

Independent Pricing and Regulatory Tribunal



Review of Country Energy's Water Business
(Broken Hill)
Advice on Capital Expenditure

February 2009

Halcrow Pacific Pty Ltd

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February 2009

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1 Introduction

1.1 *Background*

Country Water, which is part of Country Energy's Infrastructure Operations division, is responsible for the delivery of water and sewerage services in Broken Hill and water supply to Menindee, Silverton and Sunset Strip in far west New South Wales. It provides water services to approximately 10,500 properties and sewerage services to approximately 9,500 properties.¹

IPART is currently undertaking a review in order to determine maximum charges for water and sewerage services provided by Country Energy in the Broken Hill area. To assist its review, IPART has engaged Halcrow to provide advice in respect to the reasonableness of Country Energy's historical and proposed future capital expenditure. The advice has been provided on the basis of a brief desk top review of relevant documentation.

1.2 *Scope*

The scope of the review is as follows:

- Review the capital expenditure outlined by Country Energy and provide comment on the reasonableness of the estimates, including the reasonableness of any overheads or contingencies included (for example Mica Street). Also provide comment on the reasonableness of completing the projects within the timeframes proposed.
- Review the Asset Management Plan provided by Country Energy and compare with best practice.
- Consider whether the capital expenditure projects identified by Country Energy comply with the Asset Management Plan.

¹ *Country Water Submission to IPART's Review of Prices for Water and Sewerage Services to Broken Hill and Surrounds*, September 2009, page 6.

1.3 Approach

1.3.1 General

The *Country Water Submission to IPART's Review of Prices for Water and Sewerage Services to Broken Hill and Surrounds*, submitted to IPART in September 2009, has been used as the basis for this review, together with the associated *Special Information Return (SIR)* submission. In addition, further documentation was requested to undertake this review.

For the sake of clarity, throughout this document, we refer to Country Energy's Water Business (Broken Hill), as 'Country Water'.

1.3.2 Asset Management Plan

In undertaking the review of Country Water's Asset Management Plan (AMP) against industry best practice we have made our assessment based on our technical expertise, as well as recognised Asset Management best practice such as the NSW Government Total Asset Management (TAM) Manual.

In reviewing the AMP, we sought evidence of clear linkages between Country Water's asset strategy, its capital investment framework, its approach to asset planning, maintenance, condition assessment and the disposal of assets. We also considered the processes and systems in place to maintain water and sewerage assets.

We have sought to identify any areas where Country Water's AMP falls short of industry best practice, and made recommendations for improvement where necessary.

1.3.3 Review of capital expenditure

In undertaking the review of capital expenditure, we undertook an overview of the capital program and selected a number of capital projects to review in detail.

Our detailed review of proposed capital expenditure considered:

- The basis (driver) for the proposed investment.
- Evidence of options considered and design development.
- The basis of the cost estimates, including a review of key cost components and unit rates. In making this assessment we have also had regard to the proposed method of procurement and the stage of design development, where this information has been made available.
- Allowances for overheads or contingencies. The basis for applying contingencies to cost estimates was reviewed, taking into account the stage of design development and typical allowances made within the water and

sewerage industry. The method for calculating any overheads was also reviewed and an assessment made as to the reasonableness for the charge being applied to the capital expenditure forecast.

- The phasing of expenditure and the deliverability of the project in the proposed timeframe.

Our detailed review of historic capital expenditure considered:

- The actual capital expenditure versus budgeted spend.
- Reasons for any variances in proposed and actual capital expenditure. We investigated any significant variances in the approved budgeted capital works program and sought explanations as to why changes were made.
- We examined the methods by which capital projects were identified, developed and procured to assess whether the methods adopted have been efficient and effective.

In addition, we have also reviewed the correlation between the Capital Expenditure Program and AMP. This has involved reviewing the rigour with which the asset management approach has been applied and confirming that there are clear linkages between the AMP and the capital program.

The scope of our review does not include an assessment of Country Water's demand forecasts. In assessing Country Water's capital expenditure requirements we have relied on the demand forecasts that it has prepared, as reported in Chapter 4 of its submission to IPART.

1.4

Reporting Process

Following our desktop review, we issued a report *Review of Country Energy's Water Business (Broken Hill) – Advice on Capital Expenditure (Issue 2, Rev 1)*, dated December 2009, to IPART. IPART submitted our report to Country Water for comment. Following receipt of comments from Country Water, IPART requested that these comments be reviewed and that we update our report where deemed appropriate.

Throughout this document, reference to Halcrow's 'initial report' refers to our report, *Review of Country Energy's Water Business (Broken Hill) – Advice on Capital Expenditure (Issue 2, Rev 1)*, dated December 2009.

Country Water comments on our initial report are contained within the document, *Response to IPART-Halcrow Pacific Review of Country Energy's Water Business*, dated 8 January 2010.

1.5

Limitations of this Report

This report has been prepared for IPART by Halcrow for the sole purpose of providing an assessment as to the reasonableness of Country Water's historical and proposed future capital expenditure. This report cannot be relied upon by any other party or for any other purpose.

The advice in this report has been provided on the basis of a brief desk top review of documentation provided by Country Water. A detailed audit of Country Water's submission, its SIR and supporting documentation is outside the scope of this review. We have not undertaken any independent verification of the reliability, accuracy or completeness of the information provided. Therefore, it should not be construed that we have carried out any form of audit or other verification of the adequacy, completeness, or reasonableness of the specific information provided by Country Water.

Events which have occurred since the preparation of our report may impact the conclusions that we have drawn.

2 Asset Management

2.1 *Asset Management Framework*

The document *Country Water; Water Asset Management Plan; 2009/10 to 2014/2015* prepared by Country Energy trading as Country Water (undated) provides an overview of the Agency's approach to asset management. It sets out Country Water's:

- Asset Management Framework, including;
 - an overview of its approach to asset management;
 - its Corporate objectives; and
 - its strategy for water service delivery;
- Approach to identifying capital investment requirements, including consideration of:
 - Water and sewerage infrastructure augmentation requirements;
 - Demand management initiatives;
 - Reliability, quality and security of supply;
 - Asset renewal requirements; and
- Approach to asset maintenance.

A review of the *Water Asset Management Plan* reveals that it outlines the principles behind good asset management practices, including:

- Identification of key drivers;
- Risk based condition assessment; and
- Investment based on assessment of rate of return on investment, subject to requirement to meet statutory obligations and levels of customer service.

The practical implementation of these principals is not, however, widely evident from the proposed capital investments documented in the *Plan*, or from supporting documentation. Of the limited documentation provided, the *Business Case; Mica Street Water Treatment Plant; Develop Design and Construction Project*, prepared by Country Water, May 2008 does demonstrate consideration of alternative solutions, risk, and financial impact as part of the approval process.

The *Water Asset Management Plan* identifies and briefly describes a range of asset renewal projects that form the basis of Country Water's capital investment over the period 2009/2010 to 2014/2015, together with estimated costs. The basis upon which these projects have been included in the proposed capital program, ie.

the assessments undertaken to justify project need, has not been documented. Whilst such justification may be well documented elsewhere, this information has not been available for review.

This view appears to be supported by practical experience. A consultant's report² in relation to the Menindee to Stephens Creek Reservoir pipeline comments that: *"The current maintenance management and response systems do not facilitate corrosion status capture or make such information readily available for management decision-making processes. Recovered pipe sections that had failed in service were discarded to scrap."* This would indicate that appropriate measures for condition assessment and recording are not currently in place.

As suggested in the *Water Asset Management Plan*, the proposed capital program is comprised almost exclusively of asset renewal projects. One public submission to IPART's review observes that there appears to be an impression that Country Water has inherited a 'run down' system. The view of the proponent is that, whilst some assets are old, they may not yet have reached the end of their useful life. This view reinforces the need for investment decisions to be based on a robust assessment of condition, remaining life and failure risks.

A further detailed review of the practical implementation of Country Water's asset management framework would be required to fully assess the application of 'good practice'. On the basis of the information available for review to date, it would appear that, although the *Water Asset Management Plan* outlines good asset management practices, they may not currently be implemented.

2.2

Asset Portfolio

In the *Submission to IPART's Review of Prices for Water and Sewerage Services to Broken Hill and Surrounds* it is identified that Country Water's supply network includes the following major assets:

- Steel/concrete 600mm pipeline from Menindee to Broken Hill (~120km);
- 11 water service tanks;
- 2 reservoirs (Stephen's Creek and Umberumberka);
- 1 emergency dam supply (Imperial Lake);
- 7 water pumping stations;
- 3 water filtration places (two of which are potable);

² Alf Grigg & Associates, *Condition evaluation and residual lifetime assessment of 600MSCL Menindee to Broken Hill Water Supply Pipeline – Stage 1 Report*, 18th February 2009, page 3.

- 558km of water and sewer mains;
- 2 sewage treatment plants; and
- 11 sewage pumping stations.

A detailed asset register has not been reviewed, so verification of the actual asset stock has not been undertaken.

2.3

Operating Performance

Pursuant to the National Water Initiative (NWI), State and Territory Governments have agreed to report independently, on an annual basis, to facilitate benchmarking of pricing and service quality for urban and rural water delivery agencies. Accordingly, the National Water Commission, the NWI parties and the Water Services Association of Australia (WSAA) have developed the National Performance Framework to facilitate nationally consistent reporting based on agreed performance indicators and definitions.

The National Performance Framework provides a basis for comparing both the operational and financial performance of Country Water (reported as Country Energy) in comparison with other similar sized³ urban water utilities.

Factors which may influence a utility's performance against any given indicator include operating environments, geographic and climatic conditions, regulatory requirements, and customer bases, etc.⁴ Whilst care is required when drawing conclusions from these indicators, such analysis can provide some insight into a utility's performance, and trends in performance.

Country Water's performance in respect of the following indicators has been reviewed as an indicator of its performance in respect to asset management:

- Water main breaks (per 100km of water main);
- Sewer main breaks and chokes (per 100km of sewer main);
- Water quality complaints (per 1000 properties);
- Water service complaints (per 1000 properties);
- Sewer overflows to the environment (per 100km of sewer main);
- Capital expenditure per property (\$ per property); and
- Combined operating cost – water and sewerage (\$ per property).

³ Based on number of properties serviced.

⁴ National Water Commission, *National Performance Report 2007-08: urban water utilities, Part A Comparative Analysis*, March 2009, page 5.

Country Water's performance records in respect to each of these indicators are summarised in **Table 2.1**. Average figures and Country Water's ranking for 2007/08 are based on comparison with other similar sized utilities, ie. utilities with between 10,000 and 20,000 connected properties.

An assessment of the information presented in **Table 2.1**, including the comparison with similar utilities, indicates that:

- *Water main breaks* – performance has been variable over the last three (3) years; performance in 2007/08 was below average;
- *Sewer main breaks and chokes* – performance has been improving over the last three (3) years, however, remains significantly worse than average (Country Water is the second worst performing in this area);
- *Water quality complaints* – performance has been improving at a high level over the last three (3) years;
- *Water service complaints* – performance has improved at a high level over the last two (2) years;
- *Sewer overflows to the environment* – performance has been variable over the last three (3) years; performance in 2006/07 was relatively poor, but improved in 2007/08 to be slightly better than average;
- *Capital expenditure per property* – expenditure was marginally (17 per cent) higher than average for 2007/08; figures for previous years not provided; and
- *Combined operating cost* – water and sewerage – expenditure has reduced marginally over the last three (3) years; it remained significantly (42 per cent) higher than average.

Asset performance can be used as one indicator of the effectiveness of asset management practices. On the basis of the reported figures, it appears that there may be some opportunity for improvement in respect to both the water and sewerage networks.

Numbers of complaints can be used as one indicator of customer satisfaction with asset performance. On the basis of the reported figures, it appears that customers are generally satisfied with system performance.

It is noted that Country Water does not hold an Operating Licence in respect to the water and wastewater services it provides to Broken Hill. This instrument would normally quantify appropriate and agreed performance requirements. Country Water does have a Customer Charter in place. A review of the customer charter reveals that it includes some performance requirements, eg. requirements relating to planned service interruptions.

Table 2.1 Asset performance indicators

Indicator	2005/06	2006/07	2007/08	2007/08 Average	2007/08 Ranking ⁽¹⁾
Water main breaks (per 100km of water main)	13.0	10.0	18.0	15	14 out of 23
Sewer main breaks and chokes (per 100km sewer main)	183.0	148.0	125.6	49	21 out of 22
Water quality complaints (per 1000 properties)	0.5	0.1	0.0	5.3	1 ⁽²⁾ out of 18
Water service complaints (per 1000 properties)		0.7	0.1	23.8	1 ⁽²⁾ out of 14
Sewer overflows to the environment (per 100km of main)	7.0	25.0	7.0	12	11 out of 20
Capital expenditure per property (\$ per property)			\$908	\$774	21 out of 26
Combined operating cost – water and sewerage (\$ per property)	\$1,263	\$1,135	\$1,040	\$731	24 out of 25

Note: (1) this ranking is for utilities with between 10,000 and 20,000 connected properties;
(2) ranking shared by two (2) other utilities, ie. same scores;
Source: NWC, National Performance Report 2007-2008

In summary, Country Water's record of operational performance, as measured using the NWI indicators, appears to indicate that there may be opportunity for improvement in the management of its water and sewerage assets.

2.4

Capital Planning

Country Water's *Water Asset Management Plan* sets out a listing of its proposed capital investment projects for the period 2009/2010 to 2014/2015. A review has been undertaken to assess the correlation between projects identified in the *Water Asset Management Plan* and the proposed capital program as summarised in the *Special Information Return (SIR)* submitted to IPART in conjunction with its pricing submission.

This review has revealed some discrepancies in the annual projections presented in the two sources of information at program level, however, the total program has remained constant, as shown in **Table 2.2**. The SIR does not include expenditure forecasts for 20013/14.

Variances in respect to individual projects are discussed in **Section 3**.

Table 2.2 Proposed capital expenditure

Program	Proposed Capital Expenditure (2009/10 \$'000)				
	2009/10	2010/11	2011/12	2012/13	2013/14
Water Asset Management Plan (WAMP)					
Water	\$28,125	\$4,899	\$5,974	\$5,993	\$4,957
Sewerage	\$1,893	\$713	\$6,375	\$6,315	\$260
Total	\$30,018	\$5,612	\$12,349	\$12,308	\$5,217
Special Information Return (SIR)					
Water	\$28,570	\$4,899	\$5,975	\$5,993	-
Sewerage	\$1,448	\$713	\$6,375	\$6,315	-
Total	\$30,018	\$5,612	\$12,350	\$12,308	-
Variance (WAMP vs SIR)	Nil	Nil	+\$1	Nil	-\$5,217

3 Capital Expenditure

3.1 Overview of Historical and Forecast Capital Expenditure

Country Water has proposed a capital program of \$30.269 million (\$2009/10) over the period 2010/11 to 2012/13, comprised of \$16.867 million (\$2009/10) water service expenditure and \$13.402 million (\$2009/10) sewerage service expenditure.

Table 3.1 provides a breakdown of historical and proposed capital expenditure for the years 2006/07 to 2012/13.

Table 3.1 Historical and proposed capital expenditure (\$'000 2009/10 real)

Service	Historical (\$ 2009/10) ¹				Proposed (\$2009/10)		
	2006/07	2007/08	2008/09	2009/10 ²	2010/11	2011/12	2012/13
Water	3,428	9,455	19,539	28,570	4,899	5,975	5,993
Water adjusted ³	3,428	7,958	4,805	3,010	4,899	5,975	5,993
Sewerage	963	1,026	758	1,448	713	6,375	6,314
Sewerage adjusted ⁴	963	1,026	758	1,448	206	282	175

Note: (1) Escalation factors provided by IPART, email dated 18 January 2010

(2) Forecast expenditure.

(3) Capex excluding Mica Street WTP Replacement.

(4) Capex excluding Wills Street WWTP Replacement. Source: SIR Table 8.1 and 8.2.

Excluding the capital expenditure associated with the Mica Street WTP Replacement scheme, the proposed water service capital expenditure over the period 2010/11 to 2012/12 is approximately \$0.8 million per annum greater than the average annual spend over the period 2006/07 to 2009/10.

Excluding the capital expenditure associated with the Wills Street WWTP Replacement scheme, the proposed sewerage service capital expenditure is lower than the average annual spend over the period 2006/07 to 2009/10.

This is shown in **Figure 3.1**.

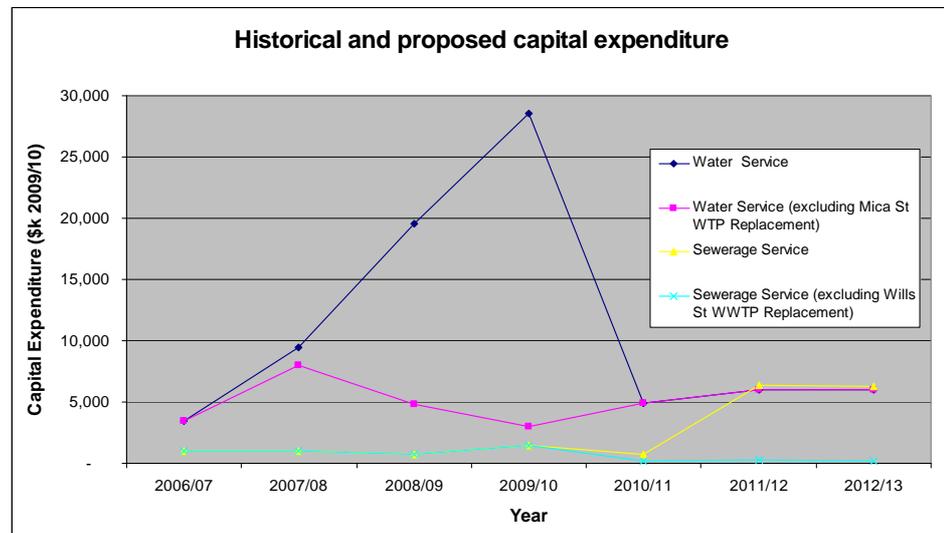


Figure 3.1 Historical and proposed capital expenditure

We note that there are inconsistencies between Table 8.1 of the SIR (Water capex by time) and Table 7.1 of the SIR (Capital expenditure by purpose). We have not sought to investigate the reasons for these differences.⁵ Our assessment of capital expenditure is based on Table 8.1 of the SIR.

3.2

Review of Selected Capital Projects

As part of the review of capital expenditure, we selected a number of Country Water's capital projects to review in detail. These projects comprise a significant portion of the total capital expenditure forecasts. We have reviewed the selection in order to assess the reasonableness of the estimates, including overheads or contingencies included, and the reasonableness of completing the projects within the timeframes proposed.

We selected the schemes from those listed in Table 8.1 and Table 8.2 of Country Water's SIR. The projects that we selected to review are identified in **Table 3.2**, together with their costs. We have included the allowances for 'Miscellaneous Minor Capex', as they make up a considerable element of the historical and proposed capital expenditure.

⁵ In its response to our initial report, Country Water has stated that the difference relates to sewerage effluent environmental improvement projects that have been listed under treated effluent water projects in Table 8.1, but classified as sewerage in Table 7.1 (Country Water, *Response to IPART – Halcrow Pacific Review of Country Energy's Water Business*, 8 January 2010, page 6).

The projects selected for detailed review comprise 76 per cent of the proposed water service expenditure over the period 2010/11 to 2012/13, and 99 per cent of the sewerage service expenditure.

Table 3.2 Projects selected for review (\$'000)

Project	ID	\$ Nominal				\$ 2009/10		
		2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
Water Service								
Mica Street WTP Replacement	W3	-	1,404	14,291	25,560	-	-	-
Mica Street WTP No 1 Tank Replacement	W7	-	-	-	-	-	2,611	2,631
Miscellaneous Minor Capex	W25	553	2,761	2,289	254	344	282	179
Umberumberka Pipeline Replacement	W51	548	-	-	-	435	374	377
Menindee to Stephens Creek Pipeline Replacement	W52	458	-	-	267	2,024	1,741	1,754
Stephens Creek Reservoir Cover	W54	-	1,418	311	-	-	-	-
Total Water Selections		1,559	5,583	16,890	26,081	2,804	5,009	4,941
Sewerage Service								
Warren Street SPS	S1	786	380	52	-	-	-	-
Wills Street STP Replacement	S2	-	-	-	-	506	6,093	6,139
Miscellaneous Minor Capex	S100	92	582	683	380	206	108	175
Total Sewerage Selections		878	962	735	380	713	6,201	6,314

Source: SIR Table 8.1 and 8.2

3.3

Project 1 – Mica Street WTP Replacement

3.3.1

Project description

This project, which commenced construction in mid 2008, involves the design and construction of a new WTP next to the existing Mica Street WTP.

The existing Mica Street WTP provides treated water to over 20,000 people in Broken Hill. Country Water's AMP and the project business case for the new WTP indicates that the existing WTP, which was built in 1950, is difficult to maintain and that it is unable to comply with requirements of the Australian Water Quality Guidelines under all raw water supply conditions. Investigations undertaken on the WTP indicated that significant process and plant modifications are required to combat the water quality issues.

The new WTP will incorporate pre-treatment, enhanced coagulation, clarification, filtration, disinfection with UV light and chlorine dosing facilities.

3.3.2

Key drivers and links to AMP

While the AMP provides minimal detail on the Mica Street WTP project, the key justification provided for the project is that the existing plant is difficult to maintain, and much of the equipment is obsolete (ie. an asset renewals driver). We note that the timing of the scheme is consistent with the remaining useful life of the existing WTP which has recently been estimated as between two years (for civil and mechanical-electrical components) and five years (for the sedimentation tank and civil and mechanical-electrical components of the sludge lagoons).⁶

3.3.3

Solution development

The project business case indicates that alternatives to a full replacement of the Mica Street WTP were investigated in an initial Value Management Study conducted in 2001 by GHD, and that additional alternatives were investigated in an Integrated Water Cycle Management study completed in 2004. We have not reviewed either of these documents, although the options considered during each of these stages are listed in the project business case, together with the key reasons for not choosing these alternatives.

During concept design phase, five options for the final design and treatment processes for the replacement WTP were identified. Options were assessed on the basis of price, and the preferred concept design selected in November 2006.

The Design and Construct contract, which was awarded in June 2008, is based on the preferred option identified at concept design stage. Approval for the works was given by the Department of Water and Energy (DWE) on 30 June 2008, subject to the following three conditions:

⁶ GHD, *Country Energy Optimised Depreciated Replacement Cost (ODRC) Valuation of the System Assets of Country Energy's Water Business – Draft Report*, Appendix D, September 2009.

- The works be undertaken in accordance with the planning documents and that any changes to the scope be submitted for approval before construction.
- Details of the sludge and brine management systems, including ultimate disposal of dried sludge and salt be submitted for review and approval before construction.
- Details of the fluoridation dosing systems are to be submitted for review and approval before construction.

Whilst Country Water has not provided evidence that these further approvals were obtained, we assume that the necessary approvals were obtained prior to the commencement of construction.

3.3.4

Cost estimate

In its SIR submission to IPART, Country Water has reported that the actual and forecast capital expenditure for this project is \$41.255 million (nominal). This compares to \$31.977 million (nominal), approved in the project business case, and \$26 million forecast in the AMP, as summarised in **Table 3.3**.

Table 3.3 Mica Street WTP budget and actual capital expenditure (\$'000 nominal)

	2007/08	2008/09	2009/10	2010/11	Total
Business Case					
Approved capex – including 10% contingency		14,687	13,991	3,300	31,977
Approved capex – excluding 10% contingency		13,351	12,719	3,000	29,070
Actual and forecast capex	1,404	14,291	25,560		41,255
Variance (Approved capex incl. contingency vs. Actual and forecast capex)	1,404	(396)	11,570	(3,300)	9,278
Overhead allocation as % of direct costs (excluding contingency)					~32%

A review of the business case indicates that the approved estimate was made up of capital costs of \$29.070 million (nominal), and project and tender contingency costs of \$2.907 million (nominal).

The direct costs include \$26.356 million (nominal) for design and construction of the new WTP (as per the tendered cost agreed with Tenix). The remaining capital costs relate to a number of items including allowances for project management, spares, power supply works, engineering checks, legal fees and some allowances for delays.⁷

The contingency allowance of \$2.907 million is equivalent to 10 per cent of the capital cost, which is typical given the stage of design development at the time of preparing the business case.⁸ However, as specific allowances for delays and additional contingencies for clarifier covers are already included within the \$29.070 million, this contingency allowance is on the upper range of what we consider as reasonable.

The business case indicates that three companies were shortlisted to provide tenders for the detailed engineering design and construction of the plant, and that each was offered \$218,000 contribution towards the cost of tender preparation. The payment was made *'to attract sufficient competitive interest in the project'*.⁹ These payments (totalling \$654,000) are not included within the \$31.977 million (nominal), approved in the project business case. Also excluded was expenditure associated with development of the concept design, pilot plant construction, development of tender documentation and costs associated with the environmental impact assessment, totalling \$532,000. This expenditure had already been incurred at the time of business case preparation.

Country Water has indicated that the project is currently on budget and due to be commissioned on time. In relation to the significant variation between the total actual and forecast capital expenditure and the business case estimate, Country Water indicated that the variation *'is due solely to corporate allocations and overheads'*.¹⁰

⁷ We note that capital costs associated with the decommissioning of the existing WTP were not included within the business case estimate. Country Water stated in the business case that parts of the plant may qualify for heritage listing and that decommissioning would be included as a separate project.

⁸ Engineering contingency allowances at detailed design/tender stage typically sit within the range of 5 to 10 per cent.

⁹ Country Energy, *Business Case; Mica St Water Treatment Plant Develop Design & Construction Project, May 2008*, page 10.

¹⁰ Country Water, *Response to IPART-Halcrow Pacific Review of Country Energy's Water Business*, 8 January 2010, page 7.

It is unclear why Country Water did not include the full project expenditure (including allocations of overheads) in the business case. Given that Country Water is proposing to roll the full project expenditure (including corporate overhead allocations) into its regulatory asset base, we are of the opinion that the business case should provide visibility of the expected overall project cost (including corporate allocations and overheads). We note Country Water's response to our initial report and we accept that the economic assessment should be based on incremental costs, however, failure to report the corporate allocations and overheads lacks transparency, and effectively results in an understatement of the capital expenditure requirement.

The corporate allocations and overheads are expected to total \$9.278 million (nominal) over the life of the project, which is equivalent to approximately 32 per cent of the direct project costs. This compares to allocations for project management and support in the range to 15 to 20 per cent typically applied in the water industry (refer **Section 3.13**). Given that project management, engineering checks, legal fees and a number of support costs are separately included within the direct costs (\$29.070 million), we would expect the overhead allowance to be reduced further, to approximately 5 per cent, or \$1.45 million. On this basis, a reasonable estimate of the capital cost of the scheme is approximately \$33.4 million (nominal).¹¹

The recent valuation of Country Water's system assets estimates the replacement value of Mica Street WTP at approximately \$32.2 million.¹² As the existing WTP is close to the end of its useful life, the WTP was allocated a replacement cost equivalent to the cost of the new plant. Based on our high level assessment, we are of the opinion that this represents a fair valuation of the new WTP.¹³

A submission to IPART's review observes that the expenditure on the new Mica Street WTP excludes sludge processing/handling, a raw water storage tank,

¹¹ Country Water has not provided an annual breakdown of the scheme costs, so it is not possible to determine the overhead allocated in each year. Hence, the nominal value of the scheme is reported.

¹² GHD, *Country Energy Optimised Depreciated Replacement Cost (ODRC) Valuation of the System Assets of Country Energy's Water Business – Draft Report*, Appendix D, September 2009.

¹³ Country Water has stated that the recent valuation does not include Country Water's corporate allocations or overheads (Country Water, *Response to IPART-Halcrow Pacific Review of Country Energy's Water Business*, 8 January 2010, page 7). Our comments in relation to the allocation of overheads are included in Section 3.13.

and a control room.¹⁴ Based on a review of Tenix's detailed cost breakdown, this observation is correct.

Country Water has provided some clarification in relation to the above observation. It has indicated that sludge management was removed from Tenix's contract as it was of the view that the cost of sludge management in the submitted tenders was excessive.¹⁵ The business case includes an allowance of \$570,797 (excluding GST and corporate overheads) for sludge disposal (to be incurred over 2008/09 and 2009/10). Country Water has not indicated what works are to be undertaken for this expenditure or what expenditure on sludge processing/handling has been incurred to date. Given its comments that the project is currently on budget, we would not expect any additional expenditure on new sludge handling facilities in excess of the allocation included within the business case.

In relation to the exclusion of a raw water storage tank, Country Water is of the opinion that the submission should actually refer to back wash water.¹⁶ It has indicated that, *'all waste water from the plant will be directed to the main sludge dam. As part of the new water treatment plant project, Tenix are installing a new larger pump and rising main to return all of the water collected in the dam to the head of the new water treatment plant for recycling'*.

In relation to the control room, Country Water has indicated that it intends to use the existing control room.

We note that the new Mica Street WTP will be fully automated, and while we have not reviewed the forecast operating expenditure for this scheme, we would expect a reduction in labour costs once the plant is operational.

3.3.5

Timing and deliverability over the regulatory period

This project is being delivered through a design and construct contract, which was awarded in June 2008. The business case indicates that commissioning is forecast for June 2010, although the project program indicates that commissioning and testing will take place from February to March 2010. From the latest project report provided, it is not readily apparent whether the project is still on track to

¹⁴ Submission to IPART re Review of Broken Hill Water Pricing, Graham Walkom.

¹⁵ Country Water, *Response to IPART-Halcrow Pacific Review of Country Energy's Water Business*, 8 January 2010, page 6.

¹⁶ We have not sought clarification from Graham Walkom regarding this aspect of his submission to IPART re Review of Broken Hill Water Pricing.

meet the March commissioning date, however, a copy of the October progress claim from the contractor indicates that approximately 75 percent of the contracted value had been delivered and that most of the major civil works are complete or almost complete. Country Water has indicated that, to date, the contractor has made claims for an extension to May 2010.

On the basis of the above, the allowed construction timeframe appears reasonable.

3.4 Project 2 – Mica Street WTP No 1 Tank Replacement

3.4.1 Project description

This project involves replacing the existing No 1 concrete tank at Mica Street WTP (5.91ML capacity) with a new 9ML steel tank. The tank, which holds potable water for distribution to Broken Hill, was built in circa 1890 and is cracked and leaking badly. Country Water has reported that all previous attempts at sealing the existing tank have been unsuccessful, and its remaining useful has been estimated at 5 years.¹⁷ In its AMP, Country Water has reported that the existing tank is currently operating at less than half capacity, which results in operational difficulties when the No 2 tank is taken out of service.

In addition to replacing the tank, the project includes allowances for associated works including earthworks, pipework, and electrical works.

3.4.2 Key drivers and links to AMP

The AMP indicates that the existing tank is old and has major cracks which are unable to be repaired. The need to replace the tank was confirmed in the recent asset valuation which indicates that, *“the tank has some significant structural issues including a number of leaks”*.¹⁸ The remaining useful life of the asset has been estimated at five years. Consequently, the key driver for this project is asset renewals.

Country Water has reported that the availability of the tank will also add to operational efficiency as well as security, allowing a longer duration between water deliveries from the WTP.

¹⁷ GHD, *Country Energy Optimised Depreciated Replacement Cost (ODRC) Valuation of the System Assets of Country Energy's Water Business – Draft Report*, Appendix E, September 2009.

¹⁸ Ibid, page 11.

3.4.3

Solution development

This project is currently at concept design stage. Country Water provided a copy of the concept design report which was prepared by engineering consultants in June 2008. The concept design report provides an overview of the site, details of the proposed tank, a summary of functional requirements and an indicative cost estimate.

From the information provided it is not apparent whether alternative design solutions have been considered or what drove the decision to replace the 5.91ML tank with a tank of 9ML capacity. The concept design report indicates that *'Country Water informed GHD that the proposed Tank No 1 would have a capacity of 9ML...In effect, the proposed Tank No 1 will be the exact duplicate of Tank No 2 in terms of size and capacity'*.¹⁹

We sought clarification from Country Water in relation to the basis for upsizing the tank, and whether any other design options were considered other than replacement of the existing tank with a steel tank. In response, Country Water indicated that, *"the original tank was a custom built and the size would have been determined by requirements at the time. The existing newer No 2 steel tank is 9ML, which is an economic (\$ per ML) standard manufacturers can readily supply. Providing extra capacity means extra security in case of plant or pipeline failure and better operational economy because more water can be pumped, filtered and stored during off-peak periods"*.²⁰

In response to our initial report, Country Water provided some further comments; *'In order to operate the Mica St WRP efficiently, it aims to run the plant at maximum capacity during off peak electricity tariff times and store as much water as possible in order to be available during peak electricity tariff times. Duplicating the 9ML tank would give Country Water the ability to run the WTP more economically at all times and allow for storage capacity of 18ML/d. The capacity of the new WTP is 31ML/day which indicates that Country Water can produce more of the water for Broken Hill during off peak tariff times thus saving considerably on energy costs'*.²¹

¹⁹ GHD, *Report for Concept Design, Proposed New Mica Street No 1 Steel Reservoir*, June 3008, page 4.

²⁰ Email from Country Water, dated 17 November 2008.

²¹ Country Water, *Response to IPART-Halcrow Pacific Review of Country Energy's Water Business*, 8 January 2010, page 8.

It is unclear whether Country Water has considered or investigated any alternative options. We would normally expect to see an analysis demonstrating the benefit of upsizing the tank, which is effectively an enhancement to the system. While we accept that the project is still in concept stage and a detailed cost benefit analysis is yet to be undertaken, in the absence of even a high level analysis demonstrating the economic advantages of upsizing the tank, we are unable to confirm whether the decision to upsize the tank is reasonable, particularly given that the population of Broken Hill has declined significantly over the last thirty years.²²

3.4.4

Cost estimate

The proposed capital expenditure included in the Country Water submission to IPART for this scheme is \$5.242 million (\$2009/10), to be incurred over the period 2011/12 to 2012/13. Country Water indicated that this was an early estimate, prepared for the AMP prior to completion of the concept design. It reported that its estimate is based on quotes from tank manufacturers and earthworks cost for similar sized projects.

The indicative cost estimate prepared by the engineering consultants is \$4.75 million (\$2007/08). The estimate is based on a scope which includes earthworks to cut into an existing slope to create an embankment for the tank, construction and installation of a 9ML steel tank, cover and associated works, pipework, and electrical works including relocation of an overhead power supply. The cost estimate is made up of direct costs of \$3.2 million, indirect costs (including design, project management, and indirect construction costs) of \$0.6 million and \$0.95 million contingency. It is based on quotations from steel tank constructors, the *Rawlinsons Australian Construction Handbook* for 2008, and costs from recently completed steel tanks (designed by the consultant).

The contingency allowance of 25 percent is consistent with estimates at this stage of design development.²³

We sought clarification for Country Water in relation to the difference between its cost estimate for this project and that of the engineering consultant. It has

²² In its response to our initial report, Country Water noted that while customer numbers had declined, the reliability of water supply has also declined. It indicated that the increasing number of poor raw water quality events is another driver for greater storage capacity at the Mica St WTP site (Country Water, *Response to IPART-Halcrow Pacific Review of Country Energy's Water Business*, 8 January 2010, page 8). Given that the new Mica St WTP has been designed to improve the level of treatment, particularly in times of poor quality raw water, we are uncertain of why this would be a key driver to increase storage capacity.

²³ We would typically expect an engineering contingency allowance of 15 to 30 per cent for cost estimates based on concept designs.

indicated that the original estimate used in its submission to IPART is made up of \$3 million direct costs, with the remaining capital expenditure (\$2.242 million) related to Country Water's corporate and business overheads, which are allocated to each individual project. Country Water stated that, whilst the engineering consultant's estimate includes some provision for indirect costs of its own, it has in no way covered its corporate and business overheads.

Country Water indicated that the corporate and business overhead allocation includes such activities as administration and management, supervision, safety, IT, communications, fleet, human resources, compliance, finance and accounting. It has stated that the allocations are based on the Australian Energy Regulator approved cost allocation method that was reviewed in the recent electricity determination process.

We note that the allocation constitutes a significant portion of the total costs, and equates to 74.7 per cent of direct project costs (based on the estimate in Country Water's SIR submission).²⁴ Whilst we have not reviewed Country Water's cost allocation method, the indirect costs are significantly greater than we would expect for such a scheme. Our comments in relation to the corporate overhead allocation are included in **Section 3.13**.

We recommend that further evidence be sought to confirm whether the tank needs to be upsized.

The capital expenditure required for a tank of similar size (~6ML) to the existing tank will be lower than the estimate by the engineering consultant. Based on our assessment, a 6ML tank, including design, installation and associated works, would cost in the order of \$4.2 million (excluding corporate overheads, but including 25 per cent contingency). Unless Country Water is able to sufficiently demonstrate the need for upsizing the tank (eg. by undertaking a cost-benefit assessment), we recommend that the capital expenditure allocation for this scheme be based on a 6ML tank. Including an allowance of 20 percent for corporate overheads (refer to **Section 3.13**), our recommended capital expenditure for this scheme is \$4.9 million, as shown in **Table 3.4**.

²⁴ Country Water has indicated that it has not included a contingency allowance in its estimate, and that the total of the \$2.242 million relates to business overheads (Country Water, *Response to IPART-Halcrow Pacific Review of Country Energy's Water Business*, 8 January 2010, page 8).

Table 3.4 Mica Street WTP No 1 Tank Replacement proposed and recommended expenditure (\$'000 2009/10)

	2010/11	2011/12	2012/13	Total
Proposed Capex	-	2,611	2,631	5,242
Recommended Capex	-	2,441	2,459	4,900
Variance	-	(171)	(172)	(342)

In phasing the expenditure over 2011/12 to 2012/13, we have assumed the same proportion of expenditure in each year as Country Water.

3.4.5

Timing and deliverability over the regulatory period

Country Water has assumed that this scheme will be delivered over the period 2011/12 to 2012/13. As the concept design for the scheme has already been completed, the proposed timing for delivery of the scheme appears reasonable and currently on track. We note that this proposed timing is also consistent with the most recent asset valuation, which indicates that the remaining useful life of the No 1 tank is five years.

3.5

Project 3 – Miscellaneous Minor Capex (Water)

3.5.1

Project description

Country Water has included within its submission to IPART an allowance for 'Miscellaneous Minor Capex'. As part of our review we requested Country Water to provide an overview of the method by which the allowance has been estimated, including key assumptions used to estimate expenditure, the type of works included in the allowance, and how this capex is typically delivered/procured.

Country Water provided a breakdown of expenditure for projects greater than \$50,000 for 2007/08 and 2008/09. Projects cover a range of sites and involve pump refurbishments, valve replacements, surveys, and other minor expenditure items.

Country Water indicated that the proposed allowance for miscellaneous expenditure is based on historical values and that a nominal amount is reserved for expenses throughout the year. Expenditure is allocated to such items as replacement of tools and equipment, minor building works and urgent minor safety works arising from audits. It indicated that due to the age of the equipment and buildings, and often obsolete design, many of these miscellaneous expenses are unforeseen; hence the practice of allowing a nominal annual amount.

3.5.2

Cost estimate

In its SIR submission to IPART, Country Water has proposed miscellaneous minor capital expenditure (water) of \$0.805 million over the period 2010/11 to 2012/13. This is significantly lower than the expenditure incurred over recent years, as shown in **Table 3.5**.

Table 3.5 Historical and proposed miscellaneous minor capex (water) (\$'000)

Historical and forecast (\$ Nominal)				Proposed (\$ 2009/10)		
2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
553	2,761	2,289	254	344	282	179

Country Water indicated that the forecast of miscellaneous minor capex relates to business as usual notional works on all aspects of the water network. Most of these notional works range between \$10,000 to \$50,000 and are delivered by internal staff. It stated that the amounts allocated to minor capex are the same from one year to the next, and that allocations are on a per site basis based on historical expenditure at each site. While the method outlined by Country Water appears reasonable, it has not provided a breakdown of its calculations and hence we have been unable to confirm this. However, we note that the allowance for minor capex (water) is lower than the historical expenditure, and that it gradually reduces over the period to 2010/11 to 2012/13. This is to be expected, given the new Mica Street WTP.

While we have not recommended any specific adjustments to the proposed miscellaneous minor capital expenditure (water), we have recommended adjustments to reduce the allocation of corporate overheads applied to all capital projects. This is discussed in more detail in **Section 3.13**.

3.6

Project 4 – Umberumberka Pipeline Replacement

3.6.1

Project description

The Umberumberka pipeline, which was commissioned in 1914, transfers water from the Umberumberka Reservoir to Silverton, Broken Hill and Imperial Lake. The main is 450mm diameter and is 30km in length. The terrain through which the main is located is extremely rugged, and some sections of the pipe are buried, half buried, or mounted on concrete chairs over creek crossings.

The pipeline is the second most important water line to Broken Hill and, because of its criticality and condition, it is subject to continual inspection and ongoing annual maintenance and repair. Country Water indicated that over the years, many sections of pipe have been replaced as a consequence of leaks caused by corrosion, or bursts induced by high transient pressure. The result is a mixture of different types of pipes, coatings and joints.

This capital expenditure included in Country Water's submission to IPART involves replacing sections of the main in the poorest condition. It has assumed the replacement of 100 metres in each year from 2010/11 to 2012/13.²⁵

3.6.2

Key drivers and links to AMP

The key driver for this scheme is asset renewals. The recent condition assessment undertaken as part of the asset valuation indicates that the existing pipeline has significant corrosion issues, and appears to require substantial renewal in the shorter term.²⁶ While the AMP does not contain a great amount of detail in relation to this scheme, it does indicate that an ongoing replacement program is proposed to commence from 2010/11.

3.6.3

Solution development

To get a better understanding of the condition of the pipeline and ensure targeted effective expenditure, Country Water engaged an engineering consultant (in mid 2009) to inspect the pipe, review historical reports and failure details, and to provide advice on maintaining the pipeline service in the most economical basis. The consultant undertook a provisional condition evaluation and reported its findings in July 2009.

Country Water provided a copy of the short report for our review. The consultant confirmed that the pipeline comprises a mix of pipe media of varying age and condition. The report identified a number of issues with the pipeline, which has a history of failures due to corrosion and water hammer.

²⁵ Country Water has applied a 20 per cent contingency to the length of pipeline (100 metres) to be replaced, ie. the cost estimate is based on replacing 120 metres.

²⁶ We note that the replacement cost of the asset estimated for the Optimised Depreciated Replacement Cost (ODRC) has been determined on the assumption that the pipeline is 600mm diameter, would follow a different route and would therefore be 5km longer, and that it would be underground and constructed of MSCL (GHD, *Country Energy Optimised Depreciated Replacement Cost (ODRC) Valuation of the System Assets of Country Energy's Water Business – Draft Report*, September 2009, p10). It would appear that the renewal program is based on a mix of below and above ground pipeline.

The consultant has recommended that pressure logging, updating of the pipeline plan records, and wall thickness measurement be undertaken in the immediate future.²⁷ The consultant has also recommended replacing existing air valves to minimise failures and optimise the residual service life of the various pipe media in the pipeline.

No recommendations have been made in relation to what sections of the pipeline should be replaced, however, once the above investigative works have been completed, Country Water should have sufficient information to identify and develop options for remediation, including identification of sections for replacement based on current condition and probability of failure.

In the AMP, Country Water has indicated that planned capital works include replacement of a number of obsolete and non-functioning air valves, and replacement of sections of the pipeline. While no information has been provided on the type of pipe that will be used, the Optimised Depreciated Replacement Costs Valuation assumes mild steel cement lined (MSCL).

3.6.4

Cost estimate

The proposed capital expenditure included in the Country Water submission to IPART for this scheme is \$1.187 million (\$2009/10), to be incurred over the period 2011/12 to 2012/13. The historical and proposed expenditure on the Umberumberka Pipeline is shown in **Table 3.6**.

Table 3.6 Umberumberka Pipeline Replacement historical and actual capital expenditure (\$'000)

Historical and forecast (\$ Nominal)				Proposed (\$ 2009/10)		
2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
548	-	-	-	435	374	377

As part of our review, we requested a breakdown of the capital expenditure, including key cost components, unit rates used to develop estimates, contingencies or allowances for overheads, the scope of works, and an explanation of how the scheme expenditure has been phased.

²⁷ Wall thickness measurement will determine the state of the pipeline sections and will be used to establish the residual service life of various sections of the pipeline.

Country Water provided a breakdown of the cost estimate for our review. Although not separately identified in the estimate, we understand that an allowance has been made for the replacement of 10 air valves at a total of \$50,000. Excluding the allowance for air valves, the direct costs associated with replacement of 120 metres of pipe (including dismantling of the old pipework) is equivalent to ~\$1,653/metre. This unit rate is on upper range of what we consider reasonable and this allowance should be more than sufficient to deliver the proposed works.

The cost estimate includes a contingency allowance of 20 per cent (applied to the length of main to be replaced). Country Water stated that this takes into account that the Umberumberka Pipeline runs along difficult terrain and is difficult to survey. We are of the opinion that the direct cost proposed by Country Water (which is equivalent to ~\$1,653/metre) contains sufficient allowance for the difficult terrain. For pipeline replacement schemes, we consider a contingency allowance in the order of 5 to 10 per cent to be sufficient.

On top of the direct costs, Country Water has added allowances for allocations and overheads, as shown in **Table 3.7**.

Table 3.7 Overhead allocations to the Umberumberka Pipeline replacement cost estimate (\$'000 2009/10)

Proposed Expenditure	2010/11	2011/12	2012/13	Total
Direct costs	215,000	215,000	215,000	645,000
Allocations and overheads	220,218	159,295	162,115	541,628
Allocations and overheads as % of direct cost	102%	74%	75%	84%

The allowances range from 74 per cent to 102 per cent of the direct costs, which is significantly greater than the allowances typically applied by water utilities throughout Australia. In our experience, allowances for overheads (ie. those associated with design and contract management) are generally in the order of 5 to 10 per cent of the direct cost. Including allowances for IT and other support items (ie. corporate overheads) typically increases the allowance to 15 to 20 per cent (refer **Section 3.13**). These allowances are applied to direct cost estimates which exclude contingency.

On the basis of our review, we recommend that the proposed capital expenditure be reduced to exclude what appear to be excessive allowances for corporate

overheads and allocations, and for the excessive contingency allowance. Our recommended adjustments are shown in **Table 3.8**.

Table 3.8 Recommended adjustments to Umberumberka Pipeline proposed expenditure (\$'000 2009/10)

Proposed Expenditure	2010/11	2011/12	2012/13	Total
Proposed direct capex (including 20% contingency)	215,000	215,000	215,000	645,000
Halcrow Adjustments				
Direct capex (less contingency of 20%)	179,167	179,167	179,167	537,500
Allocations and overheads (at 20% of direct costs)	35,833	35,833	35,833	107,500
Contingency (at 10% of direct costs)	17,917	17,917	17,917	53,750
Halcrow Recommended - Total capex (direct + overheads + contingency)	232,917	232,917	232,917	698,750
Proposed capex	435,218	374,295	377,115	1,186,628
Recommended capex	232,917	232,917	232,917	698,750
Variance	(202,301)	(141,378)	(144,198)	(487,878)

3.6.5

Timing and deliverability over the regulatory period

As noted above, Country Water has proposed a program involving the replacement of 100 metres of main per year (with an additional contingency allowance of 20 metres). The current investigations should identify those sections of pipe in need of critical repair, and this may result in adjustments to the timing of the replacement program. However, based on the information available to date, the proposed timing is appears fair, and should be deliverable over the period.

3.7

Project 5 – Menindee to Stephens Creek Pipeline Replacement

3.7.1

Project description

A critical component of Country Water's infrastructure is the raw water pipeline between Menindee and Stephens Creek. The 600mm diameter MSCL pipeline, which was built between 1946 and 1952, is 100 kilometres in length.

This capital expenditure, included in Country Water's submission to IPART, involves replacing sections of the main in the poorest condition. It has assumed the replacement of 600 metres in each year from 2010/11 to 2012/13.²⁸

3.7.2

Key drivers and links to AMP

The key driver for this scheme is asset renewals. While the AMP contains minimal detail in relation to this scheme, it does indicate that parts of the pipeline are thought to be badly corroded, and that provision has been made for replacement of sections of pipe from 2011/12.

In its submission to IPART, it appears that Country Water has brought forward the replacement program to 2010/11, with some emergency work to commence in 2009/10. A recent condition assessment undertaken as part of the asset valuation indicates that the existing pipeline has a remaining useful life of 41 years.²⁹

3.7.3

Solution development

The AMP indicates that due to the age and history of failures, a specialist pipe engineer would be engaged to provide a condition assessment of the Menindee to Mica Street pipeline.³⁰ Since the time of writing the AMP, an engineering consultant has been engaged by Country Water, and copies of the Stage 1 and Stage 2 progress reports were provided to us as part of this review. The reports detail interim findings on the condition evaluation of the pipeline.

The Stage 1 report³¹, dated 18th February 2009, was based on an initial review of available technical and historical data, together with site inspections and discussions with former employees. It noted that the pipeline is considered to be in an advanced state of internal corrosion. The consultant recommended further investigations to capture additional pipeline wall thickness and pressure data to

²⁸ Country Water has applied a 6.7 per cent contingency to the length of pipeline (600 metres) to be replaced; ie. the cost estimate is based on replacing 640 metres.

²⁹ We note that the replacement cost of the asset, as determined for the Optimised Depreciated Replacement Cost (ODRC) has been determined on the assumption that the pipeline is 600mm diameter, would follow a different route and would therefore be 5km longer, and that it would be underground and constructed of MSCL (GHD < *Country Energy Optimised Depreciated Replacement Cost (ODRC) Valuation of the System Assets of Country Energy's Water Business – Draft Report*, September 2009, page 10). It would appear that the renewal program is primarily based on an above ground pipeline.

³⁰ The Menindee to Stephen Creek pipeline forms part of the Menindee to Mica Street pipeline.

³¹ Alf Grigg & Associates, *Condition evaluation and residual lifetime assessment of 600MSCL Menindee to Broken Hill Water Supply Pipeline – Stage 1 Report*, 18th February 2009.

enable development of a prioritisation model. It also recommended that cathodic protection works be undertaken promptly.

Stage 2 of the investigations involved field surveys and sample testing to determine wall thickness loss. The Stage 2 progress report³², dated 20th August 2009, indicates that the results of field testing suggest that the pipeline is generally in good condition for its service age. The consultant notes that some sections of pipe, possibly few in number, have lost upper internal mortar lining and have extensive wall thickness loss which will present burst failures, and recommends that appropriate temporary repairs be undertaken on these sections.

The consultant predicts that the ongoing randomised survey planned for the pipeline will confirm that the majority of pipe lengths are in good condition with years of reliable service providing emerging weld corrosion and failures are repaired as required.

Country Water has developed its forecast expenditure for this replacement program on the basis that 600 metres of pipeline will require replacement each year. In the absence of a final report and strategy by the consultant, it is not clear whether the length for replacement proposed by Country Water accurately reflects the condition of the pipeline. However, the allowance, which is equivalent to 0.6 per cent of the pipeline length per year, does not appear unreasonable.

3.7.4

Cost estimate

The proposed capital expenditure included in the Country Water submission to IPART for this scheme is \$5.519 million (\$2009/10), to be incurred over the period 2011/12 to 2012/13. The historical and proposed expenditure on the Menindee to Stephens Creek Pipeline is shown in **Table 3.9**.

Table 3.9 Menindee to Stephens Creek Pipeline historical and actual capital expenditure (\$'000)

Historical and forecast (\$ Nominal)				Proposed (\$ 2009/10)		
2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
458	-	-	267	2,024	1,741	1,754

³² Alf Grigg & Associates, *Stage 2 Progress Report & Interim Findings on the Condition Evaluation of 600 MSCL Menindee-Broken Hill Pipeline*, 20 August 2009.

The AMP indicates that the expenditure incurred in 2009/10 has involved inspection of the pipeline to provide a condition assessment, replacement of a number of obsolete and non-functioning air valves, and replacement works on the sections of pipe suffering significant corrosion.³³ The AMP does not report any expenditure in 2010/11, but states that an allowance of \$1 to \$2 million per annum will be made from 2011/12 for replacement of sections of the pipeline and installation of additional cathodic protection equipment for \$20,000.

Country Water provided a breakdown of the cost estimate for our review. The direct costs associated with replacement of 600 metres of pipe (including dismantling of the old pipework) equates to ~\$1,563/m, which appears reasonable. The cost estimate includes a contingency allowance of 6.7 per cent (applied to the length of main to be replaced). This is within the 5 to 10 per cent range typical for pipeline replacement schemes.

On top of the direct costs, Country Water has added allowances for allocations and overheads. These have been applied at the same rate as that of the Umberumberka pipeline renewals project, as shown in **Table 3.10**.

Table 3.10 Overhead allocations to the Menindee to Stephens Creek pipeline replacement cost estimate (\$'000 2009/10)

Proposed Expenditure	2010/11	2011/12	2012/13	Total
Direct costs	1,000,000	1,000,000	1,000,000	3,000,000
Allocations and overheads	1,024,269	740,906	754,024	2,519,199
Allocations and overheads as % of direct cost	102%	74%	75%	84%

As noted in **Section 3.6.4**, the allowances for overheads are significantly greater than the allowances typically applied by water utilities throughout Australia. We consider that an allowance of 20 per cent more accurately reflects the resources required to deliver this scheme. Consequently, we recommend that the capital expenditure for this scheme be reduced to reflect this, as shown in **Table 3.11**.

³³ From the information provided it is not clear whether costs related to the condition assessment have been capitalised.

Table 3.11 Recommended adjustments to Menindee to Stephens Creek Pipeline Replacement proposed expenditure (\$'000 2009/10)

Proposed Expenditure	2010/11	2011/12	2012/13	Total
Proposed direct capex (including 6.7% contingency)	1,000,000	1,000,000	1,000,000	3,000,000
Halcrow Adjustments				
Direct capex (less contingency of 6.7%)	937,500	937,500	937,500	2,812,500
Allocations and overheads (at 20% of direct costs)	187,500	187,500	187,500	562,500
Contingency (at 6.7% of direct costs)	62,813	62,813	62,813	188,438
Halcrow Recommended - Total capex (direct + overheads + contingency)	1,187,813	1,187,813	1,187,813	3,563,438
Proposed capex	2,024,269	1,740,906	1,754,024	5,519,199
Recommended capex	1,187,813	1,187,813	1,187,813	3,563,438
Variance	(836,457)	(553,094)	(566,212)	(1,955,762)

3.7.5

Timing and deliverability over the regulatory period

As noted above, Country Water has proposed a program involving the replacement of 600 metres of main per year (with an additional contingency allowance of 40 metres). The current investigations should identify those sections of pipe in need of critical repair, and this may result in adjustments to the timing of the replacement program. However, based on the information available to date, the proposed timing is appears fair, and should be deliverable over the period.

3.8

Project 6 – Stephens Creek Reservoir Cover

3.8.1

Project description

This project involves construction of an evaporative cover at Stephens Creek Reservoir. Stephens Creek Reservoir is situated 20 kilometres east of Broken Hill. The Menindee to Broken Hill pipeline transfers water to Stephens Creek Reservoir where it is stored at an intake pond (275ML capacity) before transfer to Mica Street WTP. The intake pond is used as a cooling pond for heated water out of the Menindee pipeline. It is 10 hectares in area and has a high area/volume ratio which leads to high evaporative losses.

In 2006, Country Water submitted an application to the now Department of Environment, Climate Change and Water (DECCW) for an Energy Funding grant of \$700,000 for the installation of an evaporative cover over the most intensively used areas of Stephens Creek Reservoir (an area of 68,000 square metres). The submission to DECCW was that the cover would prevent Country Water from having to pump 143ML of water from Menindee, thereby saving 240MWH of electricity and 236 tonnes of CO₂ emissions per annum.

The project, which was originally due for completion in February 2008, is currently on hold and is under review. No additional expenditure has been included within Country Water's submission to IPART to complete the scheme.

3.8.2

Key drivers and links to AMP

There is no mention of this project in Country Water's AMP or in its written submission to IPART, although the expenditure is reported in the SIR. Based on a review of the business case (dated November 2007), the key objective of the grant was to reduce energy consumption (by reducing the amount of water to be pumped to Stephens Creek). Country Water also viewed the scheme as a good fit with its drought strategy.

In its response to our initial report, Country Water has stated, *'The project was approved on the basis that it formed part of the drought contingency strategy. The commercial assessment showed that in the event of the drought, the project provided a positive NPV as it would have reduced the need to transport water into Broken Hill from Bathurst.'*³⁴

A review of the business case approval documentation indicates that the timing of this scheme may also have been driven, at least in part, by the availability of funding; the business case was approved by management *"on the basis that the cover is a prudent drought measure and the government funding may not be available in the future. On this basis the business case is positive for CE on a financial and operational/ risk basis"*.³⁵

3.8.3

Solution development

The application to the now DECCW for an Energy Funding grant was submitted in November 2006. The application for \$700,000 was estimated using a rate of \$10 per square metre, which was estimated by a contractor. DECCW approved the funding for \$700,000 (\$490,000 after tax) in December 2006, and an amount of \$850,000 was included within Country Water's 2007/08 budget for this scheme.

³⁴ Country Water, *Response to IPART-Halcrow Pacific Review of Country Energy's Water Business*, 8 January 2010, page 11

³⁵ Internal Country Energy email, dated 27 November 2007.

A consultant was engaged to develop the specification and tender documents in October 2007, and tenders for design and construction (D&C) of the cover were called. The first business case for the project was prepared in November 2007, a copy of which was provided for this review. The business case recommended award of the D&C contract at a price of \$1.091 million.

The reasons given by Country Water in the business case for the significant increase in cost from \$700,000 to \$1.091 million (an increase of 56 per cent) included:

- Cost escalation of engineering projects resulting from high demand for these services.
- The detailed review of site conditions identified difficult anchoring and structural conditions which were not fully appreciated when the original request for the grant was submitted.
- Exacerbation of remote area cost loading primarily driven by the mining boom.

Whilst these issues would have contributed to the cost increase, it appears that the original cost estimate was poorly developed. The impacts of cost escalation due to high demand and the mining boom should have been reasonably foreseen at the time of preparing the preliminary estimate. Contingencies applied to preliminary estimates should typically be in the range of 15 to 25 per cent. The increase in scheme capital expenditure by 56 per cent indicates insufficient understanding of foreseeable risks associated with the project, such as site conditions, and design and construction issues.

From the information provided in the business case, it is not apparent whether Country Water sufficiently investigated and assessed any other options to reduce energy consumption or evaporative losses. Whilst the business case identified four sets of rejected options, it provides no information on how the options were identified, or whether a formal options assessment was undertaken.³⁶

Following approval of the business case, the contract was awarded in December 2007. In April 2008, the design by the D&C contractor was peer reviewed by GHD; a number of design queries were identified, and then rectified. In June 2008, the Dam Safety Committee identified concerns with the design,

³⁶ Options identified were 1. Chemical layer to reduce evaporation; 2. Non complying tenders (hexagonal modules, nets, other technologies); 3. Drilling bores; 4. Transport water by rail (should water supply run out). In its response to our initial report Country Water has provided some additional information on the assessment of the four options (Country Water, *Response to IPART-Halcrow Pacific Review of Country Energy's Water Business*, 8 January 2010, page 10).

which was thought to pose a risk to the dam wall in extreme storm events. These issues were addressed in a revised design in February 2009, at which time the D&C contractor sought a variation of an additional \$550,000.

In March 2009 a project review was undertaken as significant concerns were emerging in respect to the project. The project was subsequently put on hold. Whilst construction had commenced, we understand that only preliminary works have been undertaken.

3.8.4

Cost estimate

Table 8.1 of the SIR shows expenditure of \$1.418 million in 2007/08 and \$311,000 in 2008/09 for this scheme, which is equivalent to \$1.733 million (2007/08 real).³⁷ This compares to the expenditure approved in the original business case of \$1.091 million (\$2007/08).

Country Water has not provided any information on forecast costs to complete for this scheme, and it is not clear whether it has any outstanding liabilities with the D&C contractor. The escalation of costs does, however, highlight possible weaknesses in the implementation of Country Water's capital planning processes and its methods for cost estimation. Had it undertaken more detailed investigations and planning in the early phases of this scheme, it might have avoided the current issues with this project, or made a decision not to proceed.

Our review of this scheme has also highlighted what we consider to be a significant issue with Country Water's business planning processes. The issue is highlighted in an internal email approving the business case for this scheme.³⁸ In relation to whether the water business cases should be viewed on a 'Water Business only' basis or on a 'Country Energy' basis, the referenced email states that the business cases should be on a 'Country Energy' basis but show the NPVs and financial outcomes on both a 'Country Energy' and a 'Water Business only' basis for information. Given that Country Water seeks to fund its water and sewerage schemes from charges to its water and sewerage customers, it is unclear how a business case can be viewed on any basis other than 'Water Business only'.

In response to our above comments, Country Water has stated, *'It is good (and common) business practice to understand the impact of a project on both the individual business unit as well as the overall business. Only then can the implications of any business decision be*

³⁷ Indexed using CPI at 30 June.

³⁸ Internal Country Energy email, *Re Water Evaporation Reduction Project v0.11.doc*, dated 27th November 2007.

*understood. The water business is not a separately funded business, nor is it a separate legal entity, and nor would any projects likely be viable on a water business only basis. The Mica Street Water Treatment Plant would never have gone ahead on a water only basis. Therefore it is entirely appropriate to assess the impact of the project from a total Country Energy perspective.*³⁹

3.8.5 *Timing and deliverability over the regulatory period*

As noted above, this project was originally due for completion in February 2008, however, it is currently on hold and is under review.

We concur with Country Water's proposal that the costs of this scheme should not be included in the regulatory asset base if the project does not proceed. In the event that the project does proceed, an appropriate reduction in the value of the asset should be made (to account for inefficiencies) before rolling into the regulatory asset base.

3.9 ***Project 7 – Warren Street SPS***

3.9.1 *Project description*

Country Water has reported in its submission to IPART that expenditure was incurred at Warren Street SPS to replace old pumps and wells with new submersible pumps, wells and switchgear. The project was undertaken over the period 2006/07 to 2008/09.

3.9.2 *Key drivers and links to AMP*

This scheme was completed prior to the current AMP, and hence no reference is made to this scheme in the AMP document.

3.9.3 *Solution development*

Construction of this scheme has already been completed and the SPS is operational. No information demonstrating the need for equipment replacement or the consideration of alternative solutions was provided for initial review. However, Country Water has since provided an overview of the scheme in its response to our initial report.⁴⁰

The pumping station consists of three wet wells, with three 54kW submersible pumps, with a combined pumping capacity of 142L/s, and associated works. The

³⁹ Country Water, *Response to IPART-Halcrow Pacific Review of Country Energy's Water Business*, 8 January 2010, page 10.

⁴⁰ Country Water, *Response to IPART-Halcrow Pacific Review of Country Energy's Water Business*, 8 January 2010, page 11.

project was initially approved in May 2006, for \$568,000 (excluding overheads). A scope change resulted in approval of an additional \$143,000.

3.9.4

Cost estimate

Country Water has reported capital expenditure of \$1,218 million (nominal) for this scheme, as shown in **Table 3.12**.

Table 3.12 Warren Street SPS actual capital expenditure (\$'000 nominal)

2006/07	2007/08	2008/09	Total
786	380	52	1,218

In its response to our initial report, Country Water has provided an overview of the scheme, and some additional information on the size of the pumping station, and a high level breakdown of the assets. It has stated that the actual total project expenditure on the scheme was \$704,000, excluding corporate overheads. Without a breakdown of the timing of expenditure, it is not possible to calculate the exact allocation of corporate overhead, although it is in the order of \$514,000 (nominal), or 72 per cent of the direct cost. Our comments in relation to Country Water's corporate overhead allocation are included within **Section 3.13**.

The recent ODRC Valuation of the System Assets estimates the replacement value of the Warren Street SPS at \$534,600.⁴¹ The valuation consists of allowances for civil, mechanical-electrical components, pipes and fittings and telemetry controls.

Given that the recent valuation is significantly less than the expenditure reported in the SIR submission, even after excluding the corporate overhead allocation, there is some question as to the reasonableness and efficiency of the historical expenditure reported by Country Water in Table 8.1 of its SIR. However, we have not investigated the reasons for this variance.

3.9.5

Timing and deliverability over the regulatory period

There is no expenditure forecast for the Warren Street SPS during the coming regulatory pricing period.

⁴¹ GHD, *Country Energy Optimised Depreciated Replacement Cost (ODRC) Valuation of the System Assets of Country Energy's Water Business – Draft Report*, Appendix I, September 2009.

3.10 Project 8 – Wills Street STP Replacement

3.10.1 Project description

This project involves the replacement or refurbishment of the Wills Street Sewage Treatment Plant (STP). The existing STP, which services approximately 75 percent of Broken Hill, was built in 1960 and has an operational capacity of 3ML/d. The plant is comprised of primary sedimentation, trickling filters, sludge digesters and UV treatment.

3.10.2 Key drivers and links to AMP

The key driver for this project is asset renewals. The AMP indicates that the STP is in continual need of refurbishment and that a condition assessment is currently underway to determine the optimal (least cost) refurbishment/replacement path.

3.10.3 Solution development

This project is currently in the early stages of development. In June 2009, Country Water engaged an engineering consultant to undertake a condition assessment of assets at the Wills Street STP and to prepare a renewal strategy which will provide it with the best option for renewal or replacement of the plant. It will also develop preliminary cost estimates for required works.

The engineering consultant has now inspected the plant and undertaken a detailed assessment of the criticality of plant items. Country Water provided a copy of the draft condition assessment prepared by the engineering consultant (we understand that a final report is due imminently). It indicates that with repairs, the estimated life of most components of the plant can be extended to between 10 to 20 years.⁴²

3.10.4 Cost estimate

The proposed capital expenditure included in the Country Water submission to IPART for this scheme is \$12.338 million (\$2009/10), to be incurred over the period 2010/11 to 2012/13. This is shown in **Table 3.13**.

Table 3.13 Proposed capital expenditure for Wills Street STP Replacement (\$'000 2009/10)

2010/11	2011/12	2012/13	Total
506	6,093	6,139	12,738

⁴² GHD, *Country Water – Report for Wills Street sewage Treatment Plan Renewal Strategy – Condition Assessment*, July 2009 (draft).

Country Water has indicated that the scope, cost and scheduling of the works is preliminary (based on similar sized treatment plant projects), and that once the renewal strategy has been developed, it will be able to more accurately define the scope of the works. This will in turn lead to a more accurate estimate of capital expenditure and scheduling.

Country Water has not provided a breakdown of the cost estimate in the SIR. However, the AMP indicates that planning and design, together with any urgent capital works, will be undertaken in 2010/11, while the major refurbishment/replacement works will take place over the period 2011/12 to 2012/13, with work spread evenly over those two years.

The recent condition assessment of the STP assets indicates that while major refurbishment or replacement is required for a few asset items (eg. one of the inlets and some fencing around the digesters), most other assets at the STP can be repaired, and their estimated life extended to between 10 to 20 years. These remedial works will be required within the next 5 years. On this basis, it appears that the cost estimate included in Country Water's submission to IPART is overstated.⁴³ The repairs to the treatment plant should be significantly cheaper than the \$12.738 million proposed. While the engineering consultant is to develop estimated costs for the recommended works, it is yet to complete this element of the review. Based on our high level review, we would expect that the necessary remedial works to extend the life of the plant would be in the order of \$3-\$5 million.

On the basis of our review, we recommend reductions to the capital expenditure allowance as shown in **Table 3.14**.

Table 3.14 Wills Street STP Replacement proposed and recommended expenditure (\$'000 2009/10)

	2010/11	2011/12	2012/13	Total
Proposed capex	506	6,093	6,139	12,738
Recommended capex	199	2,392	2,410	5,000
Variance		(3,702)	(3,729)	(7,738)

⁴³ As the condition assessment report is still in draft, some of these condition assessments may be subject to change.

We note Country Water's comments in relation to our initial report. It is of the opinion that our reduction of capital expenditure is '*premature until all analysis and condition assessments have been finalised...Country Water still needs to make a strategic decision on the required life expectancy of any refurbishment work undertaken at Wills St sewer [sic] treatment plant.*'⁴⁴ We have made our assessment on the information presently available. Given the current uncertainty surrounding what works will be undertaken, we are of the opinion that reducing the capital expenditure for this scheme represents a more equitable split of the pricing risk between Country Water and its customers.

Furthermore, given that Country Water has not yet developed a renewal strategy for the plant, we are of the opinion that, should plant replacement be identified as the most appropriate solution, delivery timing will most likely extend beyond 2012/13, ie. into the next price path period. In particular, the treatment process investigation is yet to be finalised, Country Water is yet to make a strategic decision on the works that will be undertaken, and in the event that it decides to proceed with a plant replacement approach, development and financial approvals will have to be gained prior to undertaking the works.

3.10.5

Timing and deliverability over the regulatory period

The condition assessment currently being finalised indicates that some works are urgently required, while other repairs are required within the next five year period. In its submission to IPART, Country Water has assumed that this scheme will be delivered over the period 2010/11 to 2012/13. Given the condition assessment, the timing of this scheme appears appropriate and we would expect Country Water to complete refurbishment works within the forecast time period.

3.11

Project 9 – Miscellaneous Minor Capex (Sewerage)

3.11.1

Project description

Country Water has included in its submission to IPART an allowance for 'Miscellaneous Minor Capex'.

As with the allowance for Miscellaneous minor capex (water), discussed in **Section 3.5**, the allowance is allocated to such items as replacement of tools and equipment, minor building works, and urgent minor safety works arising from audits.

⁴⁴ Country Water, *Response to IPART-Halcrow Pacific Review of Country Energy's Water Business*, 8 January 2010, page 13.

3.11.2

Cost estimate

In its SIR submission to IPART, Country Water has proposed miscellaneous minor capital expenditure (sewerage) of \$0.489 million over the period 2010/11 to 2012/13, which is lower than the expenditure incurred in previous years. This is shown in **Table 3.15**.

Table 3.15 Historical and proposed miscellaneous minor capex (sewerage) (\$'000)

Historical and forecast (\$ Nominal)				Proposed (\$ 2009/10)		
2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
92	582	683	380	206	108	175

Whilst Country Water has not provided a breakdown of its calculations to estimate the allowance, its method for forecasting the allowance (as explained in **Section 3.5**) appears reasonable. While we have not recommended any specific adjustments to the proposed miscellaneous minor capital expenditure (sewerage), we have recommended adjustments to reduce the allocation of corporate overheads applied to all capital projects. This is discussed in more detail in **Section 3.13**.

3.12

Observations on Other Items of Capital Expenditure

Based on our review of Country Water's AMP, its submission to IPART, and its SIR, we have made the following observations in respect to another two of proposed capital schemes:

- In its AMP, Country Water has included allowances for proposed dam safety works at Umberumberka Dam. It states that *"proposed works for 2009/10 include dam safety works, estimated at \$27,000 and continuous expenditure thereafter to monitor and maintain aging dam. Provision has been made for additional expenditure in 2012/13 for leakage monitoring, measurement and control."*⁴⁵ From the information provided in Country Water's submission to IPART, it is unclear whether the leakage monitoring activities have been capitalised. However, Table 8.1 of the SIR includes \$263,000 for 'Umberumberka Reservoir Dam – Safety Works (W58).' We would not typically expect activities relating to leakage monitoring, measurement and control to be capitalised.

⁴⁵ Country Water AMP 2009/10 to 2014/15, page 45

- Country Water's AMP proposes \$730,000 to refurbish Herbard Street Tank in 2010/11. The proposed work is 'clean, repair, recoat interior and exterior'. Table 8.1 of the SIR includes \$708,000 for 'Hebbard Street Service Reservoir Refurbishment (W8)' in 2010/11 which appears to correspond to the allowance in the AMP. These activities appear to be opex in nature, and we would not generally expect these items to be capitalised. A similar allowance has also been made for Block 10 Tank No 4 in 2013/14, although is not apparent whether an allowance has been included within Table 8.1 of the SIR.

In our initial report we recommended that clarification be sought from Country Water on the scope of these schemes so that an assessment may be made as to the appropriateness of the capitalisation of the expenditure. In its response to our initial report, Country Water has indicated that the expenditure is required to extend the life of the assets, and as such is of a capital nature.⁴⁶ We have not sought to investigate this further.

3.13

Allowances for Corporate Overheads and Allocations

Our review of the Country Water's capital expenditure program has highlighted what we consider to be significant issues with the application of corporate overheads and allocations to capital schemes. The allowances, which are allocated to all capital schemes, represent a significant proportion of the capital expenditure which, in our experience, is much greater than the allowances typically applied by water utilities throughout Australia. Furthermore, the allocation appears to include a number of operational activities such as credit management and billing services, which in our opinion, should not be capitalised.

Table 3.16, provided by Country Water, shows a breakdown of the capital expenditure for the years 2009/10 to 2012/13.

Country Water has indicated that the corporate and business overhead allocations include such activities as administration and management, supervision, safety, IT, communications, fleet, human resources, compliance, finance and accounting. It indicated that the allocations are 'fixed', and that it has little control over these items. It explained that total overheads and allocations are calculated for the water business. The totals are then split between opex and capex based on the proportion of the direct cost associated with each as a percentage of total direct costs. This portion of overheads is then allocated to each project by taking the

⁴⁶ Country Water, *Response to IPART-Halcrow Pacific Review of Country Energy's Water Business*, 8 January 2010, page 13.

project's direct cost proportion of total direct costs for all projects, multiplied by the total capex allocation and overheads to be applied to the water business.

Table 3.16 Breakdown of capital expenditure showing allocation of overheads (\$'000)

	2009/10	2010/11	2011/12	2012/13
Direct capex (including contingency allowances)	22,278	2,772	7,094	7,017
Corporate overhead	3,102	1,110	2,007	1,995
Divisional overhead	4,638	1,660	3,000	2,983
Total overhead	7,740	2,770	5,007	4,979
Overheads as % of direct costs (including contingency allowances) ¹	35%	100%	71%	71%
Total capex (direct capex and overheads)	30,018	5,542	12,101	11,996
Total (per Table 8.1 SIR)	30,018	5,611	12,350	12,308
Variance ²	-	70	249	312

Note: (1) This overhead is different to the overhead allocated to the Umberumberka and Menindee Pipeline schemes which have overheads as a percentage of direct cost as 102%, 74% and 75% for the years 2010/11 to 2012/13.

(2) With the exception of 2010/11, we have been unable to tie this to Table 8.1 of the SIR. The differences are not material and may relate to escalation.⁴⁷

The allocation of overheads to capital schemes should reflect the use of resources by those schemes. Overheads typically include allowances for project management and related support activities, with an allowance for corporate overheads applied to these cost elements. Based on the information provided by Country Water, it appears that there is very little relationship between allocation applied and the use of internal resources in the delivery of capital projects.

As shown in **Table 3.16**, the overheads represent a significant component of the capital program. This may be indicative of possible issues with the capitalisation of expenditure, the ring-fencing of expenditure within the organisation, or may be indicative of inefficient operations.

⁴⁷ In its response to our initial report, Country Water confirmed that the variances are due to applied cost escalators (Country Water, *Response to IPART-Halcrow Pacific Review of Country Energy's Water Business*, 8 January 2010, page 15).

In response to our initial report, Country Water strenuously objected to our statement that its operations may be inefficient.⁴⁸ However, in our experience of conducting similar reviews of water utilities throughout Australia, overhead allocations to capital projects are typically in the range of 15 to 20 per cent of the direct (contract) cost. Overhead allocations generally include allowances for project and contract management and other project support activities such as engineering checks and site superintendents' wages etc. These allowances are capital in nature and are directly allocated to capital schemes.

Country Water has stated in its response to our initial report that its overhead allocation methodology is based on an approved and audited, full absorption costing methodology, approved by the Australian Energy Regulator, that was reviewed in the recent network electricity determination process. However, given the magnitude of the corporate allocation applied to the capital program, we strongly recommend that a detailed audit of the cost allocation method be undertaken to confirm its suitability and application to the operations of Country Water. This would clarify whether the allocations to Country Water's capital program accurately reflect the use of corporate resources, and whether the capitalisation of expenditure is appropriate.

We note Country Water's comments made in response to our initial report, and its objections of our findings.⁴⁹ However, given the magnitude of the corporate overhead allocation, our initial assessment of its overhead allocation is unchanged. We acknowledge that we have not undertaken a detailed benchmark or audit of the apportionment methodology and it is for this reason that we strongly recommend that an audit be undertaken to confirm whether the allocation of overheads to capital schemes accurately reflects the use of resources by those schemes.

On the basis of our review, we recommend that reductions be made to the whole of the capital program to remove the excessive allocation of corporate overheads. Our calculations are shown in **Table 3.17**.

⁴⁸ Country Water, *Response to IPART-Halcrow Pacific Review of Country Energy's Water Business*, 8 January 2010, page 14.

⁴⁹ Country Water, *Response to IPART-Halcrow Pacific Review of Country Energy's Water Business*, 8 January 2010, page 14.

Table 3.17 Recommended adjustments to allocation of overheads (\$'000 2009/10)

		2010/11	2011/12	2012/13	Total	Comments
Total proposed capex	A	5,611	12,350	12,308	30,269	Table 8.1 SIR
Proposed capex of schemes where specific adjustments have been made to the allowance for overheads:						
▪ Mica Street WTP No 1 Tank Replacement		-	2,611	2,631	5,242	Section 3.4 refers
▪ Umberumberka Pipeline Replacement		435	374	377	1,187	Section 3.6 refers
▪ Menindee to Stephens Creek Pipeline Replacement		2,024	1,741	1,754	5,519	Section 3.7 refers
▪ Wills Street WWTP Replacement		506	6,093	6,139	12,738	Section 3.10 refers
Total capex reviewed where specific adjustments have been made to the allowance for overheads	B	2,966	10,820	10,901	24,687	
Capex where no adjustments have been made to the allowance for overheads	C = A-B	2,646	1,530	1,407	5,583	
Overhead applied by Country Water	D	102%	74%	75%		As we have been unable to confirm the overhead percentage in Table 3.16, the overhead percentage applied here is based on the Umberumberka and Menindee pipeline schemes. Country Water provided a breakdown of the cost for these schemes and the rate of overhead applied.
Capex less overhead applied	E = C/(1+D)	1,310	879	804	2,993	

		2010/11	2011/12	2012/13	Total	Comments
Estimate of contingency (assume 5%)	$F = E \times 0.05$	65	44	40	150	In the absence of any information, we have assumed that Country Water has applied contingencies of 5 per cent (on average) to the remainder of the capital program.
Direct capex (excludes overheads and assumed contingency)	$G = E - F$	1,244	835	764	2,843	
Allowance for reasonable overheads (20% of direct capex)	$H = GX 0.2$	249	167	153	569	Contingency should not be applied to overheads. Hence, contingency is excluded from this calculation.
Recommended capex (direct + overhead + contingency)	$I = E + H$	1,559	1,047	957	3,562	
To adjustment recommended	$J = I - C$	(1,087)	(484)	(450)	(2,021)	
Adjustment to Water capex		(1,002)	(395)	(394)	(1,791)	This excludes the scheme specific adjustments to Mica Street WTP No 1 Tank Replacement, and the two pipeline replacement schemes
Adjustment to Sewerage capex		(85)	(89)	(56)	(230)	This excludes the scheme specific adjustment to the Wills Street WWTP Replacement.

3.14

Comments on Public Submissions and Public Hearing

As part of our review, IPART has requested that we consider two submissions it has received from the public in relation to the review of prices for Country Water. These submissions are from Roger Edwards (dated 11th November 2009) and Graham Walkom (undated). It has also requested that we consider the transcript from the Public Hearing held in Broken Hill on Wednesday, 18th November 2009.

In the following paragraphs we provide an overview of some of the comments made in relation to capital planning, asset management and specific capital schemes.

A number of comments have been made in relation to the Mica Street WTP project. Observations include the decision to upgrade the plant rather than to extend the life of the existing plant, the practice of chlorine dosing at Menindee Lakes, the decision to defer construction of some key processes, and the increase in cost of the new WTP. We make the following observations:

- Roger Edwards has questioned the decision to upgrade the plant rather than to extend its life (Part 9.0 of his letter refers). The Mica Street WTP business case notes that alternatives to a full replacement were investigated during an initial Value Management study (in 2001) and as part of an Integrated Water Cycle Management study (in 2004). Whilst we have not reviewed these documents, it is apparent that alternatives to upgrade the plant have been considered as part of these studies. In addition, the recent ODRC valuation of assets by GHD indicates that most components of the plant have a remaining useful life of two years, whilst the sludge lagoons have a remaining life of five years. On this basis, the decision to upgrade the plant appears appropriate. We have not, however, undertaken a review of the design adopted and cannot therefore comment on the appropriateness of the selected design or treatment process.
- In relation to the comments made by Graham Walkom (Part B, point 6 of the letter refers) and Mr Walker (page 62 of the public hearing transcript) on the practice of dosing high levels of chlorine at Menindee Lakes. We confirm that dosing high levels of chlorine into raw water having high levels of organic matter may result in increased treatment requirements. It is for this reason that this practice has largely been stopped around the world. Pre-dosing of chlorine will require more complex and expensive processing to remove carcinogenic compounds.

- Graham Walkom has observed that the new WTP does not include sludge processing/handling, a raw water storage tank or a control room (Part B, point 6 of the letter refers). Our review of the work that Tenix has been contracted to undertake indicates this observation is correct, and our detailed comments in relation to this are included within **Section 3.3.4**. As previously noted, the ORDC valuation indicates that the sludge lagoons have an estimated remaining useful life of five years. On this basis we would expect expenditure to extend the life of the existing sludge lagoons, or to construct new sludge handling facilities, to be incurred beyond the current price review period.
- We are unable to comment on the estimate of \$8 million noted by Graham Walkom in relation to the original estimate to upgrade Mica Street WTP (Part B, point 6 of the letter refers). The approved business case was for direct costs of ~\$29 million. We have made specific comments in relation to the expenditure reported by Country Water in its submission to IPART in **Section 3.3.4**.⁵⁰

In relation to the Stephens Creek Reservoir cover project, Graham Walkom has noted that a cover on the pool negates its purpose of cooling the water (Part B, point 8 of the letter and page 61 of the public hearing transcript refer). We are aware that water pumped over long distances in above ground steel mains can heat up to ~40°C in the conditions encountered in Broken Hill and its surrounds. In terms of the evaporative cover reducing the cooling of water due in the pool, we are of the opinion that this effect would be relatively minor.

Graham Walkom has commented on the high cost of pipe replacement of the 'Rocla main' and noted that good sections of pipeline were replaced (Part B, point 7 of the letter refers). We have not reviewed this pipeline replacement scheme as part of our review and consequently cannot make any specific comments in relation to this scheme. However, we have reviewed the proposed pipeline replacement programs for Menindee to Stephens Creek and Umberumberka pipelines. Country Water has engaged a consultant to conduct field inspections and tests to identify those sections of the pipeline in most need of repair. In one report the consultant noted that: "*The current maintenance management and response systems do not facilitate corrosion status capture or make such information readily available for management decision-making process. Recovered pipe sections that had failed in*

⁵⁰ In its response to our initial report, Country Water has stated that it is unable to determine where the quoted figure of \$8 million by Mr Walkom has originated from. Country Water notes that at the time of the 'Water 2023' document, the estimated capital cost of a new water treatment plant was \$87 million in 2003/04 (scenario 4) (Country Water, *Response to IPART-Halcrow Pacific Review of Country Energy's Water Business*, 8 January 2010, page 17).

service were discarded to scrap".⁵¹ It is possible that the absence of detailed and accurate asset data may have resulted in good sections of pipeline being unnecessarily replaced.⁵² However, the current investigations by the consultant on the Menindee to Stephens Creek and Umberumberka pipelines should enable Country Water to target its proposed replacement program and avoid replacing sections of pipe not in need of replacement.

Graham Walkom has made a number of comments in relation to high cost redundant expenditure (Part B, points 1 to 4 of the letter refers). We have not reviewed the current state of dam assets, or the expenditure to maintain the assets listed in his letter. We note, however, that 'renewals' is the primary driver for most of the proposed schemes we have reviewed. Robust asset management and capital planning frameworks are critical to ensuring that renewals expenditure is efficient and appropriately targeted. The information made available for our review has not enabled us to assess overall system performance or the need for particular elements within the system to be retained in service. We can, however, confirm from our review of Country Water's Asset Management Plan that, although it outlines good asset management practices, we have seen minimal evidence that these practices are effectively implemented.

Roger Edwards has commented that, 'the figure for Corporate Services costs seems high' (Part 7.0 of his letter refers). Our review of corporate services costs has focussed on the allocation of corporate services overheads to capital schemes. Our comments in relation to this are presented in **Section 3.13**.

⁵¹ Alf Grigg & Associates, *Condition evaluation and residual lifetime assessment of 600MSCL Menindee to Broken Hill Water Supply Pipeline – Stage 1 Report*, 18th February 2009, page 3.

⁵² In its response to our initial report, Country Water stated that it is 'of the opinion that the process by which the Rocla pipes were replaced was appropriate to the nature of the pipe construction and its failing condition.' (Country Water, *Response to IPART-Halcrow Pacific Review of Country Energy's Water Business*, 8 January 2010, page 18).

4 Conclusions and Recommendations

4.1 *Asset Management Framework*

A review of the *Water Asset Management Plan* reveals that it outlines the principles behind good asset management practices, including identification of drivers, risk based condition assessment, and sound investment strategies (subject to requirement to meet statutory obligations and levels of customer service). It is not widely evident from the information provided for review, however, that these principals are being effectively implemented.

A further detailed review of the practical implementation of Country Water's asset management framework would be required to fully assess the application of 'good practice'.

A review of Country Water's operational performance on the basis of the NWI National Performance Framework indicates that it that there may be opportunity for improvement in the management of both the water and sewerage network assets.

4.2 *Capital Expenditure*

Based on our desktop assessment, we have identified a number of areas where the expenditure reported by Country Water appears overstated.

In relation to historical capital expenditure, we note significant differences between approved and actual/forecast expenditure for the Mica Street WTP scheme arising from the allocation of corporate overheads. In our opinion, the allocation of overheads is excessive and the expenditure reported by Country Water in relation to this scheme overstated. Based on our review, we recommend that IPART accept the valuation of Mica Street WTP that was estimated as part of the ODRC asset valuation (\$32.2 million).

In relation to Stephens Creek Reservoir Cover, we note that this scheme is currently on hold and may not proceed. While Country Water has indicated that it has not included the capital expenditure in its regulatory asset base, the current problems with this scheme may be symptomatic of weaknesses in the implementation of the capital planning framework.

We note that historical expenditure on Warren Street SPS is significantly greater than the replacement cost equivalent which may indicate inefficient historical expenditure to upgrade the pumping station.

In relation to our assessment of the proposed capital expenditure, we have identified a number of areas where we do not consider the proposed expenditure to be reasonable. The key issue relates to the allocation of corporate overheads and allowances to each scheme in the capital program. On the basis that this allocation is much higher than typically expected in the water industry, we recommend that a detailed audit of the cost allocation method be undertaken to confirm its suitability and application to the operations of Country Water. This would clarify whether the allocations to Country Water accurately reflect the use of Country Energy's corporate resources, and whether the capitalisation of expenditure is appropriate.

On the basis of our review, we have made some recommendations to reduce Country Water's proposed capital expenditure, as shown in **Table 4.1**, **Table 4.2** and **Table 4.3**.

Table 4.1 Recommended adjustments to proposed Water Service capital expenditure (\$'000 2009/10)¹

Project		2010/11	2011/12	2012/13	Comment
Proposed Water Service capex		4,899	5,975	5,993	Table 8.1 SIR
Mica Street WTP Replacement	W3	-	-	-	No capital expenditure proposed for 2010/11 to 2012/13
Mica Street WTP No 1 Tank Replacement	W7	-	(171)	(172)	Adjustment for 6ML tank and reduction in overheads
Miscellaneous Minor Capex	W25	-	-	-	Adjustment for corporate overheads included within 'Adjustments to remaining water schemes'
Umberumberka Pipeline Replacement	W51	(202)	(141)	(144)	
Menindee to Stephens Creek Pipeline Replacement	W52	(836)	(553)	(566)	
Stephens Creek Reservoir Cover	W54	-	-	-	This scheme is currently on hold. Country Water has not included any expenditure for 2010/11 to 2012/13 in its submission to IPART.
Adjustments to remaining water schemes – to remove excessive allocation of overheads		(1,002)	(395)	(394)	
Total adjustments – Water Service		(2,041)	(1,260)	(1,276)	
Halcrow Recommended Water Service capex		2,858	4,715	4,717	

Note: (1) Numbers may not add due to rounding

Table 4.2 Recommended adjustments to proposed Sewerage Service capital expenditure (\$'000 2009/10)¹

Project		2010/11	2011/12	2012/13	Comment
Proposed Sewerage Service capex		713	6,375	6,314	Table 8.1 SIR
Warren Street SPS	S1	-	-	-	No capital expenditure proposed for 2010/11 to 2012/13
Wills Street STP Replacement	S2	-	(3,702)	(3,729)	Defer replacement of WWTP. Allowance for maintenance to extend life of the plant.
Miscellaneous Minor Capex	S100	-	-	-	Adjustment for corporate overheads included within 'Adjustments to remaining sewerage schemes'
Adjustments to remaining sewerage schemes – to remove excessive allocation of overheads		(85)	(89)	(56)	
Total Adjustments - Sewerage Service		(85)	(3,791)	(3,786)	
Halcrow Recommended Sewerage Service capex		628	2,585	2,529	

Note: (1) Numbers may not add due to rounding

Table 4.3 Recommended adjustments to proposed Total capital expenditure (\$'000 2009/10)¹

Project		2010/11	2011/12	2012/13	Comment
Total Proposed capex		5,611	12,350	12,308	
Total Adjustments – Water and Sewerage		(2,126)	(5,050)	(5,062)	
Halcrow Recommended – Total capex		3,485	7,300	7,246	

Note: (1) Numbers may not add due to rounding

4.3 *Information for Future Reviews*

This desk-top review of Country Water capital expenditure requirements has been primarily based on its submission to IPART, its SIR, and its AMP. Additional information on specific schemes was also requested in order to assess the reasonableness of the historical and proposed capital expenditure.

We recommend that the following information be prepared to aid any future assessments of capital expenditure for pricing purposes:

- Asset Management Plan;
- Asset condition assessments or valuations (if available);
- Evidence of implementation of asset management and capital planning policies and procedures. For example, samples of business cases, project reports, post implementation reviews, submissions to Treasury (where appropriate).

In addition, we recommend that scheme specific information be provided for a selection of capital schemes to enable a more detailed review (eg. of the top ten capital schemes by value).

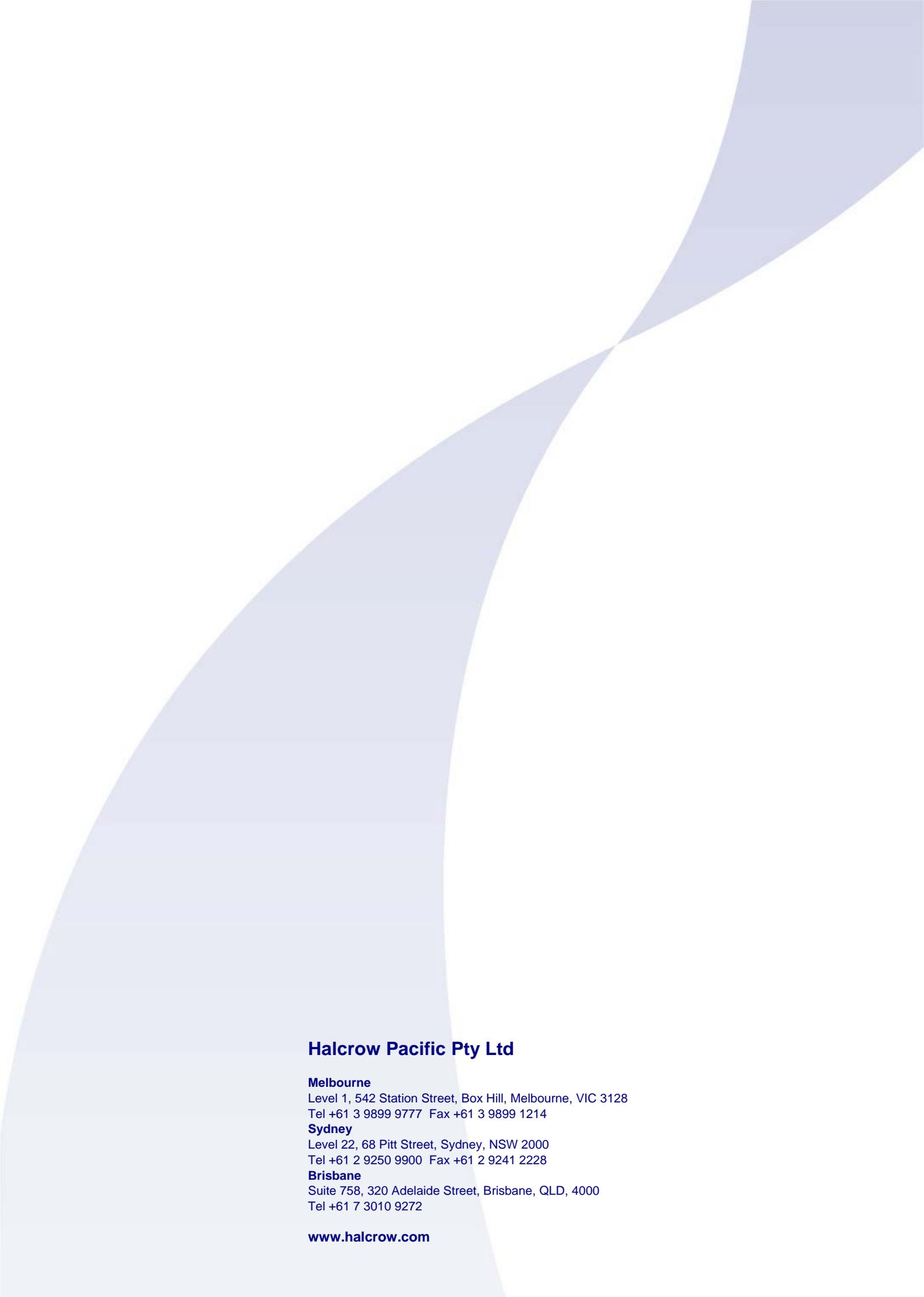
For proposed capital expenditure, we recommend the following information be provided:

- A breakdown of the scheme capital expenditure, including key cost components, unit rates used to develop estimates, contingencies or allowances for overheads;
- A breakdown of the scope of works;
- A statement as to the current stage of the project, eg. concept design, detailed design phase, construction, etc;
- Engineering design reports and business cases or other relevant information to support the need/basis of the scheme; and
- For schemes in construction phase, a copy of the latest project report (detailing the current status of the project including timing, spend, issues etc)

For historical capital expenditure, we recommend the following information be provided:

- A breakdown of the actual capital expenditure, including key cost components;
- A breakdown of the scope of works;
- A breakdown of actual spend versus budget together with explanations of variances; and

- The business case approving the expenditure together with any approvals for variations to expenditure.



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