The slippage in capital expenditure compared with the 2006 Determination is mainly attributable to delays in the Dam Safety Compliance Program. We identified delays in five major projects due to issues including further investigations, options assessment and environmental issues.

We concluded that actual expenditure in the year 2007, 2008 and 2009 was generally prudent and should be included in the regulatory asset base. There is one exception related to the prudency of expenditure to replace the Duckmaloi Filters and replacement of sections of pipeline, both part of the Fish River scheme. We document the reasons in the main text. One of the factors leading to this expenditure is that SWC does not have the necessary skills in house to manage this work.

We reviewed forecast expenditure in the current year 2010 and formed the view that the planned $74M is unlikely to be achieved because of slippage of some schemes. Our view of the level of prudent expenditure is shown in Table 1.2

Table 1.2 – Prudent Expenditure in the Current Price Path

2010 $M	2007	2008	2009	2010
State Water SIR Capex	13.8	18.4	16.2	73.6
Underspend in 2010				
Chaffey Dam Upgrade				-2.0
Copeton Dam Upgrade				-1.0
Keepit Dam Upgrade				-10.0

Adjustment for non-prudent expenditure				
Fish River - Duckmaloi Filters			-0.7	-0.2
Total for current price path period	**13.8**	**18.4**	**15.5**	**60.4**

Source: SWC SIR and Atkins Cardno analysis

Capital Expenditure in the Future Price Path

The future price path expenditure is driven mainly by completion of the Dam Safety expenditure and associated environmental works for fish passages and cold water pollution. The Dam Safety expenditure is to reduce the risk of failure from probable maximum floods following guidance from the NSW Dams Safety Committee. The environmental schemes are designed to allow greater lengths of river to be open to fish through provision of fish passages. The cold water pollution projects are to reduce the impact of cold water releases from lower levels of dams on the environment.

Our view on the level of efficient expenditure is based on our review of the Information Return, the review of sample projects and the assessment of asset management and capital expenditure processes. We have applied adjustments to reflect inconsistencies in the Information Return, in the timing of expenditure to align the dam safety program with the dates agreed with the Dams Safety Committee and adjustments to specific projects to reflect the level of contingencies included.

Our assessment of the level of capital efficiency able to be achieved by State Water Corporation in the future price path is a progression of the methodology which we applied to our 2004 review of the New South Wales metropolitan water companies and Hunter Water in 2008. This methodology applies the concepts of continuing and catch-up efficiency. Continuing efficiency is that which a frontier company would seek to achieve through new technology and innovation. We have assumed a continuing efficiency of 0.4% per annum. Catch-up efficiency relates to the improvements in systems and processes to achieve the performance of a frontier company over time. The efficiencies we have applied to the Dam Safety program are generally less than to other investment drivers as we found implementation of these processes was more focussed. The efficiencies that we have applied are summarised in Table 1.3 below.

Table 1.3 – Proposed capital efficiencies

PROPOSED CAPITAL EFFICIENCIES	2010	2011	2012	2013
Efficiencies for dam safety expenditure	1.4%	2.3%	3.2%	4.1%
Efficiencies for other expenditure	1.4%	3.3%	5.2%	7.1%

Source: Atkins/Cardno Analysis

We have then applied these efficiencies to derive an efficient level of capital expenditure as summarised in Table 1.4. In the adjustment for the timing of expenditure we have taken account of expenditure deferred from the current price path reported in Table 1.2 above.

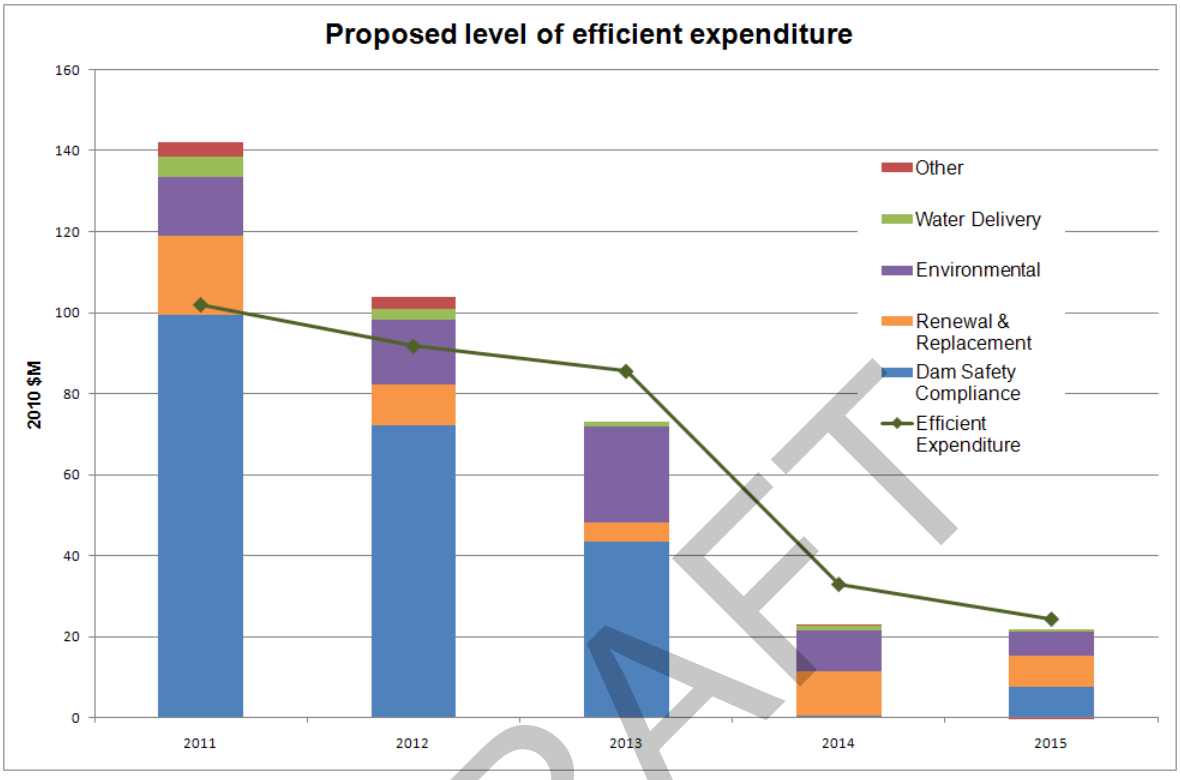
Table 1.4 – Efficient level of capital expenditure

$M 2010	2011	2012	2013	2014	2015
Total Requested	142.1	103.9	73.1	22.8	21.7
Adjustment for the timing of expenditure	-30.1	2.5	20.5	16.1	5.0
Adjustment for specific schemes	-8.6	-11.2	-4.8	-4.0	0.8
Less efficiency	-1.4	-2.5	-3.3	-2.1	-1.7
Level of efficient expenditure	102.0	91.7	85.5	32.8	24.2

Source: Atkins/Cardno Analysis

Figure 1.4 compa res the propo sed efficient level of expenditure with the SWC p roposals. Table s are included in the report for capital expenditure for each valley.

Figure 1.4 – SWC proposals and proposed efficient level of capital expenditure



Source: SIR and Atkins/Cadno Analysis

Output Measures

Output me asures a re im portant in a ssessing the effi ciency o f investment pro grams when viewed in subsequent price revie ws. We are th erefore p roposing a sm all numbe r of output mea sures so that the progress in delivery of the pro grams set out in the SWC submission can b e confirmed in the future an d efficiencies assessed. We invite comm ent on these proposed outputs from SWC with a vi ew to inclusion in the IPART Determinatio n. We also sugge st tha t output measu res are needed for the enviro nmental elements of the Thematic Expenditure proposals and invite SWC to make its proposals.

1. Introduction

1.1 Terms of Reference

In September 2009 the Independent Pricing Tribunal of New South Wales (IPART) appointed the Atkins/Cardno consortium to carry out a strategic management overview and review of operating and capital expenditure of State Water Corporation (SWC). The purpose of this review is to inform the Tribunal's Determination on prices for the upcoming price control period which applies from 1 July 2010 to 30 June 2014.

This report has been prepared in accordance with the Terms of Reference set out in the contract between Atkins and IPART dated 24th September 2009. These are reproduced as Appendix D.

The findings of this report form an important component of the overall price review process as set out in the IPART Issues Paper[1]. The conclusions relating to prudence of expenditure in the current price path inform what IPART includes in State Water Corporation's opening Regulated Asset Base value. The conclusions relating to efficient operating and capital expenditure in the future price path assist the Tribunal's assessment of what are justified requirements to be included in the 'building block' model for determining future prices.

The Terms of Reference state that the price control period is for a period of up to five years, 2011 to 2015. The length of the period has yet to be determined.

Throughout this report all expenditure is reported to the 2010 price base. For clarity we refer to each financial year as the year ending 30 June. For example year 2009/10 is referred to as 2010.

1.2 State Water Corporation submission to IPART

IPART required State Water Corporation to provide a submission outlining and substantiating its proposed prices for the period 2011-2014 and historic costs for the current price path (2006-2010). The following versions of this information have been used in the preparation of this draft report:

- Submission to IPART dated 11th September 2009;
- Special Information Return (SIR) dated 11th September 2009; and
- Updated Special Information Return dated 3rd November 2009.

Whilst we have endeavoured to satisfy ourselves as to the provenance and robustness of the data provided, a detailed audit of the completeness and accuracy of the information lies outside the scope of this project. The information provided on 3 November 2009 was received too late to include in this draft report.

The Submission included a Thematic Plan which outlined the additional expenditure State Water had estimated it needed to meet environmental, heritage and other new obligations, requirements and discretionary expenditure over the future price path period.

1.3 Review Process

We, the Atkins/Cardno team commenced our review on 11 September 2009 following receipt of the SWC Submission and SIR. Following initial review and planning the team arrived in Sydney on 7 October. We presented and discussed our methodology with the Tribunal on 8 October.

[1] Review of prices for State Water Corporation From 1 July 2010, IPART July 2008.

We held interviews over the week commencing 12 October 2009 with key SWC staff. Appendix E includes a full list of staff involved and meetings held over the week. A detailed agenda for each of these interviews was prepared and provided to the organisation in advance.

Our team also visited two operational sites to view those works currently under construction and recently completed to gain an understanding of the nature of the assets and activities.

Over the week long interview period we requested additional supporting documentation relating to a range of issues. We believe that the Corporation provided us with this information promptly and to the best of its ability. We then requested further information over the subsequent two weeks which SWC was able to respond to in a timely manner.

We presented our draft findings to the IPART Secretariat and SWC on 23rd October 2009 and discussed the key issues with both parties at the same meeting. One of our initial findings was that there was no material change in SWC's Corporate Charges for the years 2009/10 to 2014/15 in line with the reduction of other costs within SWC's business. As a result, subsequent to our presentation of these findings SWC undertook a review of the Corporate Charges as provided in the submitted SIR to IPART. The result of SWC's review revealed that the basis of the allocation of operating costs for the 20010 budget period across the various cost elements was based on the pattern of costs incurred in the 2009 year, rather than the actual budgeted allocation across the various cost elements. This resulted in SWC submitting a new SIR to IPART on 3rd November 2009. As discussed above this draft report does not take into account this revised submission. The revised submission should be taken into account for the final report.

Atkins/Cardno would like to take the opportunity to thank State Water Corporation for making its staff available for the interview days, and for the professional manner in which the organisation responded to our challenges and requests for further detail.

This draft report is the outcome of our review of the strategic management processes and other processes of the State Water Corporation. It is based on the background information provided to us by IPART, the submissions made and supplementary information provided by SWC, the findings of our interviews and the outcome of the presentations and associated dialogue.

1.4 Methodology

Strategic Management Overview

Our review and assessment of capital and operating efficiency is based on the hypothesis of a frontier company competing in an open market to deliver services to customers. We use this approach to compare the business processes and systems with current best practice and to identify the extent of catch-up that may be required over time to reach an efficient level of operation. We review the decision making processes for both operating and capital expenditure to test whether there is sufficient challenge and rigour to deliver total least cost solutions. We comment in Section 3 on SWC management systems and processes and identify areas with the potential to drive further efficiencies over the price path period.

Within this overview we have reviewed the asset management practices and capital investment appraisal and procurement processes insofar as they are used to identify investment needs and timing, appraise solutions, prioritise projects within defined budgets and procure and manage timely delivery. We compare asset management frameworks with best practice. Our analysis is focussed on the ability of the asset management systems and processes to deliver efficient expenditure. This work is not intended to be a detailed review of asset management processes. We present our findings in Section 4.

Capital Expenditure

IPART requires us to:

i. Comment on the efficiency and prudence of capital expenditure for the period 2007 to 2010 and disclose the value of any expenditure considered not to be prudent, and

ii. Provide an opinion on the prudence and efficiency of State Water Corporation's capital expenditure program for the period 2011 to 2015 and provide for each year estimates with supporting reasons, of the level of capital expenditure that we consider efficient in order to undertake SWC's core business and functions.

Our assessment of the prudence of schemes in the current price path is based on a review of a representative sample of projects. We reviewed the need for each project, its timing, and the difference between actual costs and outputs against planned. We considered the basis of costs and the procurement route for implementation of sample projects. For the year 2010, we took a view of the most likely outturn expenditure based on the current status of schemes in the program.

Our approach to the assessment of allowable future expenditure is based on a review of the asset management and capital expenditure processes, project appraisal and decision processes and a review of a representative sample of schemes in the program. Our methodology involves the following steps which we apply to all expenditure at a real 2009/10 price base:

i. Any inconsistencies in inclusions and allocation of capital expenditure by driver recorded in the SIR;

ii. Adjustments to the timing of projects due to uncertainties in the implementation programs;

iii. Adjustments for specific scheme cost estimates; and

iv. The scope to gain efficiencies through the implementation of the appraisal and cost estimating process, the approach to procurement and the program management process discussed in Section 4.

Our views on future capital expenditure efficiencies are based on the hypothesis of a frontier company, the continuing capital efficiencies that a frontier company makes through innovation and technological development, and the catch up efficiency required of SWC to achieve the performance of a frontier company over time.

We present our review of capital expenditure and present proposals for an efficient level of future expenditure in Section 5.

Operating Expenditure

IPART requires us to address various tasks in Section 3 of our brief including:

i. Review the actual expenditure from 2007 to 2010 against the 2006 Determination to the extent necessary to assess the efficiency of the proposed operating expenditure;

ii. Review the cost effectiveness and efficiency of State Water's cost of operations under the principal functions of operations, maintenance and administration, and comment on the appropriateness and performance of its functions against industry best practice; and

iii. For forecast expenditure in years 2011 to 2015 to provide an opinion on the efficiency of operating expenditure for each year and provide reasoned estimates for the level of operating expenditure required to efficiently undertake State Water's regulated functions.

Our assessment is based on the actual operating expenditure in the Submission, the robustness and confidence of these estimates taking into account the basis of the estimates and confidence in the need, timing and scope of the requirements. We also take into account whether additional expenditure proposals have been through the internal approval and challenge processes.

We have interviewed the functional managers, reviewed supporting reports and documents and assessed the current position on the development and implementation of corporate systems used to set budgets, control and monitor costs and allocate expenditure to the IPART expense types.

We have recognised the business restructuring efficiency savings made by SWC over the 2006 Determination. We have also taken into account the future efficiencies proposed by SWC at both functional and corporate levels.

We present our analysis of the future expenditure proposals contained in the SWC Thematic Plans and comment on each activity in terms of the potential for efficiencies to be achieved through the robustness of estimates, the need and timing of expenditure and absorbing of some activities within base opex as a surrogate for the application of internal challenge and budget control.

Our views on future operating expenditure efficiencies are based on the hypothesis of a frontier company, the continuing efficiencies that a frontier company makes through innovation and technological development, and the catch up efficiency required of SWC to achieve the performance of a frontier company over time.

We present our review of operating expenditure and our present proposals for an efficient level of future expenditure in Section 6.

2. Business Environment

2.1 Legislation

State Water Corporation is a statutory state-owned corporation under the *State Owned Corporation Act 1989.* SWC operates under the enabling legislation, the *State Water Corporation Act 2004.* Powers under the *Water Management Act 2000* were conferred by the Operating Licence. The Water Act 2008 establishes State Water Corporation as a NSW Constructing Authority under the Murray Darling Basin Agreement.

Commonwealth legislation under the *Water Act 2007* has created three new regulators. The Murray Darling Basin Authority (MDBA) is responsible for the Basin Plan. The Australian Competition and Consumer Commission (ACCC) is responsible for establishing water charge rules and trading rules. The Commonwealth Environmental Water Holder has been established which purchases water rights for environmental purposes. It is a new customer for State Water.

IPART is responsible under the *IPART Act 1992* for determining the maximum charges for bulk water services to customers within the SWC regulatory business. The last price path review covers the period to June 2010. The future price path period is to be determined by IPART to cover a period of up to five years.

The Dam Safety Act 1978 establishes the Dams Safety Committee which has set out regulatory requirements for the 20 major dams owned by SWC which come under the Act. This is a major driver in capital and operating costs in that the requirements necessitate regular monitoring and surveillance, and review of dam behaviour. The requirement to meet new dam safety standards is a key driver of capital expenditure.

2.2 Regulatory Requirements

State Water Corporation's Operating Licence is a requirement of the State Water Act. It authorises the functions that State Water Corporation can undertake and sets out the terms and conditions under which SWC functions. The Licence is granted by the Government of NSW. IPART is responsible for administering the Operating Licence. The form of the Licence was reviewed in 2008 and updated with new requirements.

A Memorandum of Understanding is in place with the NSW Office of Water (NOW); similarly with the Department of Environment, Climate Change and Water (DECCW) and the Department of Industry and Innovation (DII).

The key contents of the Licence insofar as it impacts on the efficiency review are:

i. Customer Service Committees: The establishment of a Customer Service Committee for each valley, a Customer Service Charter and a Complaints and Disputes Handling process;

ii. Asset Management: to ensure assets are managed in a manner consistent with the principles of the NSW Government's Strategic Management Framework and Total Asset Management policy and guidelines; also achieving the lowest cost of service delivery across the whole life of the assets;

iii. Water Delivery Operations: consistency with Works Approvals, management of allocated water, water conservation, supply constraints, metering, draft water balances, Fish River water balances;

iv. The Environment: review and update of the Environment Management Plan; and

v. Performance Indicators: these define water delivery performance for customers. Separate performance measures are set for the Fish River scheme.

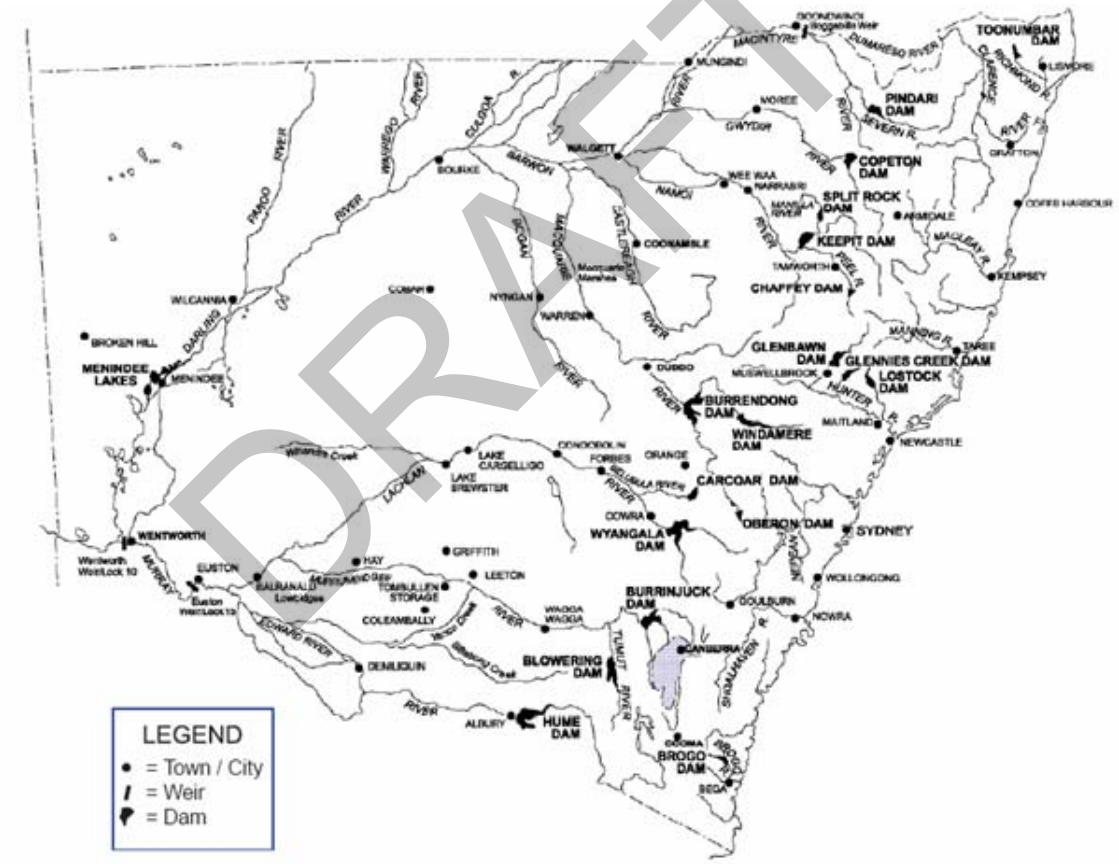
Performance against the Operational Licence is audited annually and reported by IPART.

Works approvals are issued by the NSW Office of Water for each valley operation. Conditions for five of the proposed nine works have begun to operate with the remainder being negotiated with NOW. There is an annual compliance fee payable to NOW.

2.3 The Regulated Business

The regulated business of SWC is responsible for delivering bulk water in twelve valleys in New South Wales to customers having High Security or General Security entitlements. With the current licensing arrangements, there is a 'cap' on the total volume that can be abstracted in an average year. Supplementary entitlements may be given where additional flows become available during identified periods of rainfall and run-off. Figure 2.1 shows SWC's entire area of operations.

Figure 2.1 – Map of the State Water Corporation Area



In delivering bulk water, SWC has to respond to customer requests for bulk water supplies, allocate water for each valley and manage regulation weirs and releases from dams. There are about 6000 regulated river customers who are mainly irrigation corporations, individual farmers, small horticultural businesses, some large customers growing rice and cotton and a treated bulk water supply (Fish River).

There are two separate parts of the business: a system owner role through the maintenance, surveillance and management of assets and a system operator responsible for delivery of bulk water from storage to customer in a timely and efficient manner. Ownership of the water

entitlement is with the customers who may use the entitlement themselves or trade on the water market.

One major challenge to the current business is the significant reduction in water availability which requires managing and allocating the limited water available. This also impacts on water sales and hence revenue.

The regulated business operates in twelve valleys where SWC owns and manages dams and weirs. These are summarised in Table 2.1.

Table 2.1 – Dams and Weirs by Valley

Valley	Dams	Weirs
Border	2 (Pindari, Stanthorpe)	12
Gwydir 1	(Copeton)	12
Namoi	2 (Keepit, Split Rock)	6
Peel	1 (Chaffey)	0
Lachlan	2 (Wyangala, Carcoar)	15
Macquarie	2 (Windamere, Burrendong)	10
Murray 1	(Hume)[1] 7	
Murrumbidgee	2 (Blowering, Burrinjack)	12
North Coast	0 (dams not owned by SWC	0
Hunter	0 (dams not owned by SWC	0
South Coast	0 (dams not owned by SWC	0
Fish River	1 (Oberon)	0

[1]Non-regulated business

2.4 The Non-Regulated Business

State Water Corporation undertakes a wide range of activities which fall outside the regulated business, defined as those activities not within the remit of the IPART price review.

Operation and maintenance activities are carried out for the MDBA and the River Murray - Land and Water Management. These account for approximately $48M of revenue per annum. There are smaller operations for Lowbidgee and Delta Electricity.

Surveying and data collection is carried out for a range of clients, the largest being the NSW Office of Water.

Design and construction services are provided to DECCW and the Water for Rivers project funded by the Commonwealth Government.

SWC also collects royalties from several sources although the income is not material.

We confirmed that SWC allocates its corporate costs across both regulated and non-regulated businesses generally on the basis of staff costs. The non-regulated business is relatively stable so this apportionment is not likely to change over the price path period. Nevertheless, the opportunities to develop the non-regulated business should be encouraged so that the corporate charges can be spread over a wider base.

3. Strategic Management Overview

3.1 Operating Environment

The regulated business of SWC is responsible for delivering bulk water in twelve valleys in New South Wales to customers having High Security or General Security entitlements. With the current licensing arrangements, there is a 'cap' on the total volume that can be abstracted in an average year. Supplementary entitlements may be given where additional flows become available during identified periods of rainfall and run-off.

In delivering bulk water, SWC has to respond to customer requests for bulk water supplies, allocate water for each valley and manage releases from dams and regulation weirs. The diverse geographical distribution of its assets and customers presents challenges to SWC.

The operating area encompasses the whole of New South Wales from the Border valley adjacent to Queensland to the Murray on the border with Victoria, and from the Menindee Lakes in the far west to the Hunter valley on the east coast. Communication with sites is a particular difficulty with the available infrastructure. A telemetry project is being undertaken to improve these communication links and enable more robust monitoring and control. The more recent use of video conferencing provides and efficient and effective way of communicating saving both time and travel costs. The geographical spread of assets also presents challenges in the effective routine maintenance of assets.

One major challenge to the business is the significant reduction in water sales and hence revenue due to drought conditions in the catchments.

SWC has completed major restructuring in recent times, moving from a regional organisation based on the operational valleys to a centralised functional structure. It has brought in external managers to several key positions. This has brought new and enthusiastic managers enabling greater focus to be given to developing the core business. Cultural changes have been made and new working conditions agreed with employees to provide a more flexible workforce both in inputs and workload.

3.1.1 Customer Services & Environment Outcomes

SWC is responsible for delivering bulk water supplies to customers having High Security or General Security entitlements. In the recent dry years, low reservoir storage has resulted in rationing bulk supplies, in the Lachlan valley there have been no water sales in the last four years. This period of dry years has had a material impact on revenue.

SWC states that managing water delivery with limited bulk resources has resulted in greater amounts of time being spent by its field officers in liaising with customers. At the same time improved methods of communication to customers and on-line bulk ordering has been implemented to improve customer contact.

There has been no material change in the number of customers over the current price path although the Commonwelath Government has been purchasing some entitlements for environmental reasons. There is no change in service levels or extent of bulk supplies which are likely to have a material impact on the SWC cost base.

There are increasing number of environmental drivers, which SWC has identified in its Submission. These are driving increased capital and operating expenditure in the future price path. We discuss in Section 6.8 the need and timing for these environmental enhancements and the scope and cost of works required to address them. The main drivers are for the provision and maintenance of Fish Passes and Cold Water action plans.

3.1.2 Customer Services & Willingness to Pay

Customer Service Committees (CSCs) are established for each valley. They meet several times each year and have been briefed on the SWC Submission and its impact in each valley. The impact of the Submission and the proposed increase in charges is dependent on the profitability of individual customers' businesses, the proportion of bulk water costs to total costs and the availability of and ability to trade water.

SWC has reported in its Submission on the impact on customers of proposed price changes. The Submission identifies a high impact on customers in the North Coast, South Coast and Peel valleys. Conversely a low impact is assessed for the Murray and Murrumbidgee valleys. For valleys with a moderate impact, SWC reports bulk water costs were not a major factor in determining profitability.

Our brief asks us to consider to what extent SWC takes into account the willingness of water users to pay for new infrastructure when being progressed through the business planning processes for both operating and capital expenditure. From our review of the operating cost budget process and the additional thematic expenditure, we were not aware that any specific willingness to pay surveys were carried out to support these proposals. The one exception is for a relatively small element of discretionary expenditure proposed in the Thematic Plan. Similarly we were not aware of any willingness to pay studies to support additional capital expenditure.

The response from SWC is that many of these additional operating activities are driven by additional obligations placed on the Agency. The same issue applies to some environmental drivers of capital expenditure. While this may be the case, we formed the view that the decision processes could be more rigorous and challenging in defining the scope, timing and cost of additional obligations, as if SWC was in an open market looking to reduce charges to customers when compared with other market players.

3.2 Governance Arrangements

SWC has a Board of nine members including the Chief Executive Officer. Reporting to the Board is an Executive Team comprising the CEO, General Manager Finance, Company Secretary and Manager Strategy and the Chief Operations Officer (COO). Defined delegated powers of expenditure are assigned to the CEO, COO and nominated managers.

IAB Services has undertaken a range of audits of business processes over the period 2007 to 2009. These are listed in the supported documents provided by SWC. SWC is also subject to annual audit by the NSW Audit Office.

There is a Corporate Plan and performance review cycle with KPIs rolled out through Performance and Review program. An Annual Statement of Corporate Intent (SCI) is in place which has been progressively refined after shareholder feedback. The Annual Report & Audit on Operating Licence monitors and reports on overall performance.

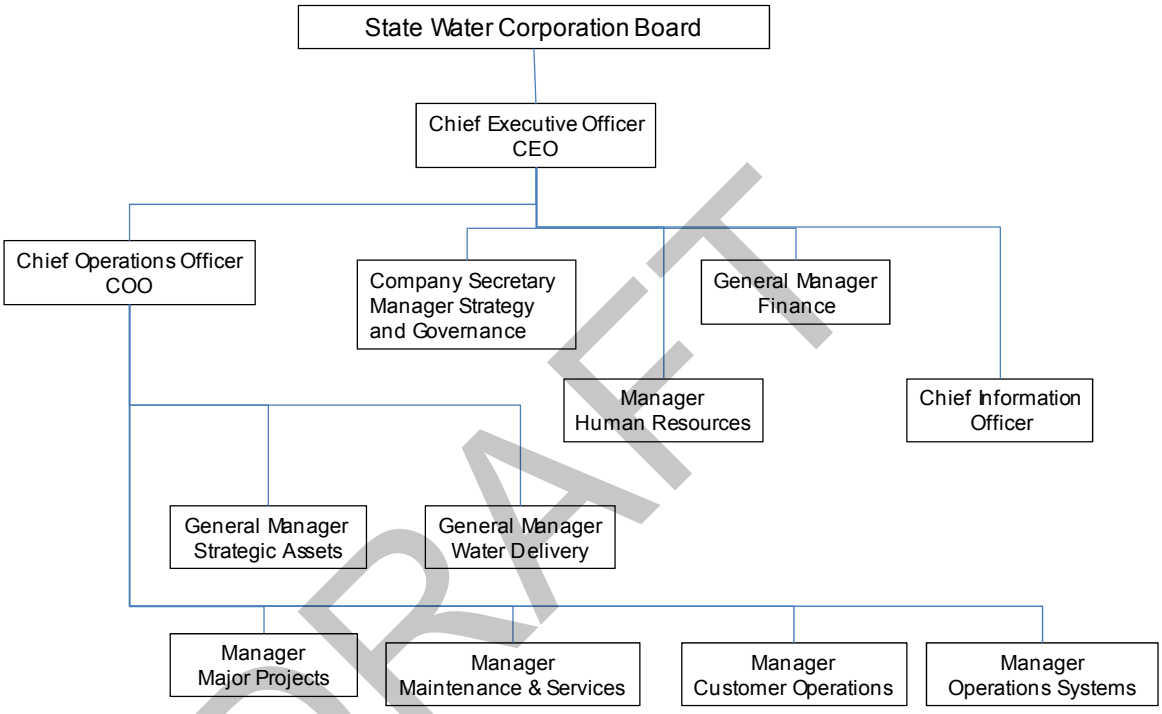
A financial report is prepared monthly for the Board, reporting on operating expenditure and capital investment, with specific reports where the variance on specific projects is greater than +/- 10%. There is an annual budget process overseen by the General Manager Finance to establish budgets for each operating function. For 2010, this process was spreadsheet-based with each Business Unit preparing its own submission. This process has been refined for 2011 with on-line budgeting, internal review processes and phased sign-off. With the 2011 process underway, we were unclear as to the rigour of this process in challenging and revising bottom up budgets from business units.

Management of capital expenditure is through the Budget and Expenditure Review Panel (BERP) process discussed in Section 3.4 below.

3.3 Organisation Structure & Functions

The Agency is currently structured with a Chief Executive Officer (CEO), Chief Operating Officer (COO), Company Secretary, General Managers, Managers and Officers as shown in Figure 3.1. This has been in place since July 2009 following a significant restructuring of the business, moving from a regional structure to a functional organisation.

Figure 3.1 – SWC Organisational Structure



Source: SWC

The main operational functions are headed by General Managers or Managers. The Structure relates to both the regulated and non-regulated businesses.

The **COO** has six operational functions reporting to him, described below:

The **Strategic Assets** function is responsible for asset information, asset planning and strategy, and the development and management of the Total Asset Management Plan. This Plan forms the basis of the capital and operating expenditure submission for the Price Review. The function is also responsible for monitoring dam safety including surveying and drafting support. There is an environmental team to provide support to the Function as well as an emergency planning team. The function is based predominantly in Parramatta with the environmental team in Newcastle.

The **Major Projects** team is responsible for managing the delivery of major capital projects, normally greater than $1M, from inception to completion. Its main role is project management with feasibility, design and construction carried out by external consultants and contractors. Its main focus is currently the delivery of the dams safety upgrade program with six major dams currently at design or tender stage and one under construction. Nearly all staff time is capitalised and charged to projects, with some non-regulatory opex. The function is based predominantly in Parramatta with some staff at Hume.

The **Water Delivery** function is responsible for the planning and delivery of bulk water and river flood operations. It also manages the nine valley Customer Service Committees. The function now

provides a central and consistent approach to water planning and delivery. The function is managed from Dubbo with teams across the operational area.

The **Customer Operations function** provides front line customer contact including enquiries, water orders, and water trading. It manages the metering services teams and is also responsible for quarterly billing and debt management. The function is managed from Dubbo with customer field officers located across the operational area. Water trading is based at one location in Deniliquin.

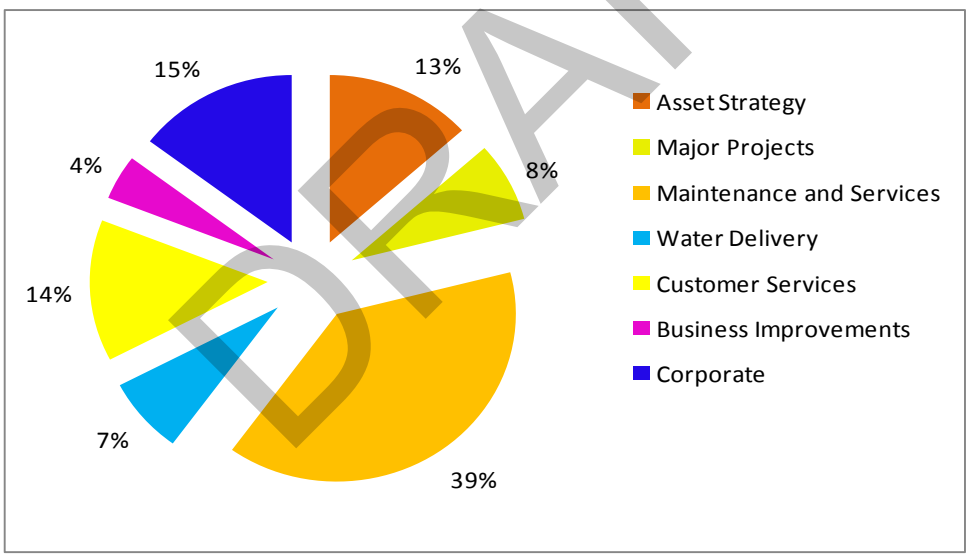
The **Maintenance and Services** function is responsible for planned and corrective maintenance of dams, river structures and associated works based on the asset plans. This function has the highest number of FTEs which are based at sites across the operational area. The function also provides services to water delivery and customer operations as required.

The **Operations and Systems** function is responsible for identifying, developing and implementing information systems to support the business. Applications include SCADA, water delivery modelling and customer water accounting and billing.

In addition there are **Corporate** functions to address Finance, Governance and Strategy, Information Systems and Human Resources reporting to the CEO.

The number of FTEs as at October 2009 was 300 distributed across the functions as shown in Figure 3.2 below. These include staff working on both regulated and non-regulated businesses.

Figure 3.2 – Distribution of FTEs by operational function.



Source: SWC

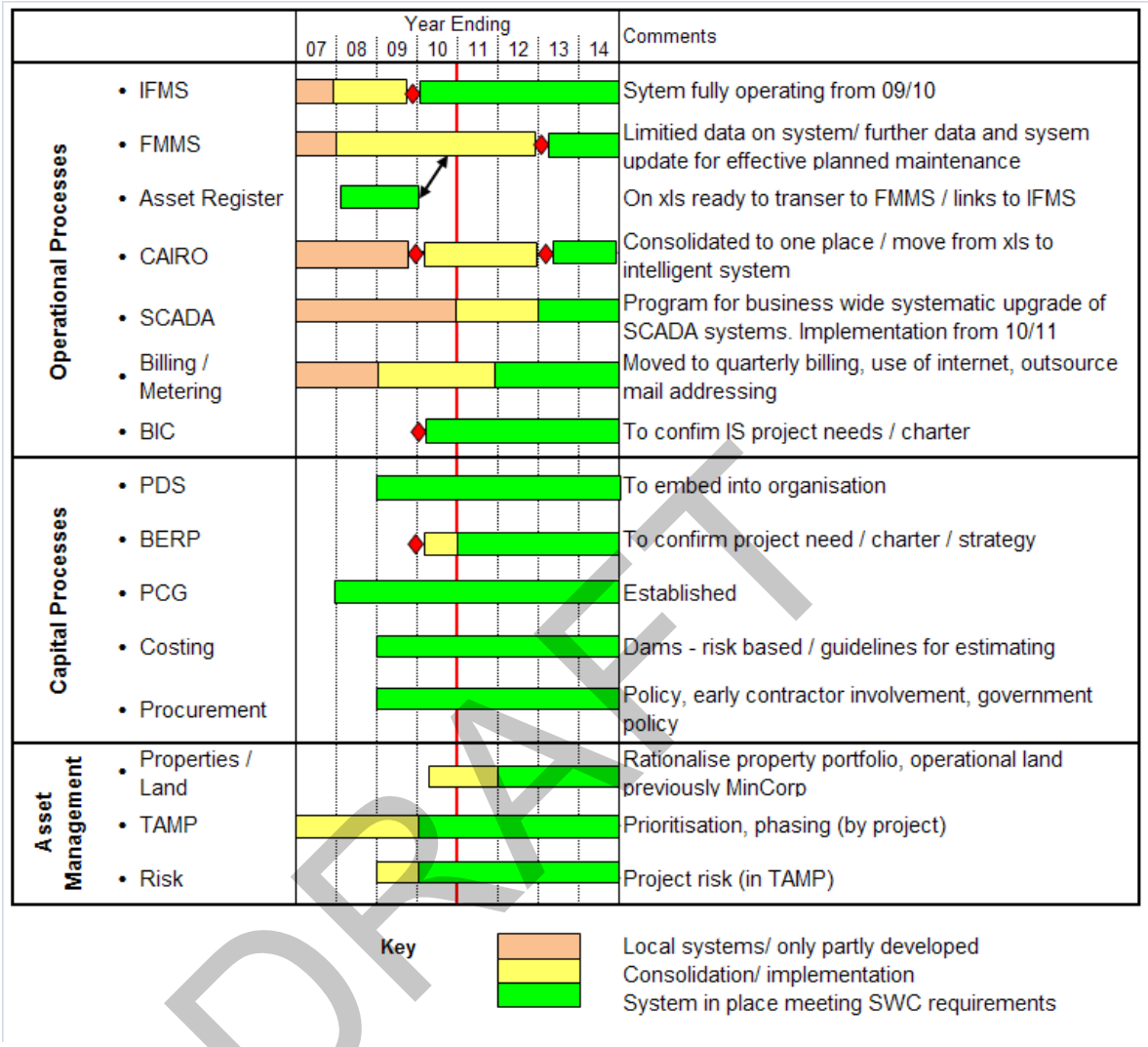
This current FTE count is a significant reduction on the 350 in place at the 2006 Determination. The new structure has been in place since July 2009

3.4 Business Systems & Processes

The quality, extent and application of the SWC business systems and processes provide an important measure of the effectiveness of the business and potential for leverage of further efficiencies over time. These systems cover the Operational and Maintenance functions as well as capital investment and asset management.

The current status of each system is shown in Figure 3.3

Figure 3.3 – SWC Business Processes



The **Integrated Financial Management System (IFMS)** has been upgraded to address issues of reliability and accuracy identified at the 2006 Determination. Work commenced in January 2007 with the new system design going live in October 2007. The new system moves to activity codes for all defined Business Units. The system was implemented with staff training, reporting and data cleansing. The IFMS moved to a new IT platform in November 2008 to provide greater security. A further upgrade in January 2009 improved its functionality for budgeting, payroll and workflows. On-line procurement was established in June 2009. The year ending 2010 is the first year when the IFMS has been fully in place. Reporting by activity, valley and source of funding enables SWC to report with confidence and to identify the scope for further efficiencies.

The **Facilities Maintenance Management System (FMMS)** has been in place for several years but has not been utilised to its full potential. For example only 20% of assets are currently on FMMS and follow a planned maintenance schedule. SWC has identified the need to enhance the system to improve its functionality and ability to provide the level of detail needed for effective maintenance scheduling and reporting. We have not seen any details of the enhancement program but have assumed that this will take two years to implement. We noted that the Asset Register in spreadsheet format is being uploaded onto FMMS during the current year. We also noted that plans are being developed to provide maintenance teams with mobile data entry and information retrieval technology so that data can be input in the field without the need to visit offices.

The **Computer Aided Improvements to River Operations (CAIRO)** system is used to inform and assist the Water Delivery function. CAIRO has been used at each valley by local operations staff. The individual models are now being consolidated into one central location and moved from a spreadsheet based application to the central IS network. This provides a more consistent approach to be taken for water delivery and greater security for the applications. There is potential to develop these systems further using real time modelling but this is dependent on information from the hydrometric network and other sources.

There is a program for the business wide system upgrade and extension of the **System Control and Data Acquisition (SCADA)** to cover all major sites and allow monitoring and control of instrumentation, gates, valves and associated equipment. Implementation is planned from 2010/11 over four years, with the big wins being implemented in the first two years. A reliable SCADA system will allow the level of manual inspection and control to be reduced and is a key enabler for further efficiencies to be made. It should also enable greater control of Water Delivery.

The **Billing and Metering** services have moved to a process whereby SWC now bills all of its customers on a quarterly basis. Its existing billing system allows it to do this. Moving forward the Corporation is looking to overhaul its billing system. The primary purposes of this is to mitigate the risk from the current platform becoming unsupported (SWC is currently the last customer in Australia on the current platform) and to enable better integration with the finance systems/department. SWC is currently process mapping its billing requirements and will have a better idea of what it will require and want to do by June 2010. We note that the Corporation quoted a figure of $50 0k to overhaul the system but that this expenditure is not within the Corporation's Total Asset Management Plan and is therefore also not in the Information Return. For metering there is no proposal to implement any changes within the future price path. Dependent on Commonwealth funding the Corporation may move to telemetric metering, SWC is ensuring through its iSMART program that any system architecture and infrastructure put in place with the iSMART program will be future proofed against any technological requirements for telemetric metering.

The **Business Improvements Committee (BIC)** was established in July 2009, from the previous Corporate Information Systems Steering Committee, as a process to encourage, develop, prioritise and approve for implementation IS type projects which have been identified to improve the effectiveness and efficiency of the business. It provides a level of governance and consistency to ensure that all IS developments across the business are well structured, planned and implemented. The prioritisation filter provides assurance that only those projects that meet the overall requirements of the business. We found that the process is new and encourages innovative approaches and is a key enabler for further effectiveness and efficiency across the business,

For capital planning, a **Budget and Expenditure Review Panel (BERP)** has been established with its first meeting held in May 2009. The BERP has been established to review annual business unit operating and capital budget submissions against Corporate plans. It monitors and reviews the overall performance of SWCs operating and capital programs during each year against cost and outputs. It approves the entry of projects into the capital planning process through a prioritisation process of project charters based on costs and benefits, whether work is mandatory or discretionary and budget limitations. We found that this BERP process is essential in managing activities and projects within defined budgets, but it has only been in place for a few months. We have not been able to assess whether this is sufficiently rigorous to drive efficiency through the capital delivery process.

The **Project Delivery System (PDS)** is outlined in SWC's Project Management Guidelines. These guidelines describe the four phases for any project: Initiation, Planning, Execution and Completion. Passing all projects through these phases should ensure that a common, transparent and systematic approach will exist throughout SWC. The Guidelines apply to all projects and

encourage a commercial focus to the way projects are identified, developed, delivered and managed. The guidelines were prepared in 2008 and are currently in draft form. While many of the elements of the guidelines form part of existing project management processes, the challenge will be to fully embed the processes into the organisation

The **Project Control Group (PCG)** was established in 2007 focusing mainly on the Dam Safety Upgrade Program and incorporated into the Major Projects Function in 2008. The purpose of the PCG is to review and endorse submissions on major projects prior to submission to the CEO and Board and to provide advice to the Major Projects function. To assist in this purpose, the PCG includes two independent members. Monthly reports are prepared for each major project, reporting progress against planned and actual costs compared with forecast. Project risks are identified. This is an established process for managing the major projects in the capital program.

The approach to **Project Costing** is typically based on traditional engineering estimating practice of developing an estimate and applying a contingency sum depending on the stage of the project lifecycle. The contingency will reduce as a project moves from project initiation to pre-tender stage as more information becomes available and the degree of confidence in the estimate increases. For construction projects greater than $5 million a risk based estimate is developed when sufficient information is available (at concept design stage and later). This probabilistic estimation (i.e. Monte Carlo Simulation) allows contingencies to be calculated for individual construction components. The output is a probability distribution for the total cost of a project. This provides a more robust and justifiable approach to estimating project cost contingency. SWC has generally assumed the 90% probability estimate for all projects when, taken at a program level could result in an overstatement of the level of cost contingency required for the program.

SWC is developing a procedure for estimating project costs to ensure consistency in approach throughout the Corporation. We were provided with a preliminary draft of the document.

The **Procurement** process is governed by the document *State Water Procurement Policy & Procedures, Policy No: SW20 07-PO129, July 0 8.* The document is consistent with the NSW Government Procurement Framework, outlines the Policy and Procedures Framework and includes Tendering Guidelines that cover the Code of Practice for Procurement, Conflict of Interest and Statement of Business Ethics. Using the framework provided, SWC is able to select the most appropriate procurement strategy. For larger projects a procurement strategy, based on the NSW Government Procurement System for Construction, is developed through a Procurement and Risk Management workshop. Where appropriate, advice may be sought from the NSW Department of Commerce.

We formed the view that best practice business systems and processes are in place or being put in place within SWC. We noted the difficulties with implementation of the IFMS which could be attributed in part to the restructuring of the business but also to the management of these changes. We also noted that progress with the FMMS implementation has been slow and there is a need to focus closely on the upgrading needed to have this fully functional across all assets. This is needed to level the efficiencies we have assumed. There is a need for the BIC to closely manage the implementation of the se and the other operational systems to deliver timely and within budget. When fully implemented these processes should enable SWC to work more effectively and lever further efficiencies. The budget process is becoming more mature which should enable SWC to challenge the extent and timing of existing and new activities. The example of SWC reducing operating costs by 20% to meet the 2006 Determination target for 2010 is evidence itself that there has been rigour in the process. The test will be to continually challenge operating costs with rigour to limit any pressures to increase from the base. To achieve current best practice, SWC should look to linking the IFMS with the FMMS systems to provide an integrated corporate system linking assets, optimised maintenance and costs. This would also help to optimise the balance between asset replacement and the level of planned maintenance.

SWC has recognised the need for greater rigour in the management of capital expenditure through the recently established BERP process.

3.5 Cost Allocation

SWC has implemented an activity based costing process though the IFMS. Activities are related to the functional structure above. The SWC Submission to IPART reports operating costs against these activities. For ease of analysis and to be consistent with the Brief, we have grouped these activities into operations, maintenance and corporate.

Table 3.1 – Allocation of Activity Codes to functions.

Primary Function	Function	Activity
Operations Cu	stomer Services	Customer Billing, Metering and Compliance.
	Water Delivery	Customer Support, Water Delivery and Operations, Flood Operations, Hydrometric Modelling, Water Quality Monitoring
Maintenance	Maintenance and Services	Corrective Maintenance, Routine Maintenance, Renewal and Replacement
	Asset Management	Asset Management Planning, Dam Safety Compliance, Environmental Planning and Practice
Corporate C	orporate	Finance
		Company Secretary and Strategic Planning
		Human Resources
		Information Systems

Source: Atkins/Cardno Analysis

In the SWC Submission, activity costs include direct overheads and Corporate costs, apportioned on the basis of labour costs. We have been able to identify Corporate costs separately although separation of Direct Costs is more difficult particularly given the uncertainties and inconsistencies in the historic allocation of costs applied within the previous Area structure.

The drivers for Capital Expenditure are clearly defined in the SWC Submission as shown in Table 3.2.

Table 3.2 – Capital Expenditure Drivers

	Definition
Dam Safety	Pre 1997: Expenditure to reduce the risk of dam failure where this was known in 1997.
	Post 1997: Expenditure to reduce the risk of dam failure which was not known in 1997
Renewal and Replacement	Capital maintenance of all assets including dams, weirs and associated structures and electrical/ mechanical plant

Environmental Planning and Protection	Expenditure to meet existing and new environmental obligations
Water Delivery	Expenditure to enhance the water delivery operations

We confirmed that these investment drivers are appropriate.

Transfer of Costs between the regulated and non-regulated business

We noted that the IFMS system records activities against codes related to the regulated or non-regulated business, or where costs are apportioned. The following codes are used to identify expenditure.

i. IPART regulated – where the full cost are recovered through regulated prices, for example customer metering and billing

ii. IPART 50% - where 50% of costs are recovered through regulated prices, for example dam safety environmental costs and water quality monitoring

iii. IPART 90% - where 90% of costs are recovered through regulated prices, for example hydrometric monitoring

iv. State Water Corporation – where costs are not recovered through regulated prices.

SWC carries out works and receives income from a range of clients as part of its non-regulated business. The Murray Darling Basin Authority (MDBA) accounts for 43% of revenue from the non regulated business. The River Murray Water and Land Management accounts for a further 38% of revenue. Income from the Department of Energy and Climate Change represents a further 9%. Each customer is given a separate code in IFMS so costs can be coded against them

The IFMS codes include activity, valley, source of funding and expense. SWC is therefore able to report operating costs against each client and apply to either the regulated or non-regulated business. We are confident that the systems are in place to report against these headings. This assumes that activity is coded correctly when data is input to IFMS.

One exception is the treatment of vehicles where the SWC purchases its vehicles and charges use to specific activities, valleys and client on the basis of mileage use. Any loss or gain from vehicle use charges are included in Corporate and apportioned across all the business. Vehicle costs account for 3% of total operating cost so any variance in this heading due to the methodology applied is not likely to have a material impact on total operating costs.

Corporate expenditure is apportioned across the regulated and non-regulated business pro-rata to salaries and wages costs. We agree that this is an appropriate methodology.

We were not aware of any transfer of costs between the regulated and non-regulated parts of State Water's business. The process of recording costs within IFMS using different client codes is appropriate.

3.6 Asset Management Practices

SWC has focused on improving its Asset Management over the current price period with a defined functional structure. It has developed a Total Asset Management Plan 2009 (TAMP) which is the basis for the Submission. This TAMP is supported by individual Asset Plans and Thematic Plans. Over the 2006 Determination period, the asset management team has worked to prepare a detailed asset register and an assessment of condition using a 1 (failed) to 7 (new) asset grading. This grading was based on expected usage, physical condition, technical obsolescence and any legal limitations on use.

SWC has developed a risk based approach based on probability of failure from condition grade and useful life, and the consequences of failure from asset criticality and value of any damages. The SWC methodology then defines a level of tolerance below which asset risk is held within the business. Where assets are above this level of tolerance then they are promoted for asset replacement.

We note that the asset condition and risk processes have recently been put in place and that the sample projects we saw have not gone through this formal process but a number of renewal and replacement projects had been undertaken based on consideration of asset condition and OH&S risks. There is a project development process now in place which then identifies needs or opportunities, screens potential projects and prioritises proposed projects for approval and implementation.

We formed the view that SWC has developed decision making, prioritisation and review processes which are now in place to manage the capital program. These processes are consistent with good practice and should provide a process to manage within budget constraints. The approach provides a program of work for the future Determination period founded on its best assessment of needs to maintain the asset base. Nevertheless, the adoption of this process applied to sample projects in the capital program and Submission is still in the early stages. As and when these processes are fully applied to projects in the Submission, we consider there is potential for efficiencies to be made.

We discuss SWC's approach to Asset Management planning in Section 4.

3.7 Benchmarking

We have carried out some broad comparisons of costs across a range of agencies of a similar size to SWC that manage dams and weirs either for bulk water management or potable supplies. These agencies are shown in Table 3.3 with key asset data and costs presented as a percentage of current replacement cost (CRC).

Table 3.3 – Cross Company Comparison

Agency	Dams (nr)	Weirs (nr)	Maintenance (% of CRC)	Capex (% of CRC)	Operation Maintenance & Admin (% of CRC)
Sun Water – River Regulation	24 84		0.2	0.17	0.69
State Water Corporation	17	69	0.45	0.32	0.95
Sun Water – Aggregated Service Provider	24 84		0.37	0.18	1.01
GWM Water – Aggregated Service Provider	12 9		0.29	50.0	1.72
Goulburn-Murray Water- Regulated River	14 14		0.31	0.62	1.91
Sydney	21 0		0.17	2.02	2.38

Agency	Dams (nr)	Weirs (nr)	Maintenance (% of CRC)	Capex (% of CRC)	Operation Maintenance & Admin (% of CRC)
Catchment Authority					
Goulburn-Murray Water- Aggregated Service Provider	14 14		0.9	0.89	2.48
Company 'A' UK	26	0	0.20	No data	No data
Company 'B'	3	0	0.20	No data	No data

Source: NWI Performance Reporting 07/08 and Atkins private papers
Note: GWM Water has 50% Capex to CRC due to the extensive channel re-lining works

We found that because of the non-homogeneous nature of agencies' asset bases, lengths of river, areas of supply, condition of assets, and robustness of data, it is difficult to identify agencies that are similar in all areas with which to compare costs and performance. These comparisons should therefore be considered as indicative only. Nevertheless the comparisons show that SWC is not an outlier. We have not used this analysis in our assessment of future efficiencies.

3.8 Conclusions

Our review has focussed on the business management systems and processes in place, under improvement or being developed. We formed the view that best practice business systems and processes are either in place or being put in place. When fully implemented these process should enable SWC to work more effectively and lever further efficiencies. We noted the difficulties with implementation of the IFMS which could be attributed in part to the restructuring of the business but also to the management of these changes. We also noted that progress with the FMMS implementation has been slow and there is a need to focus closely on the upgrading needed to have this fully functional across all assets. This is needed to lever the efficiencies we have assumed. There is a need for the BIC to closely manage the implementation of the se and the other operational systems to deliver timely and within budget.

The budget process is becoming more mature which should enable SWC to challenge the extent and timing of existing and new activities. The example of SWC reducing operating costs by 20% to meet the 2006 Determination target for 2010 is evidence itself that there has been rigour in the process. The test will be to continually challenge operating costs with rigour to limit any pressures to increase from the base. To achieve current best practice, SWC should look to linking the IFMS with the FMMS systems to provide an integrated corporate system linking assets, optimised maintenance and costs. This would also help to optimise the balance between asset replacement and the level of planned maintenance which is currently unclear.

The development of the CAIRO system at Corporate level and associated SCADA and metering projects should allow SWC to collect data and monitor river systems more effectively. We support the proposal for real time modelling of rivers and bulk releases as much as information systems allow, as this should lever cost and water efficiencies. We suggest that SWC owns and manages the hydrometric monitoring activity as this will be essential to real time modelling. It will also allow a cost reflective service in an area that the business has no direct control.

4. Asset Management

We have taken an overview of the SWC Asset Management framework and processes having regard to the condition of assets, the definition of renewal requirements and the scope for reducing or re-phasing expenditures. We also comment on the processes used to manage capital projects to minimise costs over the life of the assets. Our assessment of the effectiveness of these processes has been used to derive the likely efficiencies to be applied to the capital expenditure proposals in the SWC Submission.

4.1 Asset Base

4.1.1 Regulated Assets

SWC has a significant asset portfolio with a current replacement cost of $3.4 billion using a Modern Engineering Equivalent Replacement Asset (MEERA) valuation. The depreciated optimised replacement cost is in the order of $2.3 billion which suggests that assets have on average 70% of their life remaining. that the asset base is about 30% through its life. This is based on assumed accounting asset lives particularly for dams although the physical lives are significantly longer because of the high level of monitoring and maintenance required to maintain the integrity of these assets .

The asset base includes 19 dams, 207 weirs/regulators and associated structures, land houses, recreational facilities, telemetry, works and office buildings, plant and equipment. Many of the dams are some of the largest in NSW; of the 20 largest dams in NSW, 12 are owned by SWC. Table 4.1 provides a summary of asset values by valley.

Table 4.1 – Asset Value by Valley

	MEERA Current Replacement Cost ($M)	Depreciated Optimised Replacement Cost ($M)	Number of Dams	Number of Regulators etc
Murrumbidgee 578.32		323.27	2	38
South Coast	39.20	30.53	1	0
Macquarie 563.12		402.73	2	62
Lachlan 334.73		207.61	2	56
Peel 101.64		82.59	1	1
Gwydir 361.83		285.93	1	9
Hunter 442.52		328.93	3	0
Namoi 293.34		215.50	2	9
Murray 211.31		115.29	1	32
Fish River	243.72	145.06	2	N/A
Border 138.62		105.02	1	0
North Coast	44.20	31.80	1	0

	MEERA Current Replacement Cost ($M)	Depreciated Optimised Replacement Cost ($M)	Number of Dams	Number of Regulators etc
Total 3,352.56		**2,274.26**	**19**	**207**

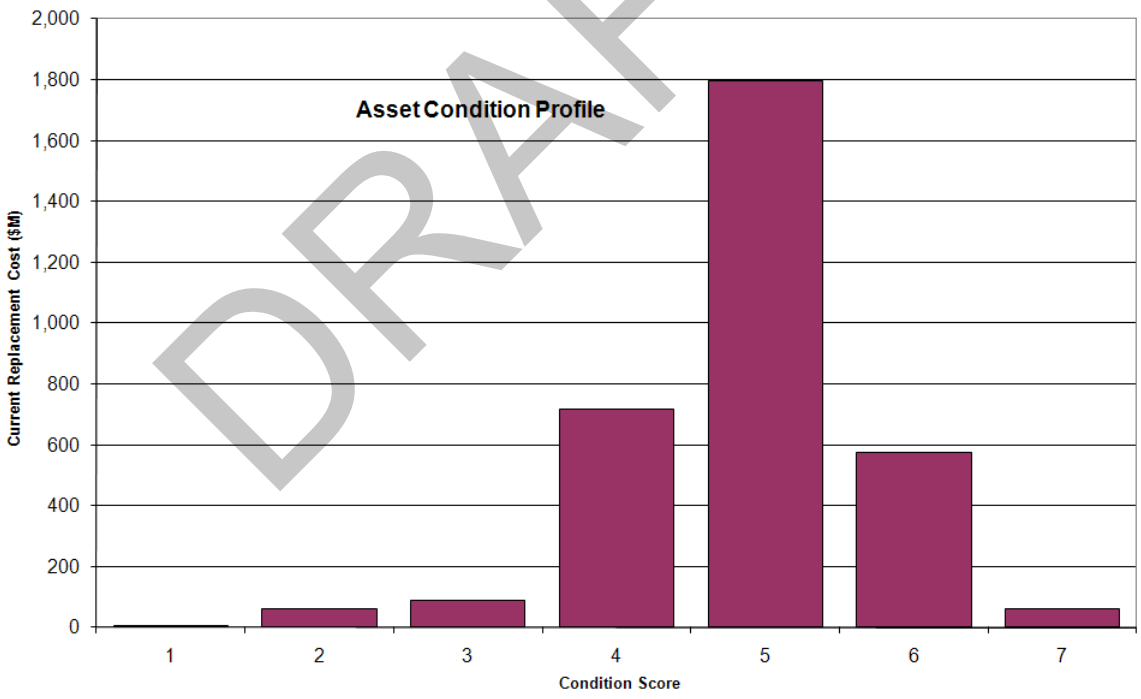
4.1.2 Non-Regulated Assets

SWC also owns and manages 'unregulated' river structures on rivers that are not regulated river systems and hence do not attract transfer charges or come under the IPART regulatory regime. These assets include a variety of small weirs and about 140 regulators which service or once serviced towns and land holders by providing small pumping pools.

4.1.3 Asset Condition & Performance

Figure 4.1 provides a condition profile of the regulated asset base by current replacement cost. The condition ratings range from 7 (excellent – new condition with acceptable risks) to 1 (poor – failed condition and intolerable risks).

Figure 4.1 – Asset Condition Profile by replacement cost



Source: Atkins/Cardno analysis of SWC asset register

This condition rating is derived from the assessment of expected usage (service output), expected wear and tear (physical condition), technical and commercial obsolescence (including risk) and legal or similar limits on usage.

This profile suggests that the asset base is in a reasonable condition and has not been run down through lack of maintenance and renewal.

As SWC has a number of high risk assets (dams), whose management is regulated through the NSW Dam Safety Committee, this has ensured that integrity of these structures has been

maintained through routine inspections, intermediate (annual) inspections and comprehensive (5-yearly) inspections.

4.2 Data Sources & Quality

Effective asset management requires good quality knowledge of the extent, condition, performance, and lifecycle cost of the asset base in order to make informed decisions on asset investment and for optimising asset maintenance and renewals.

Over the past two years, SWC has made significant efforts to bring together asset information previously stored in "silo-based" regional systems. We were advised that historically the focus had been on the larger, high value assets such as dams and weirs but the scope is now being extended to all the assets owned by SWC including housing and property.

The principal source of asset data is the asset register which is currently stored on an Excel spreadsheet. This register includes a hierarchal asset listing, service potential (condition) ratings and criteria, consequences of failure (criticality), asset age and life data and cost and value data.

The asset register for all water infrastructure was developed in 2007/08 from a wide variety of sources. The asset listing was then verified through site inspections and interviews. Asset service potential and criticality assessments were also conducted in conjunction with the verification process. This register generally reflects the asset base and its value and condition. However, there are risks associated with storing this critical information source on a spreadsheet.

Information on asset maintenance is still under development through FMMS.

4.3 Processes & Systems

SWC has developed an asset management framework which takes a "top down-bottom up" approach to asset management. Strategic asset management is the responsibility of the Strategic Assets Unit.

The framework comprises a number of elements including:

- Strategy – which outlines SWC's asset management vision, objectives, policy and principles. It also outlines the asset management structure, roles and responsibilities
- Drivers – this describes external and internal drivers that impact on asset investment and management priorities;
- Planning – this outlines processes for identifying a need, investment prioritisation based on risk and criticality, options analysis, project development, budgets and approvals;
- Implementation – this covers two elements namely project management covering project planning procurement, asset creation; and activity management including normal and abnormal (emergency) operation and maintenance; and
- Performance – including performance monitoring and reporting of services, assets, projects, budgets and benchmarking.

We observed that a number of these processes had only been implemented over the past year and many were still under development or refinement.

The Portfolio Risk Analysis (PRA) process is a key source of knowledge for the dam safety upgrade process. The PRA was last undertaken in 2002.

The systems used for asset management include:

- The asset register (described in Section 4.2). Criticality and future service potential ratings from the register are used to identify high priority renewal and replacement projects. The

spreadsheet is very large with 92 columns and over 13,000 lines. A recent audit (IAB Services, October 2009) commented that having an asset register on a spreadsheet introduces significant complexities and potential for errors, impacting on the integrity of critical, significant asset management data. We are of a similar opinion.

- We were advised that the Facilities Maintenance Management System (FMMS) has been rolled out to all sites and is accessible to all asset management staff. These staff have received training. The asset hierarchy in FMMS is to be revised. Only 20% of maintenance procedures and schedules are currently stored in FMMS. A challenge will be embedding a formalised work order system into work practices. Once fully established, FMMS should provide opportunities for efficiency improvements through analysis of asset performance and costs and subsequently optimising maintenance.

Operational expenditure is captured in IFMS. Currently there is no linkage between the asset register, FMMS and IFMS. It is fundamental that an integrated asset management information system is implemented over the next few years to improve effectiveness and lever efficiencies.

An external review of asset management by IAM Services dated October 2009 identified a number of improvement opportunities.

In assessing the performance of assets and the need for and timing of renewal SWC applied a detailed risk methodology considering the likelihood and consequence of asset failure. This has been developed and applied mainly to the dams and reservoir assets and is being rolled out to other assets.

Our view is that SWC has made a significant investment in improving asset management over the past two years and actions are in place to further develop asset management processes and systems. Once established, benefits could be achieved through more efficient and effective maintenance and extension of asset life.

4.4 Investment Appraisal

Over the past 12 to18 months, SWC has set up a capital investment process which is supported by the Project Delivery System (PDS). This contains documentation for contact administration and project management. Project management processes are documented in the Project Management Guidelines. The capital investment process has only been in place for the past six months and provides some rigour to capital investment. The TAMP 2009 states that the level of implementation of the PDS by SWC staff requires constant monitoring and a continuous improvement process. This suggests that challenges still remain in embedding structured formalised processes into the organisational culture.

The output from the capital investment process is a Capital Investment Plan which is a prioritised list of projects, which have been selected to progress to the construction phase. Needs are identified through asset service potential/criticality assessments, business theme requirements, information system opportunities, customer or stakeholder requirements and new business opportunities. Project sponsors then develop project charters, which are equivalent to a strategic assessment that outlines the needs, stakeholders, project scope and objectives, risk management, program and funding profile, priority and project risk profile. No project can commence until a Project Charter has been recommended by the Budget and Expenditure Review Panel and approved by the Board. Projects are prioritised based on factors including financial and societal cost benefits, environmental and heritage, company and societal health and safety, and legal and regulatory compliance.

A Project Plan is then developed which details how the project is to be implemented. The Plan is a further development of the Project Charter including further development of options, life cycle costs, recommended option, risk assessment and implementation. We observed that for the

larger, longer duration projects such as dams, Project Plans were revised as more information became available.

Supporting engineering studies are required for most projects. For instance, for dams, a project is typically progressed through the following stages:

- Preliminary options analysis;
- Refinement of options including value management studies (if project greater than $5 million);
- Specific investigations (e.g. geotechnical);
- Concept design;
- Environmental assessment;
- Detailed design and documentation;
- Development of an economic appraisal and business case (projects greater than $1.5 million); and
- Gateway Review for larger, high risk projects.

Smaller projects typically have a reduced level of project assessment.

Our observations indicate that a sound framework compatible with best practice exists although further development and implementation of processes is ongoing. Control and approval processes once fully established, along with cultural change, should ensure that investment appraisal processes are implemented corporately.

We did not observe evidence that post completion audits were formally undertaken although this process is listed in the Project Management – Project Completion Guidelines. Sharing project outcomes and shortfalls provides an excellent means of continuous improvement. We did note that value management studies were undertaken for larger projects that are greater than $5 million.

4.5 Control & Approval Processes

Control of capital investment is achieved through the following:

- Review of the Project Charters by the Strategic Assets Unit and recommendation of Project Charters by the Business and Expenditure Review Panel (BERP) which was established in July 2009;
- Projects are recommended to the Board via the General Manager, Finance and General Manager, Strategic Assets for inclusion in thematic and asset plans;
- Requirement for a Business Case if the project risk profile is high and/or cost is high (>$1.5M);
- Monthly review of major projects by the Project Control Group (PCG). We note that the PCG is currently monitoring 36 projects with a 09/10 budget of $112M (including $41M for the Murray Darling Basin Authority);
- BERP review of business cases and project plans if scope or cost change is greater than 20%;
- Gateway Review of high risk/cost projects. We were encouraged that SWC was undertaking Gateway Reviews of a number of projects even though this was not a mandatory NSW Treasury requirement; and

- Board approval prior to issue of tenders and, where required, Treasury and/or Cabinet sub-committee approval for projects greater than $50M.

From our interviews, documentation review and observations, we are satisfied that once BERP becomes fully established, then SWC will have a robust framework for approving and controlling capital investment.

4.6 Cost Estimating Processes

SWC's approach to cost estimating is typically based on traditional engineering estimating practice of developing an estimate and applying a contingency sum depending on the stage of the project life cycle. The contingency will reduce as a project moves from project initiation to pre-tender stage as more information becomes available and the degree of confidence in the estimate increases. For the construction projects greater than $5 million a risk based estimate is developed when sufficient information is available at concept design stage and later. This probabilistic estimation (ie Monte Carlo Simulation) allows contingencies to be calculated for individual construction components. The output is a probability distribution for the total cost of a project. This provides a more robust and justifiable approach to estimating project cost contingency.

SWC is developing a procedure for estimating project costs to ensure consistency in approach throughout the Corporation. The focus has been on the larger dam projects which form some 63% of proposed expenditure. We formed the view that the same focus is not given to the smaller less-prestigious asset replacement schemes which drive prices in individual valleys. We were provided with a preliminary draft of the document on the understanding that further work would be required to finalise the document. This draft suggests a contingency of 50% at the project initiation and options evaluation stage, 30% at concept design and 15% at detailed design. The *NSW Government Procurement Guidelines, Draft Capital Project Estimating (for Construction), [December 2006]* suggests the following contingencies:

- Indicative (order of cost) 25% - 50%;
- Preliminary estimate 15% - 25%;
- Budget (detailed estimate) 10 -15%; and
- Pre-tender estimate 5% - 10%.

The guideline suggests that a more rigorous approach to contingencies would be through the use of an Estimating Risk Analysis (ERA).

Our view is that overall the approach to cost estimates follows a defined probabilistic process which takes into account cost risk of elements of each project. The probabilistic approach taken to estimating for the larger projects is consistent with best practice. The approach allows a selection of the level of risk. For the dam projects SWC has used the P90 estimate. This means that there is a 90% probability that the outturn cost will be less than this cost. This is a cautious approach, particularly when deriving total program costs. Best practice would be to use a probabilistic approach to derive a level of contingency for a whole program of work. We therefore consider that the P90 estimates over-state the total likely expenditure for the dams program. We consider that the inclusion of contingencies does not remove the incentives on project managers to avoid scope creep and deliver at lowest cost. We found from our review of sample projects that cost estimating for other programs including environment and asset replacement are less advanced than for dam safety and included a higher level of contingency.

Opportunities exist for improving estimates. We suggest that in the preparation of the next draft estimating procedure consideration should be given to the *NSW Government Procurement Guidelines, Draft Capital Project Estimating (for Construction)* and in particular the ERA approach. SWC undertakes a project risk assessment right through the project lifecycle and should be able

to adopt a simplified risk based contingency. We also note that the draft Project Planning Guidelines suggest a contingency of less than 10% (presumably at detailed design stage). Maintaining a database of rates, standardising bills of quantities and undertaking post-implementation reviews may be other means of increasing confidence in project estimation.

The Information Return includes a range of projects at various stage of project development with probably a range of contingencies applied. In some instances these may be excessive for the risks associated with the project. We note that P90 estimates for the larger projects (dam safety compliance) have been included in the Information Return. We are of the view that it is highly unlikely that five or six projects would all be delivered at a P90 cost. It is more likely that the cost would be delivered at somewhere between P50 and P90.

We formed the view that the Submission, which comprises a range of projects at different stages of development, includes a level of total contingency which is greater than is likely when considering the overall program. Best practice would suggest that program management contingencies are held at a program level and released as needs are justified. We believe that this places greater onus on the project managers to deliver to budget and avoid scope creep.

4.7 Procurement

SWC's procurement process is governed by the document *State Water Procurement Policy & Procedures, Policy No: SW2007-PO129, [July 2008].* The document is consistent with the *NSW Government Procurement Framework* and outlines the following:

- Policy and Procedures Framework; and
- Tendering Guidelines covering the Code of Practice for Procurement, Conflict of Interest and Statement of Business Ethics.

Infrastructure planning, specialist studies (e.g. hydrological modelling, and environmental assessments), concept and detailed design and construction are fully outsourced, with SWC providing a program/ project management role. We found this approach is appropriate as it reduces the need for permanent posts over the peak in capital expenditure.

For the larger projects a procurement strategy, based on the NSW Government Procurement System for Construction, is developed through a Procurement and Risk Management workshop. We noted that the recommended procurement approach is based on a multi-criteria analysis of options. The preferred approach for many of the larger projects appears to be early contractor involvement (ECI) (at 90% design stage) with NSW Treasury's preferred GC-21 contract conditions to apply. GC-21 is intended to facilitate a cooperative contracting approach. This approach is being used at Blowering Dam and appears to be successful.

We challenged SWC as to why an alliance had not been considered for the larger projects. State Water Corporation indicated that they were advised by NSW Treasury against the use of an alliance approach as SWC's systems were not considered mature enough for the approach.

In some instances SWC staff may seek advice from procurement specialists within the NSW Department of Commerce on an appropriate procurement strategy for a particular project.

We observed that SWC was quite flexible in its approach and using the procurement framework, SWC is able to select the most appropriate procurement strategy to provide value for money for a particular project. We also noted that the approach to awarding consultancies and contracts was consistent with the Procurement Policy and Procedures. Authorisations for project expenditure are clearly documented.

SWC is now utilising the NSW eTendering process and this is providing some cost efficiencies.

We consider there are opportunities to enhance the procurement process as SWC gains more maturity in its project and program management expertise. A frontier company would be using its expertise to reduce costs and share risks through earlier involvement of contractors than at

present and through alternative procurement routes. Opportunities should be explored for packaging projects into contracts by locality, type of work etc as this may achieve efficiency gains.

4.8 Program Management

Effective management of the capital program is an essential element for efficient and timely delivery. We have previously discussed investment appraisal, project estimating, and procurement. The program management function complements these processes by monitoring, reporting and managing variances in cost and time.

Through our scheme reviews, we formed the view that SWC has now developed a sound framework for managing individual projects, with monthly reporting to the PCG occurring for the major projects. The significant increase in capital investment scheduled to commence this financial year rising from a previous $15M pa to $70M this year and $140M in 2011 will test this project management framework.

Frontier companies now use their corporate systems to undertake comprehensive monitoring and management at the program level. One feature of this approach is that it provides greater ability to respond to variations in time and cost when they are identified.

We were provided with sample copies of the Program Control Group Report. This contains reports on the major programs and projects including financial, program schedule and project progress, comprising traffic lights to indicate issues of concern. It would also be desirable to extend this process, at an appropriate level, to smaller projects. As discussed in Section 4.7 there may be opportunities for efficiency gains through packaging some of the smaller projects where appropriate.

4.9 Conclusions

We found that SWC has made significant progress in improving asset management over the past two years resulting in the production of a Total Asset Management Plan (TAMP) which forms the basis of the Submission. Actions are in place to further develop the sea sset management processes and systems. Once established, further benefits should be achieved through more efficient and effective maintenance and extension of asset life. This is dependent on enhancing and fully implementing the FMMS system integrated with the asset register.

The focus is given to the dam safety projects because of its importance, cost and prestige. We formed the view that the same emphasis is not given to the smaller and perhaps lower profile asset replacement work. However, efficient expenditure on these assets has a material impact on individual valley charges for bulk water. We see a key challenge to SWC over the next two years to focus on asset replacement in parallel with FMMS.

Our observations indicate that a sound project appraisal framework compatible with good practice exists. Further development through the BERP process should allow greater scrutiny and enable projects to be prioritised against need and available budget. The BERP processes once fully established, with appropriate training and cultural change, should ensure a more rigorous process to be applied.

Our view is that overall the approach to cost estimates follows a defined probabilistic process which takes into account cost risk of elements of each project. The probabilistic approach taken to estimating for the larger projects is consistent with best practice. The approach allows a selection of the level of risk. For the dams projects SWC has used the P90 estimate. This means that there is a 90% probability that the outturn cost will be less than this cost.

We formed the view that the Submission, which comprises a range of projects at different stages of development, includes a level of total cost contingency which is greater than is likely for an

overall program of work. Best practice would suggest that program management contingencies are held at a program level and released as needs are justified. We believe that this places greater onus on the project managers to deliver to budget and avoid scope creep.

We consider there are opportunities to enhance the procurement process as SWC gains more maturity in its project and program management expertise. A frontier company would be using its expertise to reduce costs and share risks through earlier involvement of contractors than at present and through alternative procurement routes. Opportunities should be explored for packaging projects into contracts by locality, type of work etc as this may achieve efficiency gains.

5. Capital Expenditure

5.1 Methodology

In this section, we present the results of our review of the efficiency of SWC's capital expenditure. We identify the major cost drivers and explain the variances in the current price path expenditure against the 2006 Determination. We comment on the efficiency of capital expenditure in the 2006 Determination period which is used to inform our view of future efficiency. We comment in Section 4 on the main asset management systems and processes used to budget, track, monitor and report capital expenditure.

We then make an assessment of an efficient level of expenditure for the period 2010 to 2015. We discuss the cost drivers and efficient cost level recommendations for each of the capital drivers – dam safety, asset replacement, environment and water delivery – and the specific activities contained therein.

The evaluation of operating expenditure was undertaken using SWC's 2009 Submission and supporting SIR spreadsheets. Our assessment is based on the actual operating expenditure in the Submission, the robustness and confidence of these estimates taking into account the basis of the estimates and the confidence of the need, timing and scope of the requirements. We also take into account whether additional expenditure proposals have been through the internal approval and challenge processes.

The methodology for the review of capital expenditure has focused on an evaluation of the information provided in the Information Return and gaining an understanding of SWC's external and internal environment as well as drivers for capital investment which we discuss in Sections 2 and 3 of this report. Our views are guided by the evaluation of asset management and capital investment processes through interviews and SWC presentations, which we discuss in Section 4 of this report.

We have selected a representative sample of capital projects from the 2006 Determination and proposed 2010 Determination to gain an understanding of the efficiency and prudence of the investment; prudence as defined by IPART:

> *The prudence test assesses whether, in the circumstances existing at the time, the decision to invest in an asset is one that State Water, acting prudently, would be expected to make. It should assess both the prudence of **how the decision** was made to invest and also the prudence of **how the investment was executed** where the asset has been built (i.e., the construction or delivery and operation of the asset), having regard to information available at the time.*

A summary of the projects reviewed is listed in Appendix B. Each project has a summary of our findings presented in Appendix C.

We present our analysis of the future expenditure proposals and comment on each driver on the potential for efficiencies through the robustness of estimates, the need and timing of expenditure and the impact of internal challenge and budget control.

Our views on future capital expenditure efficiencies are based on the hypothesis of a frontier company, the continuing efficiencies that a frontier company makes through innovation and technological development, and the catch up efficiency required of SWC to achieve the performance of a frontier company over time.

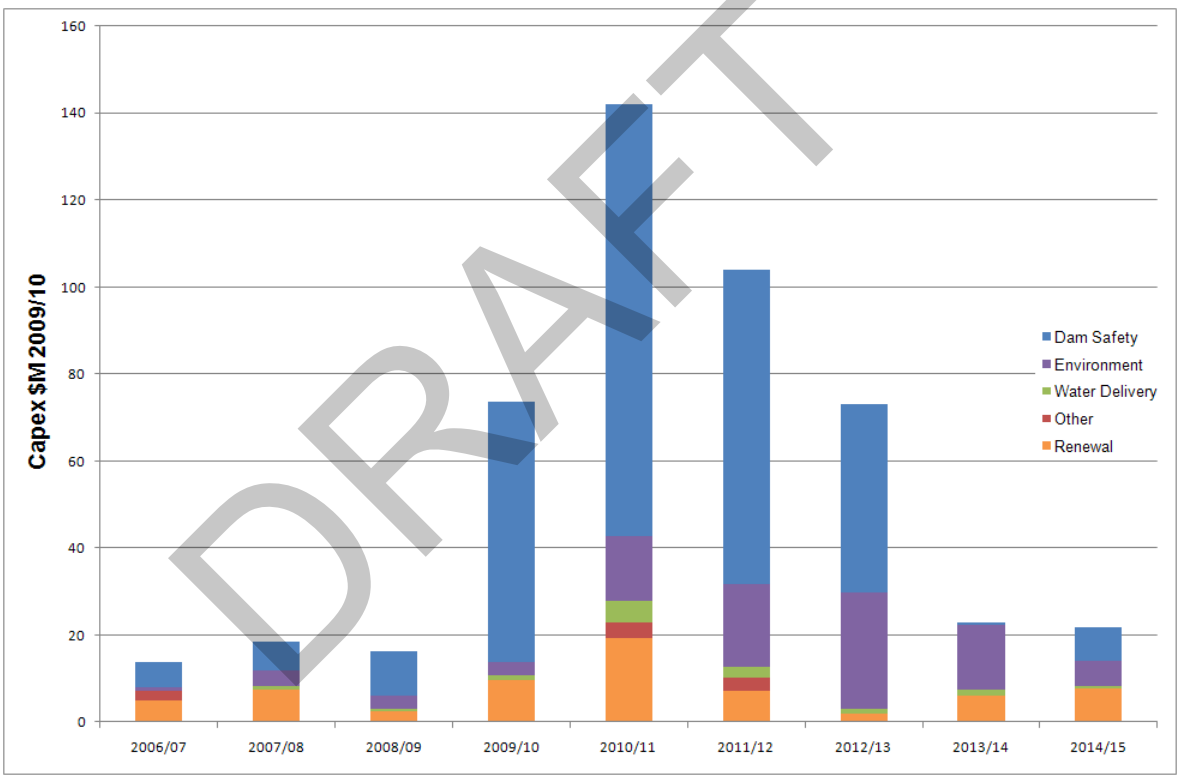
5.2 Overview

SWC started the current price path period with capital expenditure below that allowed in the 2006 Determination. Expenditure in 2010 shows a significant increase in expenditure to generally meet the total expenditure included in the 2006 Determination. This final year expenditure is mainly driven by the Dam Safety driver.

The expenditure profile shown in Figure 5.1 shows a continuing increase in expenditure to $140M in 2011 falling back as dam safety projects are completed.

SWC has proposed capital expenditure of $342M over the price control period 2011 to 2014, against the drivers of dam safety, renewal and replacement, environmental planning and protection, water delivery and other operations. SWC also reported actual expenditure over the current price period 2007 to 2009 of $117M.

Figure 5.1 – Capital Expenditure 2007 to 2015 by Driver



Source: SWC Information Return and Atkins/Cardno analysis

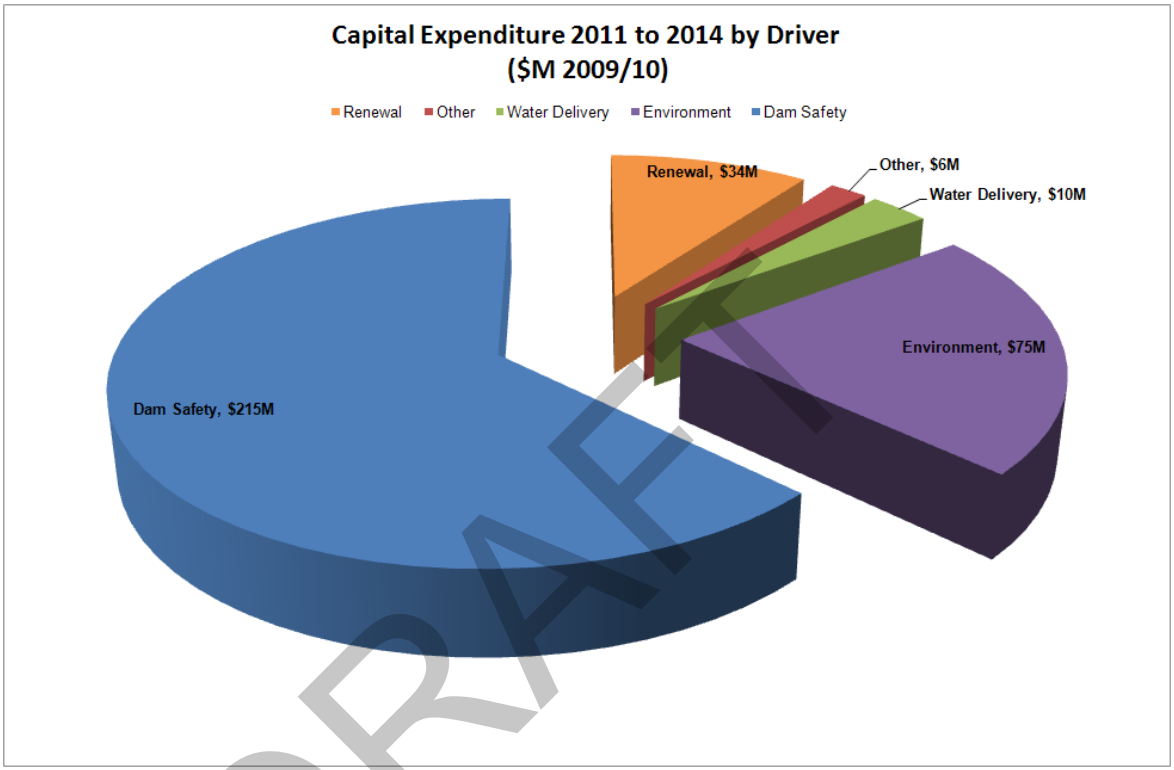
Major investment in dam safety compliance is driven by ANCOLD (Australian National Committee on Large Dams) and the 2006 agreement with the NSW Dam Safety Committee to reduce the risk of failure of SWC's dams.

There is increasing expenditure on environmental projects in the 2010 Determination Period related to Fish Passage and Cold Water Pollution drivers. The Fish Passage Program has been developed through a Memorandum of Understanding (MOU) with the Dept of Industry & Investment (DII), formerly the Department of Primary Industries. The Cold Water Pollution Strategy aims to reduce the impacts of water discharge from the large, deeper dams.

5.3 Investment Drivers

Expenditure for the period 2011 to 2014 has been allocated to investment drivers defined by IPART being pre 1997 Dam Safety, Asset Renewal, Water Delivery, Environment and Other. A breakdown of expenditure by driver is illustrated in Figure 5.2.

Figure 5.2 – Breakdown of Expenditure in Future Price Path by Driver



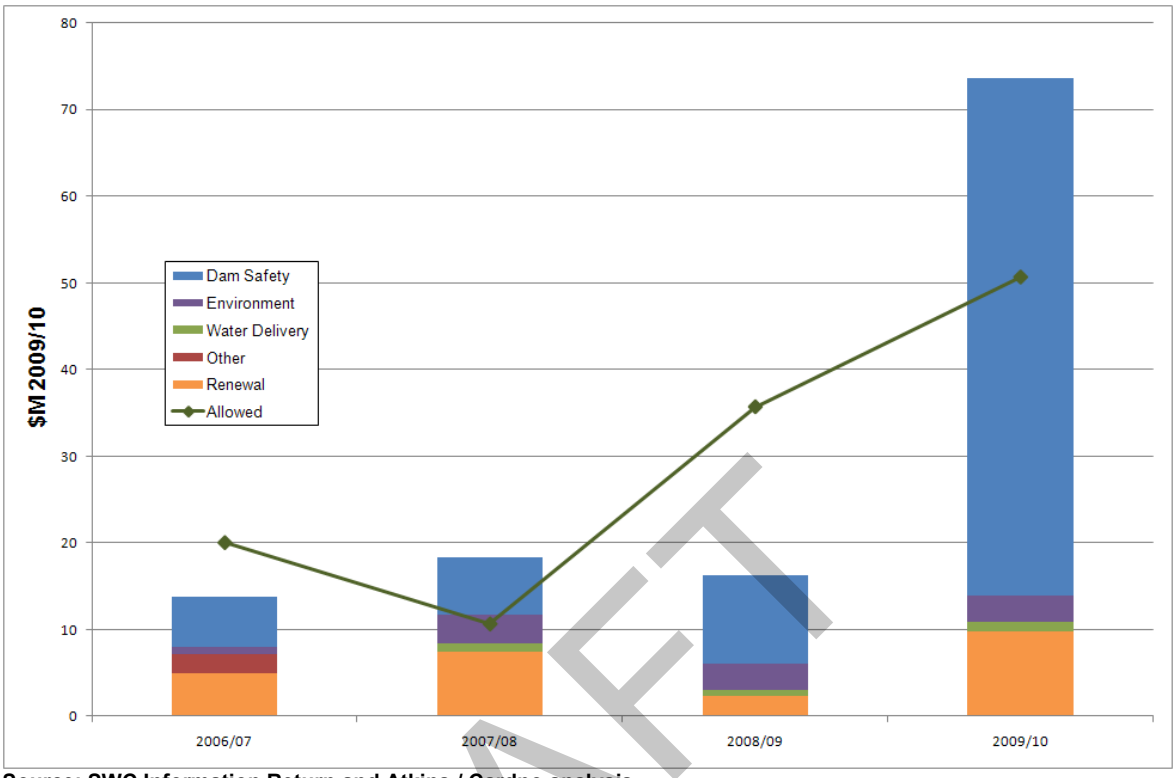
Our review identified two inconsistencies in allocation. The Wyangala Dam Fish Passage Offset ($6.05M) and the Wyan gala Dam Cold Water Pollution ($5.1 M) were wrongly allocated to Renewal and Replacement. We have subsequently allocated these projects to Environmental Planning and Protection.

5.4 Capital Expenditure in Current Price Path

In 2006, IPART set a Determination for SWC for the four years ending 30 June 2010.[2,3] This was informed by a number of reviews and reports on capital and operating expenditure efficiency. The Determination set a level of capital expenditure equivalent to $117M. SWC reports in its 2009 submission to IPART[4] that actual expenditure in 2007 to 2009 and forecast expenditure in 2010 is $121.9M. This includes a forecast expenditure of $50.7M in 2010. A comparison between the actual expenditure and allowed expenditure in the 2006 Determination period is illustrated in Figure 5.3.

[2] Bulk Water Prices for State Water Corporation and Wato Administration Ministerial Corporation from 1 October 2006 to 30 June 2010 – Determination, IPART, Sept 2006.
[3] Bulk Water Prices for State Water Corporation and Water Administration Ministerial Corporation – Report, IPART, Sept 2006.
[4] Electronic Information Return, Submission to IPART, SWC, September 2009.

Figure 5.3 – Current Price Path Capital Expenditure



Source: SWC Information Return and Atkins / Cardno analysis

SWC advised that the significant under-spend in 2009 was due to the effects of the change in organisational structure in moving from a regional to a more centralised organisation. This change had a significant impact on staff and in short term organisational effectiveness.

The Dam Safety Compliance program had a major impact on slippage in expenditure at several dams as summarised below.

- Blowering Dam – delayed one year for further investigative work;
- Burrendong Dam – delayed due to further options assessment and investigations;
- Chaffey Dam – delayed so that funding for augmentation of dam capacity for urban water could be considered by stakeholders;
- Keepit Dam – delayed as a number of environmental issues had to be addressed in particular the fish passage off-set program; this also had an impact on Split Rock Dam; and
- Wyangala Dam – delayed due to need to investigate spillway gate raising options.

We challenged SWC on the achievability of the proposed expenditure in that this represented a step up in resource requirements where the profile of expenditure does not likely lead to achieving efficiencies. SWC responded to our challenge about the achievability of the planned program in 2010. It considered that the program was achievable because of improved project management and reporting processes were in place. SWC acted as program and project managers with all of the activities including planning, design, construction and supervision outsourced. As a result the program would not be constrained by limits on internal SWC resources. In addition many of the dams are moving into a mature phase of the project lifecycle as indicated in Table 5.1.

Table 5.1 – Status of Dam Safety Compliance Projects

Dam	Project Status	2009/10 Expenditure $M
Blowering	Construction	19.1
Burrendong	Stage 1 ready for tender	3.3
Chaffey	Detailed Design	2.7
Copetim	Detailed Design	5.0
Keepit	At tender review stage	22.0
Split Rock	Pre-design	0.4
Wyangala	Detailed Design	2.1

We note and accept the reasons provided. Nevertheless, the number of projects and the level of expenditure proposed will have an impact on construction resources which may be reflected in the value of tenders received. The high level of expenditure proposed in 2010 compared with previous years of the Determination shows that SWC will be challenged to achieve the level of expenditure it plans.

Review of Schemes

We reviewed a representative sample of schemes with significant expenditure in 2007 to 2010 to understand the scope of schemes, the project delivery process, the planned and actual project delivery, the reasons for variance in forecast and outturn costs and the contribution to outcomes. Our key findings are summarised in the following paragraphs. Individual scheme summary sheets are included in Appendix C.

1068 – Lidsdale Reservoir – Survey / Design / Constrict Pipeline

The township of Lidsdale had previously been supplied from the Fish River Water Supply with untreated raw water. The project involved providing a 3km pipeline as a treated water main. The project was completed in 2008.

1280 – Colligen Creek Weir Refurbishment

This project involved the refurbishment of a weir constructed in the 1930s including upgrading works to address Occupational Health & Safety (OH&S) risks associated with timber drop boards, walkway and hand railing. The project was substantially completed in 2008.

1285 – Yallabool Weir Refurbishment

This project is similar to the Colligen Creek Weir Refurbishment but with a reduced scope of works. We noted that the concept design had been modified from that used at Colligen to facilitate operation and maintenance. The project is to be packaged with a number of fish way projects including the Yallakool Fishway. It is proposed to issue the project to tender in November. It had been delayed as the Department of Industry and Innovation (DII) required re-design of the fishways.

20296 – Replacement of Duckmaloi Filters

The Duckmaloi Water Treatment Plant supplies the Fish River Water Supply. The plant was upgraded in 2004 with the installation of a membrane filtration plant. In 2007 treated water quality deteriorated and the membranes were replaced in 2009.

Dam Safety Compliance

A number of dam safety compliance projects were reviewed. These projects have a long project lifecycle which have extended through to the 2010 Determination period.

1030P6 – Lake Cargelligo Fish Passage

The scheme is for the construction a fish passage on the Lake Cargelligo weir. The design of the fish passage is for a multi-level inlet fish passage.

The scheme is required as a consequence of maintenance work on the weir. S218 of the 1994 Fisheries Act states that:

"The Minister may, by order in writing, require a person (other than a public authority) who constructs, alters or modifies a dam, weir or reservoir on a waterway to carry out, within the period specified in the order, such works as may be so specified to enable fish to pass through or over the dam, weir or reservoir."

The scheme is prudent when considered in isolation; there is a legislative requirement for these works to be undertaken. However, there are a number of fish passage capital schemes being undertaken and there is a question of whether it is prudent for all of these to be undertaken within the same time or short period of time. Monitoring of the effectiveness of the fish passage will provide lessons learnt for future design of fish passages.

The scheme within the SIR is for latest costs rather than the costs that were first identified in 2005.

State Water Corporation has not constrained its fish passage program within an overall capital budget for the future price path as it considers that since these schemes are required by legislation it has no option but to undertake them.

Basis of costs were developed by the Department of Commerce in producing a detailed design. Mitigation of risks is predominately provided by sheet piling the area of works. In the Project Charter $500k was allowed for outline design and $2M for detailed design and construction with no costs allowed for contingency. State Water assumes that risk is borne by the contractor. Total outturn cost to State Water is $3.7M.

State Water procured the design through an open advertised tender process which was awarded to the Department of Commerce. Construction is through open tender and this closed on the 3rd November 2009. State Water invited tenderers to a meeting on site at which 10 attended.

There is a program in place with milestones. The design process is finished and currently construction is out at tender. Construction is due to start in the third quarter of the 2010 financial year with completion at the end of the second quarter of the 2011 financial year.

Lake Brewster Water Efficiency Project

This scheme was identified through stakeholders, namely customers in the Lachlan valley, the Lachlan Catchment Management Authority. Lake Brewster is an off-river water storage which is created by a natural depression in the topology. The underlying issue with Lake Brewster is that there was a significant dead storage zone and also experiences water quality issues. The stakeholders considered that if the dead storage could be utilised and if there were no water quality issues that the Lake could increase the security of supply to customers.

The scheme in basic terms consists of an existing channel from the Lake which has been deepened to gain access to the previous dead storage zone and the creation of wetlands surrounding the inlet and outlet channels to improve the water quality situation.

The scheme can be considered prudent as it will increase the security of supply and that the majority of the funds have been provided by 3rd parties. Of the $13M capital expenditure required only $2.7M is a State Water contribution. The scheme involves using much of the existing assets on site but also required the building of some new embankments and regulators.

Whilst there are clear links to the Lachlan Valley Asset Management Plan for the existing assets it is not clear that there is a link into the TAMP for the new assets. The TAMP identifies no capital spend on the project with the exception of $1M in 2010 on renewal and replacement of existing assets. In supporting data for historic capital expenditure, spend has been placed against the environmental driver and hence it is unclear why in 2010 spend on the same assets is placed against the renewals and replacement driver. Reconciling project costs against those in the TAMP is difficult as State Water Corporation has only capitalised within the TAMP those costs that are contributed by State Water.

The Project Manager identified a risk that if the whole works was awarded as a single contract then any delays on one part of the works would run a risk of the whole program being delayed. By sub-dividing the works into packages the State Water is better placed to manage any slippages within the overall timetable.

State Water investigated the impact of losing Lake Brewster as an off-river storage and determined that the potential loss in revenue versus the capital in undertaking the project was of sufficient significance to go ahead with the project.

The breaking up of the works into smaller packages was an efficient and prudent way of ensuring that the project would be delivered to the set timescale to mitigate against rainfall/runoff and flooding. This is demonstrated by the works coming in under budget and within the set timeframe. The procurement of services was through open tender.

The procurement process was overseen by the Project Steering Committee and went through State Water's Project Delivery System.

The project is currently in the final construction stage and dependent on availability of water could be operational in 2011.

5.5 Prudence and Efficiency in Current Price Path

On the basis of inspection of expenditure presented in the Information Return and a review of sample projects we concluded that, with the exceptions discussed below, actual expenditure in the year 2007, 2008 and 2009 was prudent and would be included in the regulatory asset base.

However, we have concerns regarding the prudency of expenditure on the replacement of Duckmaloi Filters. Our concerns are that membranes usually have a life of 10 years rather than the 3 years experienced. The causes of premature failure do not seem to have been fully investigated and it is possible that premature failure of the membranes could occur again. It would have been preferable if SWC had commissioned a specialist water treatment consultant rather than a supplier to provide an objective assessment. It does not appear that all the options were fully explored for example pre-treatment, providing specialist operational resources, and re-evaluations of the appropriateness of the membrane process.

From our review of this project, and to a lesser extent the Rydal project for replacement of sections of pipeline at Fish River in the 2010 Determination, we are concerned that SWC currently does not have all the in-house skills to manage a bulk urban water supply such as Fish River. We note that Hunter Water has recently become involved in the operation of the system and we consider this to be beneficial. Options available to SWC include:

- Contracting out management and operation of the system;
- Resourcing specialist resources (e.g. utility management, water treatment and drinking water specialists etc) possibly through a panel of providers arrangement; or
- Transferring the system to another public organisation (State or Local Government).

For the proposed expenditures in 2010 we concluded that SWC faces a challenge in achieving the level of expenditure proposed where compared with the previous years and is likely to underspend against its planned program. From our analysis we believe that the program will fall short of the forecast for 2010 by $13M. The components of this sum are listed in Table 5.2 as well as our assessment of prudent expenditure for the period 2007 to 2010.

Table 5.2 – Assessment of Prudent Expenditure with Underspend for 2010

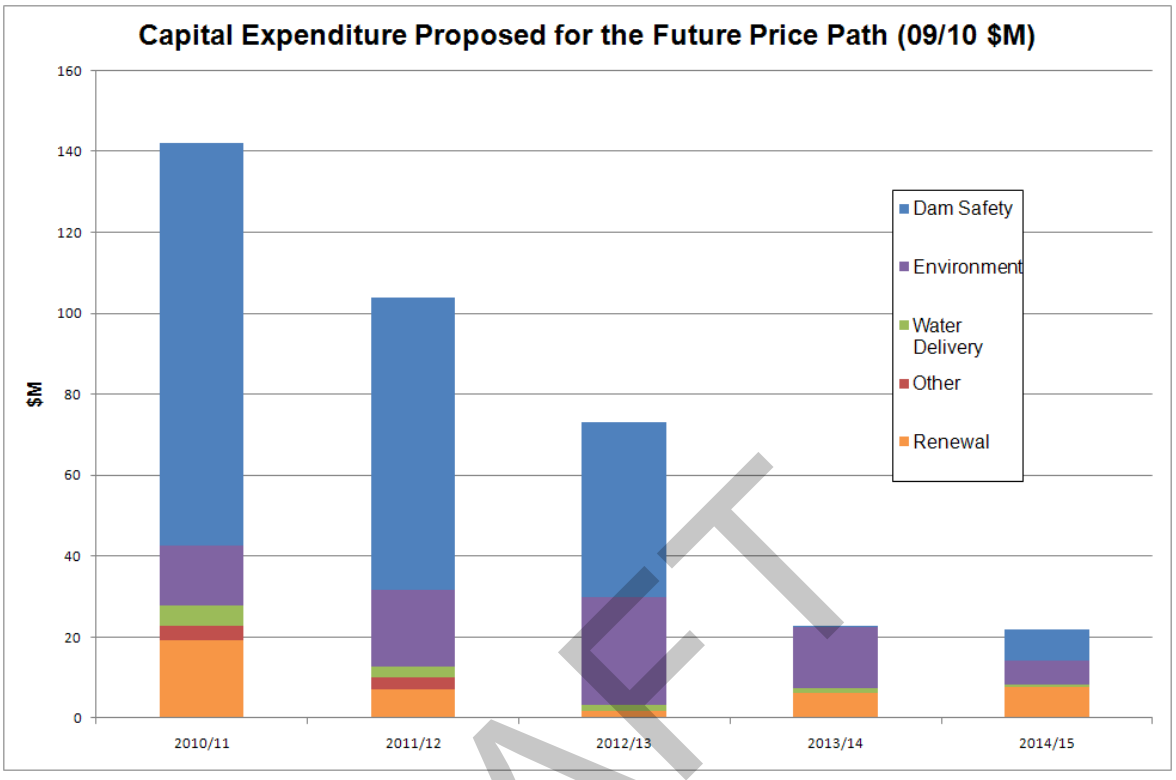
2010 $M	2007	2008	2009	2010
State Water SIR Capex	13.8	18.4	16.2	73.6
Underspend in 20010				
Chaffey Dam Upgrade				-2.0
Copeton Dam Upgrade				-1.0
Keepit Dam Upgrade				-10.0
Adjustment for non-prudent expenditure				
Fish River - Duckmaloi Filters			-0.7	-0.2
Total for current price path period	**13.8**	**18.4**	**15.5**	**60.4**

5.6 Future Price Path Expenditure

The key features of the SWC capital expenditure forecast is a peak in dam safety expenditure, increasing environmental expenditure with continuing asset replacement expenditure. The features can be seen in the expenditure profile shown in

Figure 5.4. We have included year 2015 which is outside the price path period although within our brief for this efficiency review. We review and comment below on these expenditure proposals.

Figure 5.4 – Capital Expenditure Proposed for the Future Price Path (09/10 $M)



Our opinion on the level of efficient expenditure for the future price path and its phasing is based on our analysis of the Information Return, interviews with SWC staff and a review of a representative sample of schemes. We have considered:

i. Any inconsistencies in inclusions and allocation of capital expenditure recorded in the Information Return;

ii. Adjustments to the phasing of projects adjustment to timing to reflect the achievability of the program having regard to the efficiency of managing an increasing program;

iii. Adjustments for specific schemes; and

iv. The scope to gain efficiencies through the implementation of the development and implementation of the capital investment and project management processes over the past 12 to 18 months as discussed in Section 4.

In proposing any adjustments we have regard to the basis of cost estimates included within the Information Return and the level of contingency included. We have discussed point iv.above in Section 4.6.

We have used SWC's Information Return and the capital program outlined in the Total Asset Management Plan to assess the level of expenditure by driver in the future price. Table 5.3 summarises the analysis.

Table 5.3 – Future Price Path – Proposed Capital Expenditure by Driver

	2011	2012	2013	2014	2015	Total 2011-2014	%
Renewal	19.34	7.09	1.79	6.11	7.75	34.33	10.0%
Other	3.49		3.00	0.00	0.00	6.49	1.9%

	2011	2012	2013	2014	2015	Total 2011-2014	%
Water Delivery	5.04	2.61	1.37	1.30	0.42	10.32	3.0%
Environment	14.77	19.05	26.60	15.00	6.00	75.42	22.1%
Dam Safety	99.48	72.12	43.39	0.41	7.57	215.40	63.0%
Total	**142.12**	**103.86**	**73.14**	**22.83**	**21.74**	**341.95**	**100.0%**

Dam Safety Compliance

Dam safety compliance accounts for 63% of total expenditure. This expenditure is required to meet the Dam Safety Compliance Program – Phase 1 as agreed with the NSW Dam Safety Committee in 2006. The objective is to reduce flood risk at priority dams within the medium term of 10 years to a level approaching an Annual Exceedance Probability (AEP) of Dam Crest Flood of 1:100,000, with the exception of Keepit Dam which will be fully compliant (ie meeting Probable Maximum Flood (PMF)).

Dam risk, pre- and post-Phase 1 along with the cost of upgrade is summarised in Table 5.4. The total cost (2006 & 2010 price path) for Phase 1 is $283M. Indicative additional costs to allow full PMF compliance are estimated to be in the order of $190M.

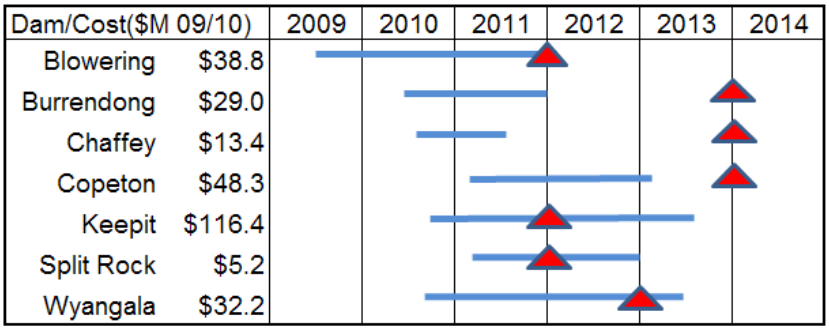
Table 5.4 – Dam Risk (Pre/Post Phase 1) and Costs

Dam	EP of DCF (FSL) (pre-phase 1)[1]	AEP of DCF (FSL[2]) (post)-phase 1)	PAR Sunny Day	Total Economic Loss ($M)	Phase 1 Current Estimate ($M)	Additional cost to be PMF[3] compliant ($M)
Blowering	1:25,000	1:110,000	11,800	2,184	38.8	35.0
Burrendong	1:20,000	1:50,000	4,400	8,495	29.0	15.0
Chaffey	1:100,000	1:450,000	2,700	1,619	13.4	13.4
Copeton	1:7,200	1:100,000	1,600	4,835	48.3	30.0
Keepit	1:12,000	PMF compliant	6,400	1,689	116.4	0.0
Split Rock	1:20,000	1:80,000	800	250	5.2	5.6
Wyangala	1:9,000	1:25,000	2,000	5,377	32.2	85.6
				Total	**283.3**	**184.6**

[1]Annual Exceedance Probability (AEP) of Dam Crest Flood (DCF); [2]FSL is the full supply level; [3]PMF is the probable maximum flood

The proposed constructions program along with target dates agreed with DSC are illustrated in Figure 5.5.

Figure 5.5 – Proposed Construction Program and Agreed DSC Phase 1 Target Dates



At the request of IPART we challenged SWC as to whether all the dam safety projects were "pre-1997" meaning whether the requirement was identified prior to 1997 when SWC changed from a government department to a commercial business unit. SWC provided the following response:

> *The Executive Engineer of the DSC has confirmed that in the 1980's, large dams were built to PMF standards as was the case throughout the rest of the world. Estimating large floods such as 1:10,000 events was not a well defined science as hydrology (based on historical rainfall data) was focused on recurrence intervals up to 1:100 with uncertain interpolation up to PMF. In 1981, a Workshop on Spillway Design identified the need to rationalise the diversity of design flood practices used throughout Australia. Following subsequent ANCOLD sub-committee sessions & associations with other expert bodies, the ANCOLD Guidelines on Design Floods for Dams 1986 were a major step forward and became the first national guideline on spillway practice. This guideline suggested PMF to 1:10,000 for all "High" hazard dams.*
>
> *DSC policy throughout the 1980's however was formalised with the issue of their Technical Information Sheet No. 1 in December 1989 which required NSW dams to comply with full PMF capacity where loss of identifiable human life would be expected. A brief background is provided in the current DSC Dam Guidance Sheet DSC 11 – Section 4.*
>
> *In 1984 the Dapto flood increased awareness that the then current Bureau of Meteorology predictions of Probable Maximum Precipitation (PMP) could easily be exceeded – resulting in major increases in rainfall estimates with subsequent increases in PMF magnitudes.*
>
> *Split Rock was originally thought to have been identified post 97 but documentation has recently been discovered indicating that the dam safety deficiencies were identified pre 97, consequently State Water's submission to IPART has allocated these costs 100% to Government.*

We reviewed a number of dam safety compliance projects. Our findings for each project are summarised below with our detailed findings presented in Appendix C.

Blowering Dam Upgrade – Phase 1 (1331 P6)

This project is in the construction stage with the contractor generally on program for completion in 2011. The accepted tender was significantly lower that the approved estimate of $43M. The revised project cost was estimated at $ 35.4M, including $1.5M price escalation contingency but excluding physical contingencies. The pricing model takes into account inflation so this cost escalation should be excluded. The SIR included $41M in total, $21.5M in the current price path and $19.5M in the future period. The latest PCG report showed a likely outturn cost of $38.8M which is equivalent to the $35.4m plus contingencies. Our view is that SIR is reporting expenditure some $2.1M greater than the latest estimate.

Burrendong Dam Upgrade – Phase 1 (1685 P6)

The project will be implemented in two stages. Stage 1 comprises the main embankment crest raising is ready for construction tender. SWC will shortly commence detailed design on Stage 2 which comprises raising of spillway walls and raising spillway gate hoist bridge. The P90 cost estimate for Phase 1 is $12.7M, while the overall project cost is estimated to be $23.3M.

Chaffey Dam Upgrade – Phase 1 (1212 P6).

This project will be undertaken in two stages. Only Stage 1 will be undertaken during the 2010 Price Path. Stage 1 involves the construction of a 35m auxiliary spillway. SWC advised that detailed design is in progress and should be complete by the end of November. The P90 estimate is $10.3M. SWC's program has the project listed for completion by January 2011. The agreement with DSC is for completion by June 2013.

Copeton Dam Safety Upgrade Phase 1(1135 P6).

This is the second highest risk dam within the SWC portfolio. The project will be undertaken in two stages with only Stage 1 being constructed during the 2010 Price Path. Stage 1 involves a 250m wide Fuse Plug ancillary spillway, relocation of Copeton Waters State Park and re-siting of Copeton Dam main road. The estimated cost is $45.4M. The project is currently in the detailed design stage which is scheduled for completion in June 2010. SWC's program indicates project completion by August 2012. The agreement with DSC is for completion by June 2013.

Keepit Dam Upgrade Phase 1(1176 P6)

Keepit Dam is the highest risk dam within SWC's portfolio and can only accommodate 37% of PMF. After completion of Phase 1 works the dam will be PMF compliant. Phase 1 works will be undertaken as two work packages.

Work Package 1 includes a 220m right-hand abutment fuse plug spillway and a 380m subwall fuse plug spillway. Work package 2 involves raising the main dam wall by 3.4m and post-tensioning of the wall. Early pre-construction work has commenced while Work Package 1 is to be awarded in late October. [redacted] The originally agreed program with DSC was completion by June 2011, but progress has been delayed due to the need for significant stakeholder consultation. The estimated project completion date is May 2013. Split Rock Dam (upstream drought storage) is to be completed to the same DSC timeline (June 2011).

Wyangala Dam Upgrade – Phase 1(1350 P6)

Phase 1 has been split into three projects namely:

- Locking system for existing radial gates (project 1A);
- Raising of chute wall (project 1B); and
- New parapet wall on embankment (project 1C)

The P90 estimate ($09/10) for the project is $32.18M. The project is currently in the detailed design stage. During our review SWC advised that an additional $9.2M may be required for an alternative road route that bypasses the dam, but was not included in the submission. A revised cashflow was presented which indicates that if the alternative access road is required, project completion will be delayed until 2014. The report on the alternative is currently with the Minister.

Renewal and Replacement

The proposed renewal and replacement expenditure profile increases to $19.8M in 2011 and decreases to $7.1M, $1.8M and $6.1M in subsequent years, bringing the total expenditure during the 2010 Price Path to $34.3M. The bulk of the proposed expenditure will be on:

- Menindee Fuse Plug - $13M; and
- Rydal: Replace Section of Pipeline - $10M.

The Menindee Fuse Plug (1287 P6) project is aimed at improving the reliability of fuse plug operation and cost effectively addressing soil erosion risks. The fuse plug protects the main weir and also the township of Menindee. The main Sydney to Perth railway line is located downstream. There have been concerns about current arrangements during major flood events for a number of years. The project involves:

- Lowering the crest of the fuse plug embankment;
- Removing trees on the fuse plug embankment or possibly re-locating the fuse plug; and
- Incorporating appropriate soil erosion control measures.

Rydal – place section of pipeline (2191 P6). SWC inherited The Fish River water supply in 2006. It is a bulk urban water supply system much of which was constructed in the 1940's and 1950's. A number of the pipelines are subject to frequent failures. Some 20% of the mains have been replaced and a number of the mains are now scheduled for replacement.

2123P6 - Keepit Dam: Fish Passage Offsets

Due to dam safety upgrade work on the Keepit Dam, State Water Corporation is required by Section 218 of the 1994 Fisheries Act to provide a fish passage at the dam if requested by the Minister.

As it is considered that the costs of construction of a high level fishway at Keepit Dam are likely to exceed the potential benefits to the migratory fish community of the Namoi River the Department of Primary Industries (DPI) supports the construction of three fishways on downstream weirs; the Mollee, Gunidgera and Weeta weirs. These three fish passages are also considered by the DPI to provide an offset to the dam safety work being undertaken at Split Rock Dam.

The negotiation of providing fish passages at offset locations is considered prudent when one compares the cost of providing a fish passage at Keepit versus the cost of providing fish passages at the three above mentioned weirs. The estimated cost for a high level fish passage at Keepit was identified as $30M whereas the cost of providing fish passages at the three weirs has been estimated at $18.1M.

The scheme is prudent when considered in isolation; there is a legislative requirement for these works to be undertaken. However, there are a number of fish passage capital schemes being undertaken and there is a question of whether it is prudent for all of these to be undertaken within the same time or short period of time. Monitoring of the effectiveness of the fish passage will provide lessons learnt for future design of fish passages and also enable efficiencies to be made in the capital expenditure of providing these fishways across the state.

The costs within the Total Asset Management Plan are for $18.1M or rather $6M for each offset fish passage. A feasibility report undertaken by State Water Corporation in October 2007 estimated the costs for the three weirs to be $15.8M in 2009/10 prices. These costs included a large contingency for estimating uncertainties. State Water Corporation considers that the estimated costs would not be sufficient because as detailed design progresses further unknowns are identified, and that this is why the estimate was adjusted upwards even though there is a contingency within the estimated costs. The expected increase in budget costs relate directly with results State Water Corporation has obtained in carrying out P90 risk based cost estimates on the other parts of the project. As all the fish passages in the fish program seem to be based on the same costs we consider that the allowance for the overall fish passage program to be generous. By using high end estimates it provides little incentive for project managers to drive costs down on projects or even to gain any capital efficiencies as State Water progresses along its capital fish passage program.

State Water Corporation has not constrained its fish passage program within an overall capital budget for the future price path as it considers that since these schemes are required by legislation it has no option but to undertake them.

1030P6 - Lake Cargelligo Fish Passage

The scheme is for the construction a fish passage on the Lake Cargelligo weir. The design of the fish passage is for a multi-level inlet fish passage.

The scheme is required as a consequence of maintenance work on the weir. S218 of the 1994 Fisheries Act states that:

"The Minister may, by order in writing, require a person (other than a public authority) who constructs, alters or modifies a dam, weir or reservoir on a waterway to carry out, within the period specified in the order, such works as may be so specified to enable fish to pass through or over the dam, weir or reservoir."

The scheme within the Total Asset Management Plan is for latest costs rather than the costs that were first identified in 2005.

Fish Passages – Generic

The costs for the majority of schemes are based on estimates from a conceptual design. The conceptual design costs have a contingency of 30% applied to them. State Water Corporation has then uplifted these estimates by another proportion based on P90 cost estimating. We consider that the P90 cost estimates are likely to be generous considering the scale of the program. With such numbers of fish passages to be built it is unlikely that the individual cost for each passage will always meet or exceed the P90 estimates.

Cold Water Pollution – Generic

Cold Water Pollution schemes are required at a number of dams, categorised as high impact, due to the environmental impact cold water releases (water derived from deeper levels within the storage) have on native fish downstream of these structures. The NSW government has identified a number of key sites within the state for CWP mitigation and intends to issue "Works Approvals" to dam owners/operators under the Water Management Act 2000, and that these may include the requirement to manage cold water pollution releases.

Dam sites belonging/operated by State Water Corporation that have been identified as requiring CWP mitigation within the future price path are Keepit, Copeton, Wyangala and Burrendong dams.

State Water Corporation has undertaken preliminary investigations into mitigating cold water pollution at its sites and has identified a number of technologies that would enable this. It is clear that the technologies available can be quite dependent on the nature of the dam site itself, for example the depth, width and surface area characteristics. So whilst the investigations for one type of technology may prove to be the answer for one site it may not necessarily the most pragmatic and cost-effective for another site. State Water Corporation has created a scale model of one of its sites to monitor the impact and effectiveness of a certain technology at a particular site.

Capital expenditure associated with mitigating cold water pollution from State Water's Total Asset Management Plan is shown in Table 5.5.

Table 5.5 – Cold Water Pollution Capital Expenditure

2010 $k	2011	2012	2013	2014
Keepit Dam CWP	-	-	5,000	-

CPTN: Cold Water Pollution Implementation	50	200	5,000	10,000
Burrendong CWP	100	2,500	2,000	-
WYAN:Cold Water Pollution	-	-	100	5,000
Total 150		2,700	12,100	15,000

This cl early shows that expenditu re ramps up to significa nt value in 201 3 and 2014 as it undertakes CWP capital schemes at 3 sites simultaneously. A more prudent approach would be to phase out the expenditure as much as possible to ensure that there is as much time as possible to learn any le ssons from previous capital schem es. By obse rving ho w efficient a pa rticular technology would be (and its limitations) State Water could ensure that any other alterations to its dam sites were undertaken in the most efficient and prudent manner possible.

As the cold water pollution sch emes are esse ntially driven by fish passag es (becau se if no fish passages a re built the re are no fish which a re subjected to cold wate r p ollution), that a ny re-phasing of t he fish p assages wo uld i mpact o n th e timing of requiri ng to mitigate col d water pollution. The fish passage program is predominantly driven by the dam safety upgrade projects.

On a procurement level by undertaking all these schemes at the same time the tendering process may not prov e to be entire ly competitive as th ere may not be en ough contractors avail able (and willing) to undertake the work.

State Water Corporation has not con strained its cold water p ollution pro gram within an overall capital budget for the futu re price path as it considers that since these sch emes are required by state govern ment it has no option b ut to underta ke them. We note that the Cabin et app roved State-wide Strategy states that the strategy is to “investigate and ameliorate the impacts of Cold Water Pollution (CWP) at high prio rity dams, where it is te chnically and economically fea sible to do so ” and t herefore a capital co nstraint coul d be con sidered. We con sider that som ething economically feasible does not necessarily mean that it is cost beneficial and vice-versa, therefore the pro gram of cold water pollution sho uld be con sidered by State Water Corporation along with the price impacts on its custom ers along with the economi c vi ability of State Water providing amelioration technology.

Contributions for the Environme ntal Drive r in which this scheme sits u nder is 5 0% user contribution and 50% gove rnment contribution. Within the SIR to IPART State Wate r Corporation has incorrectly allocated th e Wyangala Cold Water P ollution scheme capital ex penditure ag ainst the Rene wal and Repla cement d river (which attracts a 90 % use r contribution and 10% government contribution) rather than t he Envir onmental Planning and Prote ction driver which i s 50:50 user and government contributions.

N052 – iSMART (Integrated Surveillance Monitoring, Automation & Remote Telemetry)

This scheme involves installation of tel emetry remote control tech nology at many of State Water Corporation’s site s. La rgely the sche me will enable ope rating ef ficiencies to be ma de th rough reducing staffing, regulatory compliance and customer services.

Much of the scheme is required to fulfi l re quirements with the Dam Safety Committee wh ere reduced man-hours at dam sites have been or are scheduled to be implemented.

The scope of the schem e is prude nt as the schem e will consolidat e existing and provide future savings.

The impact of deferral of t he scheme is that larger staff numbers will be requi red. Scheme is to meet the current larg e redu ction in staff due to reduced ma nning at d am sites as well as anticipated savings in re duced manni ng at other sites. The Dam Safety Committee req uire

improved/increased telemetry and monitoring at dam sites in order to agree to reduced manning at sites including those already agreed.

The scheme has a Project Charter. Program/scope is endorsed by the Business Improvement Committee, prior to this the project sponsor helped justify the program.

Costs have been identified from business requirements by visiting sites and ascertaining what requirements there are for each site. An engineering estimating process was undertaken identifying every key part from communication down to field instrument level.

There is no single line for contingency in the budget, this is done on an item by item basis using the engineering estimating process, costs will be further refined as the scheme progresses.

The program is front loaded as State Water Corporation look to consolidate current reduced manning levels at dam sites and to achieve the big wins/priorities first.

Procurement is an open tender process with pre-discrete packages. Management will be done internally, system architecture will form a single tender and the surveillance monitoring and control will potentially form many packages.

The scheme is currently at a defined scope process, with engineering estimates undertaken, for the functional and technical requirements. The scope will be finalised in November 2009 and then State Water Corporation will define the surveillance part of the program.

5.7 Prudence and Efficiency in Future Price Path

We are proposing adjustments to the capital expenditure Submission to reflect our view of prudent and efficient expenditure for the future price path. Our views are based on our review of the Information Return, the review of sample projects and the assessment of capital expenditure processes. We have applied the following methodology:

i. Adjustment for Inconsistencies in the Information Return

We identified two material inconsistencies in the Information Return. Both the Wyangala Fish Passage Offset and Cold Water Pollution were wrongly attributed to Renewal and Replacement rather than Environmental Planning and Protection. The net impact is that $ 11.15M should be transferred from Renewal and Replacement to Environmental Planning and Protection. We note that in our analysis throughout this report we have already made these adjustments as they are of significant values and would otherwise present an incorrect picture by investment driver.

ii. Adjustment to the timing of expenditure

We have adjusted the expenditure for the dam safety compliance program to align with the agreed Dams Safety Compliance program.

iii. Adjustments for Specific Projects

We have included for the likely deferring of expenditure from 2009/10 for Chaffey, Copeton and Keepit Dam upgrades. We have also made adjustments for a degree of conservatism in adopting a P90 estimate in all the dam estimates and the level of contingency included in other project estimates.

iv. Applying Capital Efficiency Targets

Following steps (i) to (iii) we have arrived at an adjusted expenditure profile against each driver. To this adjusted expenditure profile we have applied the efficiency target that we assessed later in this Section. The derivation of our proposed expenditure for SWC for the future price path following adjustments and application of efficiencies as set out below.

Efficiency Assessment

Our assessment of the level of capital efficiency able to be achieved by State Water in the future price path is a progression of the methodology which we applied to our 2004 review of the New South Wales metropolitan water companies and Hunter Water in 2008. This approach is based on a methodology developed by Ofwat and applied to water companies in England and Wales for over 15 years. It is also employed in other regulated industries. This methodology applies the concepts of continuing and catch-up efficiency.

Continuing efficiency is the scope for a top performing or 'frontier' company to continue to improve its efficiency. It reflects the continuing efficiencies being gained across all major sectors through innovation and new technologies. Catch-up efficiency is the scope for all other utilities to reach the performance of a 'frontier' utility. This concept was developed and applied by the Water Services Regulatory Authority (Ofwat) in England and Wales for the 1999 Periodic Review and also used in the 2004 and 2009 Periodic Reviews. It has been subject to independent scrutiny by the UK Competition Commission and has been utilised in other industries.

The recent Ofwat report[5] on the performance of companies in England and Wales reported a weighted average 5% reduction in the 2008/09 total capital expenditure against the Determination for that year. Efficiency savings accounted for 3% above target. The other main difference for underspend was the different timing of investment. The equivalent efficiency gain in 2007/08 was 4% over target.

In New South Wales, Sydney Water (2008) was set capital efficiency targets[6] of 0.5% per annum continuing and 1.0% per annum catch up as applied to non-contracted expenditure. Hunter Water (2009) was set capital efficiency targets[7] of 0.5% per annum continuing and catch up efficiency of 1% to 4.5% over the price control period. For both agencies the cumulative efficiencies increased from, in general, 1.5% per annum in year 1 to 6%/6.5% per annum in year 4.

For this review, we have only examined SWC. There is synergy with other water agencies in the type of assets – reservoirs and large hydraulic structures – which are similar although we note the differences with urban water utilities. The provision, upgrading and maintenance of these large civil structures and the associated water engineering and telemetry systems follow similar asset management and capital planning processes so it is appropriate to compare their effectiveness and efficiency. We have insufficient detail on all schemes across the program and limited comparative benchmarking data to enable a quantitative assessment of efficiency to be made. We have instead based our conclusions on a qualitative assessment, which has included a review of SWC's asset management processes and capital delivery processes and their impact on the future capital expenditure proposals in the Submission. Our assessment is based on interviews with the SWC staff, and a review of a representative sample of capital projects to verify how these processes have been implemented.

Continuing Efficiency

We have assumed a continuing capital efficiency of 0.4% per annum over the period 2011 to 2014 to reflect the impact of new technology and innovation which all agencies, including a frontier agency, should achieve. This value is based on the efficiency targets set for Sydney Water and Hunter Water and efficiency targets recently set by Ofwat for continuing efficiency targets for water utilities in England. We suggest that any significant differences between the forecast and outturn continuing efficiency should be considered from a retrospective analysis of prudent expenditure at the next price path review.

[5] Financial performance and expenditure for water companies in England and Wales, Ofwat October 2009
[6] Review of prices for Sydney Water Corporation's water, sewerage, stormwater and other assets, IPART June 2008
[7] Review of Capital and Operating Expenditure of Hunter Water Corporation (2009 Determination), Atkins Cardno December 2008

We have assumed that the potential efficiency gains from fully implementing the asset management processes and associated innovation are included as a continuing efficiency.

Catch-up Efficiency

We applied our judgement to determine the level of catch-up efficiency that could be achieved by SWC from 2011 to 2015 based on our detailed experience of current best practice applied in Australia and what has been achieved recently by water companies in England and Wales, the recent efficiency targets set for Hunter Water and our qualitative assessment of SWC's capital planning processes. We have identified three areas where SWC can bring its processes to frontier level over time and deliver material efficiencies over the price control period: improvements in cost estimating and the management of contingencies, the impact of new procurement processes and the likely savings from more effective program management.

Our assessment of the level of continuing and catch-up efficiencies achievable in the future price path is shown in Table 5.6below. These vary depending on the type of work – Dam Safety, Asset Replacement or Environmental.

Table 5.6 – Assessment of efficiency components for the future price path

Ref	(%)	2011	2012	2013	2014	2015	Note
1.	Continuing Efficiency at the Frontier	0.4	0.4	0.4	0.4	0.4	
2.	Cumulative Continuing Efficiency	0.4	0.8	1.2	1.6	2.0	
	Dam Safety						
3.	Catch-up efficiency: Cost Estimating	0.0	0.5	1.0	1.5	1.5	
4.	Catch-up efficiency: Procurement	0.5	0.5	0.5	0.5	0.5	
5.	Catch-up efficiency: Program Management	0.5	0.5	0.5	0.5	0.5	
6.	Total efficiency – Dam Safety	1.4	2.3	3.2	4.1	4.5	2+3+4+5
	Other expenditure						
7.	Catch-up efficiency: Cost Estimating	0.0	1.0	2.0	2.5	2.5	
8.	Catch-up efficiency: Procurement	0.5	1.0	1.5	2.0	2.0	
9.	Catch-up efficiency: Program Management	0.5	0.5	0.5	1.0	1.0	
10	Total efficiency: All other expenditure	1.4	3.3	5.2	7.1	7.5	2+7+8+9

Source: Atkins/Cardno analysis

Cost Estimating and Contingencies

The efficiency identified here can be realised by management of contingencies at a program rather than project level. We have noted that the large projects all use a 'P90' estimate which when taken as an overall program is likely to overstate total capital expenditure. The cost estimating for asset replacement and environmental projects is subject to less rigour compared with the large projects, with larger contingencies. Our adjustments are to reflect the most likely level of expenditure to deliver the outputs identified. For some sample projects there may be specific adjustments where the latest estimates are inconsistent with the expenditure included in the Submission.

Procurement

This level of efficiency is our assessment of the likely impact of the implementation of State Water Corporation's procurement processes for asset replacement and environmental work where the impact of works packaging and the impact of alternative procurement strategies should deliver efficiencies. Theses procurement approaches are only just beginning to be applied across the program, therefore we have applied an increasing assessment.

Program Management

This item relates to efficiency that can be realised through the implementation of the BERP and PCG processes and further development of the PDS process.

Dam Safety Compliance

From our review of dam safety compliance schemes we confirmed that the need was clearly defined and that there had been sufficient investment in options identification and analysis, supported by value management studies and review through the Gateway Review Process.

We are concerned that this is a significant expenditure in comparison to 2007 to 2009. While project management and control processes are now in place we anticipate that there will still be some slippage in expenditure.

A number of the dam safety projects had an anticipated completion date well ahead of the agreed DSC timetable (e.g. Burrendong, Chaffey and Copeton). The completion of Split Rock Dam could be deferred to correspond to the revised timetable for completion of Keepit Dam. This provides an opportunity to more evenly balance out the Capex program.

For the Wyangala Dam Upgrade we have taken into account a proposed implementation program should an alternative access road be required. We also note that an additional $9.2M may be required if the alternative access road goes ahead.

The P90 cost estimates are considered to be higher than the most likely outturn. Our opinion is that the final costs should be between the P50 and P90 estimates. This opinion is confirmed by recently available tender information.

For all major dams we have made an adjustment for deferring expenditure and the level of contingency conservatism in the project estimates in the Submission. Details are included in Appendix A.

Renewal and Replacement

Further refinement of the project scope based on additional modelling has meant that the project estimate for the Menindee Fuse Plug has been reduced from $13M in the Submission to $7.6M with the potential to reduce costs further. As a result we have reduced the project cost to $7.3M. In addition we are of the opinion that the project is likely to be deferred by around 12 months while further studies and consultation is undertaken.

Since the submission of the Information Return, SWC have received the NSW Public Works report on the pipeline renewal program for the Fish River Water Supply (Rydal – replace section of pipeline) which has identified five high priority pipe lengths for replacement at an estimated cost of $7.6M. We have also deferred expenditure slightly while an assessment to determine the optimal size for replacement is undertaken.

Efficient Level of Expenditure

We have derived an efficient level of capital expenditure for each valley taking the SIR submission and adjusting for any inconsistencies in investment driver, We reprofile expenditure where appropriate where we consider the timing of proposed expenditure more reflects the likely timescale of the project. We make specific adjustments to projects to reflect for example the level

of contingencies that are included in the Submission. We then apply the continuing and catchup efficiencies to reflect the implementation of the asset management and capital planning processes that are being implemented. There is a summary of capital expenditure adjustments for each valley included in Appendix A.

We summarise our proposals for prudent and efficient capital expenditure are summarised in Table 5.7below.

Table 5.7 – Summary table of submitted and revised SWC capital expenditure

STATE WATER CORPORATION PROPOSAL - CAPEX - State Water Corporation Wide						
($k 2009/10)	**2011 2012**		**2013**	**2014**	**2015**	**Σ 2011/14**
Dam Safety Compliance	99,478	72,116	43,389	415	7,571	**215,398**
Renewal & Replacement	19,392	10,086	4,887	11,113	7,749	**45,478**
Environmental 14,720		16,050	23,500	10,139	6,000	**64,409**
Water Delivery	5,040	2,607	1,368	1,159	425	**10,174**
Other 3,491		2,999	0	2	-1	**6,492**
Total 142,12	1	103,858	73,144	22,828	21,744	**341,951**
1. Adjustments in inconsistencies						
Adjustments 50		3,000	3,100	5,000	0	**11,150**
2. Adjustments to the timing of expenditure						
Adjustments -30,10	0	1,500	20,500	16,100	5,000	**13,000**
3. Adjustments for specific schemes						
Adjustments -860	0	-11150	-4750	-3950	-800	**-28,450**
4. Application of capital efficiency targets						
Overall Efficiency	1.40%	2.63%	3.80%	6.18%	6.62%	**2.94%**
REVISED EXPENDITURE PROPOSAL						
	2011 2012		**2013**	**2014**	**2015**	**Σ 2011/14**
Dam Safety Compliance	78,957	61,664	60,151	10,324	7,230	**211,095**
Renewal & Replacement	3,788	12,751	2,926	5,679	7,168	**25,145**
Environmental 10,816		11,894	21,140	15,736	9,435	**59,587**
Water Delivery	4,969	2,521	1,297	1,077	393	**9,864**
Other 3,442		2,900	0	2	-1	**6,344**
Total 101,97	3	91,730	85,514	32,818	24,225	**312,035**

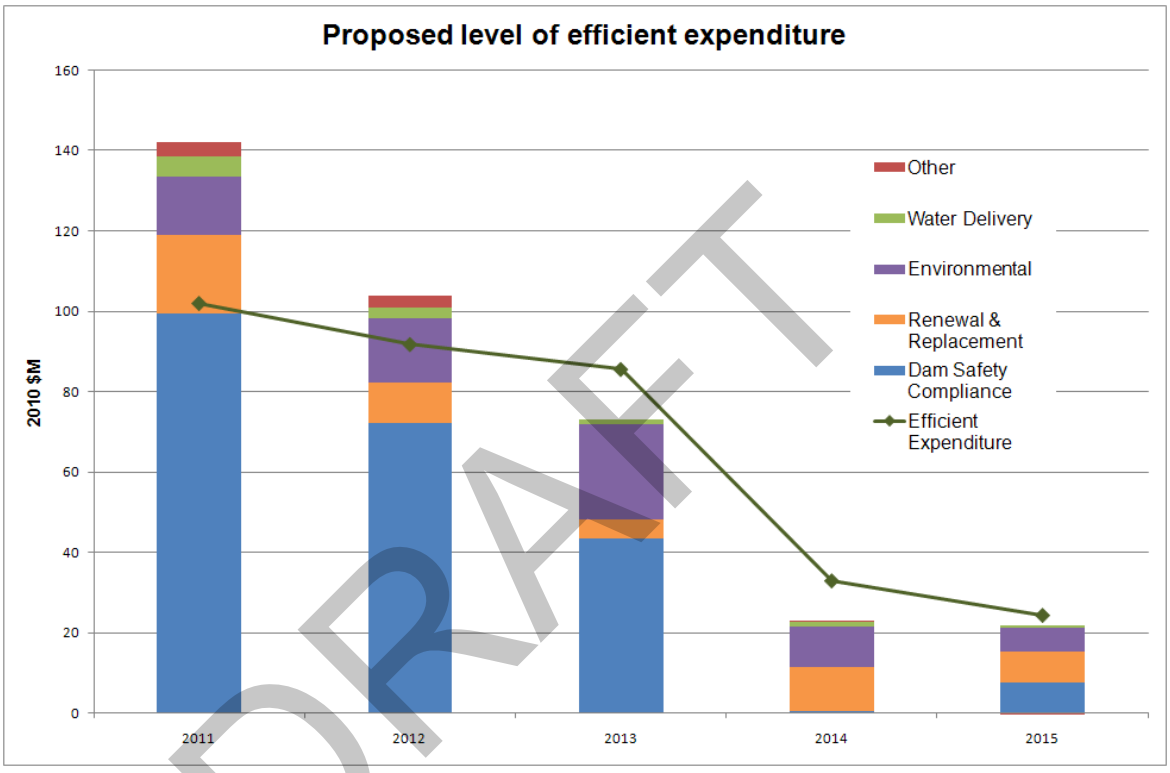
5.8 Conclusions

We have reviewed SWC's processes for delivering capital projects and we have examined specific projects to inspect how these processes are applied. We have proposed adjustments to the Submission expenditure to reflect allocation to investment drivers, the profile of expenditure

and specific cost adjustments to reflect the level of contingency in the estimates. We have formed the opinion that while S WC already ha s in pla ce or has begun implementing effective strategies for delivering its proj ects, there is still significant scope for reali sing capital efficiencies. We have quantified the efficiencies that we believe SWC will be able to make over the coming price path and we will apply these t o our re commendations for SWC's all owable expe nditure for th e next price path.

The proposed level of efficient capital expenditure is shown in Figure 5.6 below.

Figure 5.6 – Assessment of efficient capital expenditure versus the SWC proposed level.



6. Operating Expenditure

6.1 Methodology

In this section, we present the results of our review of the efficiency of SWC's operating expenditure. We identify the major cost drivers and explain the variances in the current price path expenditure against the 2006 Determination. We comment on the efficiency of operating expenditure in the 2006 Determination period which is used to inform our view of future efficiency. We comment in Section 4 on the main management systems and processes used to budget, track, monitor and report operating expenditure.

We then make an assessment of an efficient level of expenditure for the period 2010 to 2015, taking into account the efficiencies proposed by SWC. We discuss the cost drivers and efficient cost level recommendations for each of the operational areas – operations, maintenance and corporate – and the specific activities contained therein.

The methodology for the review of operating expenditure has focused on an evaluation of:

- Historical expenditure for financial years ending 2007 to 2009;
- The current budget for year ending 2010; and
- The projected costs for the financial years ending 2011 to 2015.

The evaluation of operating expenditure was undertaken using the SWC's 2009 Submission and supporting SIR spreadsheets. Our assessment is based on the actual operating expenditure in the Submission, the robustness and confidence of these estimates taking into account the basis of the estimates and the confidence of the need, timing and scope of the requirements. We also take into account whether additional expenditure proposals have been through the internal approval and challenge processes.

We have interviewed the functional managers, reviewed supporting reports and documents and assessed the current position on the development and implementation of corporate systems used to set budgets, control and monitor costs and allocate expenditure to the IPART expense types.

We have taken particular attention to the business restructuring efficiency savings made by SWC in the 2006 Determination. We have taken into account the efficiencies proposed by SWC at functional and corporate level.

We present our analysis of the future expenditure proposals in the SWC Thematic Plans and comment on each activity on the potential for efficiencies through the robustness of estimates, the need and timing of expenditure and absorbing of some activities within base opex as a surrogate for the application of internal challenge and budget control.

Our views on future efficiencies are based on the hypothesis of a frontier company, the continuing efficiencies that a frontier company makes through innovation and technological development, and the catch up efficiency required of SWC to achieve the performance of a frontier company over time.

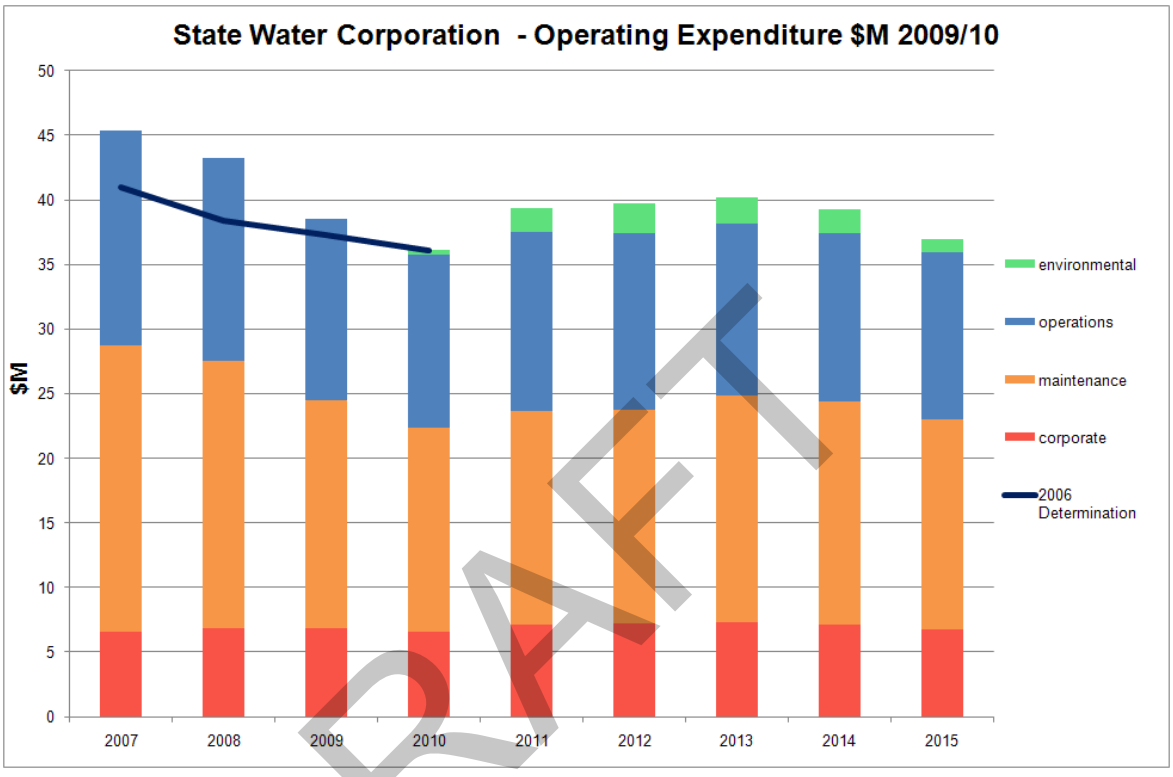
6.2 Overview

SWC started the current price path period with operating expenditure significantly higher than allowed in the 2006 Determination. It responded to the challenge set in the 2006 Determination with a major business restructure resulting in significant cost reductions to meet the IPART operating cost target for 2009/10. The extent of this reduction is shown in Figure 6.1 below which

compares th e red uction i n actual o perating cost again st the target profile set in the 2 006 Determination.

The Figure also shows a step increase from this base to the 2011 proposed operating cost and a relatively even profile thereafter, then reducing in 2015.

Figure 6.1 - SWC Proposed Operating Expenditure for the period 2007 to 2015



Source: SWC Submission

We report o perating cost s by the p rincipal a ctivities of ope rations, maintena nce and corp orate. The ope rations fun ction compri ses cu stomer suppo rt, custome r b illing, water d elivery, metering and compliance, hydrometric monitoring and water q uality monitoring. The mai ntenance fun ction comprises routine and corrective maintenance, asset management planning and dam safety..

The key fact ors to note are that the operating co st red uctions from 20 07 to 2010 relate to both operations a ctivities and maintenance and asso ciated wo rks. The analy sis by expense cod e shows that much of thi s red uction h as been a chieved throug h indi rect co sts. The le vel of corporate expenditu re is shown to be relatively uncha nged. SWC a dvised us that beca use of inconsistencies a nd ina ccuracies in coding of costs in 2007 and 2008, it con sidered th at any variance analysis of years 2007 and 2008 is not reliable.

The forecast increases in total operating expenditure relate to the SWC Thematic Plan comprising mainly ad ditional environmental a nd related mai ntenance costs. Th e cost of op erations i s relatively un changed. The re is a sm all increa se in Corporate ex penditure. While year 2 015 is outside the p rice path period, it is impo rtant to note a $2M reduction ag ain due to enviro nmental and related maintenance expenditure.

6.3 Operating Expenditure in Current Price Path

We summa rise in Tabl e 6.1 belo w the actual op erating expe nditure comp ared with the 2006 Determination; all cost s a re re ported to the 2010 b ase yea r. SWC a dvised us that be cause o f inconsistencies a nd ina ccuracies in coding of costs in 2007 and 2008, it con sidered th at any

variance analysis would be uncertain. These comparisons are therefore indicative. The current year 2010 is forecast to outturn at the 2006 Determination target. We confirmed from the Q1 financial report that SWC are on target to achieve this outcome.

Table 6.1 – Comparison of actual operating expenditure with the 2006 Determination

IPART Determination $M 2010	2007	2008	2009	2010
Operations	15.5	14.0	13.5	13.1
Maintenance	18.9	17.6	16.9	16.4
Environment	0.0	0.0	0.0	0.0
Corporate	6.6	6.8	6.8	6.6
Total	41.0	38.4	37.3	36.1
Actual Operating Expenditure $M 2010	**2007**	**2008**	**2009**	**2010**
Operations	16.7	15.7	14.1	13.4
Maintenance	22.1	20.7	17.6	15.7
Environment	0.0	0.0	0.0	0.4
Corporate	6.6	6.8	6.8	6.6
Total	45.4	43.2	38.5	36.1
Variance over determination	**2007**	**2008**	**2009**	**2010**
Yearly variance	+4.4	+4.8	+1.2	0
Total variance over price path	+10.4			

The 15% reduction in operating costs over the period relates mainly to water delivery costs. SWC attributes the expenditure above the 2006 Determination to higher staffing levels pending restructure. The cost of other activities such as customer service, billing and hydrometric monitoring remain relatively unchanged. Maintenance costs have reduced by 29% mainly related to routine maintenance. The SWC analysis shows preventive maintenance expenditure below the Determination which leads us to question whether there is a backlog in maintenance. SWC mentions less work undertaken because of delays caused by uncertainties of the restructure. The Asset Management expenditure is significantly above the Determination which SWC ascribes to additional resources for the preparation and review of the Asset Management Plan (TAMP). Dam safety expenditure was higher than the Determination attributable to higher staffing levels pending restructure. In summary the rebalance of expenditure on maintenance has increased the asset management and dam safety teams offset by a lower level of routine maintenance.

At the 2010 base year, SWC reports a lower level of maintenance expenditure compared with the 2006 Determination although it is unclear whether this represents an average level of routine maintenance or there is some backlog. Analysis by cost code suggests that the main expenditure reductions have been achieved through indirect costs with employment costs relatively stable. Corporate costs are shown to be relatively unchanged over the period although we have been advised of some inconsistencies in the allocation of these costs which result in changing expenditure.

State Water Corporation has been through a major restructure over the last two years, moving from a regional, valley-based organisation to a functional structure. This restructure is described in

its Submission. This restructure has addressed inconsistencies and duplication in the former regional organisation and reducing staff numbers and the need for several regional offices with associated costs. This is the primary reason that SWC has achieved the target operating expenditure in the 2006 Determination. This reduction over the four year 2006 Determination period is equivalent to a 20% efficiency while there has been no material change to the scope and extent of services provided.

In its submission, SWC identifies a theoretical deficiency in its capability until its processes and enabling technology are implemented. An example is that it has been able to agree a lower level of daily attendance dam surveillance with the Dam Safety Committee due to the current low reservoir levels. Put another way, the low reservoir levels provide an opportunity for lower manpower levels and time to implement telemetry and associated works for remote monitoring.

At the same time, SWC advised that more inputs are required to manage releases of restricted bulk water compared with years when full entitlements can be provided.

With its new functional structure described in Section 3, SWC has brought in new managers from external firms and agencies. These have brought a wide experience and knowledge to SWCs business and provided a focus for the implementation of enhanced process and efficient working. Three new labour agreements has been concluded and implemented from July 2009.

We have analysed actual/ forecast and 2006 Determination expenditure by valley using data in the SWC Submission. We have compared actual total operating expenditure over the four year period against the 2006 Determination to identify any material variances. We secondly compare the 2010 forecast expenditure against the Determination.

Table 6.2 – Variance Analysis with 2006 Determination at Valley level

Valley Expenditure 2007 to 2010 ($M 09/10)	Actual Expenditure	2006 Determination	Variance $M	Variance (%)	2010 Expenditure	
					Actual	Determination
Border 6.2		6.2	0	1.3	1.2	1.5
Gwydir 16.2		15.3	0.9	5.4	3.6	3.5
Namoi 18.2		16.6	1.6	8.9	3.8	3.9
Peel 4.9		5.4	-0.5	-11.1	0.9	1.2
Lachlan 21.2		18.5	2.7	12.9	5.1	4.4
Macquarie 18.9		17.3	1.6	8.6	4.3	4.0
Murray 13.5		11.1	2.4	18.0	3.1	2.7
Murrumbidgee 27.5		26.9	0.6	2.30	5.9	6.5
North Coast	3.1	3.0	0.1	2.2	0.6	0.7
Hunter 16.9		15.7	1.2	6.8	3.2	3.7
South Coast	3.0	3.1	-0.1	-2.4	0.6	0.7
Fish River	13.5	13.7	-0.2	-1.3	3.3	3.2
Total 163.3		152.8	10.5	6.4	36.1	36.1

Source: SWC Submission

The Murray and Lachlan valleys show variance in expenditure greater than 10% of the 2006 Determination. The Macquarie valley also shows a material increase. Conversely the Peel valley

reports expenditure over 10% less than the Determination. SWC explained that this variance was due to increasing maintenance expenditure at the Border, Gwydir and Namoi valleys and staff levels higher pending restructure.

We also compared the actual 2010 operating expenditure against the 2006 Determination as this step change is likely to have an impact on prices. The base year 2010 analysis shows that the Lachlan and Murray valleys have an operating cost greater that 10% of the 2006 Determination. The Peel, Border, Murrumbidgee and South and North Coast valleys show actual expenditure more than 10% below the Determination. State Water Corporation has not provided sufficient information to explain these changes to base year which are likely to have a material impact on prices. This has been requested.

6.4 Efficiency & Performance in Current Price Path

SWC entered the 2006 Determination period with the legacy of a former government agency, with a geographical structure, duplication of functions, inconsistencies in approach and a lack of corporate focus in delivering an efficient service. The 2006 Determination set challenging reductions in operating costs which SWC has addressed through a major restructure of the business, movement to a functional structure and implementing cultural changes to the workforce. From our review, the forecast outturn for 2010 is likely to meet the 2006 Determination target expenditure for the year.

While there are uncertainties to detailed variance analysis, SWC has achieved a significant reduction in operating costs over the 2006 Determination period. There has been a reduction of $3.3M (20%) in operations costs mainly related to water delivery (-43%) and metering & compliance offset in part by an increase in water quality (+120%). SWC ascribes the increase in water quality expenditure to previous inconsistencies in cost allocation. All these activities are carried out in-house. This means that most of the reductions have been achieved through reduced manpower and direct on-costs. Hydrometric monitoring expenditure represents 25% of total operational costs and has not materially changed over the 2006 Determination period. This is an external charge from the NSW Office of Water.

There is a $6.3M (29%) reduction in maintenance expenditure comprising $4.5M (34%) in routine and corrective maintenance, $2.2M (44%) in dam safety and $0.5M (13%) in Asset Management offset by increases in other activities. These values are indicative because of the low confidence in cost allocations in 2007 and 2008. As with operational costs, most of the maintenance reductions have been achieved through reduced manpower and direct on-costs.

The SIR shows that there has been no material change in corporate expenditure although there are uncertainties in cost allocations. Given the significant reduction in operational and maintenance expenditure, the proportion of Corporate costs has increased from 17% to 23% of operational and maintenance expenditure. SWC submitted a revised submission on 3 November 2009 which changes the profile of the Corporate expenditure. We have been directed by IPART to base our draft report on the original SIR submission.

There are no specific output measures to assess performance in the current price path. It is not possible to confirm performance in terms of customer service and asset condition other than reported in Operational Licence audits. For maintenance it is not possible to confirm whether there has been any improvement or deterioration in asset condition or there is any advance or backlog in routine maintenance. In Section 7 we propose Output Measures which should help in future efficiency studies in confirming that assets have been condition and performance of assets have been maintained.

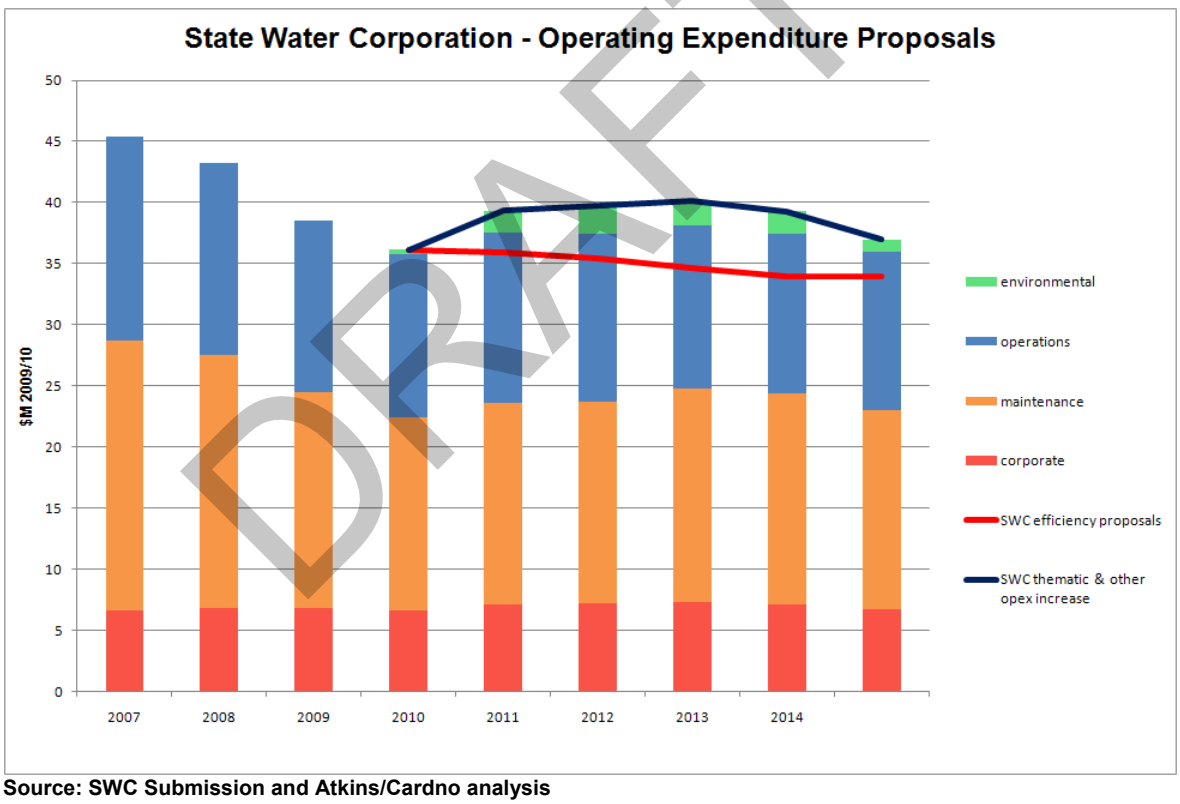
We noted that the overall reduction in operating expenditure is not reflected across all valleys. The Submission reports increases over the price path in operating expenditure greater than 10% for the Peel valley and varying decreases across other valleys. We are unclear whether this variation

is as a result of real changes in operating and maintenance requirements or from inconsistencies in cost allocations. Of more importance is the variance of the base year 2010 operating expenditure by valley compared with the 2006 Determination. For example the base year expenditure for the Lachlan, Macquarie and Murray valleys are significantly greater than the 2006 Determination. We look to SWC to further explain for the final report why the 2010 base year expenditure is greater than the Determination when the overall trend is of reducing expenditure.

6.5 Operating Expenditure in Future Price Path

The key features of the SWC operating expenditure forecast are efficiency reductions on the 2010 base year combined with identified increases in costs through its Thematic Plan, in particular increases in environmental-driven costs. This impact as shown in Figure 6.2 below is to increase operating costs from the 2010 base by 9% in 2011 and 11% by 2013. We have included year 2015 which is outside the price path period although within our brief for this efficiency review. Operating expenditure in 2015 reduces from the previous year and is 2% above the 2010 base year. We review and comment below on these proposals.

Figure 6.2 – Operating Expenditure proposals by key driver



Source: SWC Submission and Atkins/Cardno analysis

We have analysed operating costs by the principal activities of operations, maintenance and corporate using the definitions in Section 3.5 above.

The main variances from the base year 2010 are proposed efficiencies reducing operating expenditure by $2.2M per annum by 2014 more than offset by identified increases in expenditure of $4.7M by the same year. The profile of these variances in total and disaggregated to function is shown in Table 6.3 below.

Table 6.3 – Operating expenditure forecasts for the future price path

SWC Proposed Operational Expenditure $M 2010	2010	2011	2012	2013	2014	2015

Baseline opex (2010)	36.1	36.2	36.3	36.6	36.7	*36.7*
Less efficiencies proposed by SWC		-0.2	-0.7	-1.4	-2.2	*-2.5*[1]
Additional 'Thematic' expenditure by SWC		3.4	4.2	5.0	4.7	*2.8*[1]
Operating expenditure in the Submission	**36.1**	**39.3**	**39.8**	**40.2**	**39.3**	**37.0**
Operations	13.4	13.9	13.7	13.4	13.1	12.9
Maintenance	15.7	16.5	16.5	17.5	17.2	16.3
Environmental	0.4	1.8	2.3	2.0	1.9	1.1
Corporate	6.6	7.2	7.3	7.3	7.1	6.7
Total	36.1	**39.3**	**39.8**	**40.2**	**39.3**	**37.0**
Annual Increase Over Price Path Period	0	3.2	0.5	0.4	-0.9	-2.3
Total of Cost increase over future price path			14.2			

Source: SWC SIR Submission
[1] Figures in italics are inferred by Atkins

Our analysis of the Submission has removed Corporate expenditure from the operational functions using data in the SIR. This approach is simplified and may not fully reflect the method used by SWC. However, we believe this is sufficiently reliable to enable trends and comparisons to be made using the headings defined in the IPART brief. We were not able to separate indirect costs as we considered any simplified approach might not fully reflect how these are apportioned by SWC. We have then analysed the Operations and Maintenance expenditures to identify specific activities and drivers which we discuss in Sections 6.6, 6.7 and 6.8.

Operations expenditure shows a 4% increase to 2011 from the 2010 base although this reduces to below the base year by 2014. The main increase in expenditure is in maintenance, 5% in 2011 rising to 11% by 2014 above the 2010 base year. This includes some environment-driven maintenance. Environmental expenditure increases from a low base in 2010 by 475% to year 2014. Corporate expenditure is shown to increase by 9% between 2010 and 2011 because of cost allocations on the increases in other activities.

Proposed efficiencies

The scope for efficiency savings was set out in an SWC internal paper which identified potential savings in both operational staff and corporate restructuring. This paper proposed headcount reductions across the functional areas of 17 FTEs and saving $1.7M by 2014. Corporate restructuring is forecast to bring further efficiencies of $0.5M.

SWC explained that the restructure carried out in the current price path progressed at a faster rate than was originally planned and commented that there is a theoretical deficiency in its capability until enabling technologies and systems and associated processes are in place. While we note that the restructure has progressed to plan, there is no evidence in a drop in productivity, however measured. Reservoir levels are low, which has the impact of lower dam monitoring manpower offset by greater operations activity in managing limited water resources.

SWC is proposing to restructure its management to remove its Chief Operating Officer (COO) following completion of the transition and simplify the number of managers reporting directly to the Chief Executive Officer. Non-regulated business would be under a separate manager. This is expected to save $0.5M from 2012.

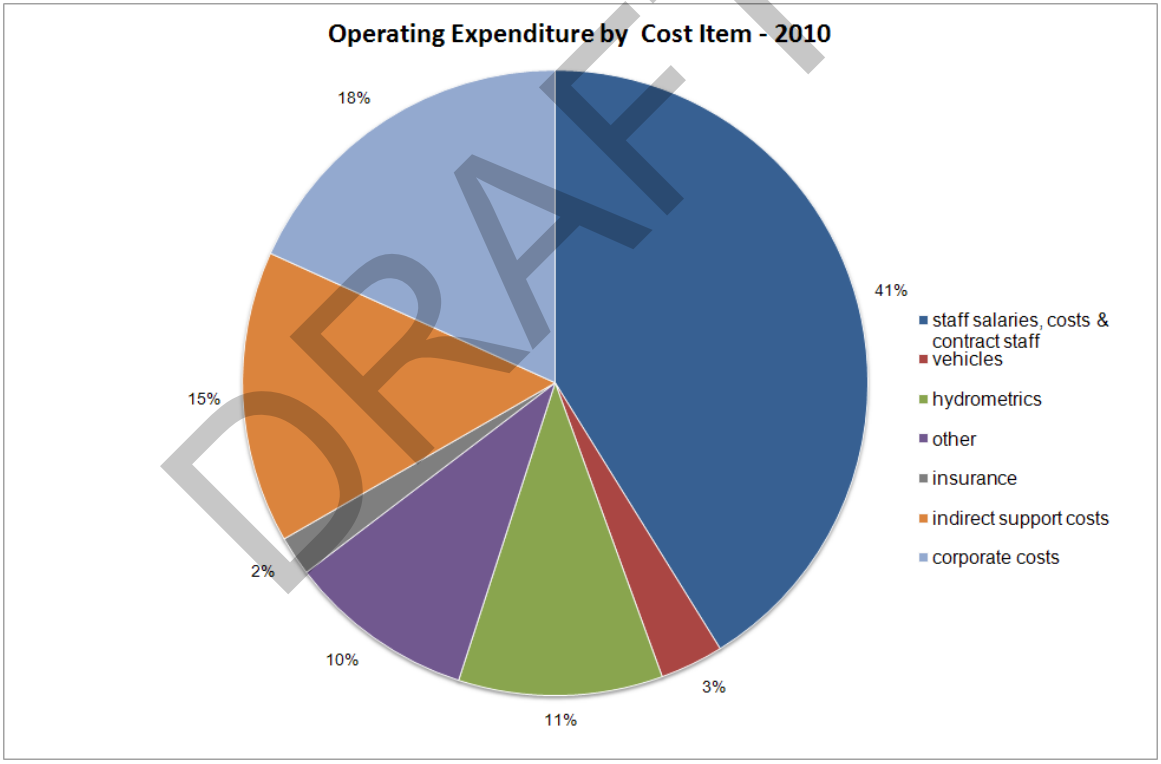
Our view confirms that a restructure is appropriate to achieve a more effective and efficient management. Our frontier company would follow the concepts of an 'Asset Owner' and Asset

Operator' which is applied in other utilities. This is where all asset owner functions – strategic assets, maintenance and services and major projects would sit under one Senior Manager. The 'Asset Operator' would be responsible for the obvious operating functions – water delivery and customer services. The SWC structure goes some way towards this concept, while not fully embracing it. There is potential to move further to this model.

Analysis by Cost Item

The Submission reports proposed expenditure by cost item. Analysis of the base year 2010 is shown in Figure 6.3 below. Staff salaries and related costs with contract staff account for 41% of total expenditure although within this heading contract staff form only 4%. This is typical of an organisation with a substantial direct labour team with minimal outsourcing of services. Vehicles are purchased, but charged to operating functions on the basis of mileage charge with any net cost or gain held in the Corporate function. Indirect support cost is an item which showed significant reduction in the 2006 Determination period and now forms 15% of total expenditure. The Corporate charge forms 18% of expenditure and has increased over the current price path period as total operating expenditure has reduced.

Figure 6.3 – Operating expenditure by Cost Item – 2010 data



Source: SWC SIR Submission

The cost base is sensitive to staff and labour costs. New agreements have been in place since July 2009 to address several legacy issues and enable a more flexible workforce to meet a range of activities. The salary structures are now consolidated within a 4% annual increase of which 1.5% is achieved through the productivity of a more rational structure. There is no material contracting out of services.

We concluded that nearly all costs are controllable in that they are within the control of the management. One exception is for hydrometric monitoring where costs are determined by the NSW Office of Water; this forms some 10% of the cost base. Energy costs are not material for the SWC except for diesel and petrol for motor vehicles.

Additional Thematic Expenditure

SWC has identified a number of activities which it says are required over the next four years mainly to address statutory and regulatory obligations. These are summarised in Table 6.4 below.

Table 6.4 – SWC Proposed additional operating expenditure

Additional Expenditure Item $M 2010	Functional Allocation	2011	2012	2013	2014
Works approvals	Operations 0.19		0.19	0.19	0.19
Environment and Heritage	Environment	1.78	2.41	2.05	1.88
Environment – additional maintenance	Maintenance 0.20		0.36	1.60	1.60
Dam Safety	Maintenance	0.25	0.25	0.45	0.25
Research Maintena	nce	0.15	0.14	0.09	0.04
Land Management	Maintenance	0.30	0.30	0.30	0.30
Emergency and Security	Maintenance	0.05	0.10	0.15	0.25
Corporate Corpo	rate	0.36	0.27	0.00	0.00
Discretionary Services	Operations 0.10		0.15	0.20	0.20
Total		**3.38**	**4.17**	**5.03**	**4.71**

Source: SWC Submission

We discuss each expenditure item in the relevant Sections 6.6 to 6.9 below.

Allocation of Efficiencies and Increases in expenditure to Valley level

SWC reports the net impact of the efficiencies and increases in operating expenditure by valley as shown in Table 6.5.

Table 6.5 – SWC Proposed operating expenditure by valley

Proposed Expenditure $m 2010	2010	2011	2012	2013	2014	Increase 2010 to 2011 (%)	Increase 2010 to 2014 (%)
Border	1.23	1.36	1.33	1.38	1.28	10.6	4.1
Gwydir 3.62		3.89	3.88	3.86	3.91	7.5	8.0
Namoi	3.83	4.06	4.25	4.06	4.02	6.0	5.0
Peel	0.94	1.14	1.19	1.17	1.11	21.3	18.1
Lachlan	5.09	5.35	5.27	5.61	5.32	5.1	4.5
Macquarie	4.25	4.60	4.63	4.65	4.86	8.2	14.4
Murray 3.06		3.32	3.34	3.31	3.20	8.5	4.6
Murrumbidgee 5.91		6.45	6.59	6.54	6.30	9.1	6.6
North Coast	0.55	0.60	0.60	0.62	0.60	9.1	9.1
Hunter	3.84	4.15	4.15	4.25	4.10	8.1	6.8

South Coast	0.62	0.67	0.66	0.67	0.65	8.1	4.8
Fish River	3.17	3.79	3.86	4.04	3.93	19.6	24.0
Total	36.11	39.38	39.75	40.16	39.28	9.1	8.8

Source SWC Submission

We have estimated the impact of increasing operating cost on a percentage basis, for the movement from the 2010 base year to 2011 and from 2010 to 2014. We noted significant differences in the impact of these changes, for example increases of 18.1% for Peel, 14.4% for Macquarie and 24% for Fish River, significantly above the average 8.8%. Conversely Border, Lachlan, Murray and South Coast show increases well below the average. We have raised this issue with SWC.

Our understanding is that the cost increases are broadly proportioned by SWC to each valley. As prices are determined by actual operating and capital expenditure specific to each valley, we suggest that these additional costs should be apportioned to the benefits provided to each valley. There is insufficient information to confirm whether this has apportionment has been carried out. We have raised this issue with SWC but this is unlikely to be resolved before submission of the final report.

Trade-off between operating and capital expenditure

We found that there was a lack of clarity on the impact of capital expenditure projects on operating expenditure. This could be because many of the projects do not have any material impact on operating costs. However, we would expect an estimate of operating cost savings to be identified from some projects, for example through rolling out of the telemetry project. We found there was no clear linkage between the capital projects for environmental improvements and the extent and timing of related operating expenditure. This is an area that SWC should develop within the BIC and BERP processes.

6.6 Operational Activities

Proposed expenditure for operational activities over the future price path is summarised in Table 8.6 below. This expenditure excludes corporate but includes direct on-costs. We have compared each expenditure profile against the 2010 base year expenditure. We comment below on each activity, the reasons for additional expenditure where this is material, and our view on the robustness of the estimates, the need for and timing of each activity, and whether any of this additional activity can be accommodated through reprioritising the base operating expenditure and activities.

Table 6.6 – Operations Expenditure by Activity

SWC Proposed Expenditure $M 2010	2010	2011	2012	2013	2014	2015
Customer Support	0.45	0.46	0.45	0.44	0.43	0.43
Customer Billing	0.36	0.37	0.36	0.35	0.34	0.34
Metering and Compliance	2.76	2.82	2.77	2.68	2.62	2.63
Water Delivery	4.78	5.05	4.96	4.86	4.76	4.72
Flood Operations	0.22	0.23	0.22	0.22	0.21	0.21
Hydrometric Monitoring	3.35	3.49	3.47	3.36	3.29	3.19
Water Quality Monitoring	0.75	0.76	0.75	0.73	0.71	0.71

Insurance (assumed a 50% allocation)	0.72	0.73	0.72	0.70	0.68	0.68
Total Operational Activities	13.41	13.91	13.71	13.34	13.05	12.91

Source: SWC SIR submission

Customer support expenditure relates to the servicing of the nine Customer Service Committees set up under the Operating Licence. Meetings are normally three times per year. The Committees are an essential part of consultation and seeking agreement to any discretionary expenditure. Costs include for members expenses and fee plus the support from about 2 FTEs who service the committees. There is no material change in expenditure from the 2010 base year.

The **Customer Billing** operational expenditure relates to the cost of State Water Corporation billing its customers. SWC has moved from annual billing to quarterly billing for all of its customers, SWC's Northern Area customers have been billed quarterly for 10 years. The impact of this move has been to increase costs during the current price path. By billing quarterly SWC has aligned itself with more commercially aware organisations, a major benefit of moving to quarterly billing is an improved cash flow and in the long term a reduced debt profile as customers are better able to manage and budget for bills of lower value but increased frequency. In the short term, however, the move to quarterly billing has caused an increase in the debt profile as customers get used to receiving quarterly bills.

Costs are largely for staff time and the increase in costs in 2008/09 was a result of increased staff required for the move to quarterly billing and a change in how activities were booked to the general ledger. Call centre costs are now booked to the general ledger under the Customer Billing activity code. There is no material change in proposed expenditure from the 2010 base year.

Metering and Compliance expenditure comprises significant staff time, which is due to a number of factors. One of the most significant is the large distances involved in visiting meters and sites for compliance activity. Another major issue is the input time required for many compliance incidents which arise. These can be quite complex in nature and require a significant amount of staff time on site. For example a compliance situation can arise where three customers with three separate licences using one works and one meter are in disagreement over volumes abstracted.

Whilst the Corporation is moving forward with a large telemetric (and SCADA) program this will not be covering customers' meters. SWC is applying to the Commonwealth to sign off on a telemetric metering program. If successful the earliest any benefits will be available will be 2012, the Corporation assumes that for the remainder of the future price path to 2014 there will be no benefits from any telemetric metering. As the Corporation does move towards any telemetric metering, it will still need resources for compliance reason. There is no material change in proposed expenditure from the 2010 base year.

Water Delivery expenditure comprises mainly staff salaries. There has been a significant overspend within the current price path; State Water Corporation ascribes this to the historic issue of incorrect allocation of staff time. It is unclear how much of this was due to staff not identifying the correct activity to book against, timekeeping issues by staff, or how much was a result of issues with IFMS, the financial system. Moving forward we would expect with the improvement of IFMS that time can be appropriately booked and that staff are trained in coding time against the appropriate activity code.

The increase of costs from 2010 to the base year of the future price path 2010/11 is largely due to additional thematic expenditure in work approval management fees, which accounts for $190k per annum of the increase. During the future price path the Corporation will make savings on its water delivery operations as a consequence of its iSMART program, which will install telemetry and remote control at a number of sites thus diminishing the number of call-outs required to sites for water delivery (and other operational purposes)..

Hydrometric Monitoring expenditure relates principally to the costs that State Water Corporation disburses to the NSW Office of Water, under a service level agreement, for the provision of hydrometric data. This data is collected by the NSW Office of Water which has other applications than the needs of SWC. The level of expenditure is relatively unchanged from the 2010 base.

In running its business effectively State Water Corporation is dependent on key hydrometric data. Its needs are more detailed and specific than those required by the Office of Water. Our view is that State Water Corporation's need is better served by live data of regular interval periods to support its water delivery and other operations. This would enable SWC to make better use of the real time data in hydraulic modelling and be more efficient both in cost and water use in the management of bulk supplies. We suggest that the current arrangements, ownership and responsibilities for hydrometric data are revisited.

Water Quality Monitoring follows an even expenditure profile over the future price control period, an increase on the current price path. The level of data collection and reporting has increased as SWC has identified business requirements and current gaps in monitoring.

SWC has included insurance costs as a separate activity. For the purposes of this analysis we have split these costs evenly across the Operations and Maintenance functions.

6.7 Maintenance Activities

Proposed expenditure for maintenance activities over the future price path is summarised in Table 6.7 below. This expenditure excludes corporate but includes direct on-costs. We have compared each expenditure profile against the base year expenditure. We comment below on each activity, the reasons for additional expenditure where this is material, our view on the robustness of the estimates, the need for and timing of each activity and whether any of this additional activity can be accommodated through reprioritising the base operating expenditure and activities.

Table 6.7 – Maintenance Expenditure by Activity

SWC Proposed Expenditure $M 2010	2010	2011	2012	2013	2014	2015
Corrective Maintenance	1.29	1.29	1.27	1.23	1.20	1.20
Routine Maintenance	7.47	7.96	8.10	9.16	9.11	8.62
Asset Management Planning	3.23	3.31	3.25	3.16	3.09	3.09
Dam Safety Compliance Pre 1997	0.0	0.0	0.0	0.0	0.0	0
Dam Safety Compliance Post 1997	2.86	3.18	3.16	3.28	3.13	2.72
Renew and replace	0.24	0.0	0.0	0.0	0.0	0
Insurance (assumed a 50% allocation)	0.72	0.73	0.72	0.70	0.68	0.68
Total Maintenance Activities	15.79	16.47	16.51	17.52	17.21	16.31

Source: SWC SIR submission

Routine and Corrective Maintenance activities form 24% of the total base year operating expenditure. These activities are managed by the Maintenance and Services function which, following the restructure, has a count of 117 FTEs. The renew and replace expenditure in 2010 appears to be an anomaly, but is not material.

Nearly all repair and maintenance work is currently carried out in-house. The FMMS system is used for planning maintenance, but as discussed in Section 3, this system only covers some 20% of assets and is being upgraded to meet current maintenance management requirements. The

TAMP costs suggest that the 2009/10 budget is rolled forward using in general the same costs as the base year. This is probably reflective of the staff levels in place for the base year. However, discussions with the Manager, Repair and Maintenance, confirmed that a new planning approach is being developed to address the medium term maintenance requirements including prioritising work and implementation through either in-house or use of contractors.

SWC has assumed in its efficiency assumptions that between 5 and 7 posts should be reduced in this function, equivalent to $0.6M or 8% of the base year expenditure by 2014. The increase in maintenance expenditure from the base year 2010 to 2014 in the Submission is $1.36M equivalent to a gross increase on $1.96M offset by efficiency savings. The largest increase in cost relates to the maintenance of 26 fish passes not previously included in operating expenditure.

We found that there is potential for further efficiencies through optimising the planned maintenance programme through full use of the FMMS. There is also potential to contract out some packages of routine maintenance. We note that the efficiencies proposed by SWC recognise that further site efficiencies are possible and more work is contracted out.

We concluded that the additional operating costs for fishway maintenance are overstated. While we recognise additional maintenance requirements, SWC has not demonstrated that realistic costs are presented or that the re-prioritising of planned maintenance through FMMS could not accommodate some of this additional work. We have assumed that some activities can be accommodated within the optimised FMMS planning process. We suggest that $0.6M additional expenditure is included for this additional maintenance liability.

The net impact of proposed efficiencies and our view of additional maintenance results in a net increase of $0.43M in reactive maintenance to $8.0M by 2014.

Expenditure for the **Asset Management** function shows no material change from the base year. SWC propose a two FTEs savings from its efficiency proposals through the further restructuring of its Asset Plans and Strategy functions. Additional expenditure in the SWC Thematic Plan has been identified for Works Approvals, Dam Safety, Research, Land Management and Emergency and Security.

Works Approvals management fees are payable to the New South Wales Office of Water. We have accepted the $0.19M per annum fees but note that these are subject to a separate price review.

Additional Dam Safety expenditure of $0.25M per annum, with $0.45M in 2013, is to update the consequence assessments, previously based on 2001 data, to ensure they meet current best practice. This is part of the SWC dam safety obligations. We note that SWC is in discussion with the Dam Safety Committee on the level of dam surveillance and the application of SCADA systems to reduce manpower.

SWC has presented proposals for additional research expenditure with $0.15M in 2011 reducing to $0.04M in 2014. We consider this expenditure is important for SWC to improve its continuing efficiency over the medium term.

The Thematic Plan includes $0.3M per annum expenditure for Land Management to investigate two issues. Firstly improving the knowledge of the land assets and associated with the operational requirements of the business and any risks to, for example, water quality. The second issue is to look at the potential for increasing income from, for example, grazing leases and wind farms. We support these activities as there are opportunities to increase revenue but question whether the first activity is part of 'business as usual' from the Asset Plans and Asset Strategy teams. If the opportunity costs for non-core business are included in the regulated costs then there should be some equitable sharing of benefits. Our view is that, given that asset knowledge and data is part of business as usual, the increased operating expenditure should be no greater than $0.2M per annum.

Emergency and Security expenditure is to meet recent legislation for key SWC sites. The additional operating costs relate to consultancy and contractor services. Physical improvements are covered in capital projects. The proposed expenditure increases from $0.05M in 2011 to $0.25M in 2014. While the need for this additional work is demonstrated, the basis of and reasons

for the increasing expenditure over the price control period are unclear. On the assumption that these expenditures would progress through budgeting and challenge process, we suggest that increases are limited to no greater than $0.15M.

Insurance costs are reported as a separate activity. For the purposes of the comparable analysis we have allocated 50% to operations and the same to maintenance activity.

6.8 Environmental Activities

Proposed expenditure for environmental planning and protection activities over the future price path is summarised in Table 6.8 below. This expenditure is directly from the SIR and excludes corporate costs. We comment below on each activity, the reasons for additional expenditure where this is material, our view on the robustness of the estimates, the need for and timing of each activity and whether any of this additional activity can be accommodated through reprioritising the base operating expenditure and activities.

Table 6.8 - Environmental Planning and Protection Expenditure by Activity

SWC Proposed Expenditure $M 2010	2010	2011	2012	2013	2014	2015[2]
EMP Coordination and reporting	0.00	0.05	0.05	0.05	0.15	
Environmental Asset Management and Audit	0.00	0.36	0.28	0.29	0.29	
Fish Passage Program - monitoring	0.00	0.28	0.58	0.31	0.32	
Weir Pool Variability Trial	0.00	0.15	0.15	0.15	0.20	
Heritage Management	0.00	0.35	0.75	0.75	0.80	
Water Quality	0.00	0.60	0.60	0.50	0.30	
Balancing line[1]	0.40	0.00	-0.11	-0.05	-0.26	
Environment	0.4	1.79	2.30	2.00	1.90	1.0

Source: SWC SIR submission

[1] *A balancing line is included to reconcile the Thematic expenditure with the Submission SIR*
[2] *No data is available for 2015 other than total expenditure in the SIR*

The significant increase from the base year 2010 is due entirely to environmental thematic planning expenditure that State Water Corporation has identified from environmental legislative requirements. The thematic expenditure (expenditure above the base opex) is not allocated to any particular valley. These costs are considered to be Corporate and extrapolated across the valleys based on the base environmental opex in each of those valleys. We consider that this is not the most equitable method of allocating this expenditure. We suggest that, where possible, the thematic expenditure should be allocated against the valley in which the environmental (or other) benefits will be realised. For the fish monitoring costs sufficient detail is available to allocate these across those valleys in which the benefits are realised.

Some of the more significant environmental thematic costs are discussed below.

Water Quality expenditure is for the development and staged roll out of a Strategic Water Quality Program and for specific monitoring and reporting for Works Approval Conditions. State Water Corporation has identified expenditure required separately from any existing water quality or other functions it carries out. For example all staff time required to undertake the Water Quality Program is considered as additional to base opex. The on-going monitoring and reporting for Works

Approval Conditions is estimated at $300k per annum. The development and staged roll out of the Strategic Quality Program is estimated at $300k per annum reducing to $0 in 2014.

Environmental Audits expenditure is that required to cover spot audits to deem appropriateness of asset management activities against Environmental Assessment Procedures and the Best Practice Manual. We note that this annual cost of $120k is approximately 5% of the total identified thematic environmental expenditure.

Heritage Management forms a significant element of the environmental thematic expenditure. As part of its Environmental Management Plan the Corporation has to develop Conservation Management Plans (CMPs). SWC has allocated $200k p.a. to develop 4 CMPs per annum. On top of this there is an allowance of $400k per annum to implement any findings from the CMPs which results in a $100k per site allowance per year. We need to clarify from SWC whether these implementation costs should be capitalised. For the current analysis we have assumed these as operating expenditure.

Another portion of the heritage expenditure is for the funding of an external audit program requiring specialist expertise at a value of $150 per annum. We note that the heritage audit expenditure considered along with the environmental audit expenditure comes to over 10% of the total environmental thematic expenditure which is significant.

Fish Monitoring expenditure is part of an increasing activity for State Water Corporation, over the next price path period the Corporation will have to undertake fish monitoring at a number of new fish passages. Costs are due to the Department of Industry and Innovation for monitoring of fish passages and in line with the Memorandum of Understanding between State Water and the Department of Industry and Innovation.

For the fish monitoring program we were unable to reconcile assumptions between data sources. We discuss these below and make adjustments to both capital and operating expenditure for consistency between the SIR and Thematic expenditure in timing of projects. We were unable to query SWC about this prior to the draft report and welcome some clarity for the final report.

Keepit Projects

Costs within the TAMP show capital expenditure of $6.0M p.a. in years 2011 through to 2013. In building up the fish monitoring program operational expenditure SWC assumes that all three offset fish passages will be constructed in 2011/12. As the SIR is based on the expenditure within the TAMP, we have readjusted the fish monitoring opex for Keepit by moving the costs for one of the fishways to 2012/13.

Copeton Projects

Expenditure for Copeton fish passages within the TAMP is for $5.0M across 2012 and 2013 and $6.0M p.a. in 2015 and 2016. From the supporting data this expenditure is for three fish passages. Within the fish monitoring program, SWC have monitoring costs for three Copeton offset passages from 2012. We therefore propose to defer monitoring costs for one passage from 2012 to 2015 and the other to 2016.

These changes result in a re-profiling of fish monitoring operating expenditure as shown in Table 6.9 and Table 6.10.

Table 6.9 – Re-profiling of fish monitoring costs

2010 $k		2011	2012	2013	2014	2015
Keepit	Post-construction costs		-32	32		
	Ongoing monitoring costs			-16		
Copeton No1	Post-construction costs		-32			32

	Ongoing monitoring costs			-16	-16	-16
Copeton No2	Post-construction costs		-32			
	Ongoing monitoring costs			-16	-16	-16
	Total Re-phasing		-96	-17	-33	0

Source: SWC supporting information and Atkins/Cardno analysis

Table 6.10 – Adjustments to fish monitoring operational expenditure

2010 $k	2011	2012	2013	2014	2015
SWC Submission Costs	280 580		309 322	361	
Re-phasing 0		-96.3	-16.7	-32.6	-0.4
Total	280 484		292 289	361	

Source: Atkins/Cardno analysis

Capitalisation of expenditure

SWC indicated that it considers that the immediate post-construction costs for fish monitoring should be able to be capitalise and were incorrectly classified as additional thematic operating expenditure. To account for this once taking into account our re-phasing of the fish monitoring expenditure the sums in Table 6.11 need to be removed from operational to capital expenditure.

Table 6.11 – Capitalisation of immediate post-construction monitoring costs

2010 $k	2011	2012	2013	2014	2015
Submitted post construction costs	128	417			
Re-phased post construction		-96			32
Sum to be capitalised	128	321	0	0	32

Source: Atkins/Cardno analysis

This expenditure assumes no savings from undertaking monitoring at several sites in the same year. We take the view that some efficiency of the monitoring program through economies of scale can be made, the difficulty and risk in meeting any adjustment is that the monitoring charges are outside of management's control. Nevertheless considering the size of the fish monitoring program SWC should seek for the Department of Industry and Innovation to make and pass on some efficiency savings.

Table 6.12 – Economies of scale savings for fish monitoring

$k 2010	2011	2012	2013	2014	2015
Rephased FP monitoring	280	484 292	289	361	
Program size adjustment	-20	-45 -	25 -	25 -	30
Allowed expenditure	260	439 267	264	331	

Source: Atkins/Cardno analysis

Routine Maintenance

These issues also affect the fish maintenance costs as SWC has applied the same assumption as that used for the fish monitoring costs, that all passages will be complete in 2012. We show the impact of this on the fish passage maintenance costs, we note that these costs are considered under the Maintenance activity driver and that irrespective of the costs below in Table 6.13 that in Section 6.7 we consider a cap of $600k p.a. for fish passage maintenance to be appropriate.

Table 6.13 – Re-phased fish passage maintenance costs

$k 2010	2011	2012	2013	2014	2015
Submitted FP maintenance	200	360	1,600	1,600	1,600
Keepit Rephased		-61			
Copeton Rephased No1		-61	-61	-61	
Copeton Rephased No2		-61	-61	-61	-61
Adjusted FP Maintenance	200	177	1,478	1,478	1,539

We have taken a view on the extent and timing of the proposed environmental expenditure given that a frontier company would challenge these proposals within its internal approvals process. We also note that individual estimates are likely to include a level of contingency which, taken in total, is likely to overstate the most likely total cost of the program. We also have regard to the potential to rephase some expenditures over five years, capitalise some expenditure, reduce the level of contingency and the extent to which some costs can be absorbed within base opex. Our proposals are presented in Table 6.14 below.

Table 6.14 – Proposed Environmental Expenditure

SWC Proposed Expenditure $M 2010	2010	2011	2012	2013	2014	2015
Total Environment Expenditure	0.4	1.79	2.30	2.00	1.90	1.0
Adjust for fish pass rephasing, capitalisation and program size adjustment	0.00	-0.15	-0.47	-0.05	-0.06	-0.06
Adjust for phasing	0.00	0.00	-0.19	-0.31	-0.2	0.70
Adjust for cost contingencies	0.00	-0.08	-0.08	-0.08	-0.08	-0.08
Absorb within base opex	0.00	-0.2	-0.2	-0.2	-0.2	-0.2
Net environmental expenditure	0.40	1.36	1.36	1.36	1.36	1.36

Source: Atkins Cardno Analysis

6.9 Corporate

Corporate expenditure comprises the CEO and COO offices and the Finance, Human Resources, Information systems and Communication functions. In the activity costs reported in the SIR, these costs are apportioned across the functional activities in proportion to the salary and wages charges. For our analysis we have used the expenditure profile in the future price path from Table 3b3 of the SIR Submission. Operational and Maintenance activities are reported net of this Corporate expenditure. Our assumption is that corporate charge reflects the corporate expenditure to support business activities.

Table 6.15 – Corporate Expenditure by Activity

SWC Proposed Expenditure $M 2010	2010	2011	2012	2013	2014	2015

Corporate	6.57	7.15	7.23	7.31	7.10	6.72

SWC explained that the increase in expenditure in 2011 related to the pro–rating of Corporate costs to the 8.8% increase in functional expenditure. Corporate represents 23% of functional costs in the base year 2010 and continues at a similar proportion over the price path. We also noted that the efficiency savings from further Corporate restructuring including the loss of the COO post and combining some functions but this is not evident in these expenditures.

The level of Corporate expenditure allocated to the regulated business is dependent on the level of non-regulated business over which these costs can be apportioned. SWC commented that the current level of non-regulated business is relatively stable and it did not foresee any material change which might increase or decrease the level of corporate charge to the regulated business. We agree that, on the basis of information provided, any further non-regulated business is unlikely to have a material impact on the apportionment of the corporate charge.

SWC has identified increasing operating costs related to specific IS activities identified in the Thematic expenditure. These relate to data cleansing of the Water Accounting System, Inter-stage Tagging, and enhancements to the WAS as a result of the Water Sharing Plans. While these needs are specifically identified, we question to what extent these activities can be carried out by the current IS resources through a review of priorities.

We formed the view that there is a lack of clarity in the Corporate forecast expenditure which does not evidently reflect the Corporate efficiencies proposed by SWC. A $0.5M reduction was proposed by SWC in 2013 offset by some additional Thematic expenditure.

6.10 Efficiency & Performance in Future Price Path

Our methodology for assessing a level of efficient operating expenditure for the future price path is based on:

i. our review of the strategic management and control processes associated with operating expenditure which we discuss in Section 3,

ii. the extent to which systems and processes recently in place or being implemented are able to lever efficiencies,

iii. our review of proposed additional expenditure including the robustness of the estimates, the need for and timing of each activity, and whether any of this additional activity can be accommodated through reprioritising the base operating expenditure and activities; and

iv. the scope and extent of efficiencies included in the SWC approach.

We have made adjustments to the SWC submission to reflect the scope and timing of additional operating activities identified in its Thematic Plans. We then applied two measures, continuing and catch-up efficiency, to the re-phased expenditure having regard to the efficiencies built into the Submission.

Our assessment of the level of operating efficiency able to be achieved by SWC in the future price path is a progression of the methodology which we applied to our 2004 review of the New South Wales metropolitan water agencies and of Hunter Water in 2008. This approach is based on a methodology developed by Ofwat and applied to water companies in England and Wales for over 15 years. It is also employed in other regulated industries.

Additional Thematic Expenditure

From our discussion on the Thematic expenditure submitted by SWC and the reason for our adjustments presented in Sections 6.6 to 6.9, we summarise our view of the net additional operating expenditure in Table 6.16 below.

Table 6.16 – Proposed Additional Thematic Expenditure

Additional Expenditure item $M 2010	Functional Allocation	2011	2012	2013	2014
Total submission		**3.38**	**4.17**	**5.03**	**4.71**
Adjustment for additional maintenance	Maintenance	0.0	0.0	-1.00	-1.00
Adjustment for Land Management	Maintenance	-0.10	-0.10	-0.10	-0.10
Adjustment for Environmental activities	Environmental	-0.47	-0.98	-0.68	-0.58
Net Additional Expenditure		**2.81**	**3.09**	**3.25**	**3.03**

Source: SWC Submission and Atkins Cardno Analysis

Continuing Efficiency

Continuing efficiency is the scope for top performing or frontier companies to continue to improve their efficiency. It reflects the continuing efficiencies being gained across all major sectors through innovation and new technologies.

The continuing improvement element of efficiency relates to the increased productivity derived from process innovation and new technology that all well performing businesses should achieve, including frontier agencies. This applies to a range of industry sectors.

In New South Wales, Sydney Water was set operating efficiency targets[8] of 0.8% per annum continuing and 1.0% per annum catch up as applied to controllable expenditure. The efficiency targets were offset by those identified by SWC resulting in efficiencies of up to 0.6% p.a. in year 4. This broadly aligns with the operating cost efficiencies[9] applied to Hunter Water in its 2009 Determination.

We have applied a continuing efficiency of 0.8% per annum which is consistent with the proposals in our 2004 Report and as applied to Hunter Water in 2008. In our analysis, we recognise the efficiency assumptions identified by SWC.

Examples of the potential for continuing efficiency are the re structure of the Corporate function and the asset management function.

Catchup Efficiency

The second element of operating efficiency is the catch-up from an agency's current position to that of the frontier utility or benchmark utility. Our qualitative assessment was based on a comparison of the agency operational control processes compared with current best practice in Australia and England. It is based on the professional judgement of our team formed from their broad and in-depth understanding of these processes across many utilities. Our assessment was based on identified improvements to processes and business opportunities which would generate efficiencies in future years to enable the agency to move towards the frontier utility. We have made a judgement in relation to the impact of improved processes that could be achieved by the end of the future price path and have assumed a cumulative increase in efficiency over time. This gradual increase recognises that expenditures in the first year of the future price path are reasonably certain but that the confidence of these estimates reduces over time.

[8] Review of prices for Sydney Water Corporation's water, sewerage, stormwater and other assets, IPART June 2008
[9] Review of Capital and Operating Expenditure of Hunter Water (2009 Determination), Atkins Cardno December 2008

We have assumed a 1.2% per annum catch up efficiency from year 2 of the price control period. This is on the assumption that SWC will move to close 60% of the efficiency gap with a frontier company over the five year period. However, we have assumed a lower 0.6% in the first year to reflect some lag in the benefits from new systems being implemented. This rate of catch-up is to reflect the ability for SWC to move towards the efficiency level of a frontier company over time. Our view also reflects the lack of clarity in the level of Corporate expenditure.

We have taken account of the efficiencies proposed by SWC in the Submission to arrive at net efficiencies to be applied to operating expenditure as summarised in Table 6.17.

Examples of catch up efficiency include the full implementation of the FMMS planned maintenance process, the introduction of new customer operations systems and new Water Delivery systems.

Table 6.17 – Proposed operating cost efficiencies

SWC Proposed Operational Expenditure $M 2010	2010	2011	2012	2013	2014	2015
Continuing efficiency (%)		0.8	0.8	0.8	0.8	0.8
Catch up efficiency (%)		0.6	1.2	1.2	1.2	1.2
Total efficiency (%)		1.4	1.8	2.1	2.2	2.0
Cumulative efficiency (%)		1.4	3.2	5.2	7.2	9.2
Efficiency proposed by SWC (%)		0.6	2.0	4.1	5.9	5.9
Net efficiency to be applied (%)		0.8	1.2	1.1	1.3	3.3

Source: Atkins analysis

Efficient Level of Operating Expenditure

We present in Table 6.18 our proposals for an efficient level of operating expenditure for the future price path period. The table includes the adjustments for the timing and scope of activities for each function and applies a combined continuing and catch-up efficiency to the revised expenditure. This analysis is subject to receiving clarity on the Corporate expenditure proposals to reflect the efficiencies being proposed. Our adjustments are summarised in total in Table 6.18 and in Appendix A. We have not been able to desegregate these adjustments to valley level for the draft report as we need clarification from SWC as to how the Thematic expenditure is apportioned.

Table 6.18 – Proposed Efficient Operating Expenditure

STATE WATER CORPORATION PROPOSAL - OPEX - TOTAL							Notes
($k 2009/10)	**2011**	**2012**	**2013**	**2014**	**2015**	**Σ 2011/14**	
Operations 13,915		13,713	13,329	13,037	12,916	**53,994**	
Maintenance 16,476		16,513	17,541	17,240	16,311	**67,770**	
Corporate	7,156	7,231	7,305	7,142	6,721	**28,834**	
Environment	1,796	2,301	1,990	1,847	1,006	**7,934**	
Total 39,343		**39,758**	**40,165**	**39,266**	**36,954**	**158,532**	
2. Adjustments to the timing of expenditure							
($k 2009/10)	**2011**	**2012**	**2013**	**2014**	**2015**	**Σ 2011/14**	

Operations	0	0 0 0			0	**0**	
Maintenance	0	0 0 0			0	**0**	
Corporate	0	0 0 0			0	**0**	
Environment -150		-660	-360	-260	640	**-1,430**	1
3. Adjustments for specific schemes							
Maintenance – fishways	0 0		-1,000	-1,000		**-2,000**	2
Maintenance - land management	-100 -100		-100	-100		**-400**	3
Environment -280		-280	-280	-280		**-1,120**	4
PROPOSED EXPENDITURE BEFORE APPLICATION OF EFFICIENCY TARGETS							
($k 2009/10)	**2011**	**2012**	**2013**	**2014**	**2015**	**Σ 2011/14**	
Operations 13,915		13,713	13,329	13,037	12,916	**53,994**	
Maintenance 16,376		16,413	16,441	16,140	16,311	**65,370**	
Corporate	7,156	7,231	7,305	7,142	6,721	**28,834**	
Environment	1,366	1,361	1,350	1,307	1,646	**5,384**	
Total 38,813		38,718	38,425	37,626	37,594	**153,582**	
4. Application of operational efficiency targets							
Efficiencies All	0.80%	1.40%	1.30%	1.50%	1.50%	**1.25%**	
REVISED EXPENDITURE PROPOSAL							
($k 2009/10)	**2011**	**2012**	**2013**	**2014**	**2015**	**Σ 2011/14**	
Operations 13,804		13,521	13,156	12,841	12,722	**53,322**	
Maintenance 16,245		16,183	16,227	15,898	16,066	**64,553**	
Corporate	7,099	7,130	7,210	7,035	6,620	**28,473**	
Environment	1,355	1,342	1,332	1,287	1,621	**5,317**	
Total 38,502		**38,176**	**37,925**	**37,062**	**37,030**	**151,666**	
1. Adjustment for fishways monitoring and capitalisation and rephasing environmental expenditure reflecting an even profile over the five years to 2015							
2. Reducing fishway maintenance to reflect uncertainties in costings and that some activities can be absorbed within the base opex through optimised maintenance from FMMS. Opex capped at $0.6M/a							
3. Assume a proportion of costs can be absorbed within base opex, cap at $0.2M/a							
4. Assumes that $0.2M absorbed within base opex and $0.08M as overstated costs							

Source: Atkins Cardno analysis

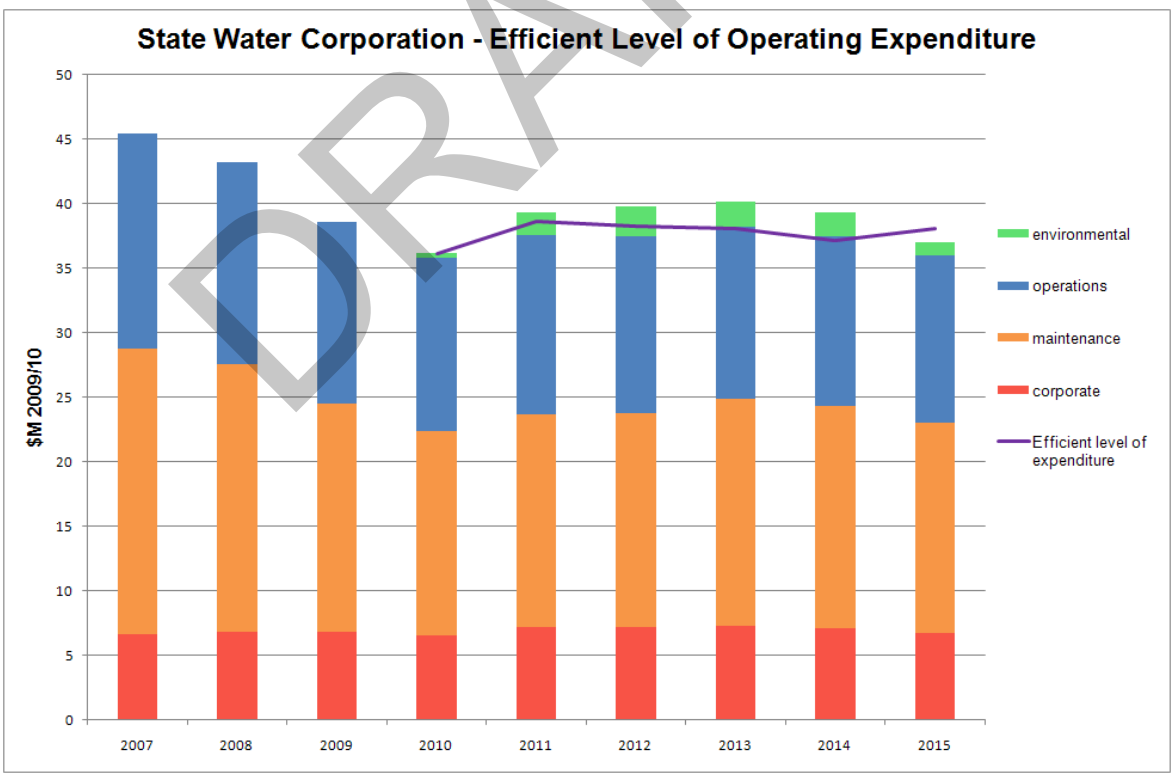
6.11 Conclusions

SWC has completed its restructure from a regional to a functional organisation. It is changing its culture from the legacy of a government agency. New managers have been brought in to bring greater focus. Business processes have been or are being implemented to lever further efficiencies. These processes allow greater scrutiny of activities and costs. With these changes the SWC has made significant progress in meeting the operating expenditure target set in the 2006 Determination.

The Corporation has prepared a submission for the future price path which includes additional activities set out in its Thematic Plan offset by further efficiencies identified at functional and corporate level. While there is no change in the level of service provided to customers, some additional activities have been identified to meet its overall obligations.

Our proposals for an efficient level of expenditure to deliver the same level of service to customers has taken into account the most likely cost of additional obligations taking into account the robustness of these costs in the Submission, the uncertainties in timing and the scope of absorbing some costs through re-prioritising base operating activities. We consider this is what a frontier company would challenge in order to maintain its competitiveness in an open market. We have also proposed levels of operating efficiency offset in part by those efficiencies proposed by SWC, which we consider can be levered through the implementation of systems and processes now in place or being developed.

Figure 6.4 – Efficient Level of Operating Expenditure



The resulting level of efficient operating expenditure compared with the SWC proposals is shown in Figure 6.4 above. The expenditure profile shows a lower increase in 2011 compared with the Submission but allows for the additional obligations presented in the Thematic Plan. While we have made some adjustments to the Thematic expenditure in 2011, there is insufficient information to re-profile any further expenditure. We consider that there is scope for SWC to revisit the Thematic Plan to test the potential for further re-profiling of activities. Expenditure in subsequent years shows a reducing trend over the price control period.

7. Output Measures

7.1 Output Measures

Efficiency is typically defined as a relationship between inputs and outputs. Typical inputs include capital and labour resources, while typical outputs for a water business include maintaining required standards, meeting customer expectations and growth in demand. A business can be more efficient if it produces the same outputs for reduced inputs. Cost savings that are achieved at the expense of required outputs are not efficiency savings. It is therefore important to include defined and measurable outputs to assess whether a business has achieved the efficiency targets that it has been set. Output Measures are used as a means of monitoring the progress of the water business in delivering its plans. They enable the assessment of prudent expenditure and they allow reporting of variance from targets and are therefore important for future efficiency reviews. The Output measures are not in themselves targets to be achieved in the price control period as there may be good reasons for variance. The main issue is to be able to identify actual outputs achieved against the related expenditure to provide greater clarity on any efficiency gains.

7.2 Past Performance

We confirmed that there were no output measures defined in the 2006 Determination or subsequently. For the 2010 Determination we consider there would be benefits with the inclusion of some measures of performance.

7.3 Measures for Future Price Path

Milestone dates of major projects such as the Dam Safety program will confirm the completion date to be achieved. Any slippage from these dates would result in customers not benefitting from the outputs at the agreed dates for which funding was allowed.

A measure of the effectiveness of corrective and routine maintenance is the extent to which assets and jobs are included in the FMMS planned maintenance schedules. We suggest the percentage of maintenance jobs on FMMS should be an output measure for this activity. The actual coverage against forecast percentage could then be reported. In addition, a measure to reflect the efficiency of the maintenance process is normally expressed as the ratio of planned to corrective maintenance. For example an Agency may defer planned maintenance to reduce costs but at the risk of a higher level of corrective maintenance at a later date.

A measure of the effectiveness of renewal and replacement capital expenditure is that there should be no deterioration in the existing asset condition profile. This provides a broad measure to confirm that the SWC is maintaining its assets in the long term. It would be helpful to disaggregate this measure to valley level to give assurance to customers that there is no deterioration of assets and a no-discrimination approach to investment is maintained. The extent of coverage of telemetry systems as an enabler for efficiencies should be monitored.

Proposed environmental measures comprise the total length of river open to fish to monitor progress in defined fish pass programs. A second measure would be the length of river with 'high' cold water pollution. Both these measures would be applied to the program following any proposed rephrasing of works. A summary of the measures and suggested values is shown in Table 7.1. For each measure the planned output should be defined. Monitoring actual against planned could be carried out every year and/or at the next price review. The definitions shown are indicative and subject to further discussion with SWC.

Table 7.1 – Proposed output measures

	Definition	Definition
Operating	FMMS	Extent of maintenance jobs planned on FMMS (% by $ cost)
	FMMS	Ratio of planned to corrective maintenance
Maintenance	Asset Condition Profile	The asset condition profile by replacement cost and grade. No deterioration in condition profile expressed as % in grades 1, 2, 3 and 4.
	Completion of dam safety schemes	Reduction in risk level through the completion of defined dam safety schemes. Milestone dates for each scheme to be defined.
	Telemetry	Number and percentage of key sites with established telemetry for monitoring and control of assets.
Environmental	Fish Passes	Total length of river open to fish. Measure by valley, length and year.
	Cold Water Pollution	Total length of river with 'high' risk of cold water pollution. Measure by valley. Length and year.
Water Delivery	Expenditure to enhance the Water Delivery operations	

In addition we suggest that SWC defines the outputs of the additional Thematic expenditure for environmental activities as part of the Determination as otherwise it will not be possible to confirm that the environmental outputs have been delivered to time and within allowable expenditure. Our experience is that without such rigour of output monitoring then there is a tendency for expenditure creep. We invite SWC to propose output measures for this environmental work as well as to comment on the above measures.

Appendix A – Expenditure Proposals by Valley

A.1 Border

STATE WATER CORPORATION PROPOSAL - CAPEX - BORDER							Note
(2009/10 $'000s)	2011	2012	2013	2014	2015	Σ 2011/14	
Dam Safety Compliance	0	0	50	0	0	**50**	
Renewal & Replacement	0	0	0	0	6	**0**	
Environmental	0	0	0	0	0	**0**	
Water Delivery	164	84	44	42	15	**334**	
Other	0	0	0	0	0	**0**	
Total 164		**84**	**94**	**42**	**21**	**384**	
1. Application of capital efficiency targets							
Efficiencies Dam Safety Compliance	1.40%	2.30%	3.20%	4.10%	4.50%	**3.11%**	
Efficiencies Other	1.40%	3.30%	5.20%	7.10%	7.50%		
REVISED EXPENDITURE PROPOSAL							
	2011	**2012**	**2013**	**2014**	**2015**	**Σ 2011/14**	
Dam Safety Compliance	0	0	48	0	0	**48**	
Renewal & Replacement	0	0	0	0	6	**0**	
Environmental	0	0	0	0	0	**0**	
Water Delivery	162	81	42	39	14	**324**	
Other	0	0	0	0	0	**0**	
Total 162		**81**	**90**	**39**	**19**	**372**	

A.2 Gwydir

STATE WATER CORPORATION PROPOSAL - CAPEX - GWYDIR							Note
($k 2009/10)	2011	2012	2013	2014	2015	Σ 2011/14	
Dam Safety Compliance	11,189	22,566	6,832	0	918	**40,587**	
Renewal & Replacement	0	0	0	0	1,378	**0**	
Environmental	100	2,200	8,000	10,000	6,000	**20,300**	
Water Delivery	545	283	149	141	43	**1,118**	
Other 110		0	0	0	1	**110**	

Total	**11,944**	**25,049**	**14,981**	**10,141**	**8,340**	**62,115**	
1. Adjustments to the timing of expenditure							
	2011	**2012**	**2013**	**2014**	**2015**	**Σ 2011/14**	
Dam Safety Compliance (Copeton)	-1,000	-3,000	5,000	0	0	**1000**	1
2. Adjustments for specific schemes							
Copeton Dam P90 adjustment	-1,000	-1,500				**-2,500**	2
Copeton CWP	0	0	-1,000	-2,000		**-3,000**	3
Copeton Fish Passage Offsets	-150		-300			**-450**	4
PROPOSED EXPENDITURE BEFORE APPLICATION OF EFFICIENCY TARGETS							
	2011	**2012**	**2013**	**2014**	**2015**	**Σ 2011/14**	
Dam Safety Compliance	9,189	18,066	11,832	0	918	**39,087**	
Renewal & Replacement	0	0		0	1,378	**0**	
Environmental 100		2,050	6,700	8,000	6,000	**16,850**	
Water Delivery	545	283	149	141	43	**1,118**	
Other 110		0	0	0	1	**110**	
Total 9,944		20,399	18,681	8,141	8,340	**57,165**	
3. Application of capital efficiency targets							
Efficiencies Dam Safety Compliance	1.40%	2.30%	3.20%	4.10%	4.50%	**3.40%**	
Efficiencies Other	1.40%	3.30%	5.20%	7.10%	7.50%		
REVISED EXPENDITURE PROPOSAL							
	2011	**2012**	**2013**	**2014**	**2015**	**Σ 2011/14**	
Dam Safety Compliance	9,060	17,650	11,453	0	877	**38,164**	
Renewal & Replacement	0	0		0	1,275	**0**	
Environmental 99		1,982	6,352	7,432	5,550	**15,865**	
Water Delivery	537	274	141	131	40	**1,083**	
Other 108		0	0	0	1	**108**	
Total	**9,805**	**19,906**	**17,946**	**7,563**	**7,742**	**55,220**	

1. The DSC target date is June 2013. Expenditure has been adjusted to meet this deadline rather than Aug 2012 deadline. The figure takes into account the $1.0M deferral of expenditure from 09/10. This takes into account the delay in commencing relocation of Copeton Water State Park.

2. The P90 estimate is considered conservative. This adjustment is approximately mid point between P90 and P50.
3. The cost is adjusted based on the uncertainties with CWP technology, a lower cost estimate will drive more efficient solution.
4. The P90 cost is considered conservative when one considers the number of fish passages to be undertaken.

A.3 Namoi

STATE WATER CORPORATION PROPOSAL - CAPEX - NAMOI							Note
($k 2009/10)	**2011**	**2012**	**2013**	**2014**	**2015**	**Σ 2011/14**	
Dam Safety Compliance	45,489	20,039	26,195	0	6,122	**91,723**	
Renewal & Replacement	0	0		0	1,189	165	**1,189**	
Environmental	6,000		6,000	11,000	139	0	**23,139**	
Water Delivery	539	279	147	0	45	**965**	
Other	111	0	0		0	0	**111**	
Total	52,139		26,318	37,342	1,328	6,332	**117,127**	
1. Adjustments to the timing of expenditure							
	2011	**2012**	**2013**	**2014**	**2015**	**Σ 2011/14**	
Dam Safety Compliance (Keepit)	0	5,000		5,000			**10,000**	1
Environmental (CWP)				-5,000	5,000		**0**	2
2. Adjustments for specific schemes							
Keepit Dam - P90 adjustment	-2,000	-1,000					**-3,000**	3
Keepit - Fish Passage Offsets	-800	-800		-800			**-2,400**	4
Keepit – CWP	0	0		0	-800		**-800**	5
PROPOSED EXPENDITURE BEFORE APPLICATION OF EFFICIENCY TARGETS							
	2011	**2012**	**2013**	**2014**	**2015**	**Σ 2011/14**	
Dam Safety Compliance	43,489	24,039	31,195	0	6,122	**98,723**	
Renewal & Replacement	0	0		0	1,189	165	**1,189**	
Environmental	5,200		5,200	5,200	4,339	0	**19,939**	
Water Delivery	539	279	147	0	45	**965**	
Other	111	0	0		0	0	**111**	

Total 49,339		29,518	36,542	5,528	6,332	**120,927**	
3. Application of capital efficiency targets							
Efficiencies Dam Safety Compliance	1.40%	2.30%	3.20%	4.10%	4.50%	**2.56%**	
Efficiencies Other	1.40%	3.30%	5.20%	7.10%	7.50%		
REVISED EXPENDITURE PROPOSAL							
	2011	**2012**	**2013**	**2014**	**2015**	**Σ 2011/14**	
Dam Safety Compliance	42,880	23,486	30,197	0	5,847	**96,563**	
Renewal & Replacement	0	0		0	1,105	153	**1,105**
Environmental 5,127		5,028	4,930	4,031	0	**19,116**	
Water Delivery	531	270	139	0	42	**941**	
Other	109	0	0		0	0	**109**
Total	**48,648**	**28,784**		**35,266**	**5,136**	**6,041**	**117,834**
1. Construction of WP1 will commence on Feb 2010 rather than late 2009 therefore there will be an expenditure carryover into 2010/11 of 10M and re-phasing of the rest of the expenditure							
2. Defer the CWP scheme for Keepit by a year to flatten capital profile.							
3. The P90 estimate is considered conservative. This adjustment is approximately mid point between P90 and P50							
4. The cost is considered to be conservative at a P90 estimate							
5. The cost is adjusted based on the uncertainties with CWP technology, a lower cost estimate will drive more efficient solution.							

A.4 Peel

STATE WATER CORPORATION PROPOSAL - CAPEX - PEEL							**Notes**
($k 2009/10)	**2011**	**2012**	**2013**	**2014**	**2015**	**Σ 2011/14**	
Dam Safety Compliance	6,257	758	0	55	0	**7,070**	
Renewal & Replacement	0	0		123	0	0	**123**
Environmental	0	0	0		0	0	**0**
Water Delivery	44	20	10	9	11	**83**	
Other	0	0	0		1	0	**1**
Total 6,301		778	133	65	11	**7,277**	
1. Adjustments to the timing of expenditure							

	2011	2012 2013		2014 2015		Σ 2011/14	
Dam Safety Compliance	-3000 3000		2000			**2000**	1
2. Adjustments for specific schemes							
Chaffey Dam - P90 adjustment		-500				**-500**	2
PROPOSED EXPENDITURE BEFORE APPLICATION OF EFFICIENCY TARGETS							
	2011	**2012 2013**		**2014 2015**		**Σ 2011/14**	
Dam Safety Compliance	3,257 3,258		2,000	55	0	**8,570**	
Renewal & Replacement	0 0		123	0	0	**123**	
Environmental	0	0 0		0 0		**0**	
Water Delivery	44	20	10	9	11	**83**	
Other	0	0 0		1 0		**1**	
Total 3,301		3,278	2,133	65	11	**8,777**	
3. Application of capital efficiency targets							
Efficiencies Dam Safety Compliance	1.40% 2.30%		3.20% 4.10%		4.50%	**2.23%**	
Efficiencies Other	1.40%	3.30% 5.20%		7.10% 7.50%			
REVISED EXPENDITURE PROPOSAL							
	2011	**2012 2013**		**2014 2015**		**Σ 2011/14**	
Dam Safety Compliance	3,211 3,183		1,936	53	0	**8,383**	
Renewal & Replacement	0 0		117	0	0	**117**	
Environmental	0	0 0		0 0		**0**	
Water Delivery	43	19 9		8 10		81	
Other	0	0 0		1 0		1	
Total 3,255		3,202	2,062	62	10	8,581	
1. The DSC target date is June 2013. Expenditure has been adjusted to meet this deadline rather than SWC deadline of Jan 2011. There is no necessity to commence construction on 09/10 to meet the June 2013 deadline therefore some expenditure has been deferred to 2010/11. The figure takes into account the $2.0M deferral of expenditure from 09/10							
2. The P90 estimate is considered conservative. This adjustment is approximately mid-point between P90 and P50							

A.5 Lachlan

STATE WATER CORPORATION PROPOSAL - CAPEX - LACHLAN							Notes
($k 2009/10)	**2011**	**2012**	**2013**	**2014**	**2015**	**Σ 2011/14**	
Dam Safety Compliance	7,406	15,059	10,182	0	531	**32,647**	
Renewal & Replacement	103	3,071	3,506	6,939	451	**13,619**	
Environmental 3,750		0	0	0	0	**3,750**	
Water Delivery	767	394	206	195	73	**1,562**	
Other 80		0	0	1	0	**81**	
Total	**12,106**	**18,524**	**13,894**	**7,135**	**1,055**	**51,659**	
1. Adjustments in inconsistencies							
($k 2009/10)	**2011**	**2012**	**2013**	**2014**	**2015**	**Σ 2011/14**	
Wy Fish passage - Renewal to Env	50	3,000	3,000	0		**6,050**	
WYAN: CWP - Renewal to Env	0	0	100	5,000		**5,100**	
2. Adjustments to the timing of expenditure							
($k 2009/10)	**2011**	**2012**	**2013**	**2014**	**2015**	**Σ 2011/14**	
Dam Safety Compliance (Wyangala)	-5,600	-8,000	2,500	11,100		**0**	1
Environmental (Wyangala FP Offsets)	0	-3,000	0	3,000		**0**	2
Environmental (CWP)				-5,000	5,000	**-5,000**	3
3. Adjustments for specific schemes							
Wyangala Dam - P90 adjustment	0	0	-750	-750		**-1,500**	4
Wyangala Fish Passage	0	0	-200	-200		**-400**	5
Wyangala CWP					-800	**0**	6
PROPOSED EXPENDITURE BEFORE APPLICATION OF EFFICIENCY TARGETS							
($k 2009/10)	**2011**	**2012**	**2013**	**2014**	**2015**	**Σ 2011/14**	
Dam Safety Compliance	1,806	7,059	11,932	10,350	531	**31,147**	
Renewal &	53	71	406	1,939	451	**2,469**	

Replacement							
Environmental 3,800		0	2,900	2,800	4,200	**9,500**	
Water Delivery	767	394	206	195	73	**1,562**	
Other 80		0	0	1	0	**81**	
Total 6,506		**7,524**	**15,444**	**15,285**	**5,255**	**44,759**	
4. Application of capital efficiency targets							
Efficiencies Dam Safety Compliance	1.40%	2.30%	3.20%	4.10%	4.50%	**3.59%**	
Efficiencies Other	1.40%	3.30%	5.20%	7.10%	7.50%		
REVISED EXPENDITURE PROPOSAL							
($k 2009/10)	**2011**	**2012**	**2013**	**2014**	**2015**	**Σ 2011/14**	
Dam Safety Compliance	1,781	6,897	11,550	9,926	507	**30,153**	
Renewal & Replacement	52	69	385	1,801	417	**2,307**	
Environmental 3,747		0	2,749	2,601	3,885	**9,097**	
Water Delivery	756	381	195	181	68	**1,514**	
Other 79		0	0	1	0	**80**	
Total 6,415		**7,346**	**14,880**	**14,510**	**4,877**	**43,151**	
1. SWC has advised that construction of the access road will defer the completion date to 2013/14. The adjustment does not take into account the $9.2M additional cost for the access road							
2 & 3. As Wyangala DSC upgrade work will now not be completed until 2013/14 this presents an opportunity to defer the delivery of the two fish passage offsets by a year. Instead of capex in 2012 & 2013 move this to 2013 & 2014. The deferment also provides the opportunity of re-phasing the Cold Water Pollution capital works into the subsequent price path period by moving the expenditure back by a year.							
4. The P90 estimate is considered conservative. This adjustment is approximately mid-point between P90 and P50							
5. P90 estimate for Fish Passage program is considered conservative.							
6. The cost is adjusted based on the uncertainties with CWP technology, a lower cost estimate will drive more efficient solution.							

A.6 Macquarie

STATE WATER CORPORATION PROPOSAL - CAPEX - MACQUARIE							**Notes**
($k 2009/10)	**2011**	**2012**	**2013**	**2014**	**2015**	**Σ 2011/14**	
Dam Safety Compliance	10,801	13,594	0	0	0	**24,395**	
Renewal &	0	0	436	1,705	177	**2,141**	

Replacement							
Environmental 3,100		5,500	2,000	0	0	**10,600**	
Water Delivery	482	249	130	124	43	**985**	
Other	81	-1	0	0	-1	**80**	
Total 14,464		**19,342**	**2,566**	**1,829**	**219**	**38,201**	
1. Adjustments to the timing of expenditure							
	2011	**2012**	**2013**	**2014**	**2015**	**Σ 2011/14**	
Dam Safety Compliance (Burrendong)	-2,000	-3,000	5,000			**0**	1
Environmental (Burrendong FP Offsets)	-3,000	0	3,000			**0**	2
Environmental (Burrendong CWP)		-2,500	500	2,000		**0**	3
2. Adjustments for specific schemes							
Burrendong Dam P90 adjustment Stage 1	-1,000					**-1,000**	4
Burrendong FP Offset adjustment		-300	-300			**-600**	5
Burrendong CWP adjustment			-200	-200		**-400**	6
PROPOSED EXPENDITURE BEFORE APPLICATION OF EFFICIENCY TARGETS							
	2011	**2012**	**2013**	**2014**	**2015**	**Σ 2011/14**	
Dam Safety Compliance	7,801	10,594	5,000	0	0	**23,395**	
Renewal & Replacement	0	0	436	1,705	177	**2,141**	
Environmental	100	2,700	5,000	1,800	0	**9,600**	
Water Delivery	482	249	130	124	43	**985**	
Other	81	-1	0	0	-1	**80**	
Total 8,464		**13,542**	**10,566**	**3,629**	**219**	**36,201**	
3. Application of capital efficiency targets							
Efficiencies Dam Safety Compliance	1.40%	2.30%	3.20%	4.10%	4.50%	**3.22%**	
Efficiencies Other	1.40%	3.30%	5.20%	7.10%	7.50%		
REVISED EXPENDITURE PROPOSAL							
	2011	**2012**	**2013**	**2014**	**2015**	**Σ 2011/14**	

Dam Safety Compliance	7,692	10,350	4,840	0	0	**22,882**	
Renewal & Replacement	0	0	413	1,584	164	**1,997**	
Environmental	99	2,611	4,740	1,672	0	**9,122**	
Water Delivery	475	241	123	115	40	**954**	
Other	80	-1	0	0	-1	**79**	
Total 8,346		**13,201**	**10,117**	**3,371**	**203**	**35,034**	
1. The DSC target date is June 2013. Expenditure has been adjusted to meet this deadline rather than SWC deadline of July 2011.							
2 & 3. The deferment of the DSC expenditure by a year provides an opportunity to defer the FP and CWP expenditure by a year to help flatten the capital profile.							
4. The P90 estimate is considered conservative. This adjustment is approximately mid point between P90 and P50							
5. P90 estimate for Fish Passage program is considered conservative.							
6. The cost is adjusted based on the uncertainties with CWP technology, a lower cost estimate will drive more efficient solution.							

A.7 Murray

STATE WATER CORPORATION PROPOSAL - CAPEX - MURRAY							Notes
($k 2009/10)	**2011**	**2012**	**2013**	**2014**	**2015**	**Σ 2011/14**	
Dam Safety Compliance	0	0	0	0	0	**0**	
Renewal & Replacement	13,916	1,817	0	57	400	**15,790**	
Environmental	0	0	0	0	0	**0**	
Water Delivery	796	412	216	205	66	**1,629**	
Other	0	0	0	0	0	**0**	
Total	14,712	2,229	216	262	466	**17,419**	
1. Adjustments to the timing of expenditure							
	2011	**2012**	**2013**	**2014**	**2015**	**Σ 2011/14**	
Renewal & Replacement (Menindee)	13,000	13,000				**0**	1
2. Adjustments for specific schemes							
Menindee Fuse Plug		-5,700				**-5,700**	2

-new SWC estimate							
PROPOSED EXPENDITURE BEFORE APPLICATION OF EFFICIENCY TARGET							
	2011	**2012**	**2013**	**2014**	**2015**	**Σ 2011/14**	
Dam Safety Compliance	0	0	0	0		**0**	
Renewal & Replacement	916	9,117	0	57	400	**10,090**	
Environmental	0	0	0	0		**0**	
Water Delivery	796	412	216	205	66	**1,629**	
Other	0	0	0	0		**0**	
Total	**1,712**	**9,529**	**216**	**262**	**466**	**11,719**	
3. Application of capital efficiency targets							
Efficiencies Dam Safety Compliance	1.40%	2.30%	3.20%	4.10%	4.50%	**3.14%**	
Efficiencies Other	1.40%	3.30%	5.20%	7.10%	7.50%		
REVISED EXPENDITURE PROPOSAL							
	2011	**2012**	**2013**	**2014**	**2015**	**Σ 2011/14**	
Dam Safety Compliance	0	0	0	0		**0**	
Renewal & Replacement	903	8,816	0	53	370	**9,772**	
Environmental	0	0	0	0		**0**	
Water Delivery	785	398	205	190	61	**1,578**	
Other	0	0	0	0		**0**	
Total	**1,688**	**9,215**	**205**	**243**	**431**	**11,351**	
1.We are of the opinion that environmental studies and stakeholder consultation will defer the project by a year							
2. This is the difference between the $13M estimate in the Information Return and a more recent estimate of $7.6M. A further reduction of $300K is included as there is potential for further cost reduction							

A.8 Murrumbidgee

STATE WATER CORPORATION PROPOSAL - CAPEX - MURRUMBIDGEE						**Notes**
($k 2009/10)	**2011**	**2012**	**2013**	**2014**	**2015**	**Σ 2011/14**	
Dam Safety Compliance	18,296	50	0	83	0	**18,429**	

Renewal & Replacement	200 79		822	999	4,776	**2,100**	
Environmental 1,770		2,350	2,500	0	0	**6,620**	
Water Delivery	1,018	530	279	265	76	**2,092**	
Other	79	0 -1	0		0	**78**	
Total	**21,363**	**3,009**	**3,600**	**1,347**	**4,852**	**29,319**	
1. Adjustments for specific schemes							
Blowering Dam adjustment for cost escalation contingency	-1,700					**-1,700**	1
Blowering Dam adjustment for consistency with latest estimate	-2,100					**-2,100**	2
PROPOSED EXPENDITURE BEFORE APPLICATION OF EFFICIENCY TARGETS							
	2011	**2012**	**2013**	**2014**	**2015**	**Σ 2011/14**	
Dam Safety Compliance	14,496	50	0	83	0	**14,629**	
Renewal & Replacement	200 79		822	999	4,776	**2,100**	
Environmental 1,770		2,350	2,500	0	0	**6,620**	
Water Delivery	1,018	530	279	265	76	**2,092**	
Other	79	0 -1	0		0	**78**	
Total 17,563		**3,009**	**3,600**	**1,347**	**4,852**	**25,519**	
2. Application of capital efficiency targets							
Efficiencies Dam Safety Compliance	1.40%	2.30%	3.20%	4.10%	4.50%	**2.45%**	
Efficiencies Other	1.40%	3.30%	5.20%	7.10%	7.50%		
REVISED EXPENDITURE PROPOSAL							
	2011	**2012**	**2013**	**2014**	**2015**	**Σ 2011/14**	
Dam Safety Compliance	14,293	49	0	80	0	**14,422**	
Renewal & Replacement	197 76		779	928	4,418	**1,981**	
Environmental 1,745		2,272	2,370	0	0	**6,388**	
Water Delivery	1,004	513	264	246	70	**2,027**	
Other	78	0 -1	0		0	**77**	
Total 17,317		**2,910**	**3,413**	**1,254**	**4,488**	**24,894**	

1. The Blowering Dam cost includes $1,500k for price escalation. As the IPART model takes account of inflation this should not be included in the estimate
2. The Blowering Dam which is currently under construction shows outturn cost for 2011 as $17,383k compared with $18,296k in the Submission

A.9 North Coast

STATE WATER CORPORATION PROPOSAL - CAPEX - NORTH COAST							Notes
($k 2009/10)	**2011**	**2012**	**2013**	**2014**	**2015**	**Σ 2011/14**	
Dam Safety Compliance	40	0	0	0	0	**40**	
Renewal & Replacement	0	0	0	0	0	**0**	
Environmental	0	0	0	0	0	**0**	
Water Delivery	38	19	10	10	4	**77**	
Other	0	0	0	0	0	**0**	
Total	**78**	**19**	**10**	**10**	**4**	**117**	
1. Application of capital efficiency targets							
Efficiencies Dam Safety Compliance	1.40%	2.30%	3.20%	4.10%	4.50%	**2.52%**	
Efficiencies Other	1.40%	3.30%	5.20%	7.10%	7.50%		
REVISED EXPENDITURE PROPOSAL							
	2011	**2012**	**2013**	**2014**	**2015**	**Σ 2011/14**	
Dam Safety Compliance	39	0	0	0	0	**39**	
Renewal & Replacement	0	0	0	0	0	**0**	
Environmental	0	0	0	0	0	**0**	
Water Delivery	37	18	9	9	4	**75**	
Other	0	0	0	0	0	**0**	
Total	**77**	**18**	**9**	**9**	**4**	**114**	

A.10 Hunter

STATE WATER CORPORATION PROPOSAL - CAPEX - HUNTER							Notes
($k 2009/10)	**2011**	**2012**	**2013**	**2014**	**2015**	**Σ 2011/14**	
Dam Safety Compliance	0	50	90	0	0	**140**	

Renewal & Replacement	0 0		0	0	11	**0**	
Environmental 0		0	0	0	0	**0**	
Water Delivery	469 244	128		122	35	**963**	
Other 0		0	1	0	0	**1**	
Total	**469 294**	**219**		**122**	**46**	**1,104**	
1. Application of capital efficiency targets							
Efficiencies Dam Safety Compliance	1.40% 2.30%		3.20% 4.10%		4.50%	**3.08%**	
Efficiencies Other	1.40%	3.30% 5.20%		7.10%	7.50%		
REVISED EXPENDITURE PROPOSAL							
	2011 2012		**2013**	**2014**	**2015**	**Σ 2011/14**	
Dam Safety Compliance	0 49		87	0	0	**136**	
Renewal & Replacement	0 0		0	0	10	**0**	
Environmental 0		0	0	0	0	**0**	
Water Delivery	462 236	121		113	32	**933**	
Other 0		0	1	0	0	**1**	
Total	**462 285**	**209**		**113**	**43**	**1,070**	

A.11 South Coast

STATE WATER CORPORATION PROPOSAL - CAPEX - SOUTH COAST						**Notes**
($k 2009/10)	**2011 2012**		**2013**	**2014**	**2015**	**Σ 2011/14**	
Dam Safety Compliance	0 0		40	0	0	**40**	
Renewal & Replacement	0 0		0	0	306	**0**	
Environmental 0		0	0	0	0	**0**	
Water Delivery	142	74	39	37	11	**292**	
Other 0		0	0	0	-1	**0**	
Total 142		**74**	**79**	**37**	**316**	**332**	
1. Application of capital efficiency targets							
Efficiencies Dam Safety Compliance	1.40% 2.30%		3.20% 4.10%		4.50%	**3.12%**	
Efficiencies Other	1.40%	3.30% 5.20%		7.10%	7.50%		

REVISED EXPENDITURE PROPOSAL							
	2011	**2012**	**2013**	**2014**	**2015**	**Σ 2011/14**	
Dam Safety Compliance	0	0	39	0	0	**39**	
Renewal & Replacement	0	0	0	0	283	**0**	
Environmental	0		0	0	0	0	**0**
Water Delivery	140	72	37	34	10	**283**	
Other	0		0	0	0	-1	**0**
Total	**140**		**72**	**76**	**34**	**292**	**322**

A.12 Fish River

STATE WATER CORPORATION PROPOSAL - CAPEX - FISH RIVER							Notes
($k 2009/10)	**2011**	**2012**	**2013**	**2014**	**2015**	**Σ 2011/14**	
Dam Safety Compliance	0	0	0	277	0	**277**	
Renewal & Replacement	5,173	5,119	0	224	79	**10,516**	
Environmental	0	0	0	0	0	**0**	
Water Delivery	36	19	10	9	3	**74**	
Other	3,030	3,000	0	0	0	**6,030**	
Total	**8,239**	**8,138**	**10**	**510**	**82**	**16,897**	
1. Adjustments to the timing of expenditure							
	2011	**2012**	**2013**	**2014**	**2015**	**Σ 2011/14**	
Renewal & Replacement	-2,500		2,500			0	1
2. Adjustments for specific schemes							
Rydal pipeline replacement - adjustment for revised estimate ($7.6M for priority replacement)		-1,200	-1,200			-2,400	2
PROPOSED EXPENDITURE BEFORE APPLICATION OF EFFICIENCY TARGETS							
	2011	**2012**	**2013**	**2014**	**2015**	**Σ 2011/14**	
Dam Safety Compliance	0	0	0	277	0	**277**	

Renewal & Replacement	2,673	3,919	1,300	224	79	**8,116**	
Environmental	0	0	0		0	**0**	
Water Delivery	36	19	10	9	3	**74**	
Other 3,030		3,000	0	0	0	**6,030**	
Total 5,739		6,938	1,310	510	82	**14,497**	
3. Application of capital efficiency targets							
Efficiencies Dam Safety Compliance	1.40%	2.30%	3.20%	4.10%	4.50%	**2.80%**	
Efficiencies Other	1.40%	3.30%	5.20%	7.10%	7.50%		
REVISED EXPENDITURE PROPOSAL							
	2011	**2012**	**2013**	**2014**	**2015**	**Σ 2011/14**	
Dam Safety Compliance	0	0	266	0		**266**	
Renewal & Replacement	2,636	3,790	1,232	208	73	**7,866**	
Environmental	0	0	0		0	**0**	
Water Delivery	35	18	9	8	3	**72**	
Other 2,988		2,901	0	0	0	**5,889**	
Total	**5,659**	**6,709**	**1,242**	**482**	**76**	**14,092**	
1. We are of the opinion that additional studies (e.g. network modelling to assess sizing) would defer commencement of construction							
2. This is the difference between the submitted costs (preliminary estimate $10M) and the cost of replacing the most critical mains ($7.6M)							

A.13 Total

STATE WATER CORPORATION PROPOSAL - CAPEX - TOTAL						
($k 2009/10)	**2011**	**2012**	**2013**	**2014**	**2015**	**Σ 2011/14**
Dam Safety Compliance	99,478	72,116	43,389	415	7,571	**215,398**
Renewal & Replacement	19,392	10,086	4,887	11,113	7,749	**45,478**
Environmental 14,720		16,050	23,500	10,139	6,000	**64,409**
Water Delivery	5,040	2,607	1,368	1,159	425	**10,174**
Other 3,491		2,999	0	2	-1	**6,492**
Total 142,12	**1**	**103,858**	**73,144**	**22,828**	**21,744**	**341,951**
1. Adjustments in inconsistencies						

	2011	2012	2013	2014	2015	Σ 2011/14
Renewal & Replacement to Environment for Wyangala schemes in Lachlan Valley	50	3,000	3,100	5,000	0	**11,150**
2. Adjustments to the timing of expenditure						
	2011	**2012**	**2013**	**2014**	**2015**	**Σ 2011/14**
Dam Safety Compliance	-11,600	-6,000	19,500	11,100	0	**13,000**
Renewal & Replacement	-15500	1300	0 2500	0	0	**0**
Environmental	-3,000	-5,500	-1,500	5,000	5,000	**-5,000**
3. Adjustments for specific schemes						
Copeton Dam P90 adjustment	-1000	-150	0 0	0	0	**-2500**
Copeton CWP	0	0	-1000	-2000	0	**-3000**
Copeton Fish Passage Offsets	0	-150	-300	0	0	**-450**
Keepit Dam - P90 adjustment	-2000	-100	0 0	0	0	**-3000**
Keepit - Fish Passage Offsets	-800	-800	-800	0	0	**-2400**
Keepit – CWP	0	0	0	-800	0	**-800**
Chaffey Dam - P90 adjustment	0	-500	0	0	0	**-500**
Wyangala Dam - P90 adjustment	0	0	-750	-750	0	**-1500**
Wyangala Fish Passage	0	0	-200	-200	0	**-400**
Wyangala CWP	0	0 0		0	-800	**0**
Burrendong Dam P90 adjustment Stage 1	-1000	0	0	0	0	**-1000**
Burrendong FP Offset adjustment	0	-300	-300	0	0	**-600**
Burrendong CWP adjustment	0	0	-200	-200	0	**-400**
Menindee Fuse Plug - new SWC estimate	0	-570	0 0	0	0	**-5700**
Blowering Dam adjustment for cost escalation contingency	-1700	0	0	0	0	**-1700**
Blowering Dam	-2100	0	0	0	0	**-2100**

adjustment for consistency with latest estimate						
Rydal pipeline replacement - adjustment for revised estimate ($7.6M for priority replacement)	0 -120	0	-1200	0	0	**-2400**
Total -860	**0**	**-11150**	**-4750**	**-3950**	**-800**	**-28450**
PROPOSED EXPENDITURE BEFORE APPLICATION OF EFFICIENCY TARGETS						
	2011 2012	**2013**		**2014 2015**		**Σ 2011/14**
Dam Safety Compliance	80,078	63,116	62,139	10,765	7,571	**216,098**
Renewal & Replacement	3,842 13,186		3,087	6,113	7,749	**26,228**
Environmental 10,970		12,300	22,300	16,939	10,200	**62,509**
Water Delivery	5,040 2,607		1,368	1,159	425	**10,174**
Other 3,491		2,999	0	2	-1	**6,492**
Total 103,42	**1**	**94,208**	**88,894**	**34,978**	**25,944**	**321,501**
4. Application of capital efficiency targets						
Overall Efficiency	1.40%	2.63% 3.80%		6.18% 6.62%		**2.94%**
REVISED EXPENDITURE PROPOSAL						
	2011 2012	**2013**		**2014 2015**		**Σ 2011/14**
Dam Safety Compliance	78,957	61,664	60,151	10,324	7,230	**211,095**
Renewal & Replacement	3,788 12,751		2,926	5,679	7,168	**25,145**
Environmental 10,816		11,894	21,140	15,736	9,435	**59,587**
Water Delivery	4,969 2,521		1,297	1,077	393	**9,864**
Other 3,442		2,900	0	2	-1	**6,344**
Total 101,97	**3**	**91,730**	**85,514**	**32,818**	**24,225**	**312,035**

STATE WATER CORPORATION PROPOSAL - OPEX - TOTAL						**Notes**
($k 2009/10)	**2011 2012**		**2013**	**2014**	**2015**	**Σ 2011/14**	
Operations	13,915 13,713		13,329	13,037	12,916	**53,994**	
Maintenance	16,476 16,513		17,541	17,240	16,311	**67,770**	
Corporate 7,156		7,231	7,305	7,142	6,721	**28,834**	
Environment 1,796		2,301	1,990	1,847	1,006	**7,934**	

Total	**39,343**	**39,758**	**40,165**	**39,266**	**36,954**	**158,532**	
1. Adjustments to the timing of expenditure							
($k 2009/10)	**2011**	**2012**	**2013**	**2014**	**2015**	**Σ 2011/14**	
Operations 0		0	0	0	0	**0**	
Maintenance 0		0	0	0	0	**0**	
Corporate 0		0	0	0	0	**0**	
Environment	**-150**	**-660**	**-360**	**-260**	**640**	**-1,430**	1
2. Adjustments for specific schemes							
Maintenance – fishways	0	0	-1,000	-1,000		**-2,000**	2
Maintenance - land management	-100	-100	-100	-100		**-400**	3
Environment	-280	-280	-280	-280		**-1,120**	4
PROPOSED EXPENDITURE BEFORE APPLICATION OF EFFICIENCY TARGETS							
($k 2009/10)	**2011**	**2012**	**2013**	**2014**	**2015**	**Σ 2011/14**	
Operations	13,915	13,713	13,329	13,037	12,916	**53,994**	
Maintenance	16,376	16,413	16,441	16,140	16,311	**65,370**	
Corporate 7,156		7,231	7,305	7,142	6,721	**28,834**	
Environment 1,366		1,361	1,350	1,307	1,646	**5,384**	
Total	**38,813**	**38,718**	**38,425**	**37,626**	**37,594**	**153,582**	
3. Application of operational efficiency targets							
Efficiencies All	0.80%	1.40%	1.30%	1.50%	1.50%	**1.25%**	
REVISED EXPENDITURE PROPOSAL							
($k 2009/10)	**2011**	**2012**	**2013**	**2014**	**2015**	**Σ 2011/14**	
Operations	13,804	13,521	13,156	12,841	12,722	**53,322**	
Maintenance	16,245	16,183	16,227	15,898	16,066	**64,553**	
Corporate 7,099		7,130	7,210	7,035	6,620	**28,473**	
Environment 1,355		1,342	1,332	1,287	1,621	**5,317**	
Total	**38,502**	**38,176**	**37,925**	**37,062**	**37,030**	**151,666**	

1. Adjustment for fish monitoring and capitalisation and re-phasing environmental expenditure reflecting an even profile over the five years to 2015

2. Reducing fishway maintenance to reflect uncertainties in costings and that some activities can be absorbed within the base opex through optimised maintenance from FMMS. Opex capped at $0.6M/a

3. Assume a proportion of costs can be absorbed within base opex, cap at $0.2M/a

4. Assumes that $0.2M absorbed within base opex and $0.08M as overstated costs

Appendix B - Capital Projects Reviewed

- Burrendong Dam Safety Upgrade
- Chaffey Dam Safety Upgrade
- Cold Water Pollution - Generic
- Colligen Creek Weir Refurbishment
- Copeton Dam Safety Upgrade
- Duckmaloi Replacement Filters
- Fish Passages - Generic
- Hartwood Weir Refurbishment
- iSMART
- Keepit Dam Fish Passage Offsets
- Keepit Dam Safety Upgrade
- Lake Brewster – Water Efficiency Project
- Lake Cargelligo Fish Passage
- Lidsdale Reservoir
- Menindee Fuse Plug
- RYDAL Pipeline Replacement
- Wyangala Dam Safety Upgrade
- Yallakool Weir Refurbishment

Appendix C - Summary Sheets for Capital Projects

C.1 Burrendong Dam Safety Upgrade

PROJECT DETAILS

Project Name	Burrendong Dam Upgrade – Phase 1		
Project Number	1685P6	**Status**	Current and future price path

NEED FOR SCHEME/ SCOPE OF WORKS

The project is required to comply with the agreed NSW Dam Safety requirements (2006). The agreed upgrade completion date is June 2013. Burrendong is the fourth highest risk dam in SWC's portfolio with an AEP (Annual Exceedence Probability) of DCF (Dam Crest Flood) of 1:20,000 (at FSL), Population at Risk (PAR Sunny Day) of 4,400 and total economic loss of $8.5 billion. The Portfolio Risk Assessment 2002 classifies the risk as intolerable.

Scope of Phase 1:

- Main embankment crest raising to maximum height of 1.8m (stage 1)
- Raise spillway walls to contain sub PMF outflow and spillway strengthening (stage 2)
- Raise spillway gate hoist bridge (stage 2)

After completion of Phase 1 (stages 1 and 2) the dam will be able to cope with 96% of PMF.

Options were finalised in April 2007 (6 options). A Value Management workshop in May 08 identified two options for further analysis. The options were further refined in February 2009. P90 estimates for Stage 1 were prepared in July 09. An economic assessment, business case and Gateway review were completed in August/September 2009. The Board selected the second option ($23.3M in comparison of $27.3M for the alternative).

There has been significant investment in options development and refinement including Gateway Review which was not mandatory for this project. The Gateway Review endorsed the proposed approach. The Project included in the TAMP and Burrendong Asset Plan.

Risks have been considered based on failure of the dam to meet flood events including population at risk, loss of life and economic loss

Project risks have been considered in Project Plan and Business Case.

Deferral of the project will result in SWC have a high risk (albeit with a low probability event) asset and not complying with the agreed timetable with the NSW Dam Safety Committee (DSC) for the dam upgrade.

The project capital cost (stages 1 and 2) is estimated to be $23.278M.

A risk based cost estimate has been developed for stage 1 works (PB July 2009). It is noted that the stage1 estimate includes $2.967M in contingencies

P90 – $12.743 M

P50 - $10.911 M

The estimate for stage 2 estimate is a preliminary planning estimate which will be refined after the concept design has been developed.

The project is considered to be prudent.

FINANCIALS AND PROGRAM (costs to 2009/10)

Budget in 2006 Determination	$0.65M	**Initial Delivery Date**	
Outturn cost / Forecast outturn cost	$4.01M	**Actual / Forecast Delivery Date**	Stage 1 Dec 2010 Stage 2 Jul 2011

KEY DATA

Investment Driver	Dam Safety Compliance
Output Measure	Reduced risk to population
Stage in Planning Process	Ready for construction tender (St1), ready for concept design (st 2)
Procurement Process	Early Contractor Involvement (ECI)

PROGRAM

The PCG Monthly Report, Sept 2009 indicates that the program completion date has slipped from September 2010 to December 2009. We are of the opinion that uncertainty about the foundation will mean that the completion date may be further delayed.

CONTRIBUTION TO OUTCOMES AND DRIVER

Maintenance of asset condition and reduction of OHS risk.

KEY DOCUMENTS REVIEWED

Teleconference with Senior Project Manager (Hume), Mel Jackson

C.2 Chaffey Dam Safety Upgrade

PROJECT DETAILS

Project Name	Chaffey Dam – Dam Safety Upgrade		
Project Number	1212P6	**Status**	Current and Future Price path

NEED FOR SCHEME/ SCOPE OF WORKS/ OPTIONS APPRAISAL

The project is required to comply with the agreed NSW Dam Safety Committee (DSC) requirements (2006). Dam failure risk will be reduced from an AEP (Annual Exceedence Probability) of DCF (Dam Crest Flood) of 1:100,000 to 1:450,000. Chaffey is SWC's second highest risk dam and is considered to be above the limit for intolerable risk. The Population at Risk (PAR), Sunny Day Failure is 2700 with economic loss estimated to be $1.7 B. Previously the AEP was 1:40,000 but interim works including a 1.8m wall on the crest reduced the AEP to 1:1100,000.

Stage 1 of the project involves the construction of 35m auxiliary spillway with release plug activated at 1:10,000 AEP.

A major issue has been a requirement to increase dam yield to meet Tamworth's future urban water demand. No formal offers of funding have been received from either Federal. State og Local government. The Board has determined that no action on increasing yield will be taken until this funding is received.

Between 2003 and 2006 about 50 options /sub-options were evaluated. And by 2007 this was reduced to 4 options. SWC decided to proceed with the following stages:

Stage 1 of the project involves the construction of 35m auxiliary spillway with release plug activated at 1:10,000 AEP (P90 estimate $10.3M (). Stage 1 can progress without delaying any decision on stage 2 works

Stage 2 will involve raising the crest by 4.6m or 8.4 m in the event of dam yield capacity being increased. Stage 2 is not included in the 2010 Submission.

The project is included in the TAMP and Chaffey Asset Plan.

The P90 estimate for stage 1 is $10. 3M ($10.56M at 09/10$). The P50 estimate is $8.9 M ($9.12M at 09/10$)

Detailed design is in progress and should be 95% complete by the end of November 2009.

Environmental investigations are in progress

Some opportunistic land acquisition has been undertaken
A Business Case is under development and following completion a Gateway Review will be undertaken. Construction is scheduled to commence in March 2010

SWC have received an exemption from implementing any cold water pollution reduction measures.

The project is considered to be prudent.

FINANCIALS AND PROGRAM (costs to 2009/10)

Budget in 2006 Determination	$3454K	**Initial Delivery Date**	
Outturn cost / Forecast outturn cost	$5563K	**Actual / Forecast Delivery Date**	Dec 2013

KEY DATA

Investment Driver	Dam Safety (pre 1997)
Output Measure	Reduced probability of failure
Stage in Planning Process	Detailed design
Procurement Process	Open EOI Process

2009/10 base	06/07	07/08	08/09	09/10	10/11	11/12	12/13	13/14
2006 Determination ($k)	608	997	1199	649				
Actual/forecast ($k)	247	1181	970	2702	6250	757		

PROJECT DELIVERY PROCESS – OBSERVATIONS

Procurement processes follow NSW Government procurement guidelines
Competitive tendering processes are used throughout project lifecycle with consultants selected on a value for money basis
SWC have been advised by the NSW Procurement Services that SWC should adopt an open EOI strategy for short-listing of contractors for this project.
The project delivery process is considered to be prudent.

PROGRAM

The program indicates that the project should be completed by January 2011. However, the 2006 agreement with DSC indicated a completion date of June 2013

CONTRIBUTION TO OUTCOMES AND DRIVER

Reduces SWC's dam safety risk.

KEY DOCUMENTS REVIEWED

Further Assessment of Long Term options, GHD, 2007
Chaffey Dam Risk Based Estimate Report, Evans & Peck, June 2008

C.3 Colligen Creek Weir Refurbishment

PROJECT DETAILS

Project Name	Colligen Creek Weir Refurbishment		
Project Number	1280	**Status**	Current Price Path

NEED FOR SCHEME/ SCOPE OF WORKS/ OPTIONS APPRAISAL

Colligen Creek Weir is one of three weirs formi ng part of the Steven's Weir Pool. These weirs were constructed in the 1930s. A safety audit undertaken by the NSW Dept of Commerce in 1999/2000 deemed the structure to be unsatisfactory particularly due to OH&S risks with the timber drop boards, walkway and handrailing. The structure was also ageing and required refurbishment.

The refurbishment works were designed by the NSW Department of Commerce and were constructed in 2007/08.

We are not aware of any imprudent expenditure on this project.

FINANCIALS AND PROGRAM (costs to 2009/10)

Budget in 2006 Determination		**Initial Delivery Date**	
Outturn cost / Forecast outturn cost	$3363K	**Actual / Forecast Delivery Date**	2007/08

KEY DATA

Investment Driver	Renewal and Replacement
Output Measure	Completion by Due Date
Stage in Planning Process	Completed
Procurement Process	Open Tender

2009/10 base	**06/07**	**07/08**	**08/09**	**09/10**	**10/11**	**11/12**	**12/13**	**13/14**
2006 Determination ($k)								
Actual / forecast($k)	753	2597	13					

PROJECT DELIVERY PROCESS – OBSERVATIONS

The design was undertaken by the NSW Dept of Commerce
The contractor was selected through an open tender process. The second lowest tenderer was selected as the lowest had no experience. The selected contractor performed well on quality and timeliness. SWC had to provide some support in OH&S systems.
The project delivery process was prudent.

PROGRAM

Project completion was reported to be slightly over the target date.

CONTRIBUTION TO OUTCOMES AND DRIVER

Maintenance of asset condition and reduction of OHS risk.

KEY DOCUMENTS REVIEWED
Teleconference with Senior Project Manager (Hume), Mel Jackson

C.4 Copeton Dam Safety Upgrade

PROJECT DETAILS

Project Name	Copeton Dam Safety Upgrade Phase 1		
Project Number	*1135P6*	**Status**	Current & future price path

NEED FOR SCHEME/ SCOPE OF WORKS/ OPTIONS APPRAISAL

The objective of the project is to meet the agreed (2006) NSW Dam Safety Committee (DSC) requirements. The probability of failure will be reduced from an AEP (Annual Exceedance Probability) of DCF (Dam Crest Flood) from 1:7,200 to 1:100,000. Copeton Dam is the second highest risk dam within the SWC portfolio with a PAR (Population at Risk) (Sunny Day) of 1600 and a total economic loss of $4.8 billion
The scope of works includes :

- 250m wide Fuse Plug ancillary spillway at Diamond Bay;
- Relocation of Copeton Waters State Park; and
- Re-siting of Copeton Dam main road.

A preliminary investigation was undertaken in 2004 and 36 options/sub-options determined which were assessed using multi-criteria analysis. These were further developed in 2007 and narrowed down to 2 options. A concept investigation was undertaken in 2008 and a two stage approach proposed including:

- Stage 1 – 250 m wide fuse plug (p90 estimate – ($44.3M); and
- Stage 2 – raising the dam wall by a 1.6m high parapet – ($29.0M)

Only stage 1 works are to be undertaken in the 2010 Determination.
Detailed design has commenced and should be complete by June 2010.
The tender for relocation of Copeton Waters State Park will be awarded in late October (approximately $9M)
The project is included in the TAMP and the Copeton AMP.
The project is in the detailed design stage (scheduled for completion in June 2010). A Review of Environmental Factors is currently in progress. A Business Plan and Gateway Review are to be undertaken in June/ July 2010.
There has been a significant investment in options analysis and development, stakeholder management and value management study
Risks have been considered based on failure of the dam to meet flood events including population at risk, loss of life, economic loss. The Project Plan lists project risks and strategies to reduce risk.
Deferral of the project will result in SWC have a high risk (albeit with a low probability event) asset and not complying with the agreed timetable with the NSW Dam Safety Committee for dam upgrade.
The project scope is considered to be prudent.

FINANCIALS AND PROGRAM (costs to 2009/10)

Budget in 2006 Determination	$ 1099K	**Initial Delivery Date**	
Outturn cost / Forecast outturn cost	$7607K	**Actual / Forecast Delivery Date**	August 2012

KEY DATA

Investment Driver	Dam Safety Compliance
Output Measure	Achievement of NSW Dam Safety Committee agreed delivery date
Stage in Planning Process	Commencing detailed design
Procurement Process	Open tender

2009/10 base	**06/07**	**07/08**	**08/09**	**09/10**	**10/11**	**11/12**	**12/13**	**13/14**
2006 Determination ($k)	884	29	26	160				
Actual / forecast($k)	12	552	1289	4975	117	6	22531	6754

PROJECT DELIVERY PROCESS – OBSERVATIONS

Procurement processes follow NSW Government procurement guidelines
Competitive tendering processes are used throughout project lifecycle with consultants selected on a value for money basis
A risk based project estimate was developed in July 2008
P90 $44.3M (2008$) $45.41M(09/10$)
P50 $39.3M (2008$) $40.28M (09/10$)

PROGRAM

The PCG program indicates project completion by Aug 2012. The agreed 2006 timetable with DSC is for completion by June 2013. This indicates that there is opportunity to defer the proposed program by 9 months.
The September 2009 PCG Monthly Progress Report states that there may be a delay of 2 months in the Copeton Water State Park (CWSP) relocation contract. SWC have subsequently advised that the project is still proceeding to schedule.

CONTRIBUTION TO OUTCOMES AND DRIVER

Reduces SWC's dam safety risk.

KEY DOCUMENTS REVIEWED

Assessment of Spillway Adequacy Using GTSMR PMP Estimates (DLWC- Centre for Natural Resources, Mar 05 Development of Dam Upgrade Options, Dept of Commerce, Sept 2005 Detailed Concept Design, GHD, May 2008 Options for Risk Reduction Measures and Dam Upgrade, Dept of Commerce, July 2006 Value Management studies Risk Based Estimate Report, Evans & Peck July 2008

C.5 Duckmaloi Filters

PROJECT DETAILS

Project Name	*Replacement of Duckmaloi Filters*		
Project Number	*20296*	**Status**	Current price path

NEED FOR SCHEME/ SCOPE OF WORKS/ OPTIONS APPRAISAL

The Duckmaloi Water Treatment Plant (40 ML/d) was upgraded in 2004 with the installation of a membrane filtration plant which superseded the previous clarification plant. In 2007, water quality from the plant declined with the treated water exceeding ADWG guideline values for turbidity, iron and manganese. High turbidity would have impacted on disinfection effectiveness which could have public health risks while dirty water complaints would have arisen as a result of high iron and manganese levels. SWC staff called in a water treatment contractor to advise on remedial actions. The contractor advised that the membrane needed to be replaced. After an open tender process the contractor was awarded the contract for membrane replacement which was undertaken in 2008/09 at a cost of $720K ($800K budget)

A response to poor treated water quality was required. However, this investment is not considered prudent because:

- membranes usually have a life of around 10 years rather than the 3 years experienced. The causes of premature failure do not seem to have been fully investigated and it is possible that premature failure of the membrane could occur again;
- it would have been preferable if the SWC had commissioned a specialist water treatment consultant to provide an objective assessment;
- it does not appear that all the options were fully explored (eg pre-treatment, providing specialist operational resources, re-evaluation of the appropriateness of the membrane process etc).

NSW Public Works evaluated the iron and manganese issues in 2009 and concluded that the membrane plant was removing iron and manganese. We are of the opinion that high iron and manganese may significantly reduce membrane life.

FINANCIALS AND PROGRAM (costs to 2009/10)

Budget in 2006 Determination		**Initial Delivery Date**	
Outturn cost / Forecast outturn cost	$716K	**Actual / Forecast Delivery Date**	08/09

KEY DATA

Investment Driver	Renewal and Replacement
Output Measure	Maintaining drinking water quality
Stage in Planning Process	Completed
Procurement Process	Open tender

2009/10 base	06/07	07/08	08/09 09/10	10/11	11/12	12/13 13/14	
2006 Determination ($k)							
Actual / forecast($k)			716				

PROJECT DELIVERY PROCESS – OBSERVATIONS

Input of a specialist water treatment consultant should have been sought in order to fully assess options. Procurement was through an open tender process

PROGRAM

No program was provided.

CONTRIBUTION TO OUTCOMES AND DRIVER

Maintenance of drinking water quality

KEY DOCUMENTS REVIEWED

Assessment of Iron and Manganese in the Fish River Water Supply, NSW Public Works Water Solutions, June 09

C.6 Hartwood Weir Refurbishment

PROJECT DETAILS

Project Name	Hartwood Weir Refurbishment		
Project Number	1236O6	Status	Current and future price Path

NEED FOR SCHEME/ SCOPE OF WORKS/ OPTIONS APPRAISAL

Hartwood Weir consists of a concrete weir in cluding 1 0 concrete bay s with timbe r drop ba rs. It was constructed in the 1930s. A safety audit undertaken by the NSW Dept of Commerce in 1999/2000 deemed the structure to be unsatisfactory particularly due to OH&S risks with the timber drop boards , walkway and handrailing. The structure was also ageing and required refurbishment.

The project includes:

- Replacement of trestle-drop board weir structure with concrete piers and aluminium tilt gates;
- Reinstatement of left and right abutment walls;and
- Provision of a power supply.

The fishway is considered as a separate project

Hartwood Weir is a very old structure (over 80years old)

There are a lack of drawings. The weir may be able to be refurbished if a cut-off structure exists. SWC are trying to determine whether a cut-off structure exists. Ste investigations to date have been inconclusive.

An options study was undertaken (Dept of Commerce 2003) which indicates that if a cut-off structure does not exist then an alternative would be the construction of a regulator close by.

The project is in early planning stages and limited work has been undertaken to date**.** The estimate provided in the Information Return is based on the estimate for Yallakool Weir which is a similar scope of works.

A Project Charter exists for the project.

FINANCIALS AND PROGRAM (costs to 2009/10)

Budget in 2006 Determination		**Initial Delivery Date**	
Outturn cost / Forecast outturn cost	$1125K	**Actual / Forecast Delivery Date**	2011/12

KEY DATA

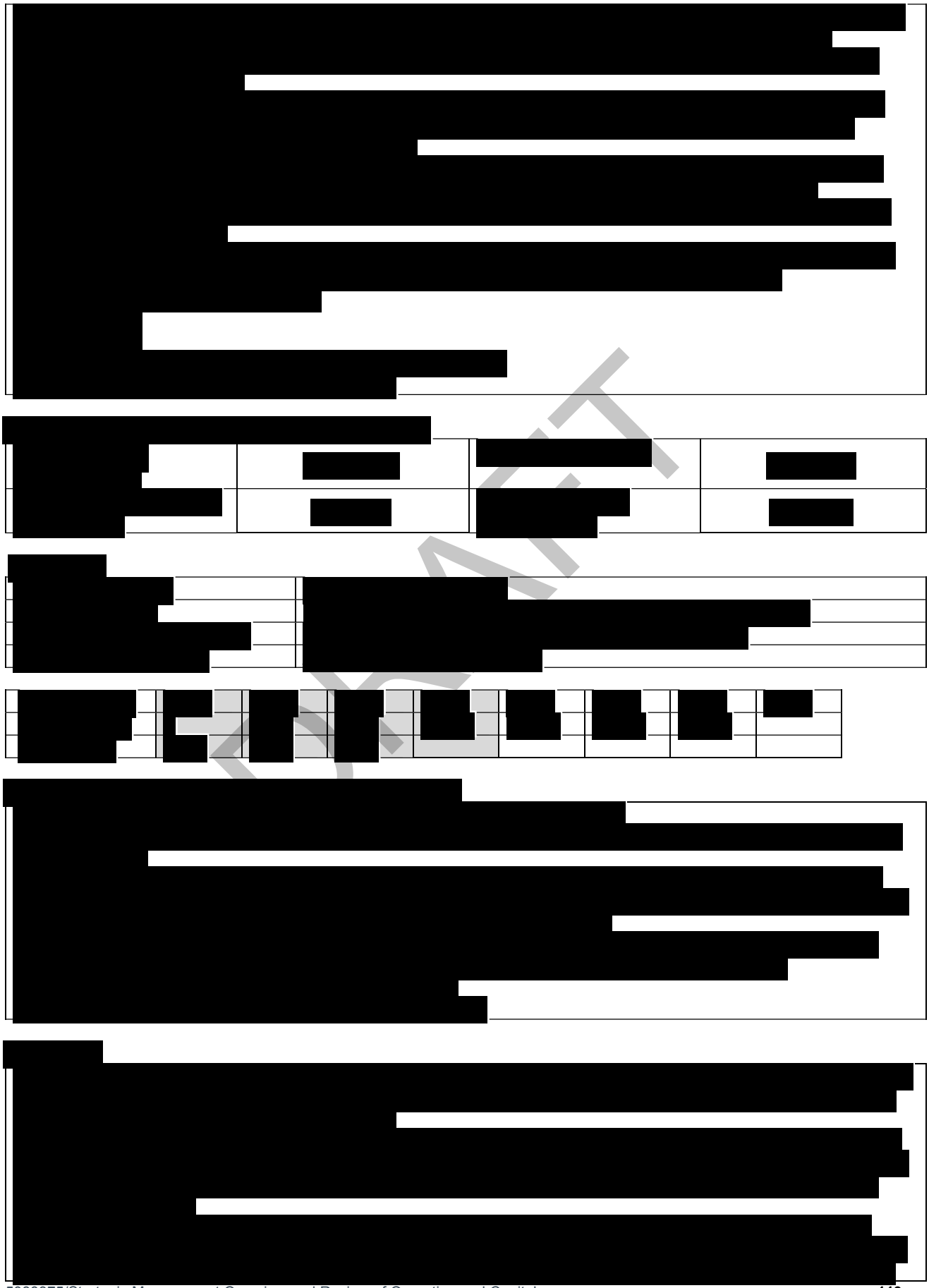
Investment Driver	Renewal and Replacement
Output Measure	Project completion
Stage in Planning Process	Preliminary
Procurement Process	Likely to be open tender

2009/10 base	**06/07**	**07/08**	**08/09**	**09/10**	**10/11**	**11/12**	**12/13**	**13/14**
2006 Determination ($k)								
Actual / forecast($k)				125	150	850		

PROJECT DELIVERY PROCESS – OBSERVATIONS

Procurement processes will follow NSW Government procurement guidelines and SWC Procurement Procedures.

[redacted]



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C.8 Lidsdale Reservoir

PROJECT DETAILS

Project Name	Lidsdale Reservoir – Survey/Design/Construct Pipeline		
Project Number	1068P6	**Status**	Current price path

NEED FOR SCHEME/ SCOPE OF WORKS/ OPTIONS APPRAISAL

The township of Lidsdale had previously been supplied with untreated raw water from a pipeline supplying the Wallerawong Power Station. The purpose of the project was to connect the township to a treated water pipeline (Fish River Stage 1 pipeline). It involved construction of a 3 km pipeline. The supply of treated water will reduce public health risk within the township.

The scope of the project is considered prudent.

FINANCIALS AND PROGRAM (costs to 2009/10)

Budget in 2006 Determination	$450K	Initial Delivery Date	
Outturn cost / Forecast outturn cost	$521.8	Actual / Forecast Delivery Date	07/08

KEY DATA

Investment Driver	Renewal & Replacement
Output Measure	Completion of the project
Stage in Planning Process	Project is complete
Procurement Process	Open tender for installation

2009/10 base	**06/07**	**07/08**	**08/09**	**09/10**	**10/11**	**11/12**	**12/13**	**13/14**
2006 Determination ($k)		450						
Actual / forecast($k)		521.8						

PROJECT DELIVERY PROCESS – OBSERVATIONS

The initial budget estimate was $450K. After detailed design the budget was increased to $580K. The final project cost was $521.8K

Procurement was split into 2 parts, supply and installation.

Supply was though sole invitee – the pipeline was a high pressure main and there is only one ductile iron pipe supplier in Australia – Tyco

Installation was through open tender with 10 companies submitting tenders

Procurement processes follow NSW procurement guidelines

We were advised that SWC was satisfied with the quality of the pipeline construction.

We are not aware of any imprudent expenditure

PROGRAM

We were advised that the project was late by a few weeks but the delay was not significant.

CONTRIBUTION TO OUTCOMES AND DRIVER

Improvement in service levels. Reduction of public health risk

C.9 Menindee Fuse Plug

PROJECT DETAILS

Project Name	Menindee Fuse Plug		
Project Number	1287P6	**Status**	Future price path

NEED FOR SCHEME/ SCOPE OF WORKS/ OPTIONS APPRAISAL

The objectives of this project are to :

- Improve the reliability of fuse plug operation; and
- Cost-effectively address soil erosion risks.

The project involves:

- Lowering the crest of the fuse plug embankment
- Removing trees on the fuse plug embankment (or possibly re-locating the fuse plus
- Incorporating appropriate soil erosion control measures

The fuse plug protects the main weir and also the township of Menindee. The main Sydney to Perth railway line is located downstream. The land in the area is very flat and the Darling has a huge catchment. During flood events the water can back up 100km.

There have been concerns about the impacts of current arrangements during major flood events for a number of years.

The Dept of Public Works undertook an independent review in 2002.

Hydrological modelling (Bewster Consulting) was undertaken on 2007 followed by a Concept Design (SKM) in 2008. Foll owing a valu e mana gement worksho p in July 200 9, further hy drological m odelling of an extremely co mplex Da rling River/Talya walka sy stem (by DHI) wa s co mpleted in Septe mber 2 009. This refined modelling confirmed that a much shorter fuse plug (600m) would be satisfactory.

The area has significant environmental and heritage significance. An environmental assessment will need to be und ertaken. These ma y possibly sp an between 09/10 and 10/11. The extent of the "sp read/timing" of environmantal assessment will not be known until an environmental assessment is commenced, since it is a borderline Part 5/or Part 3A assessment. A Part 5 (simpler) assessment will only take 3-4 mont hs whereas a Part 3A (comprehensive) assessment could take 6 months.

In addition, further investigations such as soil testing and assessment of legal implications of the project are required..

It is likely that further stakeholde r consultation will be required, particu larly in relation to impact s on the downstream Sydney to Pe rth Railway line. We a re of t he opinion that this will extend the program b eyond 2010/11 timeframe listed in the Information Return.

There has been significant work undertaken over the past few ye ars to evalu ate the optio ns available and the impacts of these options.

Continual refinement based on modelling has allowed the proj ect estimate to be reduced from $13M in the Information Return to $7.6M (with the potential to reduce costs further)

The project is considered to be prudent.

FINANCIALS AND PROGRAM (costs to 2009/10)

Budget in 2006 Determination		**Initial Delivery Date**	
Outturn cost / Forecast outturn cost	$657K	**Actual / Forecast Delivery Date**	2011/12

KEY DATA

Investment Driver	Renewal and Replacement
Output Measure	Project completion
Stage in Planning Process	Planning
Procurement Process	Open tender

2009/10 base	**06/07**	**07/08**	**08/09**	**09/10**	**10/11**	**11/12**	**12/13**	**13/14**
2006 Determination ($k)								
Actual / forecast($k)	41	98	221	427	1300	0		

PROJECT DELIVERY PROCESS – OBSERVATIONS

Procurement processes follow NSW Government procurement guidelines
Competitive tendering processes are used throughout project lifecycle with consultants selected on a value for money basis
The estimates are considered to be reasonable and are being refined as further analysis is undertaken.
The process is considered prudent.

PROGRAM

The Information return and the September PCG Report indicates that the project should be completed in 2010/11. Due to uncertainty regarding the extent of the environmental assessment and the need for stakeholder involvement it is likely that this project will extend into 2011/12

CONTRIBUTION TO OUTCOMES AND DRIVER

Reduction of risk to infrastructure, township and the environment

KEY DOCUMENTS REVIEWED

Lake Wetherall Fuse Plug Review- Hydrological Modelling, Brewster Consulting, Feb 2007
Lake Wetherall Fuse Plug Concept Design Report, SKM, Sept 2006
Hydraulic Modelling of Darling River - Talyawalka Creek and Lake Wetherall Outflow, DHI, Sept 2009

C.10 RYDAL Pipeline

PROJECT DETAILS

Project Name	RYDAL Replace Section of Pipeline		
Project Number	*2191P6*	**Status**	Future price path

NEED FOR SCHEME/ SCOPE OF WORKS/ OPTIONS APPRAISAL

The Fish River Water Supply (FRWS) provides bulk water to four major customers namely Sydney Catchment Authority (SCA), Delta Electricity, Lithgow City Council and Oberon Council. Some customers receive raw water (Stage 2 system) while others receive treated water (Stage 1 system).
Stage 1 was constructed between 1943 and 1948 (120 km)
Stage 2 was constructed between 1957 and 1959 (54 km)
Stage 3 was completed in 1964 and has few problems
Stage 1and 2 pipelines are subject to frequent failures. Two previous studies to prioritise pipe replacement were undertaken in 1992 and 2001. To date 22 km (18%) of Stage 1 has been replaced while 10 km (20%)

of Stage 2 has been replaced In 2009 SWC engaged NSW Public Works to undertake a study to prioritise further replacement of mains. A draft copy of this report was issued after the submission. The submission estimates were based on indicative estimates The report has determined a prioritised list of mains replacement based on past performance, modelled future performance and criticality. A priority list for pipe replacement has been prepared which lists 16.9km of mains for replacement at an estimated cost of $31.7M. Five high priority mains (3.6km) have been identified for replacement at an estimated cost of $7.6M. The scheme is needed to meet service agreements and to reduce Opex. However, the level of prudence could have been improved as SWC should also be evaluating other options (eg undertaking network modelling to determine the optimal size of replacement pipe rather than replacement of "like with like"). We were advised that this will be occurring now a report has been prepared. The Asset Management Plan needs to be further developed to document service standards so that investment can be linked to these drivers.

FINANCIALS AND PROGRAM (costs to 2009/10)

Budget in 2006 Determination		**Initial Delivery Date**	
Outturn cost / Forecast outturn cost		**Actual / Forecast Delivery Date**	2011/12

KEY DATA

Investment Driver	Renewal and Replacement
Output Measure	Replacement of high priority mains
Stage in Planning Process	Preliminary planning
Procurement Process	*Define and detail below*

2009/10 base	**06/07**	**07/08**	**08/09**	**09/10**	**10/11**	**11/12**	**12/13**	**13/14**
2006 Determination ($k)								
Actual / forecast($k)			5000			5000		

PROJECT DELIVERY PROCESS – OBSERVATIONS

The project was awarded tp NSW Public Works as they had previously undertaken the pipeline assessments. Costs listed in the Information Return were indicative planning estimates which can now been refined based on the NSW Public Works Report. A Project Charter exists for the project

PROGRAM

A program does not currently exist apart from expenditure proposed in the first two years of the 2010 Determination

CONTRIBUTION TO OUTCOMES AND DRIVER

Improvement of service standards Reduction in Opex

KEY DOCUMENTS REVIEWED

FishRriver Water Supply – Pipeline Renewal Program Report, NSW Public Works, Oct 2009

C.11 Wyangala Dam Safety Upgrade

PROJECT DETAILS

Project Name	Wyangala Upgrade Phase 1		
Project Number	1350P6	**Status**	Current & future price path

NEED FOR SCHEME/ SCOPE OF WORKS/ OPTIONS APPRAISAL

The objective of the project is to meet the agreed 2006 NSW Dam Safety Committee (DSC) requirements and reduce dam safety risk from an AEP (Annual Exceedance Probability) of DCF (Dam Crest Flood) of 1:9,000 to 1:25,000. The dam lies within the intolerable zone of the ANCOLD Guidelines and DSC Risk Framework. The PAR (Population at Risk) (Sunny Day) is 2000 and the Total Economic Loss is estimated to be $5.5 billion.

The project scope includes:

- Locking system for existing radial gates (project 1A)
- Raising of chute wall(project 1B); and
- New parapet wall on embankment (project 1C).

Remedial options were investigated in 2001 (GeoEng)
Further development / optimisation of options/sub-options (20 No) was undertaken in 2005 (SMEC)
A physical modelling study of the spillway was undertaken in 2006 (SMEC)
A concept design was undertaken in 2008, followed by a Value Management study
A risk based cost estimate was prepared in Sept 2009 (Evans & Peck)
An economic appraisal and business case and Gateway Review were undertaken in Sep 09
A tender has been issued for the Review of Environmental factors (REF) (Oct 2009)
The project is included in the TAMP and the Wyangala AMP
There has been a significant investment in options analysis and development, stakeholder management, value management. Economic appraisal, business case and Gateway Review.
Risks have been considered based on failure of the dam to meet flood events including population at risk, loss of life and economic loss. Project risks and risk reduction strategies are included in the Project Plan and the Business Case
Deferral of the project will result in SWC have a high risk (albeit with a low probability event) asset and not complying with the agreed timetable with the NSW Dam Safety Committee for dam upgrade.
The project is considered to be prudent.

FINANCIALS AND PROGRAM (costs to 2009/10)

Budget in 2006 Determination	$ 704K	**Initial Delivery Date**	
Outturn cost / Forecast outturn cost	$3190K	**Actual / Forecast Delivery Date**	November 2012

KEY DATA

Investment Driver	Dam Safety Upgrade
Output Measure	Achievement of NSW Dam Safety Committee agreed delivery date
Stage in Planning Process	Detailed design
Procurement Process	D&C (1A), Open tender (1B), ECI (C)

2009/10 base	**06/07**	**07/08**	**08/09**	**09/10**	**10/11**	**11/12**	**12/13**	**13/14**
2006 Determination ($k)	324	33	120	228				
Actual / forecast($k)	0	568	701	2149	7397	14995	10095	

PROJECT DELIVERY PROCESS – OBSERVATIONS

Procurement processes follow NSW Government procurement guidelines.
Competitive tendering processes are used throughout project lifecycle with consultants selected on a value for money basis. The consultancies have been awarded either through open or invited tender
The concept design for the locking system for existing radial gates (project 1A)has been awarded to a sole supplier based on positive feedback on a similar project for Warragamba Dam. The approach is consistent with SWC procurement procedures (ie sign-off by CEO/COO)

Detailed design of the chute wall raising has been awarded based on an invited tender.

The procurement strategy was considered at a Value Management Workshop in December 2008. The following is proposed:

- Stage 1a - Detailed design and construct contract
- Stage 1b - Single construct only contract
- Stage 1c - Single construct only contract

Open tenders will be called for Stages 1a and 1b. An early contractor involvement (ECI) approach using the GC21 contract conditions will be taken to Stage 1c

The PCG Monthly Progress Report Sept 2009 notes that there may be an additional cost of $3.5M to $9.0 M for an alternative road route that bypasses the dam but this is not included in current estimates due to the uncertainty of the route. SWC have advised that a preliminary planning study has estimated that the cost of an alternative road route would be $9.2M which was not included in the submission. A revised cashflow was also presented which indicates that if the alternative access road is required, project completion will be delayed until 2013/14. The report on the alternative road route is currently with the Minister.

A risk based cost estimate was developed in September 2009.

	P90	P50
Stage 1a – radial gates	$6.41M	$5.65M
Stage 1b – chute wall	$2.61M	$2.04M
Stage 1c – parapet wall	$23.16M	$21.33M
Total	$32.18M	$29.02M

The project delivery process is considered prudent.

PROGRAM

The PCG program indicates project completion by November 2012. The agreed 2006 timetable with DSC is for completion by June 2012.
The PCG Monthly Progress Report, Sept 2009 notes that progress may be delayed as a result of an independent review of future access to Wyangala Dam. SWC have indicated that construction of an alternative access road would delay the project until 2013/14

CONTRIBUTION TO OUTCOMES AND DRIVER

Reduces SWC's dam safety risk.

KEY DOCUMENTS REVIEWED

Wyangala Dam Flood Security Upgrade - Parapet Wall Option Investigation, Concept Development and Associated Chute Wall Raising, GHD, Aug 2008
Project Plan for Wyangala Dam Upgrade Version 7, Oct 2008
Value Management Study, Australian Centre for Value Management, Dec 2008
Wyangala Dam Stage 1, Flood Security Upgrade Business Case Sept 2009
Risk Based Cost Estimate – Evans & Peck, Sept 2009
Major Projects Group, Project Control Group, Report Sept 2009

C.12 Yallakool Weir Refurbishments

PROJECT DETAILS

Project Name	Yallakool Weir Refurbishment		
Project Number	1285P6	**Status**	Current Price Path

NEED FOR SCHEME/ SCOPE OF WORKS/ OPTIONS APPRAISAL

Yallakool Weir is one of three weirs forming part of the Steven's Weir Pool. These weirs were constructed in the 1930s. A safety audit undertaken by the NSW Dept of Commerce in 1999/2000 deemed the structure to be unsatisfactory particularly due to OH&S risks with the timber drop boards, walkway and handrailing. The structure was also ageing and required refurbishment.

The project includes:

- Replacement of drop board weir structure with concrete piers and aluminium tilt gates;
- Providing solar power for operation of the gates;

A concept design was developed by the NSW Dept of Commerce in 2006. The concept design was reviewed by the Dept of Commerce in 2008 based on experience with Colligen Weir. The design was updated to include aluminium gates which would improve operation and maintenance

The refurbishment works are packaged with the construction of fishways at Yallakool, Gulpa Ck,Edward River off-take and Stevens Weir.

The weir design is complete but the project but been delayed as the Department of Primary Industries requires a redesign of the fishway. It is proposed that project is issued for tender in November with construction commencing in early February. From information available in the PCG Monthly Report (August 09) it appears that the project may not be completed until early 2011.

The following is considered prudent:

- Using the experience gained from the Colligen Weir project to improve the design; and
- Packaging of construction with other related projects to gain cost efficiencies.

There may also be opportunities arising from the projects in standardising some elements of the design

FINANCIALS AND PROGRAM (costs to 2009/10)

Budget in 2006 Determination		**Initial Delivery Date**	Sept 2010
Outturn cost / Forecast outturn cost	$1125K	**Actual / Forecast Delivery Date**	Mar 2011

KEY DATA

Investment Driver	Renewal & Replacement
Output Measure	Completion of project
Stage in Planning Process	Ready for tender
Procurement Process	Open tender (packaged with other fishways

2009/10 base	**06/07**	**07/08**	**08/09**	**09/10**	**10/11**	**11/12**	**12/13**	**13/14**
2006 Determination ($k)								
Actual / forecast($k)				1125				

PROJECT DELIVERY PROCESS – OBSERVATIONS

Packaging the work with the Yallakool weir fishway and other fishway projects is prudent.
Design revisions to meet Department of Primary Industry requirements is delaying implementation.

PROGRAM

The program is likely to be delayed by a few months because of the need to redesign the fishway

CONTRIBUTION TO OUTCOMES AND DRIVER

Maintenance of asset condition and reduction of OHS risk.

KEY DOCUMENTS REVIEWED

Teleconference with Senior Project Manager (Hume), Mel Jackson

C.13 Lake Cargelligo Fish Passage

PROJECT DETAILS

Project Name	Lake Cargelligo Fish Passage		
Project Number	1030P6	**Status**	Future price path

NEED FOR SCHEME/ SCOPE OF WORKS/ OPTIONS APPRAISAL

The scheme is for the construction a fish passage on the Lake Cargelligo weir. The design of the fish passage is for a multi-level inlet fish passage.

The scheme is required as a consequence of maintenance work on the weir. S218 of the 1994 Fisheries Act states that:
"The Minister may, by order in writing, require a person (other than a public authority) who constructs, alters or modifies a dam, weir or reservoir on a waterway to carry out, within the period specified in the order, such works as may be so specified to enable fish to pass through or over the dam, weir or reservoir."

The scheme is prudent when considered in isolation; there is a legislative requirement for these works to be undertaken. However, there are a number of fish passage capital schemes being undertaken and there is a question of whether it is prudent for all of these to be undertaken within the same time or short period of time. Monitoring of the effectiveness of the fish passage will provide lessons learnt for future design of fish passages.

As discussed above the driver is defined by the 1994 Fisheries Act. The requirement for the passage results from the Minister making the request for a fish passage once notified by State Water of alterations or modifications made to any weir or dam. The scheme will be needed in accordance with the directive issued by the Minister, the impact of deferral would be the risk of non-compliance:
"(4) If a person fails to carry out the work specified in an order under this section within the period so specified, the Minister:
(a) may cause the work to be carried out, and
(b) may, by proceedings brought in a court of competent jurisdiction, recover from the person as a debt the cost of carrying out the work."

The scheme within the Total Asset Management Plan is for latest costs rather than the costs that were first identified in 2005.

State Water Corporation has not constrained its fish passage program within an overall capital budget for the future price path as it considers that since these schemes are required by legislation it has no option but to undertake them.

FINANCIALS AND PROGRAM (costs to 2009/10)

Budget in 2006 Determination	N/A	**Initial Delivery Date**	2010/11
Outturn cost / Forecast outturn cost	N/A	**Actual / Forecast Delivery Date**	2010/11

KEY DATA

Investment Driver	Environment Planning and Protection, 50% user share
Output Measure	N/A
Stage in Planning Process	Detailed design and construction
Procurement Process	Open tender

2009/10 base	06/07	07/08	08/09	09/10	10/11	11/12	12/13	13/14
Planned ($k)	0	0	0	486	3,200	0	0	0
Actual ($k)	0	60	213	3,004		0	0	0

Planned figures are from the TAMP, actual figures are from the August 2009 Monthly Progress Report.

PROJECT DELIVERY PROCESS – OBSERVATIONS

Basis of costs were developed by the Department of Commerce in producing a detailed design. Mitigation of risks is predominately provided by sheet piling the area of works. In the Project Charter $500k was allowed for outline design and $2M for detailed design and construction with no costs allowed for contingency. State Water assumes that risk is borne by the contractor. Total outturn cost to State Water is $3.7M.

State Water procured the design through an open advertised tender process which was awarded to the Department of Commerce. Construction is through open tender and this closes on the 3rd November 2009. State Water invited tenderers to a meeting on site at which 10 attended. We consider that the procurement process was therefore prudent.

PROGRAM

There is a program in place with milestones. The design process is finished, and currently construction is out at tender, construction is due to start in the third quarter of the 2009/10 financial year with completion at the end of the second quarter of the 2010/11 financial year.

The project is currently on program, however it remains to be seen (as still to receive tenders) whether contractors timelines and costs will fit within those set by State Water.

CONTRIBUTION TO OUTCOMES AND DRIVER

Contributions for the Environmental Driver in which this scheme sits under is 50% user contribution and 50% government contribution.

KEY DOCUMENTS REVIEWED

- Monthly Progress Report August 2009.
- Pr oject Charter.
- Fishe ries Act 1994.
- MoU between State Water Corporation and Department of Water and Energy.
- Review of Environmental Factors Lake Cargelligo Weir Remedial Works
- Letter from Fisheries re Cargellico.pdf (Review of Env Factors)

C.14 Lake Brewster – Water Efficiency Project

PROJECT DETAILS

Project Name	Lake Brewster Water Efficiency Project		
Project Number	Not defined in TAMP as a single project	**Status**	Future price path

NEED FOR SCHEME/ SCOPE OF WORKS/ OPTIONS APPRAISAL

This scheme was identified through stakeholders, namely customers in the Lachlan valley, the Lachlan Catchment Management Authority. Lake Brewster is an off-river water storage which is created by a natural

depression in the topology. The underlying issue with Lake Brewster is that there was a significant dead storage zone and also due to the Lake's shallowness it also experiences water quality issues. The stakeholders considered that if the dead storage could be utilised and if there were no water quality issues that the Lake could increase the security of supply to customers.

The scheme in basic terms consists of a existing channel from the Lake which has been deepened to gain access to the previous dead storage zone and the creation of wetlands surrounding the inlet and outlet channels to improve the water quality situation.

The scheme can be considered prudent as it will increase the security of supply and that the majority of the funds have been provided by 3rd parties. Of the $ 13M capital expenditure required only $2.7M is a State Water contribution. The scheme involves using much of the existing assets on site but also required the building of some new embankments and regulators.

Whilst there are clear links to the Lachlan Valley Asset Management Plan for the existing assets it's not clear that the re is a link into the TAMP for the new assets. The TAMP identifies no capital spend on the project with the exception of $1M in 2009/10 on re newal and replacement of existing assets. In supporting data for historic capital expenditure spend has been placed against the environmental driver and hence it's unclear why in 2009/10 spend on the same assets is placed against the renewals and replacement driver. Reconciling project costs against those in the TAMP is difficult as State Water Corporation has only capitalised within the TAMP those costs that are contributed by State Water.

The Project Manager identified a risk that if the whole works was awarded as a single contract then any delays on one part of the works would run a risk of the whole program being delayed. By sub-dividing the works into packages the State Water is better placed to manage any slippages within the overall timetable.

State Water investigated the impact of losing Lake Brewster as an off-river storage and determined that the potential loss in revenue versus the capital in undertaking the project was of significant proportion to go ahead with the project.

FINANCIALS AND PROGRAM (costs to 2009/10)

Budget in 2006 Determination	$ 0	**Initial Delivery Date**	2010/11
Outturn cost / Forecast outturn cost	$13M	**Actual / Forecast Delivery Date**	2010/11

KEY DATA

Investment Driver	Environmental – Water Quality & Security of Supply
Output Measure	No set output measures but reduction of dead water storage zone and improved water quality.
Stage in Planning Process	Final stages of construction
Procurement Process	Open tender

2009/10 base	**06/07**	**07/08**	**08/09**	**09/10**	**10/11**	**11/12**	**12/13**	**13/14**
Planned ($k)								
Actual ($k)	78	2,651	7,750	1,600	550	250	50	50

PROJECT DELIVERY PROCESS – OBSERVATIONS

As described above the breaking up of the works into smaller packages was an efficient and prudent way of ensuring that the project would be delivered to the set timescale to militate against rainfall/runoff and flooding. This is demonstrated by the works coming in under budget and within the set timeframe. The procurement of services was through open tender.

Procurement process was overseen by the Project Steering Committee and went through State Water's Project Delivery System.

The project is currently in the final construction stage and dependent on availability of water could be operational in 2010/11.

PROGRAM

There is a program in place with defined milestones however much of this is dependent on water resources. The construction of the regulators and spillways is well under way, the establish of the wetland s during 2010/11 is the part of the program that is dependent on water resources, however this is not critical as without water there is no need to store and treat it. If current climatic conditions continue in the long run there is the possibility that the scheme may not be used for a while.

CONTRIBUTION TO OUTCOMES AND DRIVER

The contributions to this project are $2.8M from the Lachlan Catchment Management Authority, $7.5M from the Commonwealth and $2.7M from State Water. In return for the Commonwealth's contribution it will be granted with an environmental use licence for 60% of the water savings.

KEY DOCUMENTS REVIEWED

- Brief notes – Lake Brewster Water Efficiency Project
- Monthly Progress Report – August 2009
- Lake Brewster Water Savings Modelling – May 2009

C.15 Keepit Dam Fish Passage Offsets

PROJECT DETAILS

Project Name	Keepit Dam: Fish Passage Offsets		
Project Number	2123P6	**Status**	Future price path

NEED FOR SCHEME/ SCOPE OF WORKS/ OPTIONS APPRAISAL

Due to dam safety upgrade work on the Keepit Dam, State Water Corporation is required by Section218 of the 1994 Fisheries Act to provide a fish passage at the dam if requested by the Minister.

As it is considered that the costs of construction of a high level fish way at Keepit Dam are likely to exceed the potential benefits to the migratory fish community of the Namoi river the Department of Primary Industries (DPI) supports the construction of three fishways on downstream weirs; the Mollee, Gunidgera and Weeta weirs. These three fish passages are also considered by the DPI to provide an offset to the dam safety work being undertaken at Split Rock Dam.

The negotiation of providing fish passages at offset locations is considered prudent when one compares the cost of providing a fish passage at Keepit versus the cost of providing fish passages at the three above mentioned weirs. The estimated cost for a high level fish passage at Keepit was identified as $30M whereas the cost of providing fish passages at the three weirs has been estimated at $18.1M.

The scheme is prudent when considered in isolation; there is a legislative requirement for these works to be undertaken. However, there are a number of fish passage capital schemes being undertaken and there is a question of whether it is prudent for all of these to be undertaken within the same time or short period of time. Monitoring of the effectiveness of the fish passage will provide lessons learnt for future design of fish passages and also enable efficiencies to be made in the capital expenditure of providing these fishways across the state.

As discussed above the driver is defined by the 1994 Fisheries Act. The requirement for the passage results from the Minister making the request for a fish passage once notified by State Water of alterations or modifications made to any weir or dam. The scheme will be needed in accordance with the directive issued by the Minister, the impact of deferral would be the risk of non-compliance:
"(4) If a person fails to carry out the work specified in an order under this section within the period so specified, the Minister:
(a) may cause the work to be carried out, and
(b) may, by proceedings brought in a court of competent jurisdiction, recover from the person as a debt the cost of carrying out the work."

The costs within the Total Asset Management Plan are for $ 18.1M or rather $6M for each offset fish

passage. A feasibility report undertaken by State Water Corporation in October 2007 estimates the costs for the three weirs to be $15.8M in 2009/10 prices. These costs included a large contingency for estimating uncertainties. State Water Corporation considers that the estimated costs would not be sufficient because as detailed design progresses further unknowns are identified, and that this is why the estimate was adjusted upwards even though there is a contingency within the estimated costs. The expected increase in budget costs relate directly with results State Water Corporation has obtained in carrying out P90 risk based cost estimates on the other parts of the project. As all the fish passages in the fish program seem to be borne out this increased estimate to allow for P90 costing we consider that the allowance for the overall fish passage program to be overly generous. By using high end estimates it provides little incentive for project managers to drive costs down on projects or even to gain any capital efficiencies as State Water progresses along its capital fish passage program.

State Water Corporation has not constrained its fish passage program within an overall capital budget for the future price path as it considers that since these schemes are required by legislation it has no option but to undertake them.

FINANCIALS AND PROGRAM (costs to 2009/10)

Budget in 2006 Determination	N/A	**Initial Delivery Date**	2012
Outturn cost / Forecast outturn cost	N/A	**Actual / Forecast Delivery Date**	2010/13*

* Supporting information provided by SWC shows the three passages being delivered in 2011/12, however the TAMP and Monthly Progress Report shows that $6M is not due to be spent until 2012/13, therefore one of the passages will not be operational until 2012/13. It is possible that one passage will be delivered in 2010/11 as the capital profile starts in that year with a $6M spend.

KEY DATA

Investment Driver	Environment Planning and Protection, 50% user share
Output Measure	N/A
Stage in Planning Process	Feasibility study and internal P90 cost estimating
Procurement Process	Open tender

2009/10 base	**06/07**	**07/08**	**08/09**	**09/10**	**10/11**	**11/12**	**12/13**	**13/14**
Planned ($k)	0	0	0	100	6,000	6,000	6,000	0
Actual ($k)	0	0	0	100	6,000	6,000	6,000	0

Planned figures are from the TAMP, actual figures are from the August 2009 Monthly Progress Report.

PROJECT DELIVERY PROCESS – OBSERVATIONS

No detail design yet undertaken. Costs are P90 cost estimates which are built upon an outline (but still rather detailed) design (as part of a feasibility report) which included a large contingency for estimating uncertainty.

PROGRAM

The feasibility study has been completed and detailed design is yet to be started. The profile of capital spend within the TAMP is such that the expected milestones would be the delivery of a fish passage each year between 2010/11 to 2012/13.

CONTRIBUTION TO OUTCOMES AND DRIVER

Contributions for the Environmental Driver in which this scheme sits under is 50% user contribution and 50% government contribution.

KEY DOCUMENTS REVIEWED

- Monthly Progress Report August 2009.
- Pr oject Charter.
- Fishe ries Act 1994.
- MoU between State Water Corporation and Department of Water and Energy.
- Review of Environmental Factors Lake Cargelligo Weir Remedial Works
- Fish passage at Dams cost estimate.pdf
- Keepit downstream weirs fishway studies.pdf

C.16 iSMART

PROJECT DETAILS

Project Name	iSMART (Integrated Surveillance Monitoring, Automation & Remote Telemetry)		
Project Number	N052	**Status**	Future price path

NEED FOR SCHEME/ SCOPE OF WORKS/ OPTIONS APPRAISAL

Scheme is to install telemetry remote control technology at many of State Water Corporation's sites. Largely the scheme will enable operating efficiencies to be made through reducing staffing, regulatory compliance and customer services.

Much of the scheme is required to fulfil requirements with the Dam Safety Committee where reduced man-hours at dam sites have been or are scheduled to be implemented.

The scope of the scheme is prudent as the scheme will enable significant savings.

The impact of deferral of the sche me is that large r staff numbers will be requi red. Scheme is to meet the current larg e redu ction in staff due to redu ced ma nning at da m sites a s well as anti cipated savin gs in reduced m anning at othe r site s. Th e Dam Safety Committee require im proved/increased telemet ry and monitoring at dam sites in order to agree to reduced manning at sites including those already agreed.

The scheme is within the Total Asset Management Plan.

The scheme has a Proje ct Charter. Program/scope is endorsed by the Busi ness Improvement Committee, prior to this the project sponsor helped justify the program.

FINANCIALS AND PROGRAM (costs to 2009/10)

Budget in 2006 Determination	$ 0k	**Initial Delivery Date**	N/A
Outturn cost / Forecast outturn cost	$8,430k	**Actual / Forecast Delivery Date**	2010/11 to 2013/14

KEY DATA

Investment Driver	Water Delivery and Other Operations
Output Measure	Achieving the efficiencies as set out by State Water Corporation
Stage in Planning Process	Defined scope, estimates carried out, for the functional and technical requirements. Finalise scope in November 2009 and then define the surveillance part of program.
Procurement Process	Open tender process with pre-discrete areas

2009/10 base	**06/07**	**07/08**	**08/09 09/10**	**10/11**	**11/12**	**12/13 13/14**	
Planned ($k)							
Actual ($k)	0	0	0 0 3,650		2,400	1,220	1,160

PROJECT DELIVERY PROCESS – OBSERVATIONS

Costs have been identified from business requirements by visiting sites and ascertaining what requirements there are for each site. An engineering estimating process was undertaken identifying every key part from communication down to field instrument level.

No single line for contingency, this is done on a line basis by the engineering estimating process, still early days and costs will be further refined.

The program is front loaded as State Water Corporation look to consolidate current reduced manning levels at dam sites and to achieve the big wins/priorities first.

Procurement is an open tender process with pre-discrete packages. Management will be done internally, system architecture will form a single tender and the surveillance monitoring and control will potentially form many packages.

The scheme is current at a defined scope process, with engineering estimates undertaken, for the functional and technical requirements. The scope will be finalised in November 2009 and then State Water Corporation will define the surveillance part of the program.

PROGRAM

There is a program in place with defined milestones, main system architecture for completion by July 2010.

C.17 Fish Passages – Generic

PROJECT DETAILS

Project Name	Fish Passages – Generic		
Project Number	N/A	**Status**	Future price path

NEED FOR SCHEME/ SCOPE OF WORKS/ OPTIONS APPRAISAL/ PROGRAM

The construction for fish passages is driven by legislation. S218 of the 1994 Fisheries Act states that: *"The Minister may, by order in writing, require a person (other than a public authority) who constructs, alters or modifies a dam, weir or reservoir on a waterway to carry out, within the period specified in the order, such works as may be so specified to enable fish to pass through or over the dam, weir or reservoir."*

There are a number of fish passage capital schemes being undertaken and there is a question of whether it is prudent for all of these to be undertaken within the same time or short period of time. Monitoring of the effectiveness of the fish passage will provide lessons learnt for future design of fish passages. The capital costs within the Total Asset Management Plan suggests the following build rate during the future price path:

Description	10-11	11-12	12-13	13-14
Lake Cargelligo Fish Passage	3,200	-	-	-
Hartwood Weir fishway	150	850	-	-
Rehabilitation & Fishway - Booligal - Budget Only	550	-	-	-
KEEP:Fish Passage Offsets	6,000	6,000	6,000	-
CPTN:Fish Passage Offsets	50	2,000	3,000	-
BNDG:Fish Passage Offsets	3,000	3,000	-	-
Wy:Fish Passage Offset	50	3,000	3,000	-
Number of fish passages completed each year	4	5	3	-

A summary of the proposed fishways as detailed within the 10 Year Fish Program has the following year of construction for the fish passages which shows 13 weirs all to be constructed in 2011/12. We note that this does not entirely correspond with the TAMP and we consider that the TAMP shows the latest construction profile for the new fishways.

Description	08-09	09-10	10-11	11-12
Number of fish passages completed each year	1	4	2	13

There is a question of whether it can be considered prudent to construct all of these fish passages in such a short time frame for a number of reasons. By completing all the schemes at the same time provides very little opportunity for any lessons learnt from one fish passage to be applied to other fish passages, even thought SWC will have learnt lessons from previous fish passages the uniquesness of each site and the relatively infancy of this type of technology means that it is likely for more gains to be made through better knowledge and understanding. Also on a procurement level by undertaking all these schemes at the same time the tendering process may prove to be not as competitive as there may not be enough contractors available (and willing) to undertake the work.

State Water Corporation has not constrained its fish passage program within an overall capital budget for the future price path as it considers that since these schemes are required by legislation it has no option but to undertake them.

FINANCIALS AND PROGRAM (costs to 2009/10)

Budget in 2006 Determination	N/A	**Initial Delivery Date**	N/A
Outturn cost / Forecast outturn cost	N/A	**Actual / Forecast Delivery Date**	2010/11-2012/13

KEY DATA

Investment Driver	Environment Planning and Protection, 50% user share
Output Measure	N/A
Stage in Planning Process	N/A
Procurement Process	Open tender

2009/10 base	06/07	07/08	08/09	09/10	10/11	11/12	12/13	13/14
Planned ($k)	0	0	0	0	0	0	0	0
Actual ($k)	0	0	0	2,784	13,000	14,850	12,000	0

Planned figures are from the TAMP.

PROJECT DELIVERY PROCESS – OBSERVATIONS

The basis of costs for the majority of schemes is based on estimates from a conceptual design. The conceptual design costs have a contingency of 30% applied to them. State Water Corporation has then uplifted these estimates by another proportion based on P90 cost estimating. We consider that P90 is likely to be overgenerous considering the scale of the program. With such numbers of fish passages to be built it is unlikely that the individual cost for each passage will always meet or exceed the P90 estimates.

State Water procures the designs through an open advertised tender process. The procurement process can therefore be considered prudent.

CONTRIBUTION TO OUTCOMES AND DRIVER

Contributions for the Environmental Driver in which this scheme sits under is 50% user contribution and 50% government contribution. Within the TAMP State Water Corporation has placed the costs for any fish passage offsets as SWC funded as opposed to the funding of 50% user contribution and 50% government contribution. We note however that within the Information Return (IR) all these costs are correctly allocated against the correct 50:50 funding mechanism. However, the Wyangala fish passage offset capital costs have been incorrectly allocated to Renewal and Replacement with the TAMP and IR (which attracts a 90% user contribution and 10% government contribution) rather than the Environmental Planning and Protection driver which is 50:50 user and government contributions.

KEY DOCUMENTS REVIEWED

- Fisheries Act 1994.
- MoU between State Water Corporation and Department of Water and Energy.
- Total Asset Management Plan
- Strategic 10 year Fish Program First Draft v6 Sept 09.doc

C.18 Cold Water Pollution – Generic

PROJECT DETAILS

Project Name	Cold Water Pollution – Generic		
Project Number	N/A	**Status**	Future price path

NEED FOR SCHEME/ SCOPE OF WORKS/ OPTIONS APPRAISAL/ PROGRAM

Cold Water Pollution schemes are required at a number of dams, categorised as high impact, due to the environmental impact cold water releases (water derived from deepers levels within the storage) have on native fish downstream of these structures. The NSW government has identified a number of key sites within the state for CWP mitigation and intends to issue "Works Approvals" to dam owners/operators under the Water Management Act 2000, and that these may include the requirement to manage cold water pollution releases.

Dam sites belonging/operated by State Water Corporation that have been identified as requiring CWP mitigation within the future price path are Keepit, Copeton, Wyangala and Burrendong dams.

State Water Corporation has undertaken preliminary investigations into mitigating cold water pollution at its sites and has identified a number of technologies that would enable this. It is clear that the technologies available can be quite dependent on the nature of the dam site itself, for example the average depth, width and surface area characteristics. So whilst the investigations for one type of technology may prove to be the answer for one site it may not necessarily the most pragmatic and cost-effective for another site. State Water has created a scale model of one of its sites to monitor the impact and effectiveness of a certain technology at a particular site.

State Water's Total Asset Management Plan shows the following capital expenditure associated with mitigating cold water pollution:

Description	10-11	11-12	12-13	13-14
Keepit Dam CWP	-	-	5,000	-
CPTN: Cold Water Pollution Implementation	50	200	5,000	10,000
Burrendong CWP	100	2,500	2,000	-
WYAN:Cold Water Pollution	-	-	100	5,000
Total 150		2,700	12,100	15,000

This clearly shows that expenditure ramps up to significant value in 2012/13 and 2013/14 as it undertakes CWP capital schemes at 3 sites simultaneously. A more prudent approach would be to phase out the

expenditure as much as possible to ensure that there is as much time as possible to learn any lessons from previous capital schemes. By observing how efficient a particular technology would be (and its limitations) State Water could ensure that any other alterations to its dam sites were undertaken in the most efficient and prudent manner possible.

As the cold water pollution schemes are essentially driven by fish passages (because if no fish passages are built there are no fish which are subjected to cold water pollution), that any re-phasing of the fish passages would impact on the timing of requiring to mitigate cold water pollution. The fish passage program is predominantly driven by the dam safety upgrade projects.

On a procurement level by undertaking all the se schemes at the same time the tendering process may prove to be entirely competitive as there may not be enough contractors available (and willing) to undertake the work.

State Water Corporation has not constrained its cold water pollution program within an overall capital budget for the future price path as it considers that since these schemes are required by state government it has no option but to undertake them. We note that the Cabinet approved State-wide Strategy states that the strategy is to "investigate and ameliorate the impacts of Cold Water Pollution (CWP) at high priority dams, where it is technically and economically feasible to do so" and therefore a capital constraint could be considered. We consider that something economically feasible does not necessarily mean that it is cost beneficial and vice-versa, therefore the program of cold water pollution should be considered by State Water Corporation along with the price impacts on its customers along with the economic viability of State Water providing amelioration technology.

FINANCIALS AND PROGRAM (costs to 2009/10)

Budget in 2006 Determination	N/A	**Initial Delivery Date**	N/A
Outturn cost / Forecast outturn cost	N/A	**Actual / Forecast Delivery Date**	2012/13-2013/14

KEY DATA

Investment Driver	Environment Planning and Protection, 50% user share
Output Measure	N/A
Stage in Planning Process	N/A
Procurement Process	Open tender

2009/10 base	**06/07**	**07/08**	**08/09**	**09/10**	**10/11**	**11/12**	**12/13**	**13/14**
Planned ($k)	0	0	0	0	0		0	0
Actual ($k)	0	0	0	365	150	2,700	12,100	15,000

Planned figures are from the TAMP for all the CWP schemes.

PROJECT DELIVERY PROCESS – OBSERVATIONS

As significantly sized projects occurring in the future price path these schemes are subject to State Water's Project Delivery Process, including completion of Project Charters.

CONTRIBUTION TO OUTCOMES AND DRIVER

Contributions for the Environmental Driver in which this scheme sits under is 50% user contribution and 50% government contribution. Within the TAMP and Information Return to IPART State Water Corporation has incorrectly allocated the Wyangala Cold Water Pollution scheme capital expenditure against the Renewal and Replacement driver (which attracts a 90% user contribution and 10% government contribution) rather than the Environmental Planning and Protection driver which is 50:50 user and government contributions.

KEY DOCUMENTS REVIEWED

- Monthly Progress Report, September 2009 – Copeton Cold Water Pollution
- Pr oject Charters
- MoU between State Water Corporation and Department of Water and Energy.
- Total Asset Management Plan
- Copeton Dam Environmental report.pdf
- CWP - keepit withdrawal layer analysis final report.pdf
- CWP Investigation flowchart.pdf
- DSU Cold Water Pollution Project plan.pdf
- Item 6 - Att 3 - ENVIRONMENTAL PERFORMANCE GUIDELINES FOR COLD WATER RELEASES v6 for Water CEOs 10Aug07.doc

Appendix D - Terms of Reference

IPART seeks the services of suitably qualified consultants to undertake a:

- strategic management overview of the State Water Corporation's business, planning and asset management processes
- detailed review of the State Water Corporation's operating expenditure and capital expenditure.

1. Background and context

IPART is conducting a price path review of the maximum charges for bulk water services to apply from 1 July 2010 for the State Water Corporation (State Water). The last price path for State Water began on 1 October 2006 and is due to expire on 30 June 2010. The price path was set in IPART's determination and report entitled Bulk Water Prices for State Water Corporation and Water Administration Ministerial Corporation ('2006 Determination').[10] The maximum charges determined by IPART for the upcoming determination period will cover a period of up to five years (the duration of which will be determined by IPART during the course of the price review).

As part of the price review process it is necessary for IPART to ensure that State Water has sufficient revenue to maintain and expand its operations to ensure adequate service delivery. IPART sets prices based in part on its estimates of State Water's revenue requirement over the regulatory period. This in turn is based on projections of efficient operating and capital expenditure.

In the context of monopolistic businesses, IPART seeks to set prices which do not reward inefficient investment and asset management decisions, or inefficient operations and practices.

2. Strategic management overview

The consultants must examine State Water's business systems and processes to the extent necessary to provide IPART with assurance that State Water can operate its business to meet its current and future requirements with an efficient approach to asset management.

This requires that the consultants examine State Water's decision-making processes, planning and asset management frameworks to undertake a rigorous assessment of State Water's approach to business management and investment decision making. This element of the review will incorporate a management systems focus.

To conduct this examination the consultants are to have regard to:

Business systems and processes

- comparisons with the cost of undertaking similar services and projects by other water utilities to assess the efficient costs of bulk water service provision
- risk management processes including the way in which State Water manages the risks associated with asset failure or underperformance
- the clarity and appropriateness of drivers of capital expenditure
- investment appraisal and procurement practices (including decision making processes used to rank and prioritise needs in a manner that recognises budgetary constraints)
- ring-fencing and cost transfers between regulated and unregulated activities

Operating environment and service requirements

- the specific regional and demographic circumstances of State Water

[10] Available at: www.ipart.nsw.gov.au.

- relevant legislation, regulatory requirements and Government policies and initiatives
- current and future performance and operational requirements (including customer service, health, safety and environmental standards)
- current and projected capacity
- forecast growth in customer numbers and aggregate demand
- output measures from the 2006 Determination

Asset management practices

- current asset condition and renewal requirements
- the scope for reducing or re-phasing expenditures
- asset management frameworks, plans and practices (including whole-of life asset planning) to minimise costs over the life of the assets.

IPART is particularly concerned to ensure that State Water has in place robust decision making, prioritisation and review processes that recognise and are able to take account of budget constraints and the ability and willingness of water users to pay for new infrastructure through higher prices. This task requires the consultants to have regard to State Water's assessment of the anticipated demand of users who will benefit from the infrastructure project.

The consultants are to make use of industry best practices for efficient maintenance and utilisation of bulk water infrastructure assets and observe relevant industry cost benchmarks when making its assessment.

3. Detailed review of operating and capital expenditure

IPART examines operating and capital expenditure from two perspectives – since the last determination and for the next determination period.

To assist IPART in this task the consultants are required to assess the adequacy, appropriateness and efficiency of State Water's past and proposed levels of operating and capital expenditure. In conducting this assessment the consultants must examine the total level of expenditure, in addition to assessing expenditure on an individual activity/project basis. IPART expects that a broader, high-level assessment of expenditure will have regard to the impact on State Water's business, its customers and its prices.

The consultants must assess:

a. the *efficiency* of operating expenditure for the period from 1 July 2006 to 30 June 2010, to the extent necessary to assess the efficiency of the proposed operating expenditure

b. the *efficiency* of proposed operating expenditure for the period from 1 July 2010 to 30 June 2015

c. the *efficiency and prudence* of capital expenditure for the period from 1 July 2006 to 30 June 2009

d. the efficiency and prudence of proposed capital expenditure for the period from 1 July 2009 to 30 June 2015

e. State Water's past performance against its current output measures and review and recommend output measures for the next determination period, taking into account any proposals made by State Water in its submission to IPART.

Explanations of the efficiency and prudence tests that the consultants are required to undertake are provided below.

Efficiency test

In reviewing forecast expenditure, the efficiency test is used to determine how much of State Water's proposed operating and capital expenditure for the upcoming determination period will go into IPART's determination of State Water's revenue requirement. The efficiency test should examine whether State Water's proposed expenditure represents the best way of meeting the community's need for the relevant services.

Prudence test

The prudence test is used to determine how much of State Water's:

- actual capital expenditure in the current determination period (2006/07 to 2009/10) should be rolled into State Water's regulatory asset base for the start of the upcoming determination period, for the purposes of calculating allowances for return on and return of capital
- forecast capital expenditure in the upcoming determination period (2010/11 to 2014/15) should be rolled into State Water's regulatory asset base over the course of the upcoming determination period, for the purposes of calculating allowances for return on and return of capital.

The prudence test assesses whether, in the circumstances existing at the time, the decision to invest in an asset is one that State Water, acting prudently, would be expected to make. It should assess both the prudence of how the decision was made to invest and also the prudence of how the investment was executed where the asset has been built (ie, the construction or delivery and operation of the asset), having regard to information available at the time.[11]

Detailed lists of the tasks that the consultants are required to undertake to review State Water's operating and capital expenditure are outlined below.

Operating expenditure review

The consultants are required to examine the efficiency of State Water's operating expenditure, identify its major cost drivers and recommend efficient expenditure levels for the next determination period.

The consultants are required to consider operating expenditure across all aspects of State Water's business. To conduct this task the consultants must take into account the efficiency of past operating expenditure (to inform their recommendations on future operating expenditure), trade-offs between capital expenditure and operating expenditure (such as maintenance versus capital replacement) and the need to maintain State Water's service delivery capacity.

In undertaking the review of State Water's operating expenditure, the consultants are specifically required to:

1. Review the actual and forecast operating expenditure for State Water from 2006/07 to 2014/15, to the extent necessary to undertake points 2 to 11 below.

[11] The World Bank suggests that application of the prudence test: "…utilizes the information only available at the time of investment or outlay decisions, including expectations about the future. However, the test does assess what managers should have known and should have considered when they made the decision in question." PPIAF, World Bank and PURC, Glossary for the Body of Knowledge on the Regulation of Utility Infrastructure and Services, 30 June 2005 (Revised 27 August 2007) p 64. Concha and McKenzie concur suggesting the test should, "…appraise how the company takes the decision to invest and how the company executes the project, in the light of available information and conditions at the time." Concha, R. and McKenzie, I., 'OFGEM Proposes New Treatment of Capex Overspend', NERA Energy Regulation Insights, Issue No. 21, August 2004, p 3

2. Review State Water's functions and costs of operations[12] and identify the amounts spent on each function, including:

- operations and support activities
- maintenance and servicing activities
- administration and overheads (both direct and corporate allocations)

3. Review the appropriateness and performance of each of these functions against industry best practice. At a minimum this includes the benchmarking of State Water's performance against other similar organisations.

4. Review the cost effectiveness and efficiency of these functions, encompassing consideration for the timing of expenditures.

5. Review the variation in operating expenditure from what was proposed in the 2006 Determination and explore and explain all variations of greater than 10 per cent. This should be done at a function level.

6. Identify reasons for any costs higher than normal commercial levels, for example government ownership, awards and conditions, operating environment, staffing levels, assets, technology, compliance with government policy, or other factors.

7. Identify and analyse State Water's potential for cost reduction for each function and make reasoned recommendations about efficiency gains that IPART can consider when determining efficient operating expenditure levels for price setting. If current expenditure in an area of operations is assessed as inadequate, specification and quantification of recommended additional expenditure should be undertaken.

8. Provide an opinion of the efficiency of State Water's proposed level of operating expenditure for each year between 2010/11 and 2014/15. The consultant must provide reasoned estimates of the level of operating expenditure that is required to efficiently undertake State Water's regulated functions for each year (with consideration for any necessary adjustments to operating expenditure deemed inefficient).

9. Identify the potential for efficiency savings to be achieved within the operating expenditure budget over the period 2010/11 to 2014/15 and provide evidence and reasoning to support the proposals.

10. Identify and analyse the transfer of costs between regulated and unregulated parts of State Water's business, subsidiary or parent agency or businesses and comment on any such transfers which in the opinion of the consultant are inappropriate.

11. Identify and quantify potential operating efficiencies arising from capital projects.

Capital Expenditure

The consultants are required to recommend prudent and efficient levels of capital expenditure for the next determination period. The consultants are to review and comment on the capital expenditure assigned to each asset category.

[12] State Water will submit an information return which allocates operating expenditure to a number of functions including customer support, customer billing, hydrometric monitoring, water quality monitoring, corrective maintenance, routine maintenance, asset management planning, dam safety compliance, capital projects pre-1997, dam safety compliance, environmental planning & protection, renewal & replacement and corporate systems. Costs by valley and year will be given for each function.

In undertaking the review of capital expenditure the consultants must investigate and assess the projects that make up the capital program (including the cost and timing of projects). The consultants are required to consider the capital expenditure across all areas of State Water's business to prioritise and rank projects. The consultants' prioritisation and ranking of projects should include consideration and comment on:

- State Water's assessment of customers' willingness and capacity to pay, particularly in regard to discretionary capital expenditure proposals
- an assessment of State Water's evaluation or justification for the project (eg, the robustness of its business case, cost benefit analysis or cost effectiveness analysis), including its consideration of alternative options and the implications of not proceeding with the project over 2006/07 to 2009/10.

For the review of State Water's capital expenditure the consultants are specifically required to:

1. Identify, describe, cost and assess State Water's capital works programs from 2006/07 to 2014/15 by function,[13] separately identifying projects which satisfy a materiality threshold of $1 million individually, as well as taking an aggregate overview to assess how the total capital program will impact on State Water's customers and its prices.

2. Undertake a detailed investigation into the project planning and actual outcomes for at least 10 per cent of State Water's capital projects above the $1 million threshold (the 10 per cent is to be achieved by number and by total value of State Water's capital program). The output from this task must incorporate a one-page summary for each project to be incorporated within the consultants' report as an appendix. The one page summaries should include the following:

- the planned project budget, program and outputs
- the actual project, budget, program and outputs (appropriate to the stage in the project)
- reasons for variations between actual and forecast expenditures
- additional information that identifies any proactive planning by the agency for change of project scope or process development as a result of the project
- assessment of the project outcomes and contribution to State Water's capital program drivers.

3. Comment on any particular concerns or issues relating to the process for determining and prioritising future infrastructure expenditures for State Water.

4. Comment on the prudence and efficiency of State Water's capital expenditure for the period from 2006/2007 to 2009/2010 and nominate a value for any capital expenditure considered imprudent or inefficient. Prudence and efficiency should be assessed against users' willingness and capacity to pay, identified drivers and variations from capital expenditure proposals and output measures identified in the 2006 Determination should be examined and detailed within the consultants' report. The outputs from this task must include:

- A detailed review of progress against the output measures identified at the 2006 Determination. IPART considers that an assessment of State Water's performance against its

[13] State Water will submit an information return which allocates capital expenditure to a number of functions including asset management planning, routine maintenance, dam safety compliance, renewal & replacement, structural and other enhancement, corporate systems, fish passage works, cold water impact mitigation, salt interception schemes, flood operations, office accommodation capital projects, information management projects, river channel protection works. Costs by valley and year will be given for each function.

2006 output measures forms a useful indicator of its capital expenditure efficiency and prudency.

- Historical capital expenditure values (by program) for each year of the past determination period (2006/07 – 2009/10)

5. Provide an opinion on the efficiency and prudency of State Water's capital expenditure program for the period from 2010/2011 to 2014/15 and provide for each year reasoned estimates (by program) of the level of capital expenditure that the consultant considers efficient and prudent in order for State Water to undertake its functions. The outputs from this task must include forecast capital expenditure values (by program) for each year of the forthcoming determination period (2010/11 – 2014/15).

6. Identify the potential for efficiency savings to be achieved by State Water within the capital expenditure program over the period 2010/11 to 2014/15 and provide evidence and reasoning to support the proposals.

4. Inputs

State Water will provide a detailed written submission outlining the full financial details of its past and forecast operating and capital expenditure to IPART. The list of information that IPART has asked State Water to address in its submission is listed in IPART's recently released Issues Paper for this review.[14] In general terms, this includes:

- a description of State Water's monopoly services
- its operating and capital expenditure over 2006/07 to 2009/10, and identification and explanation of variations between actual expenditure and expenditures 'allowed' in the 2006 Determination
- State Water's proposed operating and capital expenditure over 2010/11 to 2014/15
- an explanation of the relationship between State Water's expenditure and services
- suggested performance measures and indicators.

State Water is also required to provide an 'Information Return' to IPART. This is an IPART designed Excel file, which requires State Water to provide cost information by year, valley and expenditure category.

In addition to its own analysis of the submission and Information Return, the consultants are required to source and report analysis of other inputs through:

- interviews with State Water
- comparisons with relevant organisations
- the consultant's experience in the bulk water sector and in undertaking other similar tasks.

In the event that the consultants identify gaps in the information available it is the responsibility of the consultants to take the necessary steps to acquire the required information and to liaise promptly with IPART to ensure the on time reporting of the consultancy's outputs are met. Should the reliability of the information be in doubt, the consultants are expected to source 'second best information', apply sound judgement and provide detail and justifications for assumptions made.

[14] Available at: www.ipart.nsw.gov.au.

5. Outputs

The consultants must produce a written report, which addresses all tasks, considerations and objectives of the consultancy as outlined within this schedule. The consultants' draft and final reports must include:

- detailed outcomes or findings for each of the tasks, considerations and objectives listed above
- clear explanation of the consultants' reasons or rationale for each of these findings/outcomes, including its information sources, approach and any key assumptions used
- report values, where appropriate, by year, valley and expenditure function
- report values in $2009/10, applying CPI indexes to be provided by IPART.

The consultants must produce draft and final versions of their report which should incorporate responses to comments received from State Water and IPART. The consultants must undertake a thorough Quality Assurance check of all outputs to eliminate errors and inconsistencies.

The consultants should review recent IPART water determinations and reports to identify an appropriate structure for the reports and chapters contained therein. The consultants must also provide all tables and calculations in Excel format to facilitate the transfer of their outputs to IPART's pricing models (to avoid rounding errors introduced through text only formats).

Both the draft and final written reports must be provided in four bound copies and four loose-leaf copies, as well as in PDF format suitable for web publication.

The consultants should note that the draft and final report will be released as a public document and made available on the IPART website. As such the report should be clearly and logically set out and written in plain English, avoiding the unnecessary use of technical terms. The report should also incorporate appendices for supporting information and evidence where necessary.

Additional outputs of the consultancy include:

- initial presentation to IPART (including Tribunal members) on consultants' proposed methodology for review
- weekly written one-page progress updates detailing:
  - the tasks of the consultancy that have been completed
  - the work undertaken since the last progress report
  - progress towards the key milestones detailed in the 'Timing' work schedule below
  - any issues or problems that have arisen and how they have been dealt with or addressed
- discussions and meetings with State Water, IPART and/or the IPART Secretariat
- presentation of draft findings to State Water and IPART
- presentations to IPART and/or the IPART Secretariat which outline the major issues and findings.

On completion of the consultation, the consultants' reports, working papers and advice provided to IPART will become the property of IPART.

6. Timing

The consultant must meet the following work schedule:

Date	Activity
16 September 2009	Commence review of State Water's Submission
8 October 2009	Inception meeting with IPART Secretariat
8 October 2009	Presentation of approach/methodology for review to IPART Tribunal
6 November 2009	Submission of Draft Report to IPART Secretariat
Consultants to determine but no later than 6 November 2009	Presentation of consultants' Draft Report findings to IPART and State Water
27 November 2009	Submission of Final Report to IPART Secretariat

Appendix E - Meetings & Interview Program

Table 0.1 – Meeting Program

Date	Meeting	Present
8th October 2009	Presentation of Methodology to IPART	IPART Tribunal, Nigel Jones (Atkins), Dominic Bacon (Atkins), Aneurin Hughes (Cardno)
8th October 2009	Inception meeting with IPART	IPART Secretariat, Nigel Jones (Atkins), Dominic Bacon (Atkins), Aneurin Hughes (Cardno)
9th October 2009	Interview program planning meeting with SWC	Lisa Welsh (SWC), Marysia Derewlany (SWC), Nigel Jones (Atkins), Dominic Bacon (Atkins), Aneurin Hughes (Cardno)
16th October 2009	Initial findings presentation to IPART and SWC	IPART Secretariat, George Warne (SWC), Jane Redden (SWC), Lisa Welsh (SWC), Amit Chanan (SWC), Nigel Jones (Atkins), Dominic Bacon (Atkins), Aneurin Hughes (Cardno)

Table 0.2 – Interview Program

Interview Program			
Nigel	Jones **(Atkins)**	Aneurin Hughes **(Cardno)**	Dominic Bacon **(Atkins)**
Monday 12 October 2009	DUBBO Overview presentation by State Water Corporation and meet Executive team Operating Environment and specific regional and demographic factors • Overview of relevant legislation, regulatory requirements, and Government policies and initiatives • Current and future performance and operating requirements including customer, environmental, health and safety. • Structure and responsibilities • Delivery of outputs Overview of business systems and processes, BERP, PCG and asset management Other key issues in the SWC Submission – • IFMS review • Unregulated and regulated business- ring fencing and cost transfers		
	Historic operating expenditure and outputs • Variance analysis and explanations • Prude nt expenditure IFMS structure and processes		

	Business Systems and Processes • Water Delivery Group (eg CAIRO,SCADA), including current and projected capacity • Customer Operations Group (eg iWAS) , including forecasting growth in customer numbers and demand • Maintenance and Services (eg FMMS) • Business Improvement Branch • Information Services Branch		
Tuesday 13 October 2009	DUBBO **Business Systems and Processes** – mainly capex (Capital Investment Review Framework) including risk management processes Asset Management Processes (including Asset Plans, such as Thematic expenditure) Business Expenditure Review Panel (BERP) Business Improvements Committee Procurement Program Delivery Program Control Group (PCG) Capital cost estimates		SITE VISIT Lake Brewster Water Efficiency project
	Historic capital expenditure and outputs Variance analysis and explanations Prudent expenditure		
Wednesday 14 October 2009	DUBBO **Opex expense analysis** Processes Expense headings variances Corporate regulated/unregulated **Opex by function** Renewal and Replacement (by video conference) Customer support Billing	PARRAMATTA Capital projects – Dam Safety, Capital Maintenance and Water delivery (9) Research opex	DUBBO **Opex by function** Water delivery Metering Flood operation Hydrometric monitoring
Thursday 15 October 2009	SITE VISIT Blowering Dam	PARRAMATTA Capital projects – Dam Safety projects	PARRAMATTA Capital projects Environment projects (5)

Friday 16 October 2009	PARRAMATTA Asset management practices – update discussion following project reviews	
	Opex AM Planning Opex Dam safety	**Thematic Expenditure** Emergency and Security Land Management Water quality monitoring Environmental and heritage issues
	PARRAMATTAWrap up meeting- identify issues and outstanding information	

Atkins Limited
Woodcote Grove
Ashley Road
Epsom
Surrey KT18 5BW
England

info@atkinsglobal.com
www.atkinsglobal.com