Government of South Australia

SA Water

SA Water Regulatory Business Proposal 2016-2020

Attachment E Capital expenditure indexation review for the first regulatory period, PwC

www.pwc.com.au

Capital expenditure indexation review for the first regulatory period

South Australian Water Corporation

Analysis of key cost drivers for capital expenditure program

March 2015

pwc

Disclaimer

This report has been prepared by PricewaterhouseCoopers Australia (PwC) at the request of the South Australia Water Corporation (SA Water) in our capacity as advisors in accordance with the Agreement dated 13 November 2014 between PwC and SA Water.

This report is not intended to be utilised or relied upon by any other persons other than SA Water, nor to be used for any purpose other than that articulated above. Accordingly, PwC accepts no responsibility in any way whatsoever for the use of this report by any other persons or for any other purpose.

The information, statements, statistics and commentary (together the "Information") contained in this report have been prepared by PwC from publicly available material, consultations with SA Water and from material provided by SA Water. PwC has not sought any independent confirmation of the reliability, accuracy or completeness of this information. It should not be construed that PwC has carried out any form of audit of the information that has been relied upon.

Accordingly, whilst the statements made in this report are given in good faith, PwC accepts no responsibility for any errors in the information provided by SA Water or other parties nor the effect of any such error on our analysis, suggestions or report.

The Information must not be relied on by third parties, copied, reproduced, distributed, or used, in whole or in part, for any purpose other than detailed in our Agreement without the written permission of SA Water and PwC.

Liability is limited by a scheme approved under Professional Standards Legislation
.

Executive summary

The South Australian Water Corporation (SA Water) is currently developing its regulatory business proposal (RBP) for the second regulatory period covering 1 July 2016 to 30 June 2020. As part of this process, this report aims to provide an understanding of the impact of input price movements on SA Water's capital costs during the first regulatory period, more specifically:

- An analysis of prevailing economic trends in South Australia and Australia more broadly and the impact these trends may have on price growth for key input factors to SA Water's capital program across the first regulatory period.
- An evaluation of input prices movements for the major capital components that comprise SA Water's capital program across the first regulatory period. Publicly availably price indices produced by the Australian Bureau of Statistics (ABS) deemed to be representative of key inputs are used as the basis of the price trend analysis.
- A review of SA Water's current forecasts for capital expenditure over the current regulatory period (including actual expenditure for 2013-14) compared to initial forecasts in place at the commencement of the regulatory period.

Current economic trends indicate input price growth has been subdued in recent years

Our analysis of prevailing economic trends in South Australia indicates that the performance of the economy in recent years has been below what was expected during the development of the 2013 Regulatory Business Proposal. Economic growth has been subdued, particularly over the past three years, and employment growth has been flat. Further, the value of engineering construction work in the state appears to have peaked in September 2013 and fallen consistently since this time, suggesting reduced demand in the sector.

For SA Water, a key factor influencing total expenditure is the growth in input prices (such as labour and capital) that are used to deliver capital projects. SA Water has experienced lower price growth than what was anticipated at the time of its first regulatory period submission. All else being equal, this will result in lower capital expenditure over the regulatory period compared to initial forecasts.

Input prices have fallen in real terms

There has been a noticeable moderation in price growth for many inputs comprising SA Water's capital expenditure since the commencement of the regulatory period. Many input prices have grown below general inflation, indicating negative growth in real terms (an exception is labour prices, which continue to grow above general inflation). These market factors are likely to have contributed to capital expenditure forecasts being revised downward over the past 18 months.

Currently, price index data from the ABS is available for the first five quarters of the current regulatory period (June 2013 to September 2014). Using historic growth rates, three scenarios were developed to examine potential price paths for capital input costs that will prevail over the remainder of the regulatory period (September 2014 to June 2016):

- ***Scenario 1:*** The average growth rate of input prices over the current regulatory period to date (June 2013 to September 2014) continues over the remainder of the regulatory period.
- ***Scenario 2:*** Price growth reverts to a medium term average prior to the commencement of the 2013 regulatory period (5 year average to June 2013).

- ***Scenario 3:*** Price growth reverts to a long term average prior to the commencement of the 2013 regulatory period (10 years to June 2013).

Indices for the major capital cost components were selected based on an analysis of the projects that comprise each asset strategy. The analysis was carried out for the seven largest asset strategies which together account for over 75 per cent of total forecast capital expenditure. Where asset strategies were deemed similar in terms of their likely inputs, the same approach to developing an underlying cost index was applied.

Approach to cost escalation for major asset strategies and average annual rates under three scenarios (nominal)

Asset strategy	Share of capital costs	Index used	Average annual growth		
			S1	S2	S3
Mechanical and electrical equipment	15.9%	***Equipment*** – average of ABS manufacturing PPIs for electrical cable and wiring, other electrical equipment, pump and compressor manufacturing. ***Labour*** – WPIs for South Australia (all industries), Construction (national), and EGWWS (national).	0.7%	1.7%	2.6%
Pipe networks	15.1%	***Pipes*** – ABS PPI for concrete product manufacturing ***Construction / contractor costs*** – average of ABS indices - BCI, Non-res BCI, SAECAIPD, Road & Bridge Index (SA)*.	2.1%	2.6%	2.8%
Structures, safety, water resource sustainability, service reliability management	39.1%	Average of ABS indices - BCI, non-res BCI, SAECAIPD, Road & Bridge Index (SA).	1.4%	1.9%	2.8%
IT	5.9%	ABS PPI computer system design and related services	2.5%	1.1%	1.7%
Total (weighted)	***76.0%***		***1.1%***	***1.4%***	***2.0%***

*BCI – Building Construction Index (South Australia), Non-res BCI – Non-residential Building Construction Index (South Australia), SAECAIPD – South Australia Engineering Construction Activity Implicit Price Deflator.

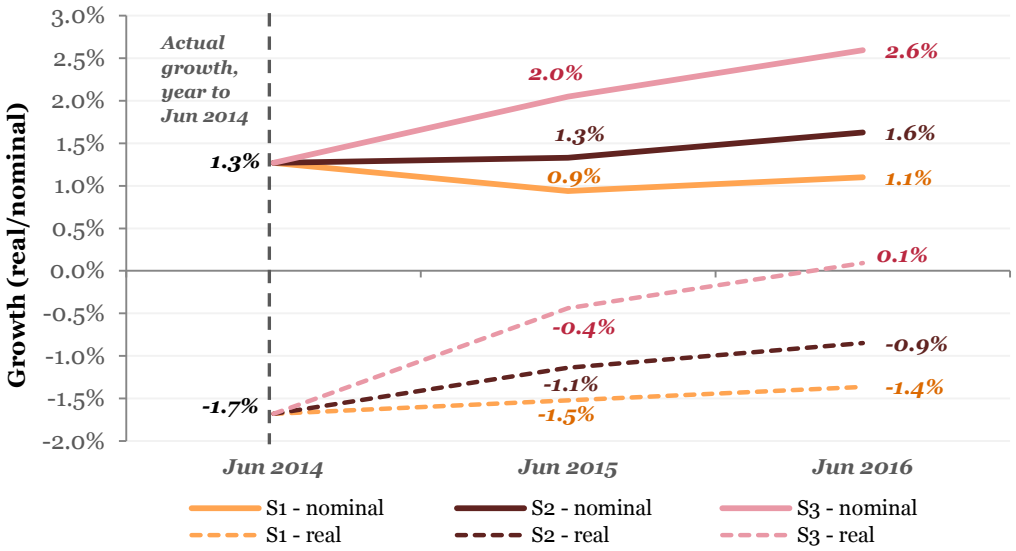
In real terms, across all scenarios there is expected to be price decreases over the current regulatory period. This reduction is greatest if the short term price growth assumption (Scenario 1) is applied. In this scenario, we estimate that aggregate prices will fall by between 0.7 per cent and 1.5 per cent annually, on average, over the regulatory period in real terms.

Nominal and real price growth estimates, overall capital program, all scenarios

	Scenario	Year ending			CAGR
		June 2014	June 2015	June 2016	
Assumed inflation rate*		3.0%	2.5%	2.5%	-
Scenario 1	Nominal	1.3%	0.9%	1.1%	1.1%
	Real	***-1.7%***	***-1.5%***	***-1.4%***	***-1.5%***
Scenario 2	Nominal	1.3%	1.3%	1.6%	1.4%
	Real	***-1.7%***	***-1.1%***	***-0.9%***	***-1.2%***
Scenario 3	Nominal	1.3%	2.0%	2.6%	2.0%
	Real	***-1.7%***	***-0.4%***	***0.1%***	***-0.7%***

Source: PwC analysis based on ABS data and capital expenditure data provided by SA Water
* For the year to June 2014, we have used the observed growth in the consumer price index. For the years to June 2015 and June 2016, we have applied the mid-point of the Reserve Bank of Australia's (RBA) inflation target range, equal to 2.5 per cent.

Price growth for SA Water capital costs over 2013 regulatory period, all scenarios



Source: PwC analysis based on ABS data and capital expenditure data provided by SA Water

Falling input prices have contributed to the reduction in forecast capital expenditure

Across SA Water's capital expenditure program, forecast expenditure over the regulatory period has fallen from $999.6 million (at the commencement of the regulatory period) to $825.6 million currently (a fall of $174.0 million or 17.4 per cent). All three of the major function categories (corporate, water and wastewater) have seen significant reductions in forecasts, though the largest in percentage point terms is water, which accounts for close to half of the total fall (8.6 pp).

Capital expenditure forecasts (initial vs current) by function

Function	Initial ($m)	Current ($m)	Change ($m)	Change (%)	Percentage point
Corporate	145.7	107.2	-38.5	-26.4%	-3.9
Water	520.8	434.8	-86.0	-16.5%	-8.6
Wastewater	328.7	279.8	-48.9	-14.9%	-4.9
Recycle	4.4	3.8	-0.6	-14.7%	-0.1
Total	***999.6***	***825.6***	***-174.0***	***-17.4%***	***-17.4***

Source: PwC calculations based on SA Water data

SA Water's initial capital forecasts assumed price indexation in line with expected inflation growth (ie no price changes in real terms). Our analysis indicates that over the regulatory period to date, prices have fallen in real terms, with the three price path scenarios showing continued price decreases in real terms.

Applying the real price decreases estimated over the regulatory period in each scenario to SA Water's three year forecast capital program suggests real price decreases could account for between a $7.1 million and $15.3 million reduction in capital expenditure (of the total $174.0 million decrease). This equates to between 4.1 and 8.8 per cent of the overall decrease.

Reduction in capital expenditure from real price decreases, all scenarios

Scenario		Year to June			Total
		2014	2015	2016	
	Initial capital expenditure forecast ($m)	356.2	327.5	315.9	999.6
Scenario 1	Real price decrease (%)	-1.7%	-1.5%	-1.4%	-
	Change ($m)	***(6.0)***	***(5.0)***	***(4.3)***	***(15.3)***
Scenario 2	Real price decrease (%)	-1.7%	-1.1%	-0.9%	-
	Change ($m)	***(6.0)***	***(3.7)***	***(2.7)***	***(12.4)***
Scenario 3	Real price decrease (%)	-1.7%	-0.4%	0.1%	-
	Change ($m)	***(6.0)***	***(1.4)***	***0.3***	***(7.1)***

Source: PwC analysis based on ABS data and data provided by SA Water

Other factors likely to have contributed to the fall in forecast expenditure include:

- More efficient procurement and project management practices employed by SA Water. A review of these practices is being assessed separately by SA Water as part of its broader transformation project. Examples include:
    - A consolidation of service providers via packaging of engineering assignments and co-location of team members.
    - Bringing together designer and construction contractors at the early stages of a project.
    - Prudent deferral of projects and program expenditure where outcomes for customers are still delivered via operating solutions.
- Unplanned deferrals leading to less expenditure occurring in the 2013 regulatory period and more occurring in the post regulatory period. We have examined SA Water data incorporating forecasts over entire project lives. This examination indicates that forecast expenditure in the post regulatory period has increased, due to project delays or other factors (for example, more accurate forecasts being developed over time as project scopes are refined).
- Lower than expected demand growth from developers for provision of water and wastewater infrastructure (networks growth).

Whilst these factors are difficult to quantify, we have noted throughout our report instances where discussions with SA Water has identified likely reasons for variance in capital expenditure occurring.

Contents

1 Project overview

1.1 Background

As the sole water utility in South Australia, SA Water is tasked with providing water and wastewater services to over 1.5 million people across the state and managing water, wastewater, major infrastructure assets and contracts that underpin the provision of these services.

The business owns assets worth in excess of $13 billion, including:

- more than 26,500 km of water mains;
- more than 8,700 km of sewer mains;
- 30 water treatment plants; and
- 23 wastewater treatment plants.

Since 1 January 2013, SA Water's activities have been regulated by the Essential Services Commission of South Australia (ESCOSA), with its first three year regulatory period due to conclude on 30 June 2016. As part of the regulatory process, SA Water is required to provide ESCOSA with capital expenditure forecasts, based on reasonable and robust assumptions, which form an integral part of the regulatory submission. As part of this review, SA Water must report the performance of capital expenditure for the first regulatory period including explanation of any movement from the planned expenditure. Part of the update needs to consider the likely market movement for the key inputs into capital expenditure (e.g. contractor services) over the regulatory period.

SA Water currently is developing its regulatory business proposal (RBP) for the second regulatory period covering 1 July 2016 to 30 June 2020. This report will form part of SA Water's RBP, and provides:

- An analysis of current and likely future economic trends in both South Australia and Australia more broadly and the impact these trends are likely to have had on SA Water's capital expenditure program (particularly market prices for key inputs).

- An evaluation of input price movements for the major asset strategies that comprise SA Water's capital program. Publicly available price indices produced by the Australian Bureau of Statistics (ABS) that are representative of key inputs are used as the basis of the price movement analysis.

- A review of SA Water's current expenditure forecasts over the 2013 regulatory period (including actual expenditure for 2013-14) and forecasts accepted by ESCOSA in its final determination. This analysis identifies asset categories and projects where current forecasts vary significantly from initial estimates.

1.2 Data provided by SA Water

The analysis of SA Water's capital expenditure data examines data provided by SA Water to PwC for the purposes of comparing regulated capital expenditure that was approved by ESCOSA in 2013 for a three year period from 1 July 2013 to 30 June 2016.

SA Water has provided PwC with capital expenditure data contained in its Capital Asset Planning System (CAPS) database. This data allows capital expenditure to be mapped from the function level (i.e. corporate, water, wastewater) through to discrete projects (see Appendix B for a detailed overview of SA Water's asset hierarchy), allowing major categories of expenditure to be identified. SA Water has provided two sets of forecasts – the first are initial forecasts used at the time the regulatory proposal was submitted (referred to throughout this report as 'initial forecasts') and secondly, updated forecasts as at December 2014 (referred to as 'current forecasts').

1.3 Variance in capital expenditure forecasts

SA Water's capital expenditure for 2013-14 and current forecasts for 2014-15 and 2015-16[1] are currently tracking below initial forecasts at the commencement of the regulatory period (Table 1). Over the regulatory period, expenditure is currently forecast to be $174 million (or 17.4 per cent) lower than initial estimates.

Table 1: Comparison of initial and current capital expenditure forecasts

Asset Strategy	Actual ($m)	Forecast ($m)		
	2013/14	*2014/15*	*2015/16*	*Total ($m)*
Initial forecast	356.2	327.5	315.9	***999.6***
Current forecast (2013-14 actual)	259.5	269.0	297.1	***825.6***
Difference ($m)	***-96.8***	***-58.5***	***-18.8***	***-174.0***
Difference (%)	***-27.2%***	***-17.9%***	***-6.0%***	***-17.4%***

Source: PwC calculations based on SA Water data. Note that figures may not add due to rounding.

Variance in expenditure forecasts is not uncommon, given the inherent uncertainty associated with developing forecasts years in to the future. Expenditure forecasts may change over time due to a range of factors, including:

- A project's scope changes over time, changing the nature of the project and therefore the level of capital expenditure required.
- Expenditure is re-allocated from a program or project code to an individual project which provides the same or a similar outcome. At the project level this would show up in the data set as one project that was initially expected to incur expenditure now incurring little or no expenditure, and another that was initially forecast to only incur minor expenditure (or may in fact not have existed in the data set of initial forecasts) now incurring larger expenditure, even if overall there is little change at the asset strategy or driver level.
- Projects being delivered at a lower cost due to more efficient business practices being adopted.
- Projects being proactively deferred, for example if demand growth is lower than initially forecast it may be prudent to delay the provision of water and wastewater infrastructure.

[1] Based on data extracted from SA Water's Capital Asset Planning System (CAPS) on 17 December 2014.

- External market forces (for instance, an uplift in activity of an industry competing for key inputs) resulting in the price of key inputs to capital expenses either increasing or decreasing unexpectedly.

- Timeframes may shift due to project delays, leading to expenditure that was initially forecasts to be incurred in the regulatory period now being incurred at a later date.

- Project slippage due to unplanned, external factors

Of particular interest to the business is identifying the extent to which market conditions (i.e. lower input prices than initially expected) are contributing to lower expenditure estimates than initially forecast.

The analysis of SA Water's capital expenditure data identified the major areas of capital expenditure (mapped from the function to project level), and secondly used cost data (either data provided by SA Water, or publicly available price indices data from the ABS) to develop a view of market price movements over the current regulatory period to date and likely movements over the remainder of the regulatory period.

1.4 Approach to estimating inflation

Throughout this report, estimates of price growth for a range of input factors are calculated in both nominal and real terms. In order to convert estimates from nominal to real figures, we have applied an estimate of inflation for each year of the regulatory period. For the year to June 2014, we have used the observed growth in the consumer price index[2], which was equal to 3.0 per cent. For the years to June 2015 and June 2016, we have applied the mid-point of the Reserve Bank of Australia's (RBA) inflation target range, equal to 2.5 per cent.

1.5 Limitations

The analysis of SA Water's capital program (Section 3 and Appendix B) is designed to identify areas of the capital program where major revisions to forecasts have been made since the commencement of the regulatory period. While this is relatively straightforward, identifying *why* the variation has occurred is more complex.

For example, the impact of more efficient procurement practices is difficult to quantify without a detailed review of contract data over an extended time period. Additionally, the impact of prudent delays to projects (in instances where demand for infrastructure provision is lower than initially expected) would require a line-by-line review of growth projects to identify where lower demand has impacted project timeframes.

As it was not possible to undertake an analysis with this level of detail, we have instead noted throughout the report instances where discussions with SA Water have identified potential causes for expenditure variance that we were not able to be capture through our analysis.

The three price scenarios developed as part of the input price movement analysis do not represent economic forecasts. Rather, they are three possible future price paths that have been developed based on average historic price growth over various time periods. We make no judgement as to whether a scenario is likely to eventuate, or if one scenario is more likely than any other.

[2] All groups, Australia. Consumer Price Index data is produced by the Australian Bureau of Statistics and is available at: http://www.abs.gov.au/ausstats/abs@.nsf/mf/6401.0

2 Economic overview

In forming a view of expected input price growth in future, it is important to give consideration to prevailing economic trends. Generally speaking, an economy (or more specifically, an industry) that is experiencing slower growth compared to trend will see reduced demand for key input factors to production (e.g. labour and capital) which will lead to more moderate growth in the price of these factors (assuming their supply is fixed in the short to medium term). Conversely, an economy (or industry) that is growing well above trend will place greater demand on input factors, leading to higher than average price growth (once again, assuming supply of the input factors are fixed).

We have carried out an assessment of recent economic trends in both the South Australian and Australian economy which can be found in Appendix A. Key findings from this assessment are:

- ***Economic growth:*** The South Australian economy has averaged 2.1 per cent annual growth over the past decade (in real terms), below the national average of 2.8 per cent. Over the past three years, growth in gross state product has moderated, averaging only 1.2 per cent annually between 2011 and 2014. The South Australian Mid-Year Budget Review released in January 2015 has revised the forecast for gross state product growth in 2014-15 down from 2.25 per cent to 2.0 per cent, indicating that significant recovery in economic growth is not expected in the short term.

- ***Labour market:*** Growth in total employment in South Australia has been flat for the past five years. Between 2009 and 2014, employment growth averaged only 0.4 per cent annually, compared to 2.0 per cent over the previous five year period. Since early 2012 there has been a consistent increase in the unemployment rate, from 5.2 per cent to 6.6 per cent in October 2014. At an industry level, total employment in both the construction and electricity, water, wastewater and gas sectors has been flat since mid-2011.

- ***Infrastructure investment:*** The value of engineering construction carried out in South Australia grew rapidly over the 2000s and appears to have peaked in the December 2012 quarter at close to $1.5 billion in real terms. Since this time, there has been consistent falls in the value of quarterly work done, with the value for the September quarter 2014 coming 30 per cent lower than the corresponding quarter a year earlier.

Overall, current trends indicate that the economic outlook for South Australia in the short to medium term remains subdued. Economic and employment growth has been low since the commencement of the current regulatory period, and engineering construction activity appears to have peaked and is now declining. This suggests that demand for input factors will remain moderate, as will price pressures on these inputs.

3 Price movement in input costs

This section examines recent price movement in various inputs that comprise SA Water's capital expenditure budget. This is done by firstly identifying the major components of the capital expenditure budget (using asset strategy categories), and then applying appropriate price indices for each component to measure price movements. A weighted index is then developed that provides an indication of the overall movement in price for the capital expenditure program for SA Water.

3.1 Major components of the capital expenditure program

Table 2 shows SA Water's current forecasts for capital expenditure over the current regulatory period at the asset strategy level. It can be seen from the table that the seven largest asset strategies (shaded) account for over three quarters of total capital expenditure forecasts ($627.6 million out of the $825.6 million total).

These seven asset strategies are examined in more detail in the following sections. The projects that comprise each asset strategy are reviewed, and based on this an appropriate price index (available from a publicly available source such as the ABS) is assigned to each strategy in order to gain and understanding of how prices have changed over various periods of time (1 year, 5 years, 10 years). Finally, a weighted price index is produced by weighting each selected price index for each asset strategy by the share of expenditure comprised by each asset strategy.

Table 2: Current capital expenditure forecasts by asset strategy

Asset strategy	Current forecast ($m)	Share of total (%)	Cumulative share (%)
Mechanical & Electrical Equipment	131.5	15.9	15.9
Pipe Networks	125.0	15.1	31.1
Structures	120.7	14.6	45.7
Safety	84.6	10.2	55.9
Water Resource Sustainability	66.2	8.0	63.9
Service Reliability Management	50.9	6.2	70.1
IT	48.7	5.9	76.0
Networks Growth	47.7	5.8	81.8
Asset Renewal - Other	38.1	4.6	86.4
Water Quality Management	37.6	4.6	91.0
Treatment Plant Growth	29.8	3.6	94.6
Environmental Improvement	28.0	3.4	98.0
Major and Minor Plant	12.6	1.5	99.5
Network Extension	3.7	0.4	99.9
Customer Service Improvement	0.4	0.1	100.0
Total	***825.6***	***100.0***	

Source: PwC calculations based on SA Water data

3.2 Mechanical and electrical equipment

Mechanical and electrical equipment makes up $131.5 million of current forecast expenditure over the 2013 regulatory period, almost 16 per cent of total forecast expenditure.

3.2.1 Major inputs into mechanical and electrical equipment expenditure

The majority of projects under this asset strategy relate to upgrades and renewals of components of various water and wastewater treatment plants. The most common types of mechanical and equipment upgrades include inlet screens, switchboards, chlorine stations and pumps.

3.2.2 Selecting appropriate price escalation factors

The activity of upgrading and replacing mechanical and electrical equipment is comprised of two primary costs – materials (the equipment itself) and the labour required to conduct the activity.[3] Given that detailed data are not available to identify the share of total costs comprised by each input, we have made the simplifying assumption that total costs are shared evenly between equipment costs and labour costs.

The ABS provides a range of producer price indices (PPI) that details price movement across a range of industries and activities, including manufacturing costs associated with machinery and electrical equipment. We have selected three PPIs that correlate closely to the types of mechanical and electrical equipment costs incurred by SA Water:

- Electric cable and wiring manufacturing (ANZSIC 2006 code[4] 2431);
- Other electrical equipment manufacturing (ANZSIC code 2439) – this category includes switchboards, which are commonly upgraded in mechanical and electrical equipment projects; and
- Pump and compressor manufacturing (ANZSIC code 2451).

In order to analyse labour price movements, wage price index (WPI) data produced by the ABS has been used. The ABS produces WPIs across all industries at the national level, as well as state-based WPIs (not specific to particular industries). For the purposes of this analysis we have looked at national WPI data for the construction and electrical, gas, water and wastewater industries, as well as WPI data for South Australia across all industries.

3.2.3 Historic price movement for selected inputs

Equipment

Figure 1 shows price growth over the past decade for the three PPIs that are most representative of SA Water's mechanical and electrical equipment costs. All three have experienced different growth patterns over the past decade. Electrical and cable wiring costs almost doubled between June 2003 and December 2006, and while there was significant volatility over the following years, with significant price increases and decreases, there has been a relatively stable trend since March 2011 of gradually declining prices.

By comparison, other electrical equipment (which includes switchboards) has shown relatively stable growth patterns over the past decade. Between June 2003 and June 2009, prices increased marginally, averaging 4.2 per cent annually. Since this time prices have

[3] There are likely to be other costs involved not related to materials or labour, however they are expected to be relatively minor and data are not available to support more detailed assumptions being made.

[4] The Australian and New Zealand Standard Industrial Classification is a framework developed by the ABS and Statistics New Zealand to assign activities to industries to assist in the analysis of industry data.

gradually trended down, and as of September 2014 the price index was 9.0 per cent lower than June 2009. Pump and compressor manufacturing prices grew significantly between June 2007 and June 2009 (averaging 18.7 per cent annually over the two years) before slowing significantly. Since early 2011 growth in the pump and compressor manufacturing price index has been flat.

Figure 1: Price growth, selected PPIs (mechanical and electrical equipment), 2003 to 2014 (nominal)[5]

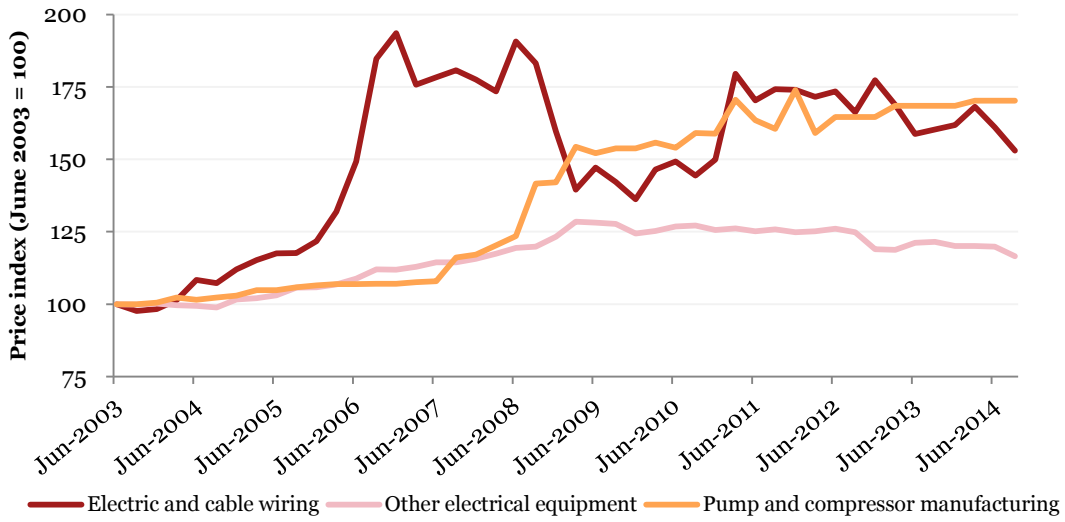
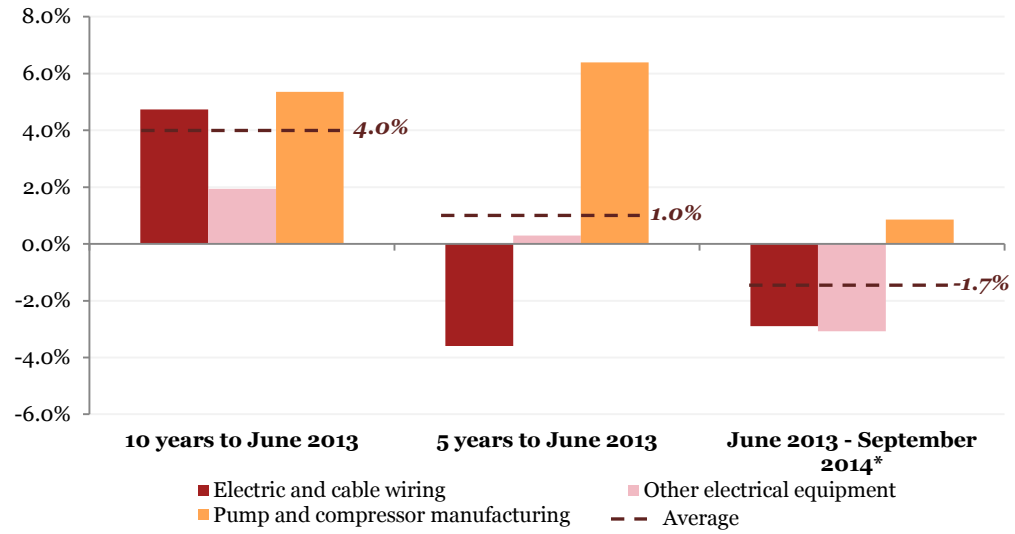


Figure 2 compares annual growth rates over three time periods for each PPI. The first two time periods (ten years to June 2013 and five years to June 2013) represent potential views of price growth that a business would have taken in mid-2013, when the first regulatory determination by ESCOSA was made. These are presented alongside an annualised growth figure covering June 2013 to September 2014 (representing the actual growth that has occurred to date during the regulatory period).

It is clear from this analysis that on average, price growth over the regulatory period to date has been significantly below the five and ten year averages that would have been calculated at the commencement of the regulatory period in June 2013. In annualised terms, prices over the regulatory period have decreased by 1.7 per cent in nominal terms.

[5] Australian Bureau of Statistics (2014) *6427.0 – Produce Price Indexes, Australia*. Available at: http://www.abs.gov.au/ausstats/abs@.nsf/mf/6427.0

Figure 2: Average annual growth figures, equipment PPIs, various time periods (nominal)[6]

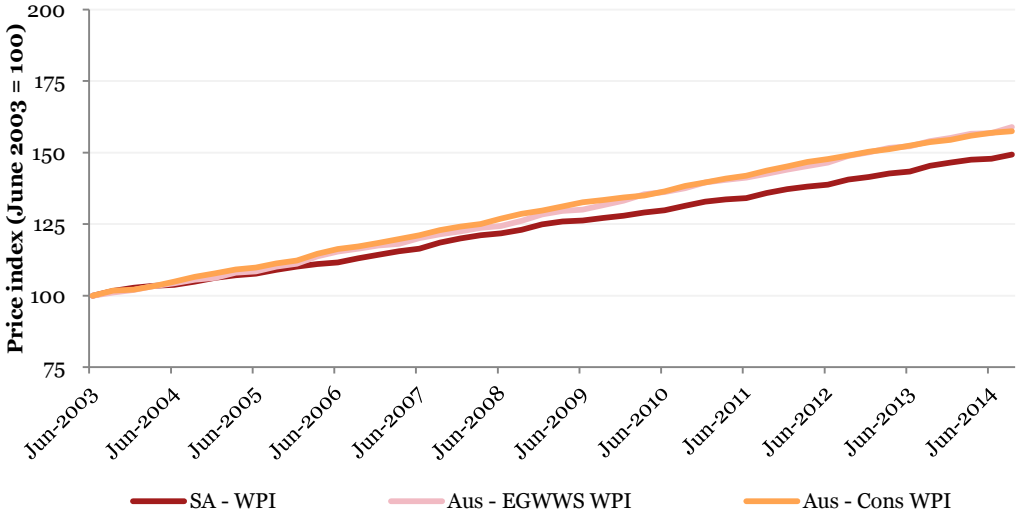


*Figures are converted to an annual equivalent growth figure for comparative purposes

Labour

From Figure 3 it is clear that growth in selected Wage Price Indices (WPI) exhibits a more consistent pattern compared to PPI growth for equipment manufacturing. Between 2003 and 2014, growth in the national WPI for the electricity, gas, water and wastewater (EGWWS) services industry and construction industry have been nearly identical (averaging 4.2 per cent annual growth between June 2003 and June 2014). Growth in the South Australia WPI (all industries) has been noticeably lower than the national industry indices, averaging 3.6 per cent growth annually over the same period.

Figure 3: WPI growth, selected indices, 2003 to 2014 (nominal)[7]

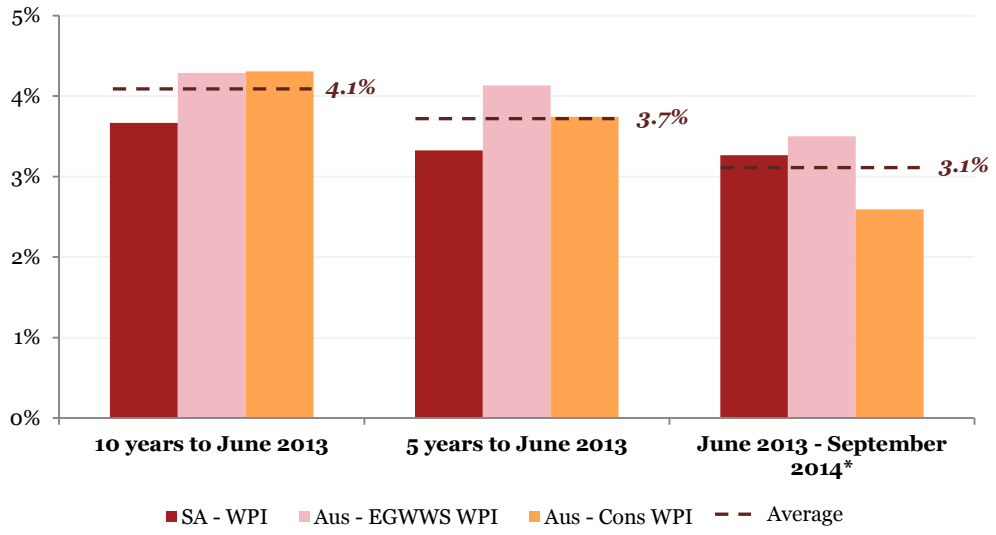


[6] Australian Bureau of Statistics (2014) *6427.0 – Produce Price Indexes, Australia*. Available at: http://www.abs.gov.au/ausstats/abs@.nsf/mf/6427.0

[7] Australian Bureau of Statistics (2014) *6345.0 – Wage Price Index, Australia*. Available at: http://www.abs.gov.au/ausstats/abs@.nsf/mf/6345.0/

Similar to price growth for equipment, the WPI growth estimates presented in Figure 4 indicate that over the current regulatory period, wages have grown at a slower rate compared with the five and ten year averages that would have been calculated at the commencement of the regulatory period in mid-2013. While growth has slowed for all indices, it is worth noting that the average annual rate of 3.1 per cent is significantly higher than the average price growth for equipment over the same period (-1.7 per cent) and is greater than general inflation.

Figure 4: Average annual growth figures, selected WPIs, various time periods (nominal)[8]



*Figures are converted to an annual equivalent growth figure for comparative purposes

3.2.4 *Price growth scenarios for mechanical and electrical equipment*

The future price growth trends for SA Water's mechanical and electrical equipment expenditure remain uncertain; however a number of scenarios can be developed to provide insight into potential trends based on past growth patterns. Three scenarios have been developed to estimate future price growth, which are:

- ***Scenario 1:*** The average growth rate of input prices over the current regulatory period to date (June 2013 to September 2014) continues over the remainder of the regulatory period.
- ***Scenario 2:*** Price growth reverts to a medium term average prior to the commencement of the 2013 regulatory period (5 year average to June 2013).
- ***Scenario 3:*** Price growth reverts to a long term average prior to the commencement of the 2013 regulatory period (10 years to June 2013).

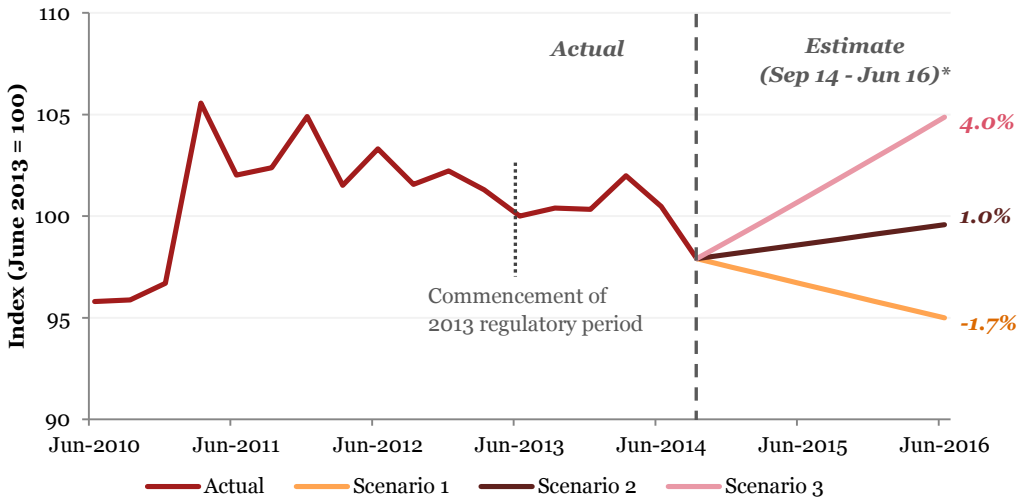
Our analysis does not present a view on the most likely scenario expected to prevail over the remainder of the regulatory period. Instead, the scenarios provide a sensitivity analysis given the inherent uncertainty in predicting future price growth.

[8] Australian Bureau of Statistics (2014) *6345.0 – Wage Price Index, Australia*. Available at: http://www.abs.gov.au/ausstats/abs@.nsf/mf/6345.0/

Equipment

Figure 5 takes the average values of the three PPIs that have been chosen as representative of equipment costs for SA Water (electrical cable and wiring manufacturing, other electrical equipment manufacturing and pump and compressor manufacturing) and applies the growth figures developed for each scenario to estimate growth over the remainder of the regulatory period. All figures are presented in nominal terms. Assuming that the average growth to date over the regulatory period continues, equipment prices will be approximately 5.0 per cent lower by June 2016 compared to June 2013. If price growth reverts to its medium term average then by June 2016 it is expected that prices will be approximately equal to June 2013. If prices grow at their long term average from September 2014 to June 2016, they will be approximately 5.0 per cent higher over the entire regulatory period from June 2013 to June 2016.

Figure 5: Price growth scenarios, mechanical and electrical equipment (nominal)[9]



*Percentages in chart are average annual estimates applied from Sep 2014 to June 2016

Table 3: Annual equipment price growth under scenarios (nominal)[10]

Year ending	Scenario 1	Scenario 2	Scenario 3
Year to June 2014	0.5%	0.5%	0.5%
Year to June 2015	-3.8%	-1.9%	0.4%
Year to June 2016	-1.7%	1.0%	4.0%
Average annual growth from June 2013 to June 2016	***-1.7%***	***-0.1%***	***1.6%***

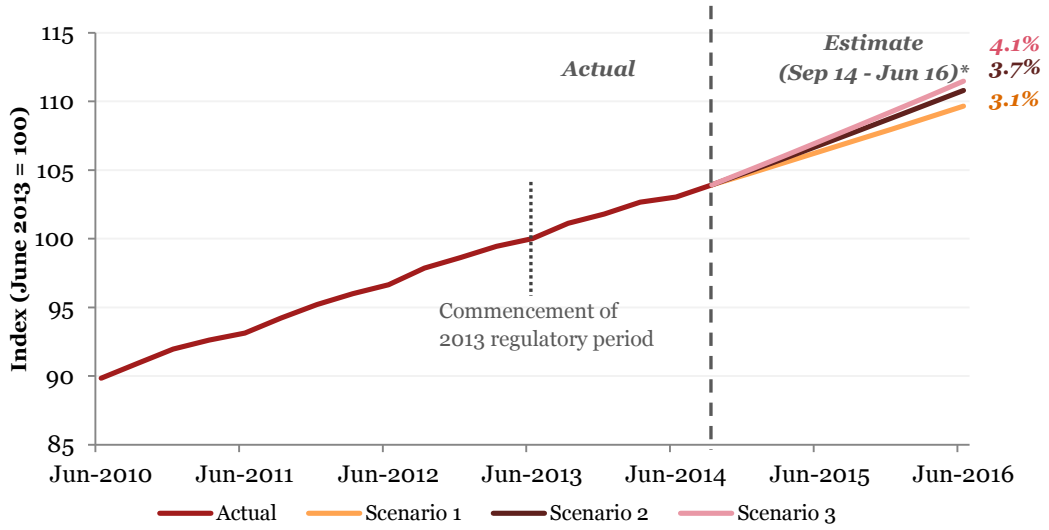
Labour

Figure 6 provides estimates of labour price growth under the three scenarios, using the average of the three WPIs discussed in Section 3.2.3 (WPI – South Australia, WPI Australia – Electricity, gas, water and wastewater, and WPI Australia – Construction). All figures are presented in nominal terms. Unlike price growth for equipment, labour price growth has remained reasonably consistent over the past ten years, though has moderated slightly since the commencement of the current regulatory period.

[9] PwC calculations based on ABS data

[10] PwC calculations based on ABS data

Figure 6: Price growth scenarios, labour input to mechanical and electrical equipment (nominal)[11]



*Percentages in chart are average annual estimates applied from Sep 2014 to June 2016

Based on the three growth scenarios applied to labour costs, wage prices are estimated to increase by between 3.1 per cent and 3.7 per cent on average over the regulatory period from June 2013 to June 2016 (Table 4).

Table 4: Annual wage price growth under scenarios (nominal)[12]

Year ending	Scenario 1	Scenario 2	Scenario 3
Year to June 2014	3.0%	3.0%	3.0%
Year to June 2015	3.2%	3.7%	3.9%
Year to June 2016	3.1%	3.7%	4.1%
Average annual growth from June 2013 to June 2016	***3.1%***	***3.5%***	***3.7%***

3.2.5 Weighted index – Mechanical and electrical equipment

Table 5 shows the weighted index calculations for each of the three growth scenarios, assuming input costs to the mechanical and electrical equipment asset strategy are split evenly between equipment and labour costs. This indicates that over the current regulatory period, average annual growth is estimated to be between 0.7 per cent and 2.6 per cent in nominal terms, depending on the price path that prevails over the remainder of the regulatory period.

[11] PwC calculations based on ABS data

[12] PwC calculations based on ABS data

Table 5: Weighted price index for three growth scenarios[13]

		Year ending			CAGR
		June 2014	June 2015	June 2016	
Scenario 1	Equipment price growth	0.5%	-3.8%	-1.7%	-1.7%
	Assumed share of total costs		50%		
	Weighted growth (equipment)	0.2%	-1.9%	-0.9%	-0.8%
	Wage price growth	3.0%	3.2%	3.1%	3.1%
	Assumed share of total costs		50.0%		
	Weighted growth (labour)	1.5%	1.6%	1.6%	1.6%
	Scenario 1 weighted index (nom)	***1.8%***	***-0.3%***	***0.7%***	***0.7%***
	Inflation	*3.0%*	*2.5%*	*2.5%*	-
	Scenario 1 weighted index (real)	***-1.2%***	***-2.7%***	***-1.8%***	***-1.9%***
Scenario 2	Equipment price growth	0.5%	-1.9%	1.0%	-0.1%
	Assumed share of total costs		50%		
	Weighted growth (equipment)	0.2%	-0.9%	0.5%	-0.1%
	Wage price growth	3.0%	3.7%	3.7%	3.5%
	Assumed share of total costs		50%		
	Weighted growth (labour)	1.5%	1.8%	1.9%	1.7%
	Scenario 2 weighted index	***1.8%***	***0.9%***	***2.4%***	***1.7%***
	Inflation	*3.0%*	*2.5%*	*2.5%*	-
	Scenario 2 weighted index (real)	***-1.2%***	***-1.6%***	***-0.1%***	***-1.0%***
Scenario 3	Equipment price growth	0.5%	0.4%	4.0%	1.6%
	Assumed share of total costs		50%		
	Weighted growth (equipment)	0.2%	0.2%	2.0%	0.8%
	Wage price growth	3.0%	3.9%	4.1%	3.7%
	Assumed share of total costs		50%		
	Weighted growth (labour)	1.5%	2.0%	2.0%	1.8%
	Scenario3 weighted index	***1.8%***	***2.1%***	***4.0%***	***2.6%***
	Inflation	*3.0%*	*2.5%*	*2.5%*	-
	Scenario 3 weighted index (real)	***-1.2%***	***-0.3%***	***1.5%***	***0.0%***

3.3 Pipe networks

Pipe networks is the second largest asset strategy in terms of expenditure, currently forecast to be $125.0 million over the current regulatory period, equal to 15.1 per cent of total capital expenditure.

3.3.1 Major inputs into pipe networks expenditure

The majority of expenditure on projects that comprise the pipe networks category relate to reticulation and trunk renewals or upgrades, and wastewater main rehabilitation. In terms of major factor inputs into pipe networks strategy, major costs are likely to be pipes themselves, and the contractor costs associated with site preparation, trench digging and laying of the pipes.

3.3.2 Selecting appropriate price escalation factors

Given the significant component of total capital expenditure related to pipes, SA Water has developed a database to track quoted costs over time. The data allows for project costs to be measured on a dollar per metre (length) per millimetre (diameter) basis, which can then be used as a unit to track price movement over time. While this data can potentially be used to develop a time series and estimate price growth trends, a number of factors limit its suitability for use in developing a proxy price index:

[13] PwC calculations based on ABS data

Given the variable nature of SA Water's pipe program, there are periods of time where many quotes have been received, whereas other periods of time have no cost data available. For example, there are numerous entries that cover the period from mid-2005 to late 2007, and only intermittent quotes between 2008 and 2014. This makes the development of a consistent time series difficult to achieve.

The data has been manipulated in order to isolate contractor costs from the costs of the pipes themselves. This eliminates any price variance that has occurred for the pipes, which may be a significant contributor (either positively or negatively) to price movements for the asset strategy.

The means by which contractor costs have been isolated from pipe costs appears to be inconsistent. For example, some quotes provide a detailed breakdown of costs, allowing the contractor component to be isolated. However, some quotes provide an overall cost only, with less precise methods used to 'strip out' pipe costs (for example, using a standardised shelf price for pipes as a proxy).

For these reasons, we have elected to not rely on this data in order to estimate price movement for the pipe networks asset strategy, and instead use publicly available price data from the ABS.

As previously stated, the two major components of pipe networks expenditure are those related to materials (the pipes themselves) and the costs associated with installation and construction.

As a proxy for material costs related to pipes, we have used the ABS PPI for concrete product manufacturing, which includes concrete pipes. In order to estimate price movement for construction costs, we have analysed four indices that have been used consistently by regulated entities as a way of capturing price movement related to contractor and construction costs. These are:

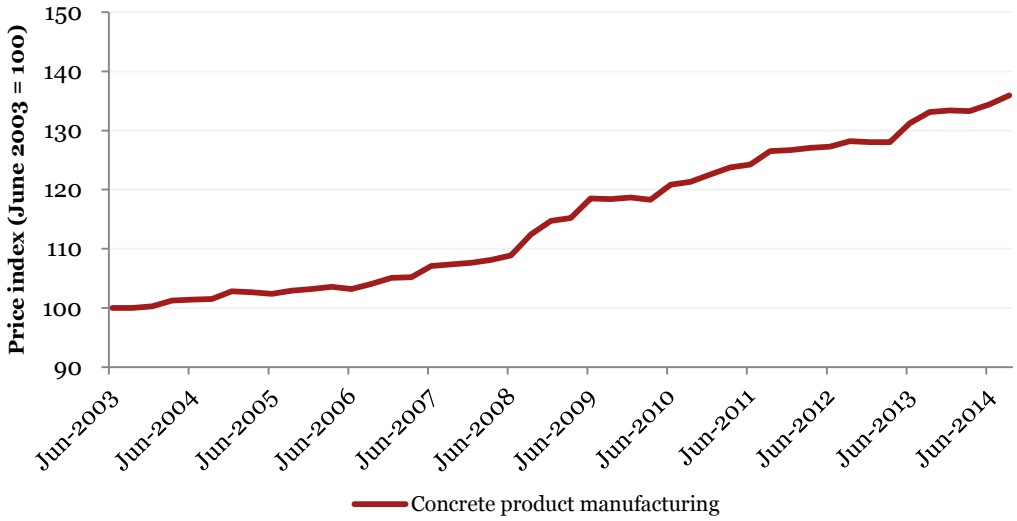
- The building construction index for South Australia (BCI);
- The non-residential building construction index for South Australia;
- The road and bridge index for South Australia; and
- The South Australian engineering construction activity implicit price deflator (SAECAIPD). This is derived by dividing the value of engineering activity in current prices (that is, nominal terms) by the value in chain volume measures (real terms) to isolate the price component of the series.

3.3.3 Historic price movement for selected inputs

Pipes

The concrete product PPI has exhibited relatively stable growth since June 2003, though there has been a noticeable increase in the rate of growth since mid-2008 (Figure 7). Between June 2003 and June 2008, the PPI averaged annual growth of 1.7 per cent, increasing to an annual average of 3.6 per cent between June 2008 and June 2014.

Figure 7: PPI - concrete product manufacturing, 2003 to 2014 (nominal)[14]



The rate of growth for the concrete product price index that has prevailed since the commencement of the current regulatory period is significantly lower than the average rate over the five years to June 2013 (2.9 per cent compared to 3.8 per cent). However this rate is consistent with the average annual rate over a longer timeframe (June 2003 to June 2013), suggesting that growth may be returning to the longer term trend following higher growth between 2008 and 2013.

Table 6: Concrete product price growth over various time periods (nominal)

Index	10 years to June 2013	5 years to June 2013	June 2013 – Sep 2014*
PPI - Concrete product manufacturing	2.8%	3.8%	2.9%

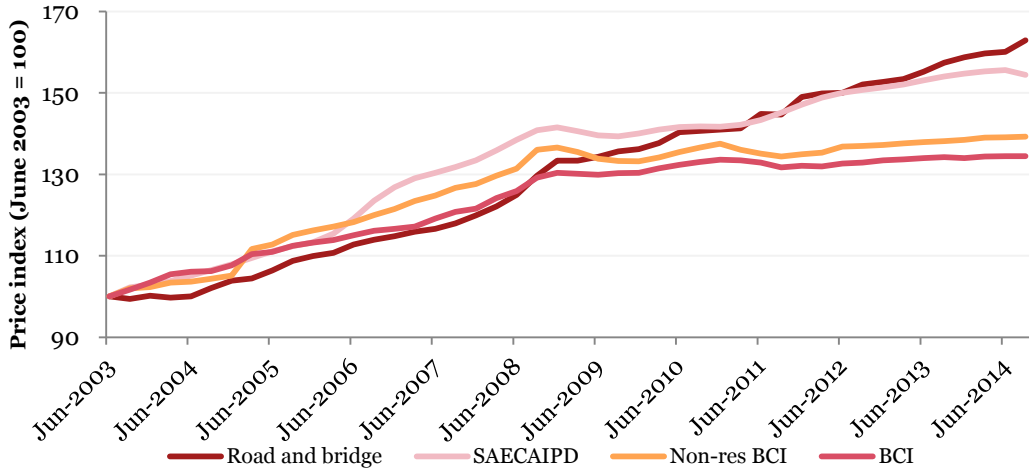
*This figure is annualised for comparative purposes

Construction/contractor costs

Figure 8 shows growth trends for indices related to price growth in the construction sector since June 2003. From mid-2003 to late 2008 all four indices exhibited relatively similar growth trends, increasing consistently over the five years. Over the next two years growth slowed, with a relatively flat trend across all indices with the exception of the road and bridge index which continued to grow consistently. Since late 2010 there has been a divergence in price growth, with the road and bridge index and SAECAIPD trending upwards, while the BCI and non-residential BCI have both remained flat.

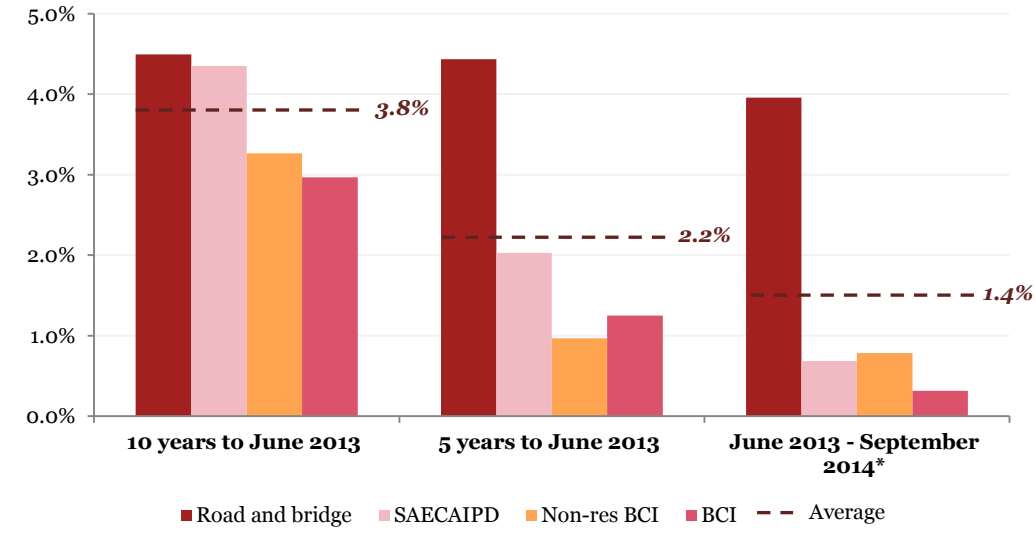
[14] Australian Bureau of Statistics (2014) *6427.0 – Produce Price Indexes, Australia*. Available at: http://www.abs.gov.au/ausstats/abs@.nsf/mf/6427.0

Figure 8: Construction activity price growth, 2003 to 2014 (nominal)[15][16]



Since the commencement of the regulatory period, the average rate of growth across the four construction price indices has slowed compared to both the five year and ten year average growth figures that would have informed a business's medium and long term view of the market at the commencement of the regulatory period in mid-2013. In nominal terms, the average annual growth figure of the four price indices has been 1.4 per cent in nominal terms, compared to the five year average to June 2013 of 2.2 per cent and the ten year average to June 2013 of 3.8 per cent.

Figure 9: Average annual growth figures, construction indices, various time periods (nominal)[17][18]



[15] Australian Bureau of Statistics (2014) *6427.0 – Produce Price Indexes, Australia*. Available at: http://www.abs.gov.au/ausstats/abs@.nsf/mf/6427.0

[16] Australian Bureau of Statistics (2014) *8762.0 – Engineering Construction Activity, Australia*.

[17] Australian Bureau of Statistics (2014) *6427.0 – Produce Price Indexes, Australia*. Available at: http://www.abs.gov.au/ausstats/abs@.nsf/mf/6427.0

[18] Australian Bureau of Statistics (2014) *8762.0 – Engineering Construction Activity, Australia*.

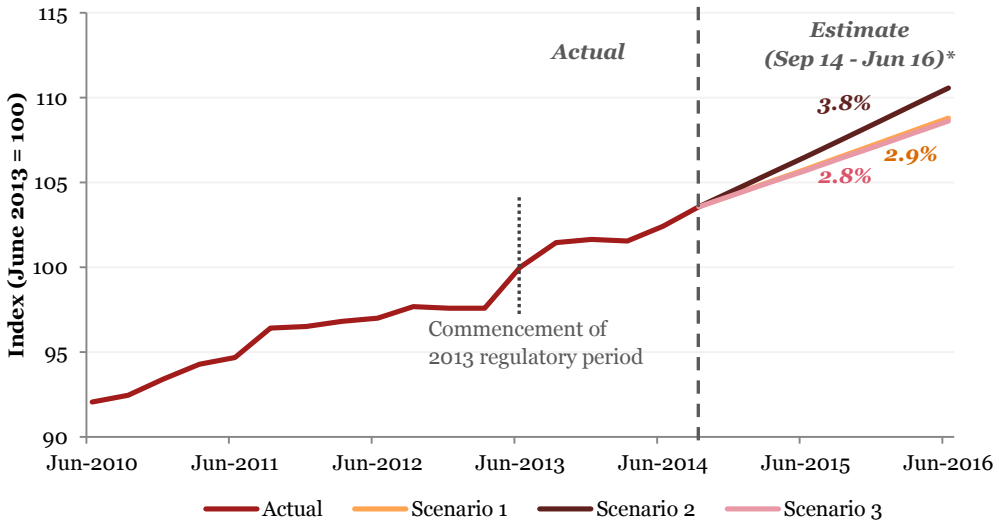
3.3.4 Price growth scenarios for pipe networks

Similar to Section 3.2.4, estimates of future price growth are developed based on three scenarios - growth continuing at the same rate as what has prevailed over the regulatory period to date, growth resuming its medium term average (five years to June 2013) and growth resuming its long term average (ten years to June 2013).

Pipes

Estimates presented in Figure 10 are based on the concrete product manufacturing PPI, which is used as a proxy for pipe costs. From this figure it is clear that the recent growth trend since the commencement of the current regulatory period is almost identical to the ten year average to June 2013. If this trend continues over the remainder of the regulatory period, the total price increase from June 2013 to June 2016 will be equal to 8.6 per cent (annual average growth of 2.8 per cent). If the medium term average growth rate were to resume, the price increase would be moderately higher, at 10.6 per cent over the three years (3.4 per cent on average).

Figure 10: Price growth scenarios, pipes (nominal)[19]



*Percentages in chart are average annual estimates applied from Sep 2014 to June 2016

Table 7: Annual pipe price growth under scenarios (nominal)[20]

Year ending	Scenario 1	Scenario 2	Scenario 3
Year to June 2014	2.4%	2.4%	2.4%
Year to June 2015	3.3%	4.0%	3.2%
Year to June 2016	2.9%	3.8%	2.8%
Average annual growth from June 2013 to June 2016	***2.9%***	***3.4%***	***2.8%***

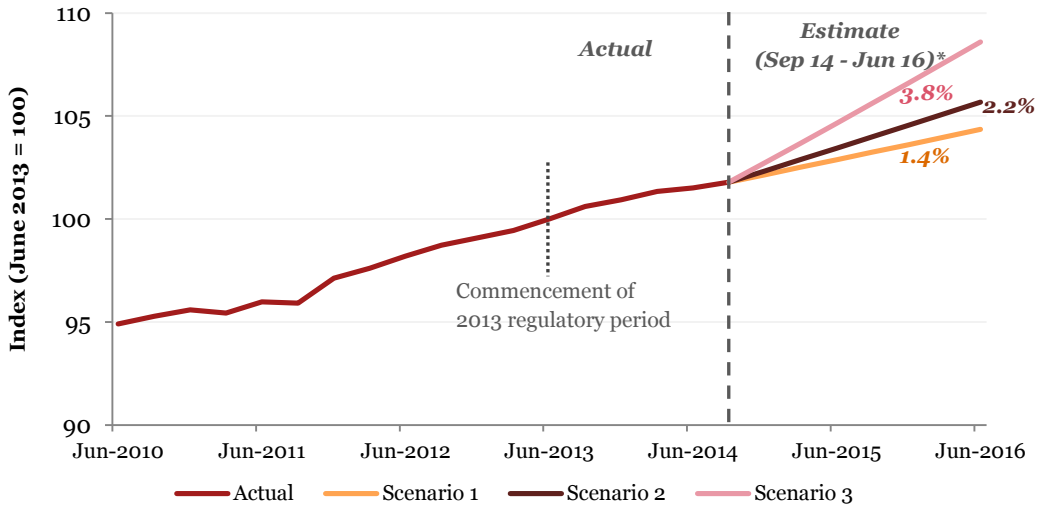
[19] PwC calculations based on ABS data

[20] PwC calculations based on ABS data

Construction/contractor costs

Average growth across the four construction price indices are used to develop a single price path (Figure 11), with three estimates provided for the remainder of the regulatory period based on differing growth assumptions. Under all three construction price scenarios, nominal prices are expected to continue to increase through to the end of the current regulatory period, though for Scenarios 1 and 2 this is expected to be below general inflation. Over the three years to June 2016, average annual growth is estimated to be between 1.4 per cent and 2.8 per cent depending on the price path over the remainder of the regulatory period (Table 8).

Figure 11: Price growth scenarios, construction indices (nominal)[21]



*Percentages in chart are average annual estimates applied from Sep 2014 to June 2016

Table 8: Annual construction price growth under scenarios (nominal)[22]

Year ending	Scenario 1	Scenario 2	Scenario 3
Year to June 2014	1.5%	1.5%	1.5%
Year to June 2015	1.3%	1.9%	3.1%
Year to June 2016	1.4%	2.2%	3.8%
Average annual growth from June 2013 to June 2016	***1.4%***	***1.9%***	***2.8%***

3.3.5 Weighted index – pipe networks

Table 9 shows the weighted index calculations for each of the three growth scenarios for pipe networks. A simplifying assumption is made that the input share is split evenly between the costs of pipes themselves and the contractor costs associated with pipe installation.

Over the current regulatory period, average annual growth is estimated to be between 2.1 per cent and 2.8 per cent in nominal terms, depending on the price path that prevails over the remainder of the regulatory period. In real terms this represents average growth of between --0.5 per cent and 0.1 per cent annually.

[21] PwC calculations based on ABS data

[22] PwC calculations based on ABS data

Table 9: Weighted price index for three growth scenarios[23]

		Year ending			CAGR
		June 2014	June 2015	June 2016	
Scenario 1	Pipe price growth	2.4%	3.3%	2.9%	2.9%
	Assumed share of total costs		50%		
	Weighted growth (pipes)	1.2%	1.6%	1.4%	1.4%
	Contractor price growth	1.5%	1.3%	1.4%	1.4%
	Assumed share of total costs		50.0%		
	Weighted growth (contractor)	0.8%	0.7%	0.7%	0.7%
	Scenario 1 weighted index (nom)	***2.0%***	***2.3%***	***2.1%***	***2.1%***
	Inflation	*3.0%*	*2.5%*	*2.5%*	-
	Scenario 1 weighted index (real)	***-1.0%***	***-0.2%***	***-0.4%***	***-0.5%***
Scenario 2	Pipe price growth	2.4%	4.0%	3.8%	3.4%
	Assumed share of total costs		50%		
	Weighted growth (pipes)	1.2%	2.0%	1.9%	1.7%
	Contractor price growth	1.5%	1.9%	2.2%	1.9%
	Assumed share of total costs		50%		
	Weighted growth (contractor)	0.8%	0.9%	1.1%	0.9%
	Scenario 2 weighted index (nom)	***2.0%***	***2.9%***	***3.0%***	***2.6%***
	Inflation	*3.0%*	*2.5%*	*2.5%*	-
	Scenario 2 weighted index (real)	***-1.0%***	***0.4%***	***0.5%***	***0.0%***
Scenario 3	Pipe price growth	2.4%	3.2%	2.8%	2.8%
	Assumed share of total costs		50%		
	Weighted growth (pipes)	1.2%	1.6%	1.4%	1.4%
	Contractor price growth	1.5%	3.1%	3.8%	2.8%
	Assumed share of total costs		50%		
	Weighted growth (contractor)	0.8%	1.5%	1.9%	1.4%
	Scenario 3 weighted index (nom)	***2.0%***	***3.2%***	***3.3%***	***2.8%***
	Inflation	*3.0%*	*2.5%*	*2.5%*	-
	Scenario 3 weighted index (real)	***-1.0%***	***0.6%***	***0.7%***	***0.1%***

3.4 Structures, safety, water resource sustainability and service reliability management

Given the relative similarities of the inputs that are likely to comprise the four asset strategies of structures, safety, water resource sustainability and service reliability management, they are analysed together rather than separately. These four categories account for $322.4 million of current forecast expenditure over the 2013 regulatory period, equal to 39 per cent of total forecast capital expenditure.

3.4.1 Major inputs into expenditure

Structures

The most common project types for the structure asset category are upgrades, replacement and renewals expenditure related to water and wastewater treatment plants, storage tanks and related civil works.

Safety

The majority of safety expenditure is related to dam safety investigation projects and hazardous area upgrades for wastewater treatment plants. Dam safety inspections can

[23] PwC calculations based on ABS data

generally be carried out by contractors and involves activities such as site inspections, design of remedial solutions and construction work to repair issues.

Water resource sustainability

Over half of the total $66.2 million in forecast expenditure on water resource sustainability is accounted for by the Adelaide Desalination Plant project ($35.5 million in total expenditure).

Service reliability management

The service reliability management asset strategy is comprised of a large number of relatively minor upgrades and repairs to wastewater treatment plants and various water infrastructure.

3.4.2 Selecting appropriate price escalation factors

Given that the majority of projects related to each asset strategy are predominantly construction and civil work, the four construction price indices analysed as part of Section 3.3 have been selected as the most appropriate means by which to assess price changes across these asset strategies:

- The building construction index for South Australia (BCI);
- The non-residential building construction index for South Australia;
- The road and bridge index for South Australia; and
- The South Australian engineering construction activity implicit price deflator (SAECAIPD). This is derived by dividing the value of engineering activity in current prices (that is, nominal terms) by the value in chain volume measures (real terms) to isolate the price component of the series.

While these indices will not correspond directly to the inputs used by SA Water or the market conditions faced by the business, they present a simple and transparent means by which to assess price movements for construction and civil work undertaken in the state. By using an average of all four indices, any volatile changes in a single index can be smoothed to provide a more consistent picture of likely price movement.

3.4.3 Historic price movement for selected inputs

Detailed analysis of price movement across the four construction price indices are provided in Section 3.3.3 (pages 14-15).

3.4.4 Price growth scenarios

Estimates of construction price growth across the three scenarios are provided in Section 3.3.4 (page 17).

3.4.5 Weighted index

The nominal figures in Table 10 below are replicated from Table 8 in Section 3.3.4 (page 17).

Table 10: Average growth in construction price indices over regulatory period under growth scenarios

Scenario	Nominal / real	Year ending			CAGR
		June 2014	June 2015	June 2016	
Scenario 1	Nominal	1.5%	1.3%	1.4%	1.4%
	Real	-1.4%	-1.1%	-1.0%	-1.2%
Scenario 2	Nominal	1.5%	1.9%	2.2%	1.9%
	Real	-1.4%	-0.6%	-0.3%	-0.8%
Scenario 3	Nominal	1.5%	3.1%	3.8%	2.8%
	Real	-1.4%	0.6%	1.2%	0.1%

3.5 IT

The IT asset strategy accounts for approximately 6 per cent of total forecast capital expenditure over the regulatory period, currently at $48.7 million.

3.5.1 Major inputs into IT expenditure

The majority of expenditure related to the IT function involves upgrades and replacement of hardware (for example, servers and computers) and software (for example, document management systems) used by SA Water. Expenditure is spread over a relatively large number of projects with each accounting for a relatively small share of total IT expenditure.

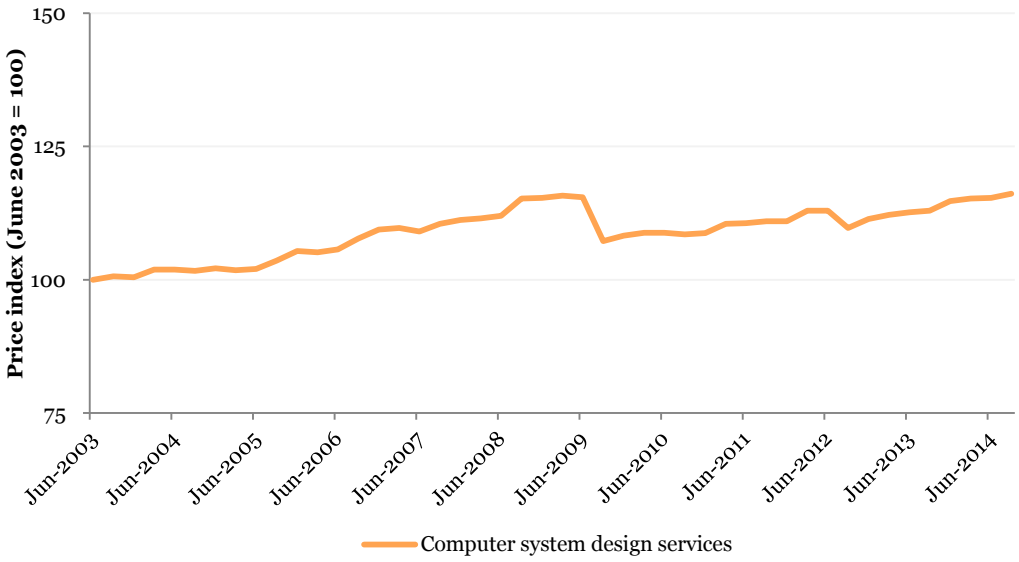
3.5.2 Selecting appropriate price escalation factors

The ABS produces various PPIs related to the IT sector, the most relevant to SA Water captures price changes associated with computer system design and related services. This category is comprised of activities such as computer hardware and software consulting, computer programming, software development and installation and systems analysis. These activities appear to largely cover the types of projects currently in SA Water's capital program.

3.5.3 Historic price movement for selected inputs

Growth in prices for computer system design and related services has been moderate and relatively consistent since June 2003, with the exception of a steep drop in prices that occurred in mid-2009. Contrary to the majority of other inputs that have been analysed in previous sections, there has been an increase in the rate of growth for computer system design and related services since the commencement of the current regulatory period in mid-2013.

Figure 12: PPI - Computer system design and related services, 2003 to 2014 (nominal)[24]



Recent growth in the computer system design PPI has outstripped both the long term and medium term averages that existed at the commencement of the regulatory period. Between June 2013 and September 2014, annual growth has average 2.5 per cent, more than double

[24] Australian Bureau of Statistics (2014) *6427.0 – Produce Price Indexes, Australia*. Available at: http://www.abs.gov.au/ausstats/abs@.nsf/mf/6427.0

the long term growth average of 1.2 per cent to June 2013, and well above the medium term estimate of 0.1 per cent. That said, the figure is still relatively moderate and in line with general inflation expectations.

Table 11: Computer system design and services price growth over various time periods (nominal)[25]

Index	10 years to June 2013	5 years to June 2013	June 2013 – Sep 2014*
PPI – Computer systems design and related services	1.2%	0.1%	2.5%

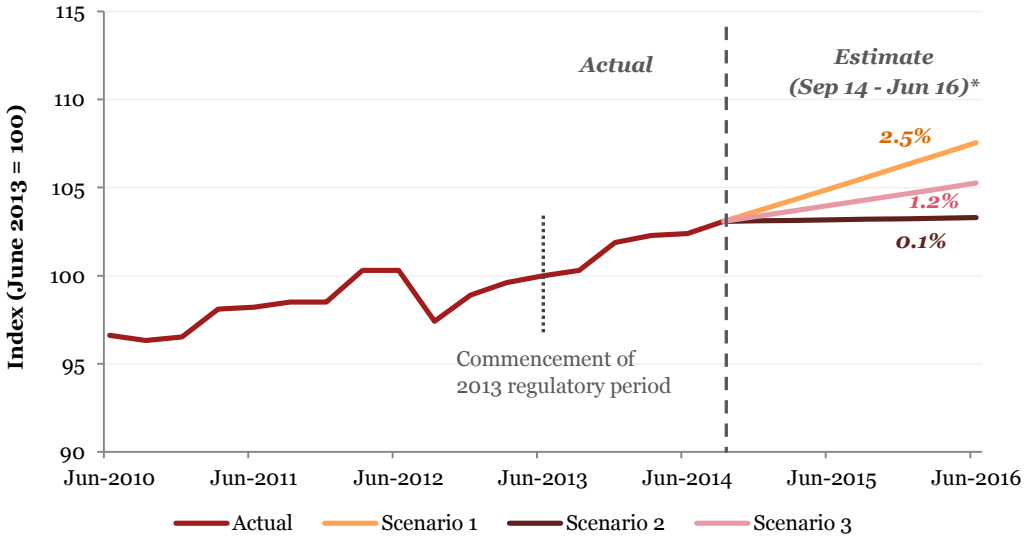
*This figure is annualised for comparative purposes

3.5.4 *Price growth scenarios for IT*

Similar to previous sections, estimates of future price growth are developed based on three scenarios - growth continuing at the same rate as what has prevailed over the regulatory period to date, growth resuming its medium term average (five years to June 2013) and growth resuming its long term average (ten years to June 2013).

Table 11 indicates that recent trends in price growth for the computer system design PPI are higher than medium and long term averages. If the average rate of growth from June 2013 to September 2014 continues over the remainder of the regulatory period, prices will be 7.6 per cent higher in June 2016 compared to June 2013. This is equivalent to average annual growth of 2.5 per cent. If price growth were to revert to medium or long term average over the remainder of the period, prices would be 3.3 per cent and 5.3 per cent higher over the three years.

Figure 13: Price growth scenarios, IT (nominal)[26]



*Percentages in chart are average annual estimates applied from Sep 2014 to June 2016

[25] Australian Bureau of Statistics (2014) *6427.0 – Produce Price Indexes, Australia*. Available at: http://www.abs.gov.au/ausstats/abs@.nsf/mf/6427.0

[26] PwC calculations based on ABS data

Table 12: Annual IT price growth under scenarios (nominal)[27]

Year ending	Scenario 1	Scenario 2	Scenario 3
Year to June 2014	2.4%	2.4%	2.4%
Year to June 2015	2.5%	0.8%	1.6%
Year to June 2016	2.5%	0.1%	1.2%
Average annual growth from June 2013 to June 2016	***2.5%***	***1.1%***	***1.7%***

Table 13: Annual IT price growth under scenarios (real)[28]

Year ending	Scenario 1	Scenario 2	Scenario 3
Year to June 2014	-0.6%	-0.6%	-0.6%
Year to June 2015	0.0%	-1.7%	-0.9%
Year to June 2016	0.0%	-2.3%	-1.3%
Average annual growth from June 2013 to June 2016	***-0.2%***	***-1.5%***	***-0.9%***

3.5.5 Weighted index - IT

As IT price growth has been estimated using a single index (the PPI for computer system design and related services), the estimated annual growth figures under each scenario will be identical to those produced in Table 12 and Table 13.

3.6 Estimated annual price growth for SA Water's capital program

3.6.1 Scenario 1

Under Scenario 1 (assumes that growth trends to date over the regulatory period continue for the remainder of the period), nominal growth is expected to average 1.1 per cent annually over the three years to June 2016. Accounting for inflation, growth is expected to be negative in real terms, averaging an annual decrease of 1.5 per cent over the three years.

[27] PwC calculations based on ABS data

[28] PwC calculations based on ABS data

Table 14: Estimated growth in SA Water capital expenditure prices, Scenario 1 (nominal)[29]

		Year ending			CAGR
		June 2014	June 2015	June 2016	
Mechanical & electrical equipment	Growth	1.8%	-0.3%	0.7%	0.7%
	Share of expenditure		*15.7%*		
	Weighted growth	0.3%	0.0%	0.1%	0.1%
Pipe networks	Growth	2.0%	2.3%	2.1%	2.1%
	Share of expenditure		*14.8%*		
	Weighted growth	0.3%	0.3%	0.3%	0.3%
Structures, safety, etc.	Growth	1.5%	1.3%	1.4%	1.4%
	Share of expenditure		*37.4%*		
	Weighted growth	0.6%	0.5%	0.5%	0.5%
IT	Growth	2.4%	2.5%	2.5%	2.5%
	Share of expenditure		*5.6%*		
	Weighted growth	0.1%	0.1%	0.1%	0.1%
Total growth - nominal		***1.3%***	***0.9%***	***1.1%***	***1.1%***
Inflation		*3.0%*	*2.5%*	*2.5%*	-
Total growth - real		***-1.7%***	***-1.5%***	***-1.4%***	***-1.5%***

3.6.2 Scenario 2

Under Scenario 2 (assumes price growth reverts to the five year average rate to June 2013 for the remainder of the regulatory period), capital cost escalation rates are expected to be marginally higher than under Scenario 1, averaging 1.4 per cent annually in nominal terms.

In real terms capital cost prices are expected to decrease under Scenario 2, albeit by less than Scenario 1. On average over the three years, real price growth is estimated to average -1.2 per cent.

Table 15: Estimated growth in SA Water capital expenditure prices, Scenario 2 (nominal)[30]

		Year ending			CAGR
		June 2014	June 2015	June 2016	
Mechanical & electrical equipment	Growth	1.8%	0.9%	2.4%	1.7%
	Share of expenditure		*15.7%*		
	Weighted growth	0.3%	0.1%	0.4%	0.3%
Pipe networks	Growth	2.0%	2.9%	3.0%	2.6%
	Share of expenditure		*14.8%*		
	Weighted growth	0.3%	0.4%	0.4%	0.4%
Structures, safety, etc.	Growth	1.5%	1.9%	2.2%	1.9%
	Share of expenditure		*37.4%*		
	Weighted growth	0.6%	0.7%	0.8%	0.7%
IT	Growth	2.4%	0.8%	0.1%	1.1%
	Share of expenditure		*5.6%*		
	Weighted growth	0.1%	0.0%	0.0%	0.1%
Total growth - nominal		***1.3%***	***1.3%***	***1.6%***	***1.4%***
Inflation		*3.0%*	*2.5%*	*2.5%*	-
Total growth - real		***-1.7%***	***-1.1%***	***-0.9%***	***-1.2%***

[29] PwC calculations based on ABS data

[30] PwC calculations based on ABS data

3.6.3 Scenario 3

Assuming price growth reverts to the ten year average (to June 2013) for the remainder of the regulatory period, nominal growth is estimated to average 2.0 per cent over the three years. Similar to Scenarios 1 and 2, in real terms this equates to a decrease in capital cost prices, equivalent to -0.7 per cent annually.

Table 16: Estimated growth in SA Water capital expenditure prices, Scenario 3 (nominal)[31]

		Year ending			CAGR
		June 2014	June 2015	June 2016	
Mechanical & electrical equipment	Growth	1.8%	2.1%	4.0%	2.6%
	Share of expenditure		*15.7%*		
	Weighted growth	0.3%	0.3%	0.6%	0.4%
Pipe networks	Growth	2.0%	3.2%	3.3%	2.8%
	Share of expenditure		*14.8%*		
	Weighted growth	0.3%	0.5%	0.5%	0.4%
Structures, safety, etc.	Growth	1.5%	3.1%	3.8%	2.8%
	Share of expenditure		*37.4%*		
	Weighted growth	0.6%	1.2%	1.4%	1.0%
IT	Growth	2.4%	1.6%	1.2%	1.7%
	Share of expenditure		*5.6%*		
	Weighted growth	0.1%	0.1%	0.1%	0.1%
Total growth - nominal		***1.3%***	***2.0%***	***2.6%***	***2.0%***
Inflation		*3.0%*	*2.5%*	*2.5%*	-
Total growth - real		***-1.7%***	***-0.4%***	***0.1%***	***-0.7%***

[31] PwC calculations based on ABS data

4 Review of capital expenditure forecasts

This section examines capital expenditure forecasts provided to PwC by SA Water. The intent of our analysis is to firstly identify the major expenditure categories that comprise the business's capital expenditure budget, and secondly to compare expenditure forecasts developed at the commencement of the regulatory period with current estimates as at December 2014 (including actual expenditure for 2013-14) and identify expenditure categories where significant variance has occurred.

The hierarchy that makes up SA Water's capital expenditure can be found in Appendix B.

4.1 Variation in total expenditure

Total expenditure in the current regulatory period is now forecast to be $825.6 million, compared with an initial estimate of $999.6 million. This represents a decrease of $174.0 million or 17.4 per cent.

At the function level, the largest decrease in percentage point terms[32] is expenditure related to water, which is responsible for close to half the total decrease ($86.0 million of $174.0 million in total). This is followed by wastewater and corporate (4.9 and 3.9 percentage point decrease respectively). The recycle function accounts for a negligible amount of total capital expenditure (currently forecast to be $3.8 million over the regulatory period).

Table 17: Comparison of initial and current estimates by function[33]

Function	Initial ($m)	Current ($m)	Change ($m)	Change (%)	Percentage point
Corporate	145.7	107.2	-38.5	-26.4%	-3.9
Water	520.8	434.8	-86.0	-16.5%	-8.6
Wastewater	328.7	279.8	-48.9	-14.9%	-4.9
Recycle	4.4	3.8	-0.6	-14.7%	-0.1
Total	***999.6***	***825.6***	***-174.0***	***-17.4%***	***-17.4***

4.2 Corporate capital expenditure

Overall, capital expenditure in the 'corporate' function is now forecast to be $107.2 million over RBP 2013, down from $145.7 million at the commencement of the regulatory period, a decrease of 26.4 per cent.

In terms of variance at the asset strategy level, the largest decreases in absolute terms are mechanical and electrical equipment ($9.7 million), asset renewal – other ($8.5 million) and safety ($8.0 million).

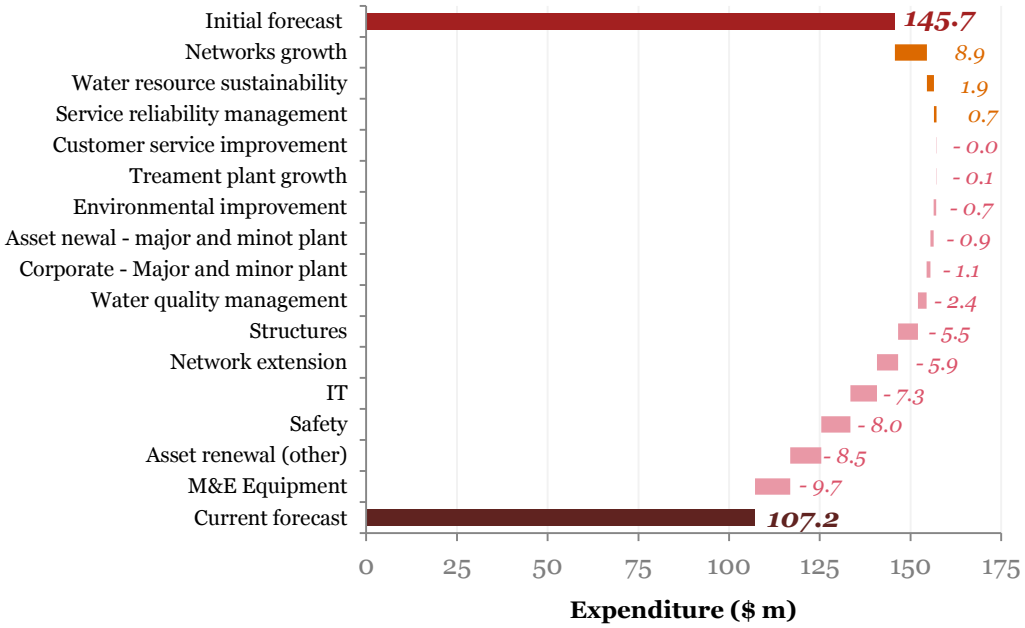
[32] Calculating changes in percentage point terms weights the percentage change in a category by the share of total expenditure is made up by the category

[33] PwC analysis of SA Water data

The reduction in forecast expenditure for mechanical and electrical equipment is due to funding initially allocated to the mechanical and electrical equipment strategy budget (initially estimated at $9.7 million) no longer being incurred.[34] For the 'asset renewal – other' asset strategy, the fall of $8.5 million is due to a reduction in forecast expenditure on the 'SCADA replace metro / outer metro RTUs' project of $4.2 million, and the removal of a strategy budget line item and funding line ($4.0 million). For safety, the reduction is largely due to the removal of the 'safety strategy budget' line item and a number of funding lines.

Conversely, networks growth expenditure is currently forecast to be $8.9 million greater than initial estimates. This is largely due to the addition of a new project – 'Northern Adelaide plains managed aquifer', worth $7.0 million in the current forecasts.

Figure 14: Variance in corporate capital expenditure by asset strategy over current regulatory period[35]



4.3 Water capital expenditure

Forecast expenditure related to water services in the current regulatory period has fallen from $520.8 million to $434.8 million, equivalent to a 16.5 per cent decrease (Figure 15). At the asset strategy level, safety, pipe networks and networks growth experienced the largest decreases in absolute terms (collectively accounting for $80.2 million of the total decrease).

For the safety asset strategy, the decrease of $44 million is largely due to the Kangaroo Creek Dam safety investigation, which has seen forecast expenditure in the regulatory period fall from $80.8 million to $38.4 million. SA Water has indicated that this is largely due to a delay in the project, with more expenditure now expected to occur after the current regulatory period.

For pipe networks, the decrease in expenditure forecasts is largely due to expenditure initially allocated to three funding lines (country water reticulation renewal program, metro

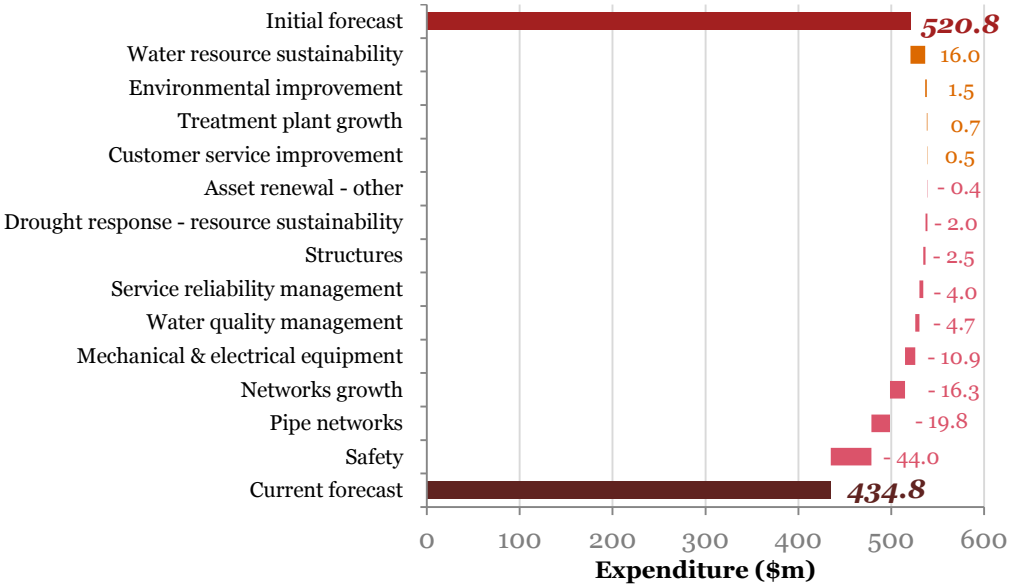
[34] From the data available we have not been able to ascertain the cause of the reduction, however SA Water has advised that it may be due to a number of factors such as funding lines being reallocated to programs, proactive deferrals or gains from savings.

[35] PwC analysis of SA Water data

water reticulation renewal program and metro water trunk renewal program) no longer being incurred. [36] For networks growth, forecast expenditure on the Mt Barker water supply investigation has decreased by $17.0 million, contributing significantly to the net decrease of $16.3 million.

Water resource sustainability expenditure has increased by $16.0 million compared to initial forecasts. This is due to the inclusion of a new project – 'purchase an additional Murray water licence'[37], which was not included in initial estimates.

Figure 15: Variance in water capital expenditure by strategy over current regulatory period[38]



4.4 Wastewater capital expenditure

Figure 16 shows that expenditure on projects related to SA Water's wastewater function is currently forecast to be $279.8 million over the 2013 regulatory period, compared to an initial forecast of $328.7 million (a decrease of 14.9 per cent). The largest decrease in forecasts in absolute terms are in networks growth (-$26.8 million), environmental improvement (-$11.0 million) and structures (-$9.6 million).

For networks growth, a reduction in forecast expenditure for the North Lefevre Peninsula wastewater diversion project accounts for $15.2 million of the total decrease. The Port Lincoln wastewater network upgrade and Gawler wastewater network upgrade account for a further $2.0 million and $1.7 million decrease respectively in forecast expenditure.

For environmental improvement, the $11.0 million net reduction in forecast expenditure is predominantly due to expenditure that was initially allocated to two funding lines (wastewater overflow abatement program and metro wastewater network odour management) no longer being incurred.[39]

---

[36] From the data available we have not been able to ascertain the cause of the reduction, however SA Water has advised that it may be due to a number of factors such as funding lines being reallocated to programs, proactive deferrals or gains from savings.

[37] SA Water has advised that this purchase was primarily funded by the sale of existing licenses.

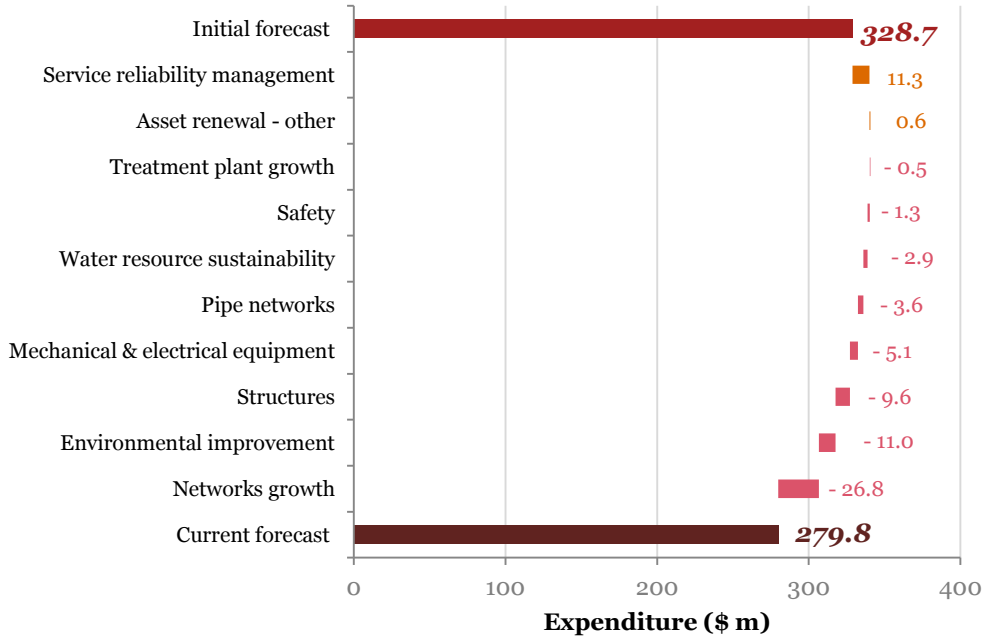
[38] PwC analysis of SA Water data

[39] From the data available we have not been able to ascertain the cause of the reduction, however SA Water has advised that it may be due to a number of factors such as funding lines being reallocated to programs, proactive deferrals or gains from savings.

The decrease in structures expenditure is largely the result of the Bolivar pre-aeration concrete rehab project (currently forecast to be $32.4 million, initially forecast to be $38.1 million).

Service reliability management expenditure is currently forecast to be $11.3 million higher over the 2013 regulatory period compared to initial forecasts. This is largely accounted for by the addition of a new project (the South Road – Torrens to Torrens project) worth $7.0 million and an increase in forecast expenditure for the Bolivar wastewater treatment plant SCADA and control systems upgrade ($3.3 million higher than initial estimates).

Figure 16: Variance in wastewater capital expenditure by strategy over current regulatory period[40]



4.5 Summary

There have been significant reductions in forecast capital expenditure across the corporate, water and wastewater functions of SA Water as the current regulatory period has progressed. However, examining this capital expenditure data in isolation is not sufficient to identify the underlying causes of this reduction.

Through discussions with SA Water, a number of reasons have been put forward for the reduction in capital expenditure over the regulatory period. These include reduced demand from developers for new infrastructure provision, and timeframe slippage for key projects (such as the Kangaroo Creek Dam safety investigation).

Another major contributor to this reduction is lower than expected prices being quoted for projects as they have been brought to market. This is potentially due to more efficient procurement practices being employed by SA Water, as well as subdued economic conditions resulting in lower growth in prices for key input factors more generally (as discussed in Appendix A). Indeed it is likely to be a combination of both.

[40] PwC analysis of SA Water data

Appendix A Detailed Economic Overview

Economic outlook for RBP 2013

At the time SA Water's 2013 RBP was being developed, the prevailing economic trends were arguably more 'upbeat' than the present outlook. Key events that were hallmarks of the 2013 RBP period included:

- Australia's economy was seen to have withstood the global financial crisis and subsequent stagnation in global growth experienced by most developed economies. Real GDP growth of 3 per cent over the next decade was expected.
- South Australia's economy was expected to transition from its dependence on manufacturing, agriculture and defence sectors to engineering construction and the resources sector.
- The Air Warfare Destroyer contract and replacement for the Collins Class submarine were seen as key projects underpinning the defence manufacturing sector over the medium term.
- The Olympic Dam expansion was expected to provide major stimulus to the economy and underpin South Australian resources exports over the long term.
- Risks to future economic growth were identified as a potential slowing of growth in key Asian economies, a tighter fiscal environment at both the federal and state level and the continued strength of the Australian dollar. However strong growth in the resources sector, particularly from uranium and base metals exports linked to the Olympic Dam expansion, were expected to support relatively strong economic growth.

Current economic outlook

There is strong evidence to suggest that since the 2013 RBP was developed, economic trends in both South Australia and broader Australia have moderated significantly.

In particular, economic growth forecasts have been downgraded on multiple occasions by the Commonwealth Government as well as international bodies such as the OECD and IMF. This has largely occurred on the back of significant moderation in investment in the mining and energy sectors and sharp falls in resources prices (leading to a decrease in the terms of trade). Unemployment has trended higher since mid-2011 and employment growth has moderated, further detracting from growth.

At the state level, the Olympic Dam expansion is yet to be approved, with continued weakness in the uranium price and more recent falls in base metal prices likely reducing the probability of the project being approved in the near term. The defence manufacturing sector in South Australia continues to face challenging conditions, with uncertainty remaining as to whether the replacement for the Collins Class submarine will be built in South Australia. The broader manufacturing sector is also facing significant challenges, particularly since the announcement by GM Holden and Toyota that their automotive manufacturing operations in South Australia will cease in 2017.

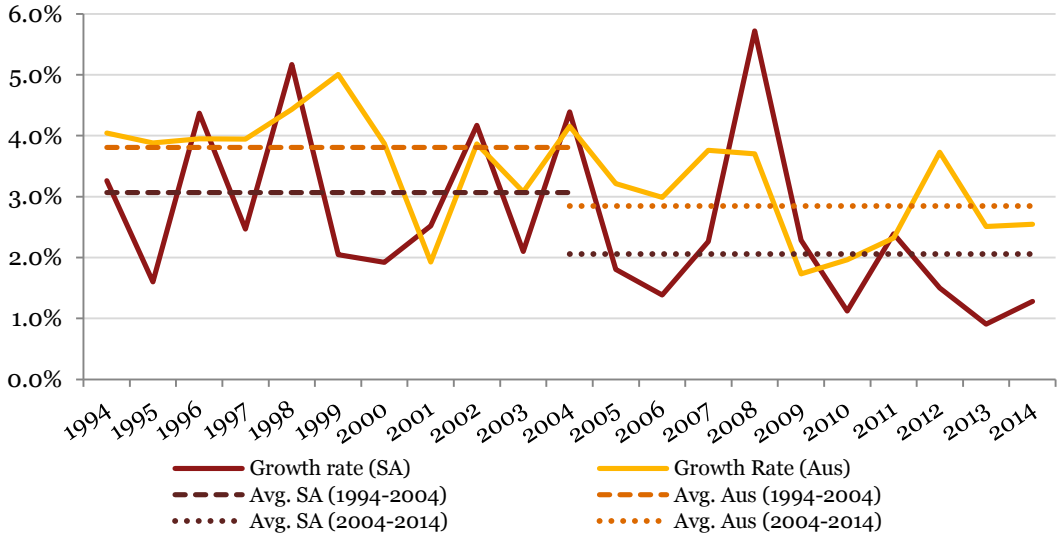
While the fall in resource prices has led to a significant moderation in the terms of trade, exports have seen some relief from the accompanying sharp fall in value of the Australian dollar since August 2014.

Economic growth

GSP and GDP growth (historic)

Economic growth in the South Australian economy has been consistently lower than Australia as a whole over the past two decades, though GSP growth in 2008 was significantly higher at 5.7 per cent in real terms. Between 1994 and 2004, South Australia's economy averaged growth of 3.1 per cent annually in real terms, compared with 3.8 per cent for Australia. The following decade (2004 to 2014) saw average annual growth fall to 2.1 per cent annually compared to 2.8 per cent for Australia. Since 2011 there has been a notable slowing in South Australia's economic growth, averaging 1.2 per cent annually between 2011 and 2014.

Figure 17: GSP (South Australia) and GDP (Australia) growth, year to June, 1994 to 2014[41]

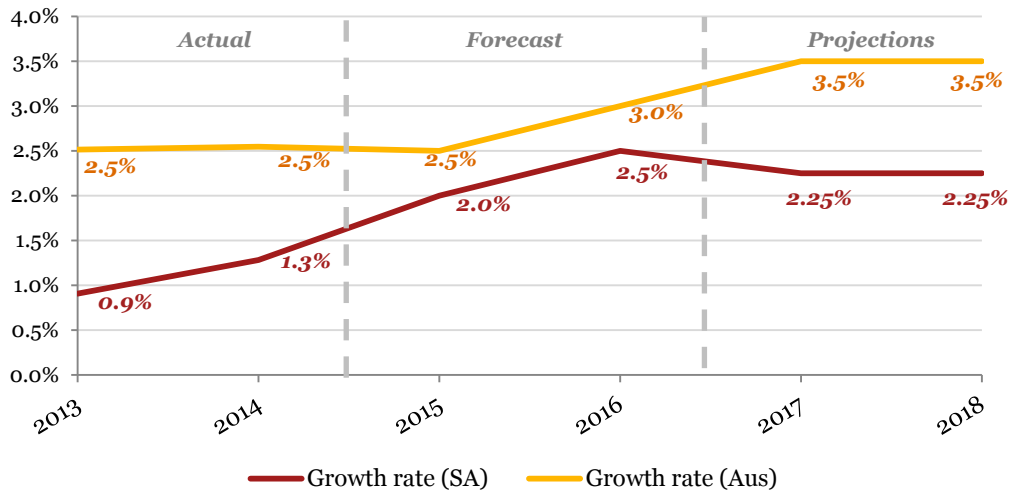


GSP and GDP growth (forecasts)

Moving forward, the South Australian economy is expected to grow by 2.0 per cent in real terms in 2014-15, higher than growth in both 2012-13 and 2013-14 (0.9 per cent and 1.3 per cent respectively). South Australia's economic growth is expected to remain below Australia as a whole out to 2017-18.

[41] ABS 5220.0, *Australian National Accounts: State Accounts, 2013-14*. Available at: http://www.abs.gov.au/ausstats/abs@.nsf/mf/5220.0

Figure 18: Forecasted and projected GSP (South Australia) and GDP (Australia) growth, year to June, 2013 to 2018[42][43]



Industry growth

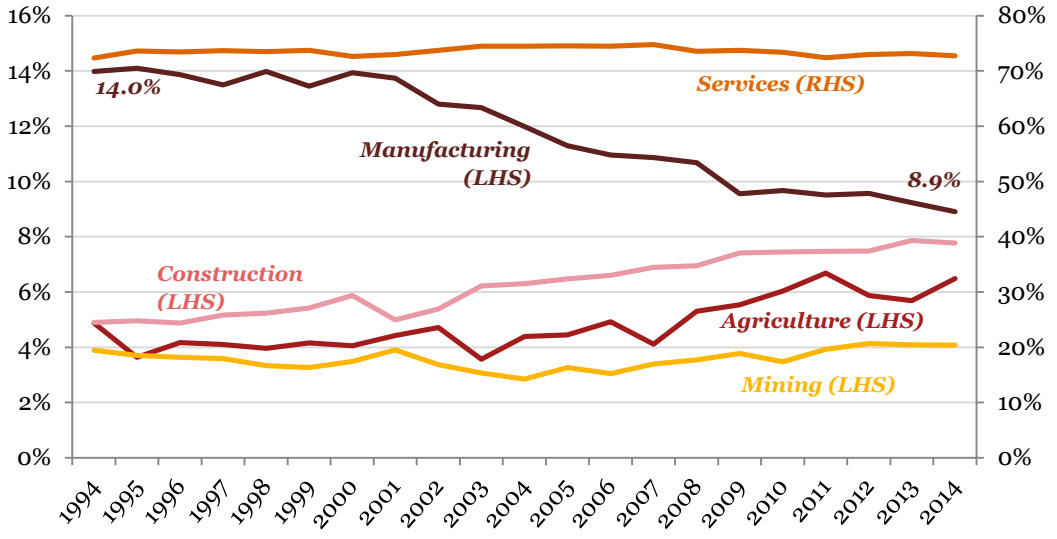
South Australia's economy has traditionally been underpinned by a strong manufacturing base, particularly relating to automotive manufacturing, mining and resources equipment, defence manufacturing and food product manufacturing. In line with the broader Australian economy, manufacturing output as a share of total economic output has been trending downwards over the past two decades as companies have sought to lower costs by establishing operations in alternative destinations. This trend has accelerated in recent years as the strengthening of the Australian dollar has further increased Australian manufacturing costs relative to many competing nations.

Between 1994 and 2014, manufacturing as a share of total industry value added has fallen from 14.0 per cent to 8.9 per cent (Figure 19). Over the same period, the construction and agriculture sectors have seen an increase in their share of total economic output. While the South Australian economy is dominated by the service sector (in line with most developed economies), its share of the economy has been relatively steady over recent decades (currently 73 per cent). Similarly, mining output as a share of the economy has been steady at around 4 per cent.

[42] Australian Government (2014) *Mid-Year Economic and Fiscal Outlook 2014-15*. Available at: http://www.budget.gov.au/2014-15/content/myefo/html/index.htm

[43] Government of South Australia (2014) *2014-15 Mid-Year Budget Review*. Available at: http://servicesa.cdn.on.net/budget201415/docs/mybr-2014-15.pdf

Figure 19: Industry output as share of South Australia economy, 1994 to 2014[44]

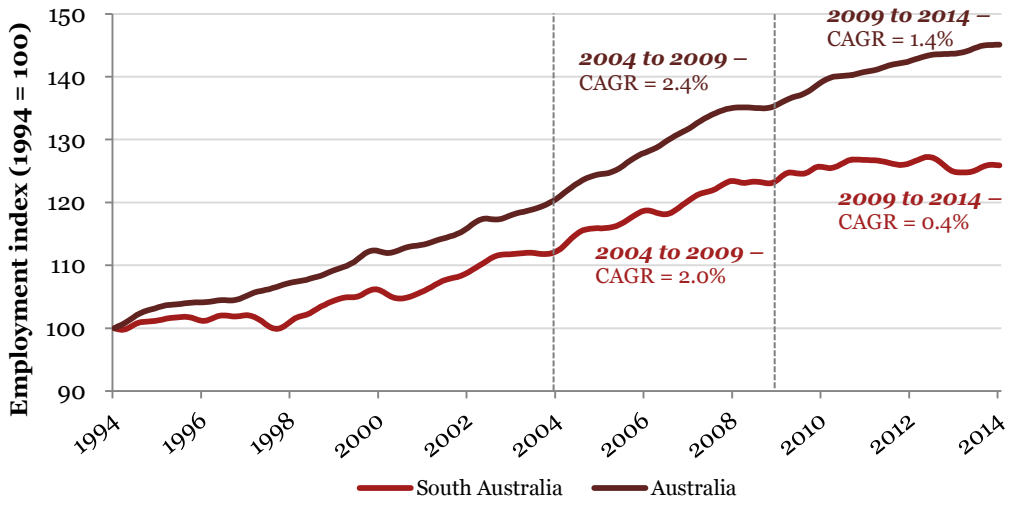


Labour force trends

General trends

Total employment in South Australia has grown below the national average for the majority of the past two decades (Figure 20). Average annual employment growth in the state over this period has averaged 1.2 per cent, though over the past five years this has slowed significantly to be only 0.4 per cent annually in trend terms, equating to employment growth of approximately 2,800 persons a year. This slowdown in growth is consistent with national trends, though does appear to be more pronounced in South Australia.

Figure 20: Total employment index, 1994 to 2014 (trend)[45]



In line with slowing employment growth, the unemployment rate has trended upwards while participation has fallen (Figure 21).

---

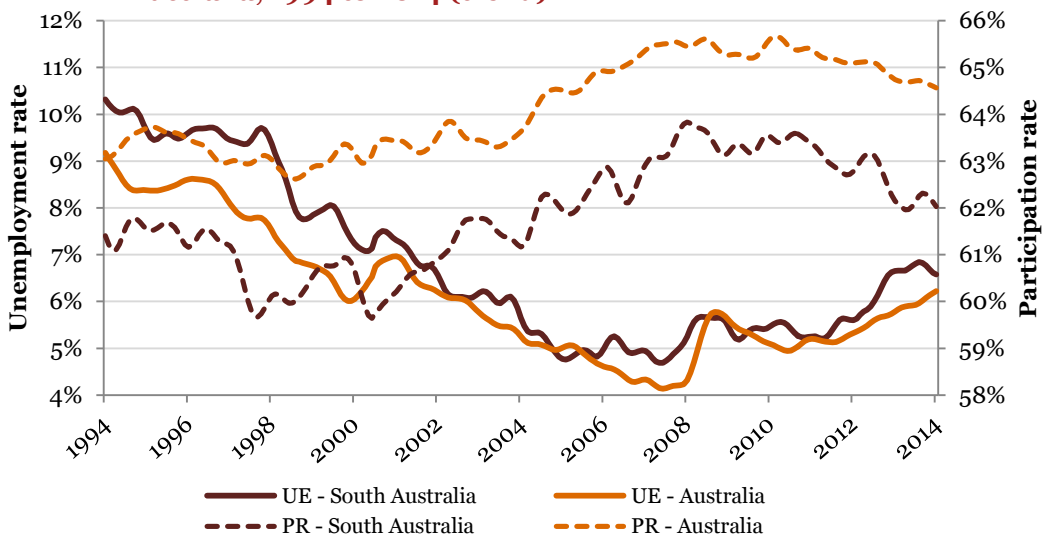
[44] Australian Bureau of Statistics (2014) *5220.0 - Australian National Accounts: State Accounts, 2013-14.* Available at: http://www.abs.gov.au/ausstats/abs@.nsf/mf/5220.0

[45] Australian Bureau of Statistics (2014) *6202.0 – Labour Force, Australia.* Available at: http://www.abs.gov.au/ausstats/abs@.nsf/mf/6202.0

Throughout the 1990s the unemployment rate in South Australia was consistently higher than the Australian average, however in the early 2000s this gap closed and the two rates moved broadly in line with each other until early 2012, when unemployment in South Australia again moved higher than the national average. In May 2014 the unemployment rate in South Australia reached 6.8 per cent in trend terms, the highest rate since March 2002, though since this time the state has recorded two consecutive months of falling unemployment.

The participation rate has generally moved inversely to unemployment, peaking during the mining boom in 2007 and steadily falling since this time as unemployment has increased. The participation rate in South Australia has consistently been between two to three percentage points below the national average, which is likely influenced to some degree by demographic factors including South Australia's older population.

Figure 21: Unemployment rate and participation rate, South Australia and Australia, 1994 to 2014 (trend)[46]



Employment projections

The Commonwealth Government Department of Employment produces five year employment projections at the national, state and metropolitan centre level across industries (Figure 22). Across most industries, industry employment growth in Adelaide and South Australia more broadly are expected to move in line with national trends.

A notable difference is in the electricity, gas, water and wastewater services (EGWWS) industry, where national growth of 6.2 per cent nationally is well above the forecasts for Adelaide (1.6 per cent) and South Australia (0.2 per cent).

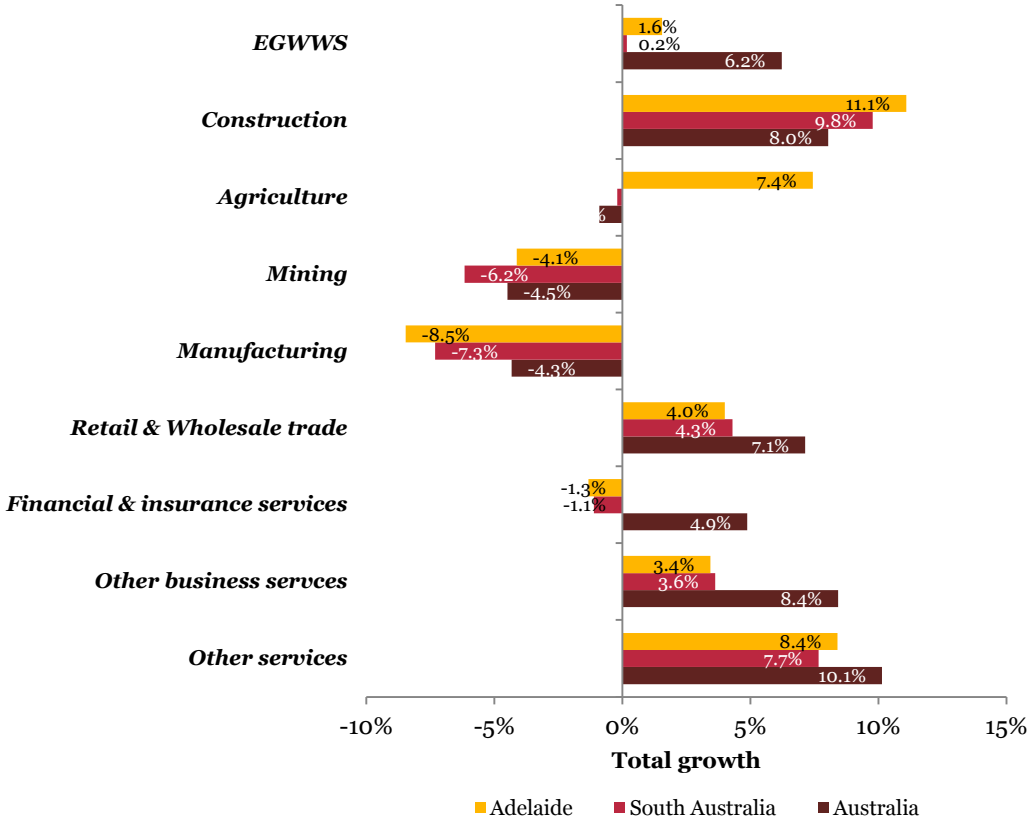
The most significant growth in employment in percentage terms is expected to come from construction, other services and retail and wholesale trade.[47]

---

[46] Australian Bureau of Statistics (2014) *6202.0 – Labour Force, Australia.* Available at: http://www.abs.gov.au/ausstats/abs@.nsf/mf/6202.0

[47] While growth in employment for Adelaide's agriculture sector is relatively high in percentage terms, this is off a low base of 7,600 persons.

Figure 22: Employment growth forecasts by industry, November 2013 to 2018[48]



Labour demand

The most relevant industries that are representative of SA Water employees (both internal labour and external contractors) are the EGWWS and construction industries. Figure 23 shows that there has been steady growth in employment for both industries over the past decade, though growth has been relatively flat since 2009 for EGWWS and since 2011 for construction.

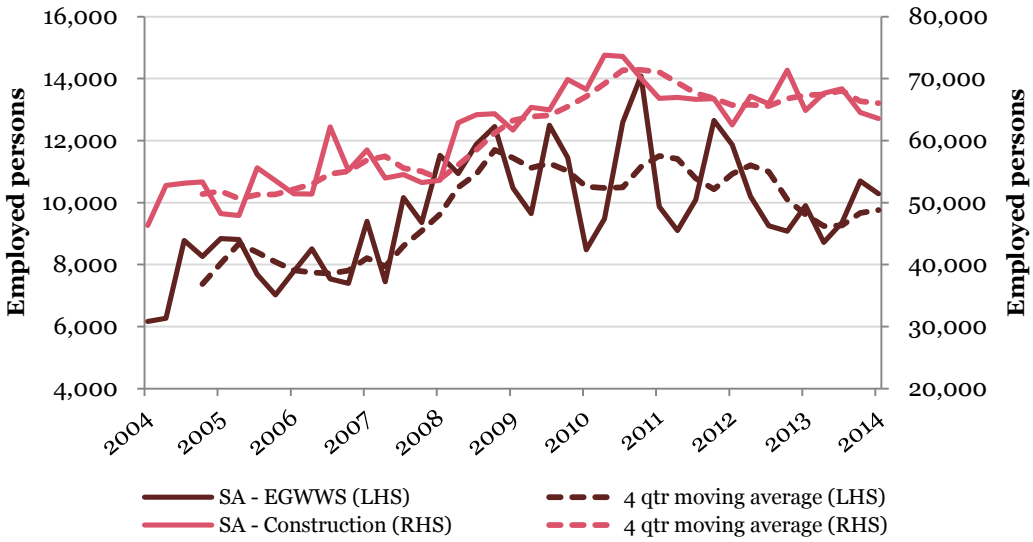
Between May 2005 and May 2009, labour demand in the EGWWS exhibited strong growth, with the number of employed persons increasing by 60 per cent to 11,700 persons (smoothed[49]). Over the past five years, the number of persons employed in the sector has trended down (falling by 17 per cent in the five years to May 2014), with volatility appearing to have increased, particularly between 2009 and 2012.

Labour demand in the construction sector was relatively flat from mid-2005 to mid-2008, increasing by 7 per cent over the three years. However between May 2008 and May 2011, employment in the sector grew significantly, despite only moderate overall economic growth as a result of the GFC, increasing by 30 per cent in three years (more than 16,000 additional employed persons). Since this time employment has trended down marginally.

[48] Australian Government Department of Employment (2014) *Employment projections*. Available at: http://lmip.gov.au/default.aspx?LMIP/EmploymentProjections

[49] Using a four quarter moving average

Figure 23: South Australia EGWWS and construction industry employment, April 2004 to August 2014[50]



Occupation vacancies

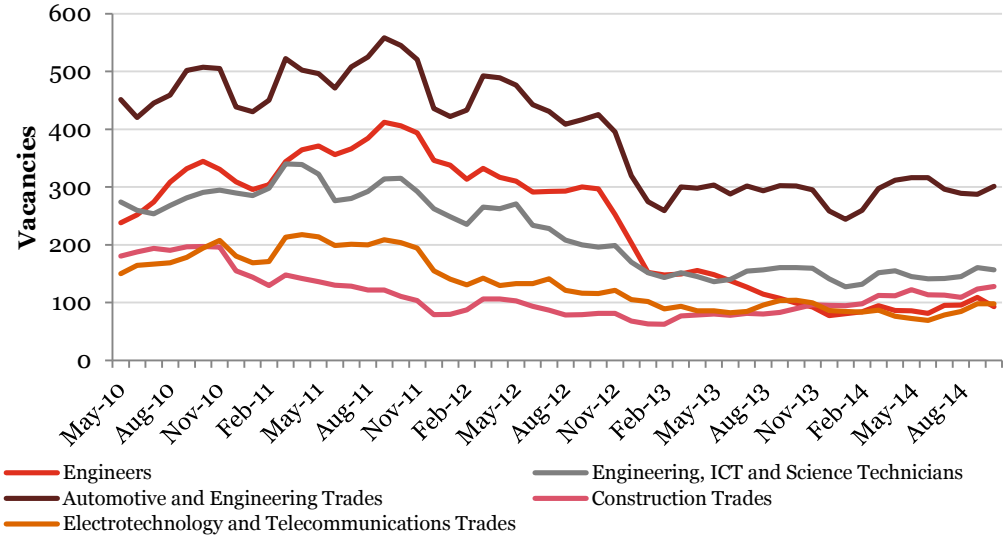
As employment growth has slowed in both the electricity, gas, water and wastewater services and construction sectors in recent years, the number of vacancies in related occupations has also fallen considerably, reflecting a moderation of activity in these industries (Figure 24).

Between September 2011 and January 2013, there was approximately a 50 per cent fall in vacancies for engineering, ICT and science technicians, automotive and engineering trades, construction trades and electrotechnology and telecommunications trades. Over the same period, the number of vacancies for engineers fell by more than 60 per cent. In absolute terms, this reflects a fall in total related occupational vacancies from approximately 1,600 in September 2011 to 750 in January 2013.

Since this time the number of construction trade vacancies has recovered, doubling between January 2013 and October 2014 (albeit off a low base). Conversely, vacancies for engineers have continued to fall (by a further 39 per cent since January 2013), while the other occupational vacancies have remained relatively flat, reflecting a relatively stable outlook for labour demand.

[50] Australian Bureau of Statistics (2014) 6291.0.55.003 – Labour Force, Australia, Detailed. Available at: http://www.abs.gov.au/ausstats/abs@.nsf/mf/6291.0.55.003

Figure 24: Vacancies for related occupations, May 2010 to October 2014[51]



Construction activity

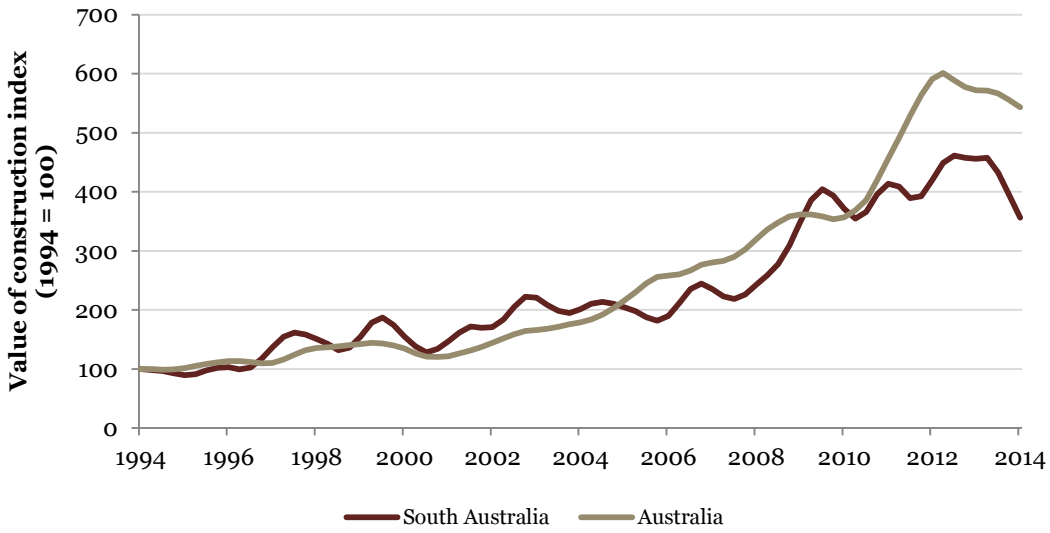
Engineering construction activity

Figure 8 represents the value of quarterly engineering construction activity (in real, trend terms) for both South Australia and Australia as a whole between 1994 and 2014. In the fifteen years to 2009, growth patterns for South Australia and Australia were relatively consistent, averaging 8.0 per cent and 8.7 per cent respectively in annualised terms.

Since 2010 there has been a noticeable divergence in growth of engineering construction activity between the state and Australia as a whole. While the value of engineering South Australia averaged annual growth of 5.5 per cent in engineering construction activity in the three years to June 2013, across Australia growth was equal to 17.8 per cent annually over the same period. Over the twelve months to June 2014 there has been a noticeable downward trend in quarterly engineering construction activity, particularly in South Australia. The value of engineering construction in the June 2014 quarter was close to 22 per cent below the value for the same period the previous year.

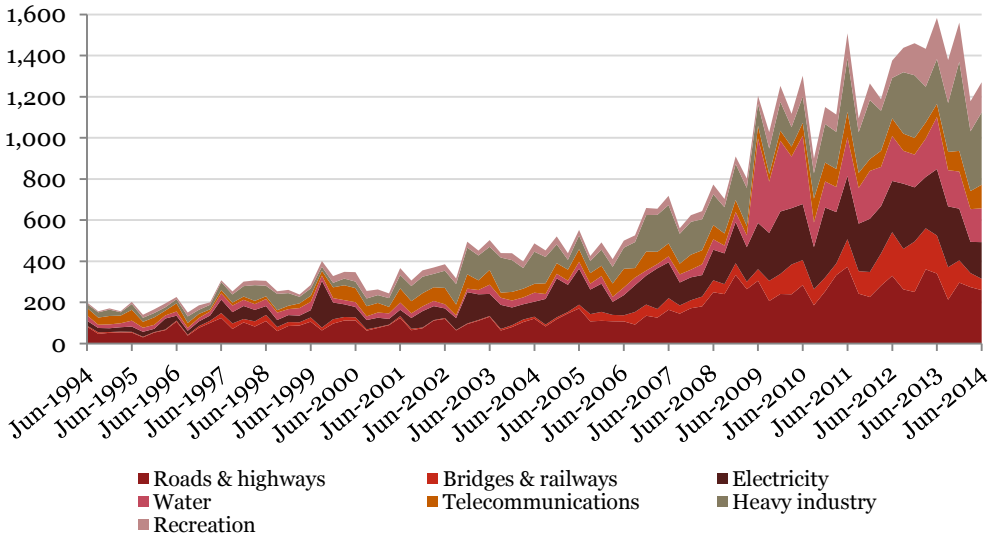
[51] Australian Government Department of Employment (2014) *LMIP Vacancy report*. Available at: http://lmip.gov.au/default.aspx?LMIP/VacancyReport

Figure 25: Value of engineering construction activity, Australia and SA, chain volume measures (trend), 1994 to 2014 (June 1994 = 100) [52]



At the industry level, most sectors saw a moderation in the value of engineering construction in the year to June 2014, following strong growth over the previous decade (Figure 26). Construction activity in the water sector increased markedly in 2009 following the commencement of construction of the Adelaide Desalination plant, and quarterly values remain above pre-2009 levels despite construction being largely completed in late 2012. Construction in the electricity and bridges and railways sectors has steadily fallen over the past year, while heavy industry construction has grown. Other sectors have seen relatively steady values over recent quarters.

Figure 26: Value of engineering construction work done (SA) by sector, 1994 to 2014 (original, nominal) [53]

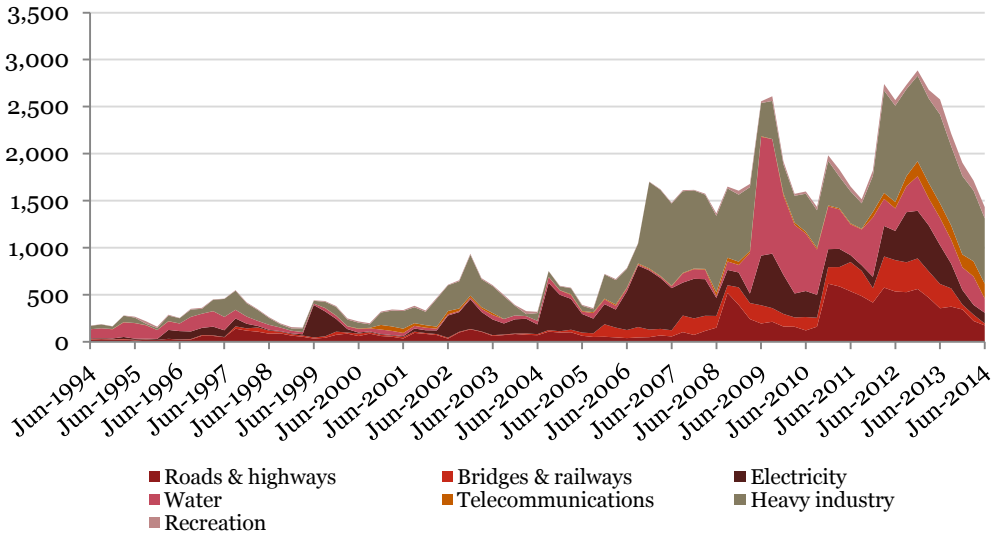


[52] Australian Bureau of Statistics (2014) *8762.0 - Engineering Construction Activity, Australia*. Available at: http://www.abs.gov.au/ausstats/abs@.nsf/mf/8762.0

[53] Australian Bureau of Statistics (2014) *8762.0 - Engineering Construction Activity, Australia*. Available at: http://www.abs.gov.au/ausstats/abs@.nsf/mf/8762.0

The moderation in engineering construction activity is borne out in Figure 27, which provides an indication of the future pipeline of activity based on work yet to be done in each sector. Since peaking in December 2012, most sectors have seen the value of work yet to be done fall significantly. This is particularly the case for the water sector, which saw values fall consistently from June 2009 as the Adelaide Desalination Plant moved towards completion.

Figure 27: Value of engineering work yet to be done (SA) by sector, 1994 to 2014 (original, nominal) [54]



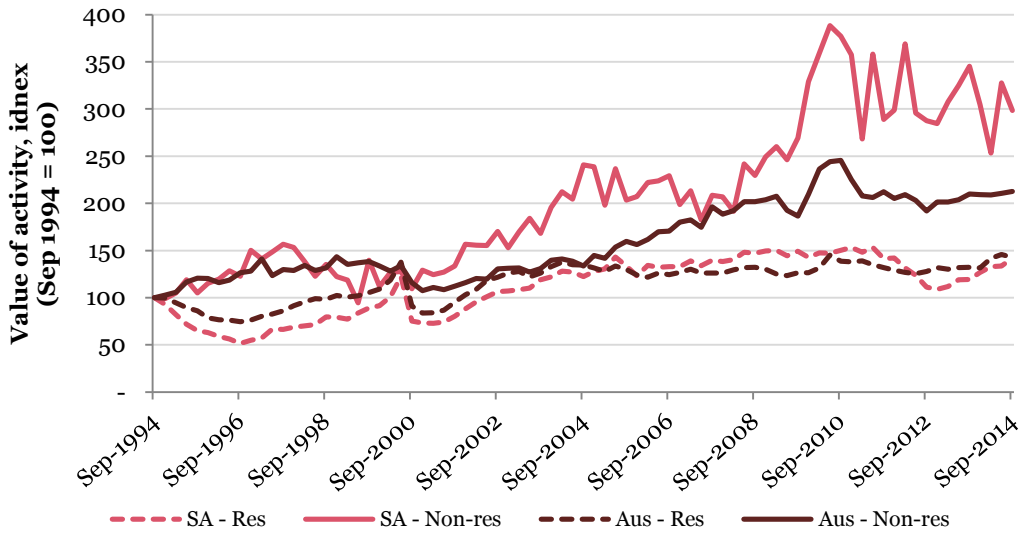
Residential and non-residential construction activity

The value of non-residential construction activity has grown at a faster rate than residential construction activity for both South Australia and Australia as a whole. South Australian non-residential building construction activity grew particularly rapidly between June 2008 and June 2010, with the work completed in the June 2010 quarter at 61 per cent higher in real terms than the same period in 2008. Since this time, non-residential construction activity has been volatile and trending down marginally over the four years to September 2014.

By comparison, residential construction activity in both South Australia and Australia has been relatively modest in real terms, particularly in South Australia where the value of residential construction has remained relatively flat since 2007.

[54] Australian Bureau of Statistics (2014) *8762.0 - Engineering Construction Activity, Australia*. Available at: http://www.abs.gov.au/ausstats/abs@.nsf/mf/8762.0

Figure 28: Value of residential and non-residential construction (work done, chain volume measures, seasonally adjusted), 1994 to 2014[55]



.

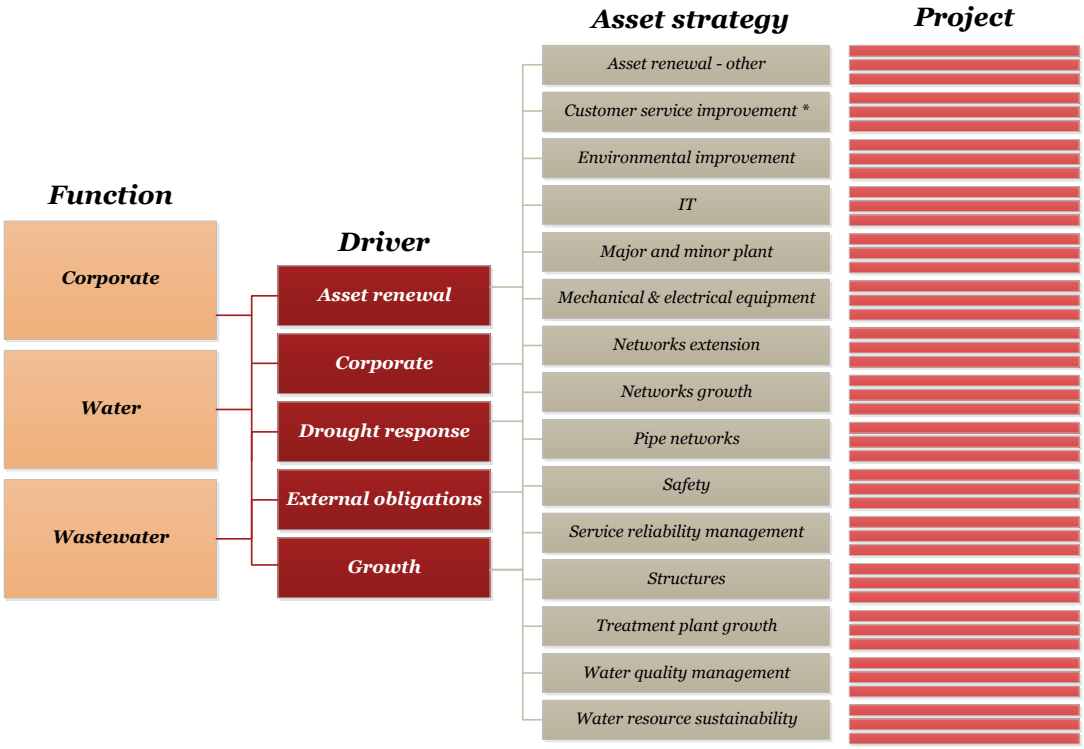
[55] ABS (2014) 8752.0 - Building Activity, Australia. Available at: http://www.abs.gov.au/ausstats/abs@.nsf/mf/8752.0

Appendix B Capital Expenditure Data Hierarchy

Overview

This section outlines the categories of expenditure that have been used to 'map' capital expenditure forecasts from functions through to discrete projects. Not every combination of function, driver and strategy will contain projects, for example there are not projects categorised as 'Corporate – Asset renewal – Mechanical and electrical equipment' (as all mechanical and electrical equipment projects fall under water or wastewater functions).

Figure 29: SA Water capital expenditure asset hierarchy

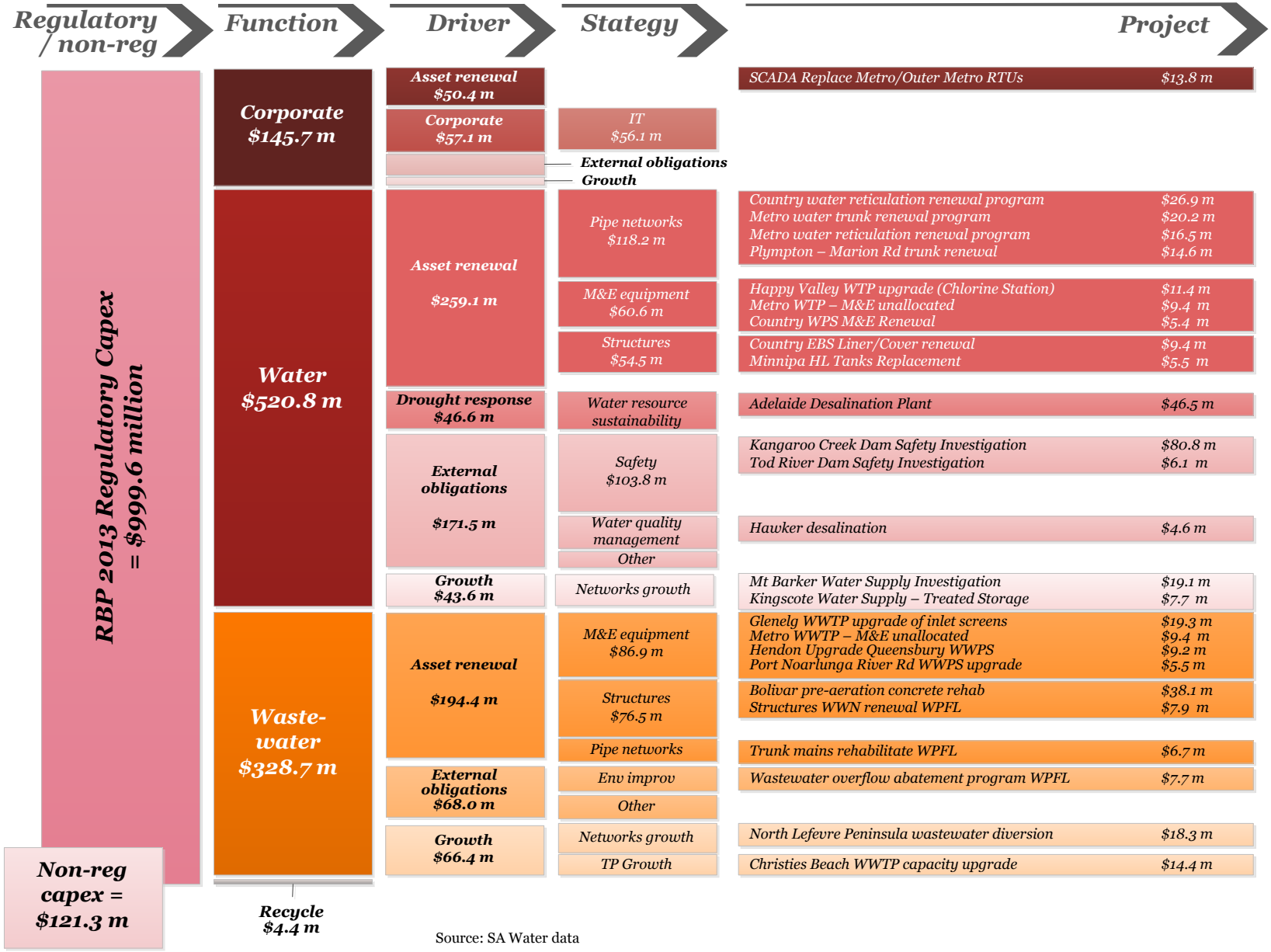


Capital expenditure mapping

The following section presents findings from the capital mapping analysis, tracking forecasts from the function through project level. Two figures are presented, representing initial and current forecasts.

Initial forecast of capital expenditure over 2013 – 2016 regulatory period

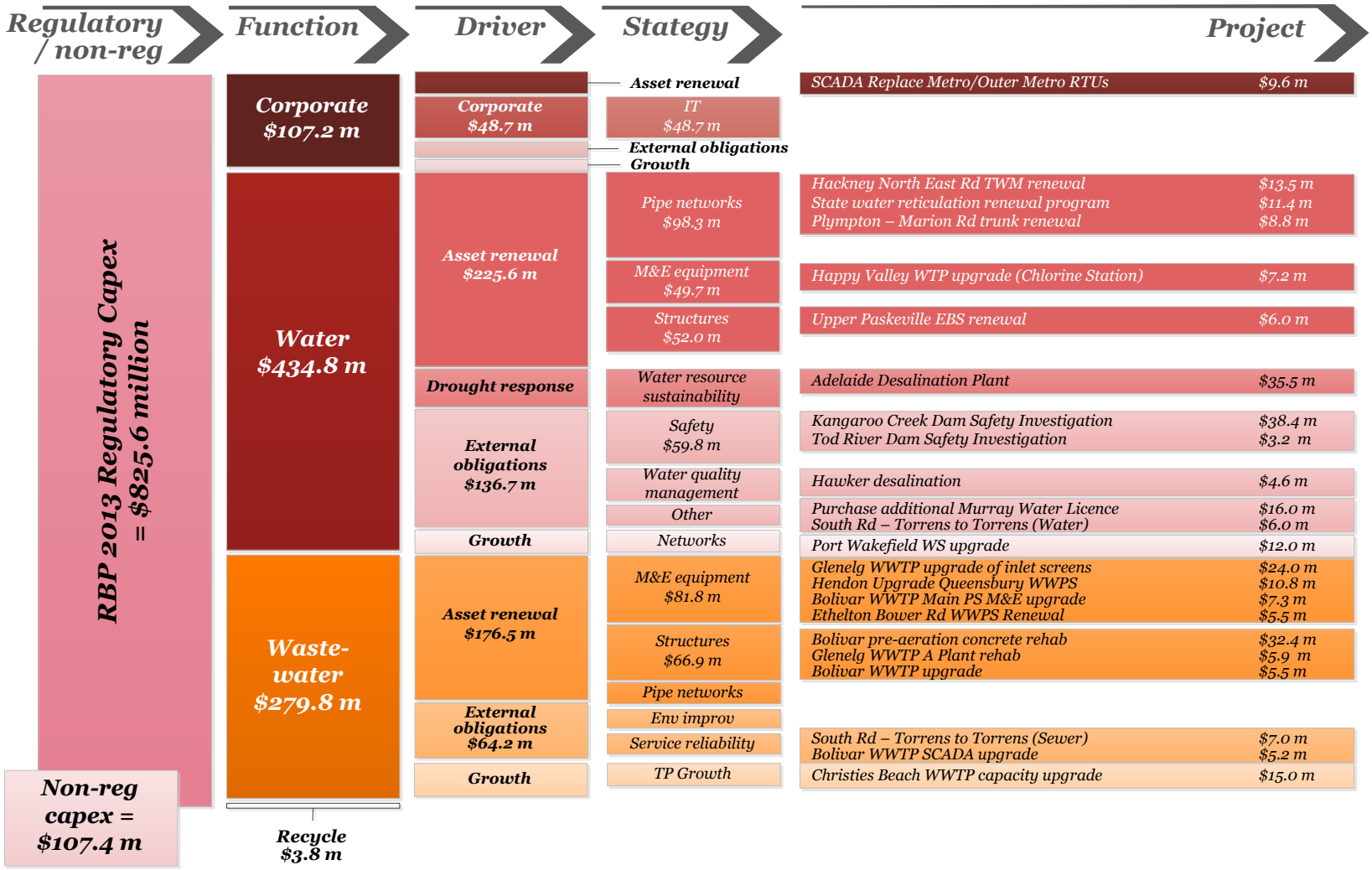
Figure 30: Mapped capital expenditure (initial forecasts)



Source: SA Water data

Current forecast of capital expenditure over 2013 – 2016 regulatory period

Figure 31: Mapped capital expenditure (current forecasts)



Source: SA Water data

www.pwc.com.au