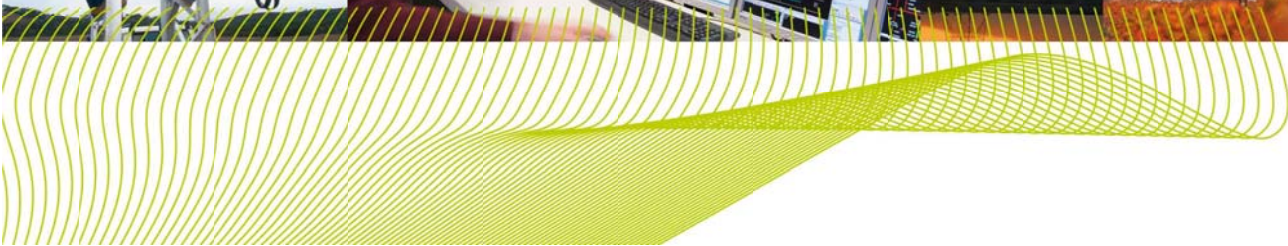




ElectraNet Transmission Network Revised Revenue Proposal

Appendix C KPMG, *Independent examination of
Labour Cost Escalation modelling
used by the AER in ElectraNet's
2012 draft decision, January 2013*





cutting through complexity

**Independent examination of
Labour Cost Escalation
modelling used by the AER in
ElectraNet's 2012 draft
decision.**

Final Report to ElectraNet
January 2013

GOVERNMENT ADVISORY SERVICES

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1. Introduction

In November 2012, the Australian Energy Regulator (AER) published its draft decision on ElectraNet Pty Limited's (ElectraNet's) transmission determination for the period 2013-14 to 2017-18¹ (the Draft Decision). In making its Draft Decision the AER has applied forecasts of labour cost escalators prepared by the AER's consultant, Deloitte Access Economics (DAE).

1.1 Purpose of this report

This report has the sole purpose of providing independent evidence that may assist ElectraNet, the AER and any relevant appellate body to assess the DAE forecast labour cost escalation methodology and data. This report has been written to comply with the Federal Court's Practice Note CM7 Expert Witnesses in Proceedings in the Federal Court of Australia.²

1.2 Background and Structure of this report

DAE as a consultant to the AER produced forecasts of wage cost escalation for the South Australia (SA) Utilities sector in its report entitled, "Forecast Growth in Labour Costs: Victoria and South Australia"³. (the DAE report)

The Australian Bureau of Statistics (ABS) has produced various wage cost measures including the Labour Price Index (LPI)⁴, Average Weekly Earnings (AWE), Average Weekly Ordinary Time Earnings (AWOTE), and Compensation of Employment (COE). Among these alternative measures, the DAE report and the AER's draft decision adopted LPI as the preferred measure of wage costs. Based on LPI, DAE produced two types of wage escalation forecasts – productivity adjusted and unadjusted LPI forecasts. ElectraNet submitted to the AER the wage cost forecasts prepared by BIS Shrapnel⁵ which were also based on the LPI, with no productivity adjustments. The AER in its Draft Decision⁶ adopted DAE's LPI forecasts unadjusted for productivity (see pp.60-63 in the AER's Draft Decision) in place of BIS Shrapnel's forecasts of LPI, proposed by ElectraNet.

The AER rejected BIS Shrapnel's forecasts for two reasons. First, BIS Shrapnel's forecasts would be overstated by including the impacts of the expansion of the Olympic Dam mine as the delay in the

¹ Australian Energy Regulator, Draft Decision, ElectraNet, Transmission Determination, 2013-14 to 2017-18, November 2012.

² Federal Court of Australia, Practice Note CM 7, Expert witnesses in proceedings in the Federal Court of Australia, 1 August 2011, <http://www.fedcourt.gov.au/law-and-practice/practice-documents/practice-notes/cm7>, accessed 14 December 2012.

³ Report prepared for the AER, 15 October 2012.

⁴ This is also referred to as Wage Price Index (WPI) in the DAE report.

⁵ BIS Shrapnel (2012), "Labour Cost Escalation Forecasts to 2017/18 – Australia and South Australia", Prepared by BIS Shrapnel for ElectraNet, Final Report, April 2012.

⁶ The Australian Energy Regulator (2012), "Draft Decision, ElectraNet, Transmission Determination, 2013-13 to 2017-18", November 2012.

expansion was announced after the release of BIS Shrapnel's forecasts.⁷ Second, BIS Shrapnel's forecasts were for the Electricity, Gas and Water (EGW) sector only and not for the entire utilities sector covering Electricity, Gas, Water and Waste Services (EGWWS).

As BIS Shrapnel's forecasts do not take into account the delay of the Olympic Dam mining expansion, its LPI forecasts might be overstated. However, BIS Shrapnel considers that DAE's forecasts in its previous reports to the AER consistently underestimate the utilities' LPI, particularly when they are compared to the all-industries' LPI⁸. According to the LPI published by the Australian Bureau of Statistics (ABS)⁹, historically, the utilities' LPI grows faster than the all-industries' LPI.

The AER considers BIS Shrapnel's LPI forecasts for the SA EGW sector to be subject to forecasting errors and prefers DAE's LPI forecasts for the SA EGWWS sector (see p59 in the AER's Draft Decision). The AER suggests that the process of estimating the LPI component of the Waste Service (WS) sector is not entirely reliable. The AER therefore considers that removing the WS components from the utilities' LPI would introduce a forecasting error¹⁰. However, the AER does not consider the potential bias generated by applying the entire EGWWS sector LPI to the wage cost forecasts of the electricity sector only, particularly when the former is influenced by market developments in the broader utilities sector rather than the narrower electricity sector. Market developments include for example, various desalination projects in Australia. Generally speaking, the LPI defined for a narrowly defined energy sector, if it were available, would be more relevant to assess wage escalation for the electricity sector.

Historical LPI series for SA utilities are not available from the ABS due to the small sample size. To generate forecasts, an historical series of SA utilities' LPI needs to be estimated. DAE estimated an historical SA utilities' LPI from various sources of information. A key piece of information used by DAE was the ratio of SA utilities' AWOTE to SA all-industries' AWOTE. This ratio was then applied to the SA all-industries' LPI available from the ABS, to estimate the historical SA utilities LPI¹¹. The application of AWOTE movements to estimate the historical SA utilities' LPI is subject to potential errors. This is because AWOTE is considered to be inappropriate due to its high volatility, even by DAE itself¹². If the estimate of the historical SA utilities' LPI series generated from AWOTE is subject to volatility, then the forecasts of SA utilities LPI are also subject to potential estimation errors from the misspecification of the underlying forecasting equation.

LPI is measured on the basis of specific jobs in industry. Therefore, LPI differentials between industries could be generated from a different mix of occupations between industries. The market wage rates of a specific occupation in different industries or regions, would be similar if any wage premiums due to region-specific (e.g. remoteness) and/or industry-specific (e.g. exposure to health

⁷ BIS Shrapnel's report for ElectraNet was released in April 2012 while BHP announced the deferral of the Olympic Dam mine expansion in August 2012.

⁸ See pp59-64 in BIS Shrapnel's report for ElectraNet.

⁹ ABS, "Wage Price Index, Australia", Catalogue Number 6345.0, September 2012.

¹⁰ See p59 in AER's Draft Decision.

¹¹ See p111 in DAE's report (October 2012) for the AER.

¹² See pp2-4 in DAE (July 2012), "Responses to BIS Shrapnel's Reports" prepared for the AER, 30 July 2012.

risk) amenity considerations are excluded. Therefore, it is worthwhile to consider the use of an occupation based LPI for relevant occupations in the electricity industry in a way to minimise the influence of non-electricity industries in assessing wage escalation of the electricity industry.

This report provides a more detailed analysis of the above issues. Section 2 provides an assessment of DAE's analysis that the utilities' LPI cannot continue to grow faster than the all-industries LPI. Section 3 examines the potential issues concerning DAE's approach to estimating the historical SA utilities' LPI series. Section 4 discusses potential bias generated from applying the whole utilities' LPI to the electricity sector. Section 5 discusses the potential bias generated from the lack of an occupation based LPI in assessing the industry specific LPI measurements.

1.3 Compliance with Federal Court's Practice Note CM7

1.3.1 The expert

The author of this report is:

Dr. Ashley Winston

KPMG

20 Brindabella Circuit

Canberra ACT 2609

1.3.2 Expert's acknowledgement

Dr Winston has read, understood and prepared this report in compliance with the Federal Court's Practice Note CM7 Expert Witnesses in proceedings of the Federal Court of Australia (1 August 2011).

1.3.3 Training and experience

Dr. Winston's qualifications and relevant experience are set out in Appendix B.

1.3.4 The questions the expert was asked to address

Terms of reference dated 5 December 2012 (see Appendix C) required the Expert to provide in this report:

"A critical assessment of the methodology applied in deriving [and] preparing the labour cost escalation assumptions adopted for the purposes of the Draft Decision to be published by the AER by 30 November 2012".

1.3.5 Source materials referenced by this report

These are listed in Appendix A.

1.3.6 Factual findings and assumptions

Assessments of DAE's labour cost escalation report to AER provided in this report are based on factual findings and assumptions set out as follows:

- Section 2 sets out findings from the historical LPI and output growth patterns of the utilities sector published by the ABS;
- Section 3 sets out findings from the historical AWOTE growth patterns of the utilities sector and the whole industry published by the ABS;
- Section 4 sets out assumptions for the relevant scope of LPI for the South Australian electricity sector, and findings of the wage cost shares of output between industries in the utility sector, published by the ABS input-output tables, 2008-09 ;
- Section 5 sets out assumptions for occupation based LPI measures.

1.3.7 Expert's opinion and reasoning

The Expert's opinions are presented below. These opinions are wholly or substantially based upon the Expert's specialised knowledge and the reasons provided in sections 2 to 5.

The expert's assessment of the methodology:

DAE's utilities' LPI growth forecasts at the national level are lower than the all-industry LPI forecasts as reported in Table 9.1 of the DAE report (p64). The same pattern is repeated at the South Australian level except for 2013-14, as reported in Table 10-2 of the DAE report (p80). To explain these patterns, DAE indicates (pp49-50) that the low estimate of the utilities' LPI relative to the all-industry LPI, can be explained on the grounds that an industry LPI cannot continue to grow faster than the all-industry or national average LPI. This position is well discussed in DAE's responses (July 2012, pp14-16) to BIS Shrapnel's reports. However, there is no statistical evidence that wage growth across industries is converging to the national average, since the publication of the LPI in September 1997.

The difference between the rates of growth of the utilities' LPI and the national LPI reduced in the last financial year. Based on this observation (pp47-48), DAE forecasts this recent slowing of growth of the utilities' LPI to continue over the coming decade. Such a conclusion is considered to be too pessimistic as it indicates that permanent structural change has occurred in the utilities sector. DAE explains that a low LPI growth forecast over the coming decade would reflect DAE's own forecasts of lower output growth in the utilities' sector and its competing sectors (pp49-50). However, even if DAE's projections of weak growth in the utilities and its competing sectors can be accepted, historically, utilities' LPI growth is only weakly related to growth in utilities output.

A South Australian utilities' LPI series is not available from the ABS, so it is necessary to estimate the historical series to provide forecasts based on the historical relationships between LPI and its underlying drivers. DAE's estimation of a SA utilities' historical LPI series relies on the published AWOTE series, although other information is also used (p111 of the DAE report). However, having regard to that volatility of AWOTE series, DAE in its responses to BIS Shrapnel in July 2012, rejected the use of AWOTE as the preferred measure of wage cost movements. Furthermore the AWOTE series has not been available since the end of 2011. Accordingly, DAE's method has introduced potential measurement errors to the LPI estimates due to the intrinsic volatility of AWOTE. This provides potential estimation errors in DAE's SA utilities' LPI forecasts.

The utilities sector comprises four sub-sectors - electricity, gas, water and waste services. If the utilities' LPI movements are heavily influenced by large scale projects in non-electricity sub-sectors (for example, the development of a large scale desalination plant), it may not accurately forecast electricity sector wage cost growth. From this point of view, LPI forecasts for a sub-set of the utilities sector would be more accurate than those for the whole utilities sector. From this perspective, BIS Shrapnel's EGW LPI forecasts would provide more accurate forecasts than DAE's EGWWS LPI forecasts.

The AER expressed in its Draft Decision, its concern with the for potential forecasting errors in BIS Shrapnel's EGW LPI arising from removing the Waste Services (WS) components from EGWWS LPI (see p59 in AER's Draft Decision). However, if the compositional mix of sub-sectors within the entire utilities sector is stable, the derivation of the EGW components from the entire utilities' LPI may be developed in a robust way, for example using the Census data published by ABS. If a robust approach to disaggregating the utilities' LPI into its sub-sector components is available, the LPI forecasts for the more narrowly defined utilities sub-sector would increase accuracy in forecasting wage cost growth in the electricity industries. From this point of view, the accuracy of DAE's SA utilities LPI forecasts could be improved.

There are many factors that influence wage cost movements at the industry level. The observed persistence in industry LPI differentials, as demonstrated by the fact that historically the utilities' LPI has grown faster than the all-industries' LPI, can be driven (for example) by differences in the mix of occupations used to calculate the different LPIs. Furthermore, the competition pressures on wage costs across industries can be more accurately captured when an occupation based LPI is applied in the industry wage cost analysis. However, the ABS terminated its publication of the occupation based LPI in 2008. Therefore, currently it is not possible to develop the industry LPI forecasts using the occupation based LPI. However, by analysing the current sample of occupations selected for the utilities' LPI estimation by the ABS, the potential implications of differences in occupation mix on the utilities LPI could be analysed. Such an analysis of the occupational mix in the ABS's LPI sample for the utilities sector could improve the robustness and accuracy of DAE's utilities LPI forecasts.

In summary, it is reasonable to conclude that DAE's SA utilities LPI growth forecasts are subject to:

- underestimation, because DAE's assumption that utilities' LPI growth is converging to the national LPI growth is not supported; and
- risks of forecasting error and a lack accuracy, because:
 - of weak support for DAE's approach of linking utilities' LPI growth to utilities' output growth;
 - DAE has not adjusted the LPI to reduce the effect on it of industries less relevant to the LPI for the electricity industry and ElectraNet;
 - DAE does not appear to have taken into account the potential effect of differences in the mix of occupations in its LPI and those applicable to the electricity industry and ElectraNet.

1.3.8 Closing

The statement required by paragraph 2.3 of the Federal Court's Practice Note CM7 is set out in section 7 of the report.

2. Utilities' LPI Growth Patterns

DAE's utilities' LPI growth forecasts are lower than the all-industry LPI growth forecasts. DAE indicates that the lower estimate of the utilities LPI relative to the all-industry LPI can be explained on the grounds that an industry LPI cannot continue to grow faster than the all-industry or national average LPI in perpetuity. This section discusses whether this explanation by DAE is supported by historical LPI movements, considering the intrinsic labour market adjustment processes.

2.1 DAE's Utilities LPI Forecasts

DAE forecasts utilities' LPI growth over the coming decade as being an average of 0.13 percentage points below the national average LPI growth (Table 9.1 in p64 of the DAE report). DAE's report to the AER (October 2012) and response to BIS Shrapnel reports (July 2012)¹³, explained that one of the key reasons for the DAE forecast being below the national average is that utilities' wage growth cannot maintain an historical higher growth than to the national wage growth in the medium and long terms and that the utilities' wage growth will be eventually similar to or lower than, the national average growth.

The rationale for this conclusion is based on the smaller differences between the utilities' and national LPI growth observed from mid 2009 on a quarterly basis (see 3rd paragraph in p49 of the DAE report). DAE interprets these smaller differences between the utilities sector LPI growth and the national average LPI growth as reflecting:

- a degree of unwinding of the utilities sector's previous higher wage gains; and
- the electricity sector's recent sharp contraction in output.

(See 5th and 6th paragraph in p49 of the DAE report)

Similar arguments can be found in DAE's earlier reports. For example, according to a report prepared by DAE, "Responses to BIS Shrapnel reports" (30 July 2012, 1st paragraph in p15):

"... DAE does not expect wage growth in any industry to grow faster than the all industries average in perpetuity."

As DAE acknowledged in the report quoted above, DAE's utilities' LPI growth forecasts have been below the average national LPI forecasts by more than 5 per cent on average¹⁴.

Therefore, whether the historical patterns of the utilities' LPI's growing faster than the industry average LPI can continue over the forecast period, is a critical to determining whether DAE's forecasts of the utilities LPI are underestimated.

2.2 Potential Sources of Persistence in Wage Differentials

DAE indicates that the past 15 years' above-average growth of utilities' LPI will unwind in the future as its above-average growth cannot continue. This implies that in the future utilities' LPI growth

¹³ See pp14-16.

¹⁴ See Chart 3-3, p16 in DAE's responses to BIS Shrapnel's reports (July 2012).

will fall below the national average. However, DAE's argument is implicitly based on a type of convergence theorem which could work in the areas in which the market adjustment mechanism operates very efficiently. According to a convergence theorem, any deviations from the national average are transitory and tend to move towards that average in the long term. However, if markets have impediments to free movement that removes regional/industrial differences from the national average they can be persistent.

Even if the convergence mechanism operates, in practice, it tends to work very slowly. For example, in Australia, labour mobility across states is not high enough to remove any labour market imbalances across regions efficiently¹⁵. This implies that wage adjustment towards any equalisation of wage rates across states would take place over the very long term.

Similarly, an industrial wage differential can be persistent. This is due to various factors such as:

- inherent location specific premiums in terms of both wage levels and growth;
- inherent occupation specific premiums in terms of both wage levels and growth; and
- inherent human-capital-specific premiums in terms of both wage levels and growth.

In summary, the labour market is characterised by segmented markets, implying that wage differentials across occupations/industries can be persistent depending on education/skill requirements and inherent productivity growth potentials. If the occupation mix of an industry is considerably different from the occupation mix of other industries, wage differentials between industries can be persistent.

If a convergence mechanism operates in the labour market as DAE indicates in its current and previous reports to AER, it is hard to justify why unwinding movements have not occurred over the past 15 or 20 years. Rather, the persistent above-average LPI growth pattern in the past 15 years might reflect the existence of utilities' sector specific characteristics compared to the national labour market. It could include a greater than average concentration of productivity enhancing, technically oriented jobs in the utilities sector.

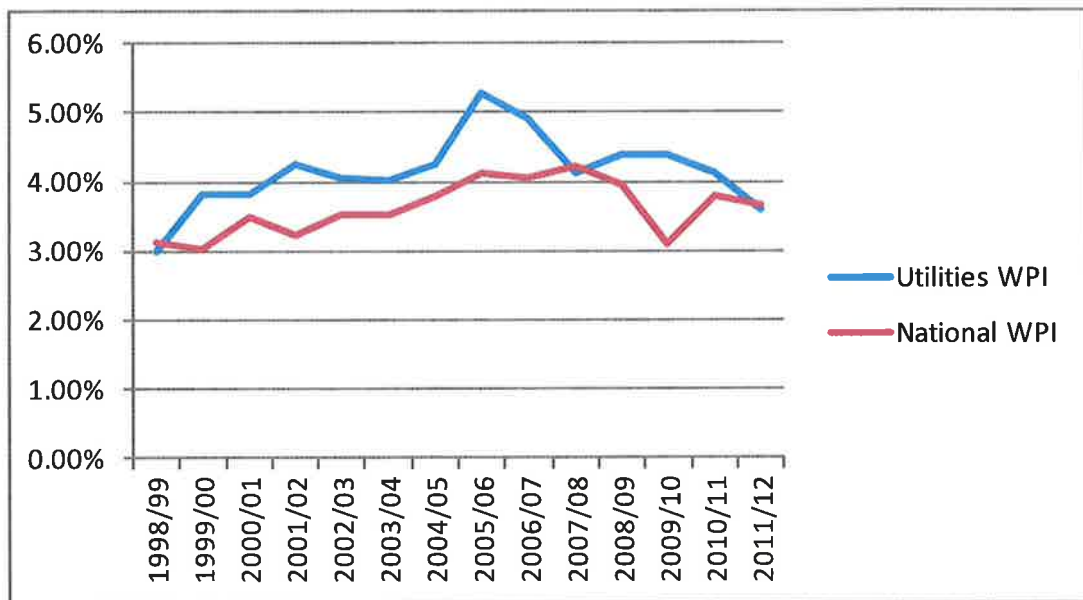
Even if a convergence mechanism exists in the national labour market, the speed of adjustment would be very slow. However, the DAE's utilities' LPI forecasts indicate that convergence takes place within a couple of years and a new relative low growth rate will be attained, then maintained over the entire remaining forecasting period. However, the fact that a growth differential has persisted for 15 years is itself evidence that convergence is not fast. Furthermore, the plausibility of a rapid adjustment in the labour market appears to be low as the mobility in the labour market is generally slower than in goods markets. Therefore, DAE's position that utilities' LPI growth, which has been higher than the national average over the past 20 years, will fall below the "all industries" average in the coming years, lacks empirical supporting evidence, particularly evidence for the speed of adjustment and the timing of convergence, implied by DAE's position.

¹⁵ A supporting study can be found in the Industry Commission (1993), "Impediments to Regional Industry Adjustment", an inquiry report, December 1993.

2.3 Brief Historical Observations

As Figure 1 shows, historically, the utility sector LPI has generally maintained higher annual growth on average by 0.53 percentage point than its national average since LPI data has been published for the December quarter 1997. Exceptions occur in the financial years of 1998/99, 2007/08 and 2011/12, but with very narrow margins.

Figure 1. Historical annual growth of utilities' and national LPI



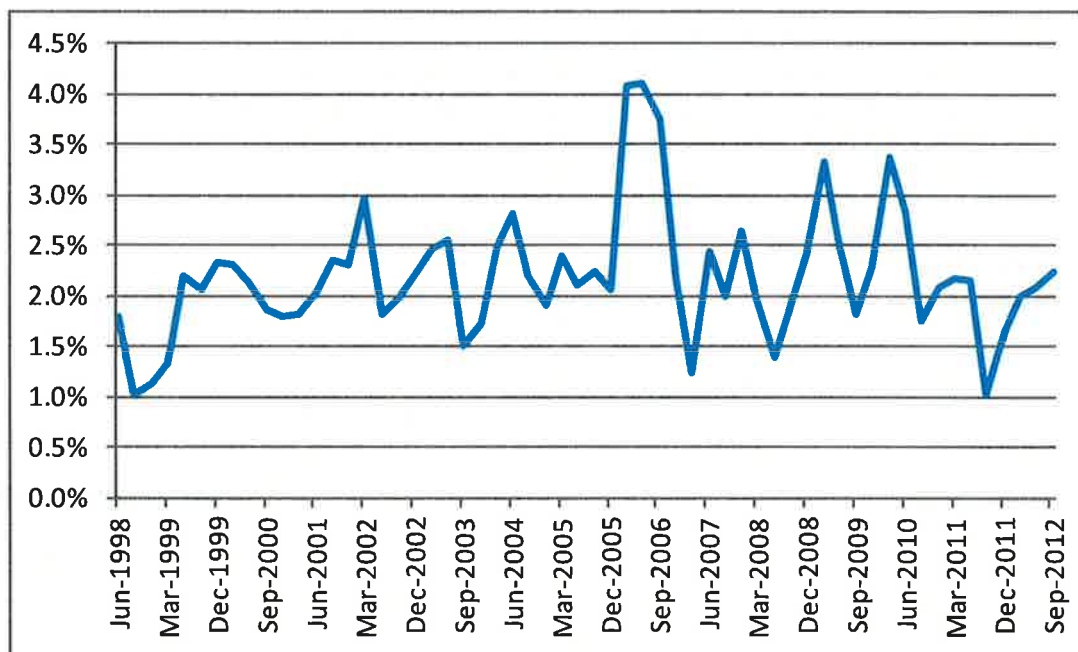
Source: ABS 6345.0 Wage Price Index, Australia Sep 2012 (Table 5a Total Hourly Rates of Pay Excluding Bonuses: Sector by Industry, Original)

Figure 2 shows the differences between the utilities' LPI annual growth and the national LPI annual growth in terms of quarterly data points. The utilities' LPI growth is higher than the national LPI growth by 2.2 percentage points on average from June 1998.

DAE's forecasts of such differences being entirely removed over the coming decade are partly based on the most recent or the last, historical observation. However, the average differences between the growth rates have not changed for the past three or four years. Using the annual growth series, the average difference over the past four years reduces marginally from 0.53 percentage points to 0.5 percentage points. Using the quarterly annual growth series, this average gap reduced marginally from mid 2009 to 2.1 percentage points.

Therefore, it is hard to determine any indications from historical data to support the forecast of dramatic reductions in the utilities LPI growth in the coming years.

Figure 2. Quarterly annual growth differences – Utilities' less national LPI growth (percentage point)



Source: ABS 6345.0 Wage Price Index, Australia Sep 2012 (Table 5b Total Hourly Rates of Pay Excluding Bonuses: Sector by Industry, Original, Quarterly Index Numbers)

2.4 Roles of utilities' output forecasts

Using the trend output growth of the utilities sector from 1976 (Chart 8.3 in p 49 in the DAE report), DAE indicates that the output growth of the utilities sector would decline in the forecast period. Based on the trend forecast decline in the utilities sector growth, DAE projects that there would be a structural change in terms of the utilities LPI (as shown in Chart 8.2 in p 48) around 2011-12. However, the average growth of the utility sector since 1996 is quite stable, and there is no indication that the downward trend observed over the period from 1976 to 1996 will continue.

In the DAE report, the same logic appears to be applied to the construction LPI growth. Historically, the construction LPI has grown faster than the national average by about 0.4 percentage points, slightly lower than the utilities' LPI growth margin relative to the national average of about 0.5 percentage points. The forecast growth of the construction LPI is on average lower than the national average by about 0.1 percentage points, though the first few years' forecast is higher than the national average¹⁶.

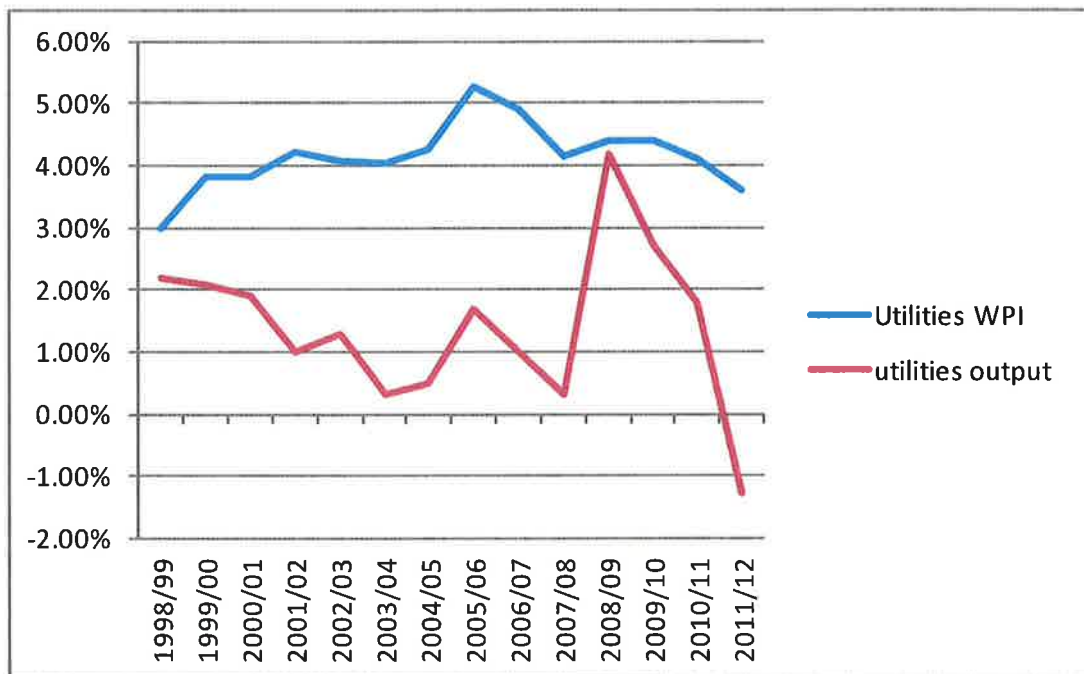
DAE argues that for the next 18 months, good growth in the construction sector is expected, and therefore the construction sector LPI will continue to grow faster than the national LPI. However,

¹⁶ See ABS : ABS 6345.0 Wage Price Index, Australia Sep 2012 and ABS 5220.0 Australian National Accounts: State Accounts

in the longer term, though the outlook of the engineering construction sectors would peak, the overall construction LPI as a whole will grow below the national LPI as well.

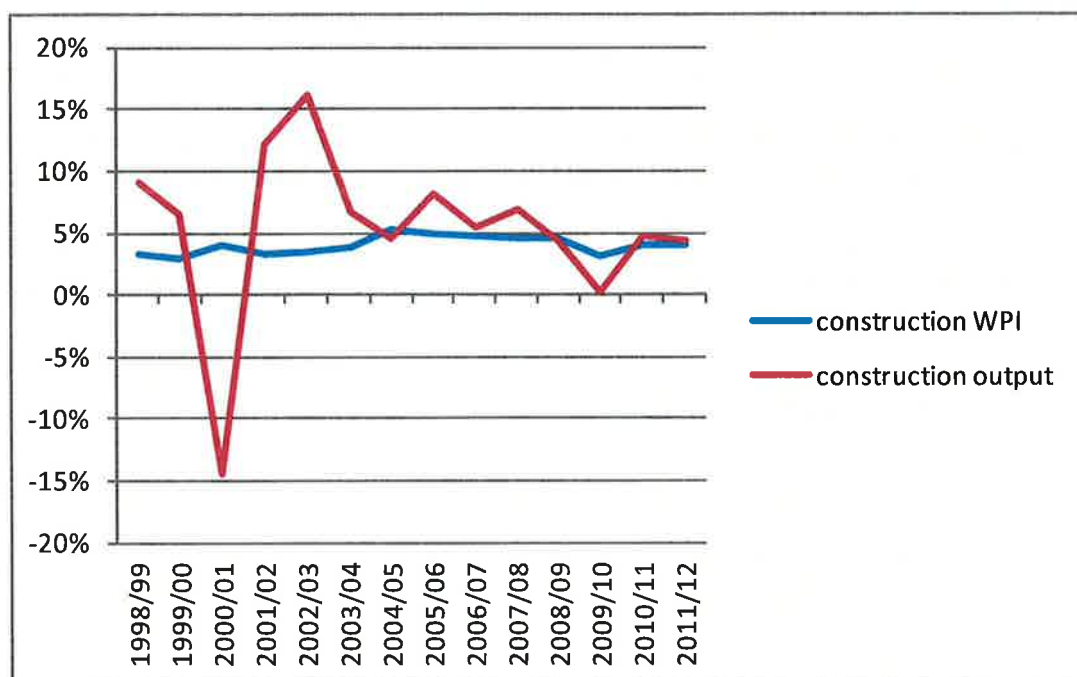
Overall, DAE's LPI growth forecasts appear to be heavily influenced by demand or output growth outlooks. As indicated in Chart 4.3 in the DAE's report (p.20), the utilities sector has generally grown more slowly than the national GDP growth in the past, but the utilities LPI growth has grown faster than the national average LPI. Historically, as the following two charts show, LPI growth does not appear to be highly correlated to output growth, particularly for the case of the construction sector. Nevertheless, there is a low degree of correlation (with the correlation coefficient of 0.12) in the utilities sector LPI and output growth. The correlation in the construction sector is negative, implying that there would be some interactions between demand and supply of labour, with external factors sometimes driving one or the other.

Figure 3: Utilities sector LPI and output growth



Source: ABS 6345.0 Wage Price Index, Australia September 2012 and ABS 5220.0 Australian National Accounts: State Accounts, 2011-12, November 2012

Figure 4. Construction Sector LPI and Output Growth



Source: ABS 6345.0 Wage Price Index, Australia September 2012 and ABS 5220.0 Australian National Accounts: State Accounts, 2011-12, November 2012

In summary, the comparative high growth rate in the utilities’ LPI may reduce in the future when a decline in the utilities sector as a share of the national economy is expected as DAE forecasts (see Chart 4.2 in p19). However, considering the historical patterns of the utilities LPI and output growth in comparisons to the national average LPI and output growth (see Chart 4.3, p20 in DAE’s report and Figure 1, p9 in the report), to maintain much lower than average growth in the utilities LPI over the coming decade, the degree of the decline of the utilities sector as a share of the national economy would have to be significant. The relationship between the output and LPI growth of the utilities sector requires more scrutiny to substantiate the current DAE position.

2.5 Summary of findings

DAE’s utilities LPI growth forecasts at the national level are lower than the all-industry LPI forecasts (Table 9.1 in p64). The same pattern is repeated for the South Australian case except for 2013-14 (Table 10-2 in p 80). DAE indicates (pp49-50) that the low estimate of the utilities LPI relative to the all-industry LPI can be explained on the grounds that an industry LPI cannot continue to grow faster than the all-industry or national average LPI. This position is well discussed in DAE’s responses to BIS Shrapnel’s reports (July 2012, pp14-16). However, there is no evidence that wage growth across industries has converged to the national average since the publication of LPI in September 1997. The relative growth of the utilities’ LPI as compared to the national LPI became weak in the last financial year, and based on this observation (pp47-48), DAE forecasts this recent

slow growth to continue over the coming decade. Such forecast changes in the utilities LPI are considered to be too pessimistic as they indicate that permanent structural change has occurred in the utilities sector. DAE explains such low LPI growth forecast over the coming decade would reflect DAE's own forecast of lower output growth for the utilities sector and its competing sectors (pp49-50). Even if DAE's projected weak growth in utilities and its competing sectors is accepted, historically, the utilities LPI growth is only weakly related to the utilities output growth. On these bases it is reasonable to conclude that DAE's SA utilities LPI growth forecasts are subject to:

- underestimation, because DAE's assumption that utilities' LPI growth is converging to the national LPI growth is not supported; and
- risks of forecasting error and a lack accuracy, because of weak support for DAE's approach of linking utilities' LPI growth to utilities' output growth.

3. Historical Utilities' LPI Estimates

A utilities LPI series for South Australia is not available from the ABS, so it is necessary to estimate historical series to provide forecasts based on historical relationships with underlying drivers.

3.1 Data Availability of LPI by Industry and State

The availability of LPI data from ABS is illustrated in Table 1.

Table 1: Availability of historical LPI data

	NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Australia
Mining			✓		✓				✓
Manufacturing	✓	✓	✓	✓	✓	✓			✓
Electricity, gas, water and waste services	✓	✓							✓
Construction	✓	✓	✓		✓				✓
Wholesale trade	✓	✓	✓						✓
Retail trade	✓	✓	✓	✓	✓				✓
Accommodation and food services	✓	✓	✓		✓				✓
Transport, postal and warehousing	✓	✓	✓						✓
Information media and telecommunications	✓	✓							✓
Financial and insurance services	✓	✓	✓						✓
Rental, hiring and real estate services									✓
Professional, scientific and technical services	✓	✓	✓		✓				✓
Administrative and support services	✓	✓	✓	✓	✓				✓
Public administration and safety	✓	✓	✓	✓	✓	✓		✓	✓
Education and training	✓	✓	✓	✓	✓			✓	✓
Health care and social assistance	✓	✓	✓	✓	✓	✓			✓
Arts and recreation services			✓						✓
Other services									✓
All industries	✓	✓	✓	✓	✓	✓	✓	✓	✓

✓ indicates that data are available in the September quarter 2012

□ indicates the specific series required for this forecasting job

Sources: KPMG illustration based on ABS data

The row and column totals for industries and states are the publicly available data which is ABS Cat. No. 6345, Table 2 for states and Table 5 for industries. Other data are available by special request from the ABS.

As the historical SA utilities' LPI is not available from the ABS publications, it is necessary to estimate them to provide its forecast series.

3.2 DAE's approaches

According to DAE's report to AER in August 2012¹⁷, to construct the SA utilities' LPI, DAE assumed that the relativity of SA utilities' AWOTE to SA average AWOTE is the same as the relativity of SA utilities' LPI to the SA average LPI.

While it is understandable that DAE needs some benchmarking indicators to recover the missing observations for SA utilities' LPI, using the AWOTE measures as a key benchmark for the estimation of the missing LPI series would make the derived LPI subject to the same criticism as the AWOTE.

DAE argues that the LPI is a preferred measure to capture the underlying wage cost pressures compared to AWE/AWOTE in terms of the sample selection procedure, coverage and, most importantly, in terms of the data volatility. Unless the volatility of SA average AWOTE and SA utilities' AWOTE is synchronised, the ratios of the two volatile series would not give a stable anchor to the SA average LPI to enable estimation of the SA utilities LPI.

Furthermore, any underlying drivers of the fluctuations in the SA utilities' AWOTE would not be the same as those for the SA average AWOTE. Therefore, the AWOTE ratios of SA utilities to SA as a whole would not give reliable indicators for the corresponding LPI ratios. The volatility of the utilities' AWOTE ratios at the national level is well noted in Chart 8.4 in the DAE's own report (p 50).

In addition, the ABS changed the frequency of the AWOTE publication from quarterly to biannually in 2012. This implies that, even if the AWOTE based ratio approach is acceptable, there would be another issue in missing observations in calculating the AWOTE ratios on a quarterly basis.

If the historical estimates of SA utilities' LPI are less than satisfactory, the accuracy of its forecast series would be affected.

There are potentially many alternate ways to recover the estimates of SA utilities' LPI. Derivation of the missing LPI components using other available LPI series would be much more reliable than benchmarking to other wage measures defined in totally different ways.

For example, KPMG (2013) provides SA utilities' LPI forecasts in a separate report¹⁸ to ElectraNet. In this report, KPMG adopts a more robust approach to estimating the historical SA utilities' LPI.

The approach undertaken by KPMG (2013) entirely utilises the published LPI measures. To estimate the missing LPI for utilities (EGWWS) in QLD, SA, WA, TAS, NT and ACT, KPMG(2013) establishes systematic relationships between underlying LPI components of each state/territory and the published national level utility LPI. This approach does not rely on any movements of historically available AWOTE which is defined differently in the sampling purposes and is also intrinsically volatile. Similar to DAE's estimates of South Australia's utilities' LPI, the resulting utilities' LPI derived from the KPMG approach is also subject to statistical errors. However, the potential statistical errors in the KPMG approach are considered to be smaller than those in DAE's estimates. The errors are smaller because the KPMG approach is based on internally consistent

¹⁷ Appendix E (p111) in Forecast growth in labour costs: Queensland and Tasmania by DAE, report prepared for the AER, 15 August 2011.

¹⁸ KPMG (2013), "Labour Cost Escalators" a report to ElectraNet, January 2013.

relationships within the published LPI series, rather than using other indicators of the wage movements. For example, DAE uses AWOTE to estimate the LPI which are not published by ABS. As the DAE report to AER itself discussed¹⁹, the volatility of AWOTE is one of the main reasons why the ABS chose to develop a new measure of LPI.

3.3 Summary of findings

A South Australian utilities LPI series is not available from the ABS, so it is necessary to estimate historical series to provide forecasts based on the historical relationships with its underlying drivers. DAE's estimation of the SA utilities' LPI series for the historical period relies on the published AWOTE series and other information; however, considering the AWOTE series are volatile, DAE rejected the use of AWOTE as the preferred measure of wage cost movements as discussed in its responses to BIS Shrapnel in July 2012. Furthermore the AWOTE series is not available since the end of 2011. The DAE method would introduce potential measurement errors to the LPI estimates due to the intrinsic volatility of AWOTE which might lead to estimation errors in DAE's SA utilities LPI forecasts. From this point of view, the robustness of DAE's SA utilities LPI forecasts might be affected.

¹⁹ Appendix D (p109) in "Forecast growth in labour costs: Victorian and South Australia" by DAE, report prepared for the AER, 15 October 2012.

4. Utilities' Sub-Sector LPI

The utilities sector comprises four sub-sectors - electricity, gas, water and waste services. If the utilities' LPI's movements are heavily influenced by large scale projects in non-electricity sub-sectors (for example, the development of a large scale desalination plant), its application to the electricity sector may limit accuracy in forecasting electricity sector wage-cost growth.

4.1 DAE's analysis of non-electricity sector influence

The SA utilities' LPI growth forecasts are on average about 0.15 percentage points lower than the SA average over the coming decade (Table 10-2 in p 80 of the DAE report). For 2011-12, DAE estimates SA utilities' LPI growth is 3.0%, which is 0.4 percentage points lower than the SA average LPI growth of 3.4%²⁰. This large negative difference for SA utilities' LPI growth in 2011-12 is compared with the observed 0.06 percentage point negative difference at the national level and 0.5 percentage point positive difference for the Victorian case.

DAE indicates that such a large difference in the utilities' LPI growth rates between SA and Victoria is consistent with its forecast of SA and Victoria utilities' outputs. DAE expresses its output forecasts of SA and Victoria utilities in terms of their shares of the national utilities' output, as reported in Chart 10.2, p67 in the DAE report. This chart shows an increased trend in Victorian utilities' share of output and a decreasing trend in SA utilities' share of output over the forecast period. DAE indicates that the increasing Victorian share of output is to do with large investment projects such as desalination projects. This implies that the utilities' LPI growth in Victoria is mainly driven by non-electricity sector activities. Therefore in this case, the relevance of the utilities' LPI to the assessment of the wage cost pressures for the electricity sector will diminish to the extent that the main drivers of changes in the utilities' LPI growth originate from non-electricity utilities sub-sectors. It would be necessary to eliminate the non-electricity utilities sub-sectoral influences from the utilities' LPI measures as much as possible to establish a more relevant utilities sector LPI for the assessment required for the AER's forecasts of ElectraNet's labour costs in the final decision.

Therefore, to assess wage cost escalation of the electricity industry, it would be ideal to use the forecast electricity industry LPI rather than the entire utility sector LPI, to remove the potential influence of non-electricity sector developments. The most recently published ABS input-output tables, 2008-09 (ABS 5209.0.55.001)²¹, indicate that the WS industry is highly labour-intensive compared to the EGW industries and may therefore introduce a bias which is not consistent with the electricity sub-sector.

The following table shows the wage cost shares of output for the four sub-sectors of utilities.

²⁰ Note that these figures for 2011-12 in Table 10-2 are not consistent with the figures in Chart 10.13 (p 82). The way to construct the South Australia utilities LPI for 2011-12 might need to be explained to ensure the accuracy of its historical estimate and forecasts.

²¹ ABS (2012), "Australian National Accounts: Input-Output Tables 2008-09" ABS Catalogue Number: 5209.0.55.001, September 2012

Table 2. Wage Cost Shares of Output for Electricity, Gas, Water and Waste Services Industries

	electricity	gas	water	waste
compensation of employees (\$m)	5,259	185	2,492	1,800
output (\$m)	39,503	2,386	14,298	3,345
wage cost share of output	13.3%	7.8%	17.4%	53.8%

Source: Table 2 (use table) from the ABS (5209.0.55.001) Input Output Tables 2008-09, published in September 2012.

Notes:

- Electricity industry includes ABS Input Output(IO) Industry 2601 (electricity generation) and 2605(electricity transmission, distribution, on selling and electricity market operation),
- Gas industry is ABS IO industry 2701 (gas supply),
- Water industry is ABS IO industry 2801 (water supply, sewerage, and drainage services),
- Waste Services industry is ABS IO industry 2901(waste collection, treatment, and disposal services).

In the Powerlink final decision (April 2012)²², the AER agreed that EGW would be preferable to EGWWS (p 60). However, the AER expressed a concern in deriving an EGW LPI due to the unavailability of EGW LPI series from ABS since late 2009. Furthermore, when separating out the electricity industry or WS industry from the utility sector, there may be issues with the sample becoming too small and therefore being affected by outliers. However, if the industry composition of the utility sector is stable, such small sampling issues may be satisfactorily addressed. For example, at least EGW sector LPI can be derived from EGWWS LPI by applying a systematic approach to isolating WS components.

Therefore, an EGW LPI is preferable to an EGWWS LPI because the entire EGWWS LPI tends to provide a bias when assessing wage escalation for the electricity sector. The removal of the bias is expected to outweigh the potential statistical errors introduced if the WS components are separated out in a systematic and statistically robust way.

4.2 Summary of findings

When the utilities' LPI movements are heavily influenced by large scale projects in non-electricity sub-sectors (for example, the development of a large scale desalination plant), its application to the electricity sector may limit accuracy in forecasting electricity sector wage cost growth. From this point of view, the LPI forecasts for a sub-set of the utilities sector would provide more accurate forecasts than those for the whole utilities sector. In light of this, BIS Shrapnel's EGW LPI forecasts

²² AER(2012), "Final Decision, Powerlink, Transmission Determination, 2012-13 to 2016-17", April 2012.

would provide a more accurate picture than DAE's EGWWS LPI forecasts. The AER expressed in its Draft Decision its concern about the potential forecasting errors in BIS Shrapnel's EGW LPI because of a lack of information about the separation of the EGW components from the EGWWS LPI. However, if the compositional mix of sub-sectors within the entire utilities sector is stable over time, the derivation of the EGW components from the entire utilities' LPI may be developed in a robust way, for example by using the Census data published by ABS. A robust approach to disaggregating the utilities LPI into its sub-sector components to provide LPI forecasts for a more narrowly defined utilities sub-sector, would increase the forecasting accuracy of wage cost growth in the electricity industry. From this point of view, the robustness of DAE's SA utilities' LPI forecasts could be improved.

5. Potential Sources of Industrial Wage Differentials

There are many factors that influence wage cost movements at the industry level. The observed persistence in industry LPI differentials — as demonstrated by the fact that the historical utilities LPI has grown faster than the all-industries LPI — can be driven by different a varied compositional mix in occupations across industries. Furthermore, competition pressures on wage costs across industries can be more accurately captured when an occupation based LPI is applied in the industry wage cost analysis.

5.1 Roles of Occupation Composition

A LPI is designed to capture pure wage inflation. For example, wage inflation, excluding any influences of overtime and labour quality adjustments such as experience. The potential sources of sectoral/regional wage differentials include:

- Differentials in demand pressures on industry outputs/labour demand between regions and between industries;
- Differentials in enterprise bargaining power between industries;
- Differentials in industry composition between regions; and
- Differentials in occupational composition between industries.

While the DAE report takes into account the first three components in its analysis, the fourth component is not properly discussed. The lack of attention to the occupation based LPI is not unique to the DAE analysis - the absence of the occupation-based LPI analysis is partly due to the termination of ABS publication of the occupation based LPI index in 2008.

However, given the recent rapid changes in the utilities sector to accommodate renewable energy activities and the carbon pricing mechanism, occupational changes in the utilities sector may well be substantial. Without considering this factor, the assessment of the utilities' LPI might not capture some fundamentals influences on the underlying wage pressures faced by the entire utilities sector.

Assessment of the importance of the occupation based LPI requires discussion of the sample selection procedure for LPI measures.

The sample selection procedure of the LPI is quite different to that for AWE/AWOTE. For the latter, the target sample changes each quarter, so the differences in AWE/AWOTE contain sampling differences. However, the LPI sampling procedure follows specific "jobs" for specific businesses over an extended period. Therefore, the LPI measures avoid the issues raised from the sampling rotation each quarter.

In the LPI sampling, particular jobs can be specified in terms of occupation. The LPI sampling is designed to represent the occupation composition of a business, and therefore the industry LPI measures are based on the fixed composition of occupations in a specific industry.

Labour mobility across industries within an occupation would be a more likely way to erode wage differentials than labour mobility across different occupations within an industry. Wage rates for a specific occupation would likely be similar across industries as labour markets are generally segmented by occupation rather than by industry. When the utilities sector is competing with the construction sector in the labour market, they are competing for many of the same occupational groups. From this perspective, the LPI by occupation would contain much more readily-assessable information than the LPI by industry.

Any changes in LPI by industry might reflect compositional changes in occupation within each industry. Different occupations might have substitution or complementary relationships, or be largely independent of each other. The ABS published the occupation based LPI for the last time in the September quarter 2008 – the main reason for the termination of the occupation based LPI was stakeholders' feedback on the lack of need for the occupation based index.²³

Demand for labour can be defined more readily and accurately by occupation than by industry. Therefore, wage pressures can be more meaningfully analysed in terms of occupational cohorts. The same occupation could be paid different wages across industries due to industry specific demand conditions; that is, location and industry specific premiums can be added to market occupational wage rates. Therefore, occupation based LPI measures across industries would provide a more transparent view of wage pressures faced by industry.

In summary, the overall wage cost pressures faced by a specific industry can be analysed in terms of occupation based LPI growth factors. Competition from other industries can be more properly assessed from an occupational perspective. This occupation based approach provides a more complete picture than simple references to the wage pressures of potentially competing industries, such as the construction and administrative services industries against the utilities industry.

5.2 Summary of findings

There are many factors that influence wage cost movements at the industry level. The observed persistence in industry LPI differentials — as demonstrated by the fact that the historical utilities LPI has grown faster than the all-industries LPI — can be driven by the different compositional mix of occupations across industries. Furthermore, competitive pressures on wage costs across industries can be more accurately captured when an occupation-based LPI is applied in an industry wage cost analysis. However, the ABS terminated its publication of the occupation-based LPI in 2008, and therefore currently it is not possible to develop the industry LPI forecasts using the occupation based LPI. However, by analysing the current sample of jobs selected for the utilities LPI estimation by the ABS, the potential implications of an occupational mix on the utilities LPI could be analysed. Such occupation oriented LPI analysis would improve the robustness of the LPI

²³ See section 3.12 in chapter 3 in Wage Price Index: Concepts, Sources and Methods, 2012 (ABS catalogue no 6351.0.55.001)

forecasts of the utilities sector. From this point of view, the accuracy of DAE's utilities LPI forecasts could be further improved by analysing the occupational mix in the ABS's LPI sample for the utilities sector.

6. Overall Assessment

As discussed in the previous four sections, there are some flaws in the methodology applied in the construction of DAE's forecasts that:

- undermine their likely robustness for forecasting the LPI for ElectraNet, and
- suggest that they may underestimate likely wage pressures in the South Australia electricity sector and, therefore, the forecasts of costs likely to be experienced by ElectraNet over the forecast period.

7. Expert's statement

I have read the Federal Court's Practice Note CM 7 Expert Witnesses in proceedings in the Federal Court of Australia (1 August 2011) and prepared this report in a form consistent with Practice Note CM 7.

I have prepared this report for the purpose set out in section 1.1 of this report and it is not to be used for any other purpose without my prior written consent. Accordingly, KPMG accepts no responsibility in any way whatsoever for the use of this report for any purpose other than that for which it has been prepared.

I have made all inquiries that I believe are desirable and appropriate and no matters of significance which I regard as relevant have, to my knowledge, been withheld from the material set out in this report.

Nothing in this report should be taken to imply that I have verified any information supplied to me, or have in any way carried out an audit of any information supplied to me other than as expressly stated in this report.

My opinion is based solely on the information set out in this report. If I amend any conclusion on further information, I will amend the report.



Dr. Ashley Winston

Appendix A: References

Australian Bureau of Statistics (2012a), "Wage Price Index: Concepts, Sources and Methods", 2012 (ABS catalogue no. 6351.0.55.001)

Australian Bureau of Statistics (2012b), "Wage Price Index, Australia" September 2012 (ABS 6345.0)

Australian Bureau of Statistics (2012c), "Australian National Accounts: State Accounts, 2011-12" November 2012 (ABS 5220.0)

Australian Bureau of Statistics (2012d), "Australian National Accounts: Input-Output Tables 2008-09", September 2012 (ABS catalogue no. 5209.0.55.001)

Australian Energy Regulator(2012a), "Draft Decision, ElectraNet, Transmission Determination, 2013-14 to 2017-18", November 2012.

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BIS Shrapnel (2012), "Labour Cost Escalation Forecasts to 2017/18 – Australia and South Australia", Prepared by BIS Shrapnel for ElectraNet, Final Report, April 2012.

Deloitte Access Economics (2011), "Forecast growth in labour costs: Queensland and Tasmania", report prepared for the Australian Energy Regulator, 15 August 2011.

Deloitte Access Economics (July 2012), "Responses to BIS Sharpnel reports" , 30 July 2012

Deloitte Access Economics (November 2012), " Forecast Growth in Labour Costs: Victoria and South Australia ", report prepared for the AER, 15 October 2012.

Federal Court of Australia (2012), Practice Note CM 7, Expert witnesses in proceedings in the Federal Court of Australia, 1 August 2011, <http://www.fedcourt.gov.au/law-and-practice/practice-documents/practice-notes/cm7>, accessed 14 December 2012.

Industry Commission (1993), "Impediments to Regional Industry Adjustment", an inquiry report, December 1993.

KPMG (2013), "Labour Cost Escalators" a report to ElectraNet, January 2013

Appendix B: Ashley Winston's curriculum vitae and relevant experience



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Certifications & Professional Memberships

- Ph.D in Economics, Monash University
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- Bachelor of Economics (with Honours), Monash University

Profile/Overview

Ashley leads KPMG's specialist economic modelling and analysis team. For the last 15 years Ashley was a Senior Research Fellow at the Centre of Policy Studies at Monash University, providing policy advice and analysis to various levels of government and private sector clients in Australia, North America, Asia, Africa, South America and Western and Eastern Europe.

Ashley has extensive research conducting model-based analysis of a wide range of policy issues. For the last 8 years Ashley was based in Washington DC, working with several federal agencies of the US government, US inter-agency policy teams and the Senate and House committees of the US Congress including Senate Finance and House Ways and Means. Ashley also has ongoing research relationships with several overseas economic research centres such as the Centre for Global Trade Analysis.

Ashley's expertise includes: CGE modelling (theory and applied); trade and international macroeconomics; energy and environmental policy; investment and capital accumulation, and interactions with corporate finance and taxation; and economic policy analysis/advice. Ashley has developed a global reputation as a leading expert on CGE modelling, and his advice is widely sort from all over the world.

Selected Experience

Ashley's experience includes:

- A utility company: Cost escalators. Ashley recently led our engagement with a utility company to provide escalators for labour costs, construction costs and electricity prices. Ashley oversaw the modeling of the three

types of cost escalators.

- **Federal Government Agency: Regional Economic Impact and Assessment of Manufacturing Facilities – KPMG** was engaged to assess the possible expansion of two strategic manufacturing facilities. Ashley played a key role in the development of the modelling methodology for each phase of the project and ensured the timely delivery of high quality outputs.
- **A Singaporean government agency: Supply and Delivery of Economic Impact Assessment Models – KPMG** has been engaged by the Government of Singapore to develop a CGE model for policy analysis. Ashley is leading the complete development of this and ensuring the model is to international best practice.
- **An inter-state environmental planning agency: Critique of economy wide modelling – Ashley** provided the high level of expertise required to critically and comprehensively evaluate the modelling done to date. Ashley's insights resulted in key recommendations being adopted by the client.
- **A State Government Department: Modelling Manufacturing Industry Scenarios – KPMG Econtech** provided advice to the Department on the future of the State's manufacturing industry. Ashley provided expert advice on the baseline trajectory, as well as the impacts of various economic events and policies, such as: exchange rate, carbon tax and productivity improvements.
- **Policy advisor to a Gulf country in the Middle East on the implementation of a new taxation system.** Ashley is also assisting this country in building an enhanced in-house economics capacity, both in terms of analytical, planning and policy functions.
- **CGE analyst and policy advisor as part of a US federal inter-agency team to report on proposed US cap-and-trade policy for carbon emissions ("Waxman-Markey" bill).**
- **Advisor to the Economic Research Service of a US Department on US bio-energy policy, including managing several policy research projects.** This resulted in several public policy papers, quoted at press conferences.

Appendix C: Terms of reference

The scope of work as described by ElectraNet in their letter to KPMG in November is:

Scope of Work

The independent expert will provide a report addressing the following issues:

- 1) A realistic expectation of ElectraNet's reasonable forecast internal labour costs in the form of a Labour Price Index (LPI) forecast for the South Australian electricity, gas and water sector (EGW) and South Australian electricity, gas, water and waste water services sector (EGWWS) for the period 2012-13 to 2017-18;*
- 2) Advice on the appropriate index to apply to most accurately represent the circumstances of ElectraNet for the period 2012-13 to 2017-18;*
- 3) A realistic expectation of ElectraNet's reasonable forecast external labour costs in the form of a construction sector wage forecast for South Australia for the period 2012-13 to 2017-18;*
- 4) Detailed explanations and supporting evidence used to develop the cost escalation forecasts; and*
- 5) A critical assessment of the methodology applied in deriving preparing the labour cost escalation assumptions adopted for the purposes of the Draft Decision to be published by the AER by 30 November 2012.*

Point 5) is addressed in this report. Points 1) to 4) are addressed in a separate report.