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Labour Cost Escalation Report
Tasmanian Networks Pty Ltd

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Final Report

Cost Escalation Factors

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Executive Summary

Tasmanian Networks Pty Ltd (TasNetworks) has engaged Jacobs to provide labour cost escalation indices on *a year on year basis* to be applied to the upcoming revenue proposal submission to the Australian Energy Regulator (AER) for the regulatory control period 2017/18 – 2023/24.

The **labour and contractor cost escalation** have been determined through empirical investigation and economic modelling of underlying drivers including general price inflation and changes to labour productivity. The annual escalation indices presented in this report represent Jacobs's calculated best projection of likely cost escalation components to account for the projected movement in underlying drivers. These affect the cost of labour relative to the Australian Capital Cities CPI, being the base inflation factor used by the regulatory authorities.

The AER has accepted real escalation rates for labour costs based on Enterprise Bargaining Agreement (EBA) outcomes. The AER accepted labour escalation rates for an EBA in place at the time of the final regulatory determination, until the expiry of the EBA, for example the 2017-18 to 2021-22 determination for Powerlink.

This acceptance is on the proviso that the EBA rates reasonably reflect a realistic expectation of the cost inputs the NSP will require to meet the opex and capex objectives and the NSP can demonstrate the EBA was negotiated at arm's length and in a commercial manner. We consider these conditions are satisfied and use labour cost escalations set in the EBA for the period covered by the EBA.

The AER has also used forecasts prepared by BIS Shrapnel and Deloitte Access Economics both indicating an upward trend in labour costs in the range from 3% - 5% in nominal terms beyond year 2020 over the upcoming regulatory period. The labour cost escalation rates in this report fall within this range for the period beyond 2020.

The annual escalation factors forecast presented in this report are specific to the business environment faced by TasNetworks, and are based on the most recent information available at the time of preparation. Table 1, Table 2 and Table 3 show Jacobs forecast of TasNetworks' labour cost escalation rates.

Table 1 Labour and contractor nominal cost escalation factors

Financial year end	2018	2019	2020	2021	2022	2023	2024
Labour cost escalation factor	2.00%	2.00%	2.50%	3.00%	3.00%	3.00%	3.00%
Contractor cost escalation factor	2.50%	3.25%	3.50%	3.50%	3.50%	3.50%	3.50%

Table 2 Real labour and contractor cost escalation factors

Financial year end	2018	2019	2020	2021	2022	2023	2024
Labour cost escalation factor	0.00%	0.00%	0.00%	0.49%	0.49%	0.49%	0.49%
Contractor cost escalation factor	0.49%	1.23%	0.98%	0.98%	0.98%	0.98%	0.98%

Table 3 Real cumulative labour and contractor cost escalation factors

Financial year end	2018	2019	2020	2021	2022	2023	2024
Labour cost escalation factor	1.0000	1.0000	1.0000	1.0049	1.0098	1.0147	1.0197
Contractor cost escalation factor	1.0049	1.0172	1.0271	1.0372	1.0473	1.0575	1.0678

1. Introduction

1.1 Background

Regulatory proposals are required to be developed according to a building block methodology, requiring annual predictions of TasNetwork's forecast expenditure over the next regulatory period. An integral part of developing suitable forecasts of annual expenditure is the production of a set of reasonable assumptions with respect to the likely rate of annual cost escalation.

Jacobs was engaged by TasNetwork to develop the real and nominal annual escalation factor (or year-on-year % change) forecast of labour cost drivers to be used in TasNetwork's revenue reset proposal for the forthcoming regulatory period 2017/18 to 2023/24 inclusive. An integral step to developing annual expenditure forecasts is the production of a set of reasonable assumptions with respect to the likely rate of annual labour cost escalation.

The labour annual escalation factors forecast presented in this report represents Jacobs' calculated best estimate of likely cost escalation components to account for the predicted movement in underlying drivers affecting the labour cost of operating and maintaining TasNetwork's networks. Statements in this report that are not based on historical data are forward looking estimates. Although such statements are based on Jacobs' current estimates and expectations, forward looking statements are inherently uncertain. Jacobs, therefore, cautions the reader that there are a variety of factors that could cause business conditions and results to differ materially from what is contained in forward looking statements in this report.

1.1 Objective and Scope of Work

The scope of works includes:

- Describe the cumulative real labour and operating costs escalation factors.
- Describe the forecasting methodology used by Jacobs including the key drivers likely to impact on labour escalation over the next regulatory control period.
- Highlight forecasts that will be derived from appropriately sourced independent data and forecasts.

The specifically indices that we report on are

- Employee costs
- Contractor costs
- Operating costs.

2.   Approach

Jacobs has drawn on information within studies undertaken on cost information for a number of turnkey and contracted construction projects (including plant equipment, materials, construction, testing, and commissioning). The results of Jacobs's research indicated that there are a number of common factors driving the changes in labour costs. The primary factors (in no particular order) influencing labour cost movements are considered to be changes in economic conditions shown by:

- Consumer price index (CPI) – general economic conditions have a strong correlation to changes in labour costs. Labour will demand higher wages when the cost of living is growing quickly. Conversely, wage increases can be delayed, decreasing the rate of labour cost increases, when the cost of living is increasing gradually. CPI is an ideal cost driver as reputable forecasts are widely available.

- Wage price index (WPI) – changes to the cost of labour will be reflected by changes in the wage price index. However, there is less availability of publically available forecasts.

- Average weekly ordinary time earnings (AWOTE) – this index is similar to the wage price index, but is normalised by hours. This captures effects of labour productivity changes not reflected in the WPI.

- Labour Productivity Index (LPI) – this index captures changes in the productivity of labour, or changes in output for each unit of labour.

- Producer Price Index (PPI) for other engineering and heavy civil construction – changes in construction prices indicates an increase in input prices, including labour.

Having identified these key cost drivers, Jacobs conducted regression analysis, in order to establish a suitable percentage contribution, or weighting, by which each of these underlying cost drivers were considered to influence the total price of each labour item.

While there are benefits in maintaining consistency, particularly with past precedents, Jacobs has incorporated improvements to its modelling method when there was a clear need, particularly in response to regulatory precedents and as improved information becomes available. The cost drivers with relevant economic indicators used in the Jacobs's model, their major application, and their reference sources are shown in Table 4.

Table 4 Data sources

Cost Drivers / Economic Indicators		Application	Sources
Labour	Internal Staff	Internal labour work	Australian Bureau of Statistics
	Contractor	Procured labour work	Australian Bureau of Statistics

3. Labour costs

3.1 Overview of price and wage developments

In general, Australian Consumer Price Inflation tends to be kept on average at 2.5% per annum across the business cycle. This average applies to both time and materials categories, noting that achieving a target CPI of 2% to 3% requires average increases in labour price to be the same. Over the longer term, nominal growth in unit labour prices does trend near CPI. This is primarily a result of two factors:
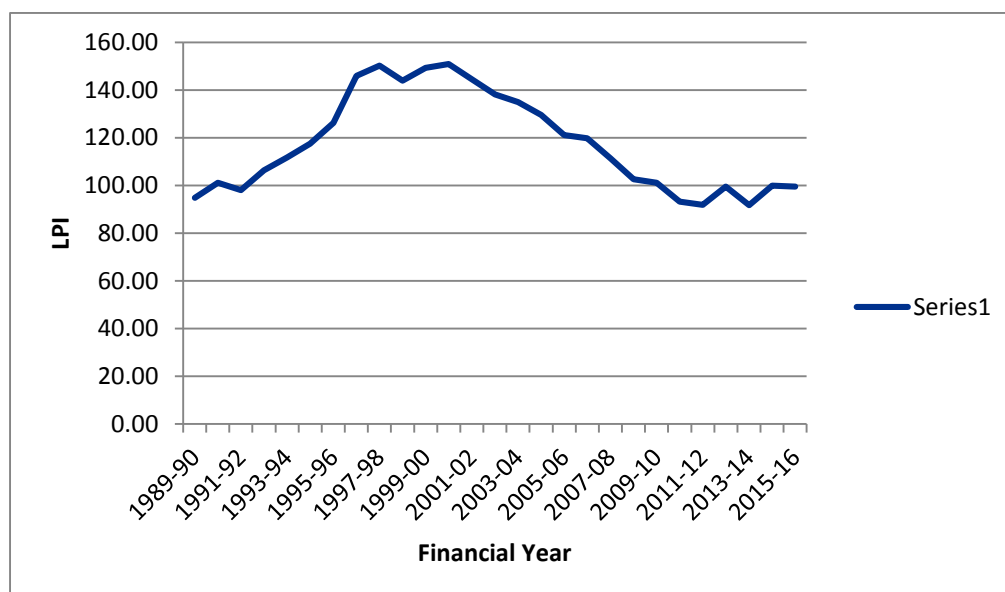
- The collective workforce gains experience and seniority as well as losses through retirements and other departures from the workforce. This creates a system of checks and balances, greatly diminishing the impact of individual wage gains which may be more than CPI on average.

- Productivity gains over time will contribute to reductions in rising wages. As people and technology become more efficient, this lessens the impact of rising wages on labour costs.

Over an extended period, growth in prices will tend to average within the RBA's target range for CPI of 2 to 3%. However, as expected, wages for the average worker tend to grow faster, equivalent to the sum of prices and productivity growth. As productivity has averaged around 3% in the last decade, this would mean that wages for the average worker have grown by approximately 5.5% (2.5% CPI + 3% productivity).

It is important to note that there will be some divergence between price and productivity growth over the course of the business cycle. When demand is high relative to supply of available workers, wage growth will exceed this measure and vice versa. Moreover, wages for the typical 'specific' worker will tend to grow faster still, as their seniority and experience increases each year. As the average or specific worker is becoming more efficient and skilled, so too does the industry they participate in. In this way, productivity gains may also be related to reductions in the number of labour units. For this reason it is important to capture industry and geographically specific cost drivers for labour wherever possible.

The ABS tracks multi-factor productivity for industry sectors using wage price movements as well as industry specific changes in capital spending and other indicators. This measure effectively captures those changes resulting from improved performance of the workforce, as well as reductions to inputs required (multifactor-productivity) illustrates productivity changes over the last two decades, showing significant improvements over the period between 1995 and 2000, which likely results from technology improvements in the sector.

Figure 1 ABS Multi-factor labour productivity index for utilities sector[1]
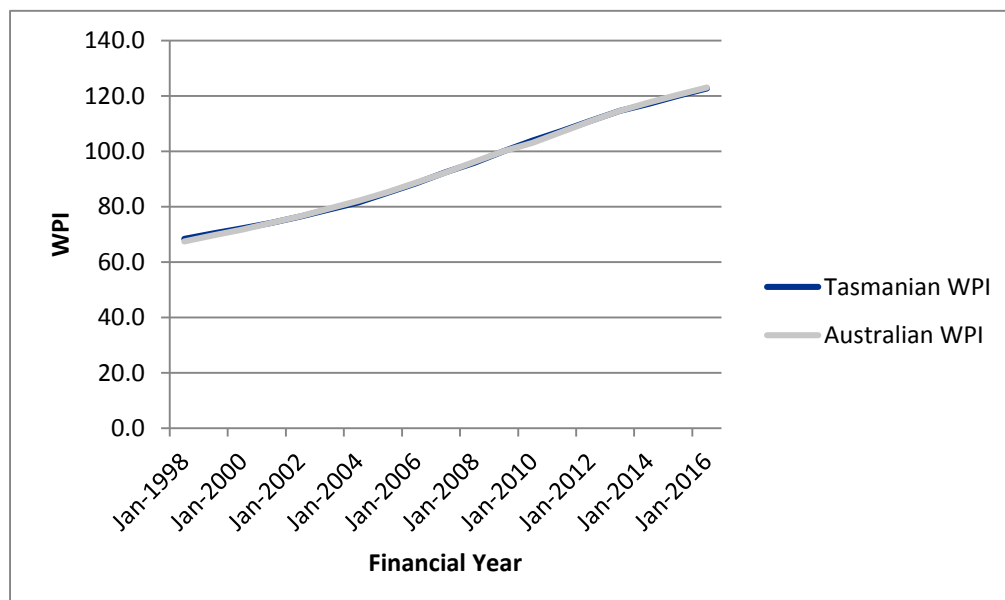

3.2   Price and wage developments specific to Tasmania

The WPI for Tasmania generally grows at a similar rate to the Australian WPI.

Over the period between 2006 and 2016, wages for all sectors in Tasmania increased an average of 3.3% pa, the same as the average annual growth rate for the Australian WPI.

Figure 2 ABS Tasmanian WPI, all sectors[2]

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[1] ABS Series: 5260.0.55.002 Estimates of Industry Multifactor Productivity – Electricity, gas, waste and water services

[2] ABS series: A2704928J Wage Price Index Tasmania all sectors

3.3   Wage and price movements specific to TasNetworks

3.3.1   TasNetwork's Enterprise Agreement

TasNetworks' enterprise agreement was approved by the Fair Work Commission (FWC) on 13 June 2017. The agreement covers both transmission and distribution networks and covers 2016-17, 2017-18, 2018-19 and 2019-20.

TasNetworks' enterprise agreement includes the following wage escalation for 2017-18 to 2019-20:

The greater of:

- 2%
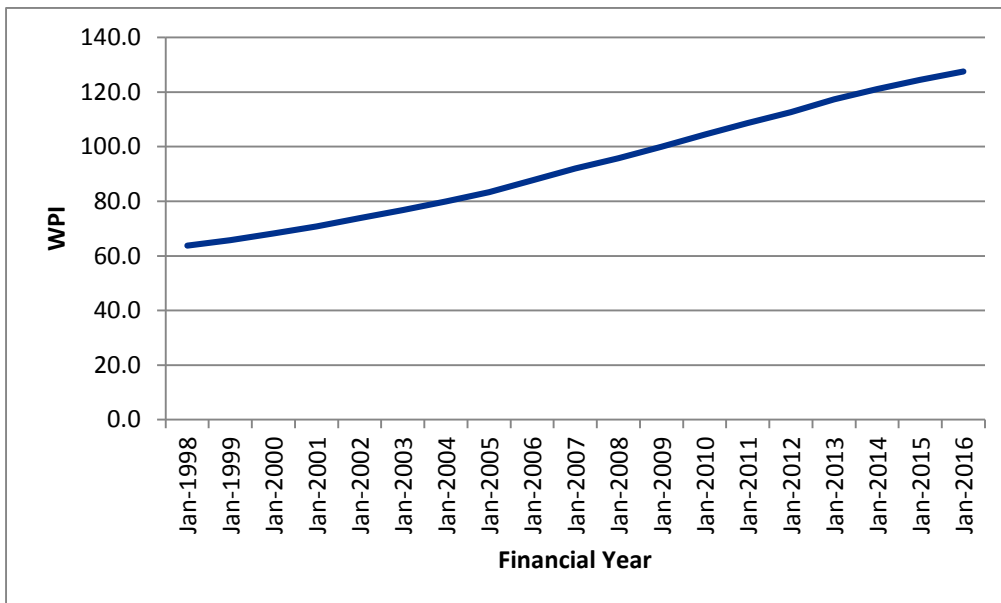- Increase with CPI up to a maximum of 3%.

3.3.2   Australian utility wages

The Australian Bureau of Statistics classification for utilities workers (ANZSIC D – Electricity, Gas, Water and Waste Supply Services, hereafter called utilities) most closely resembles the workforce profile of TasNetworks. For this reason, Jacobs recommends that projections for labour cost increases be largely based on this indicator. Jacobs considers that the ABS wage price index for utilities workers aligns with pricing trends for this industry and that this is likely to reflect future changes to both internal and external TasNetworks employees.
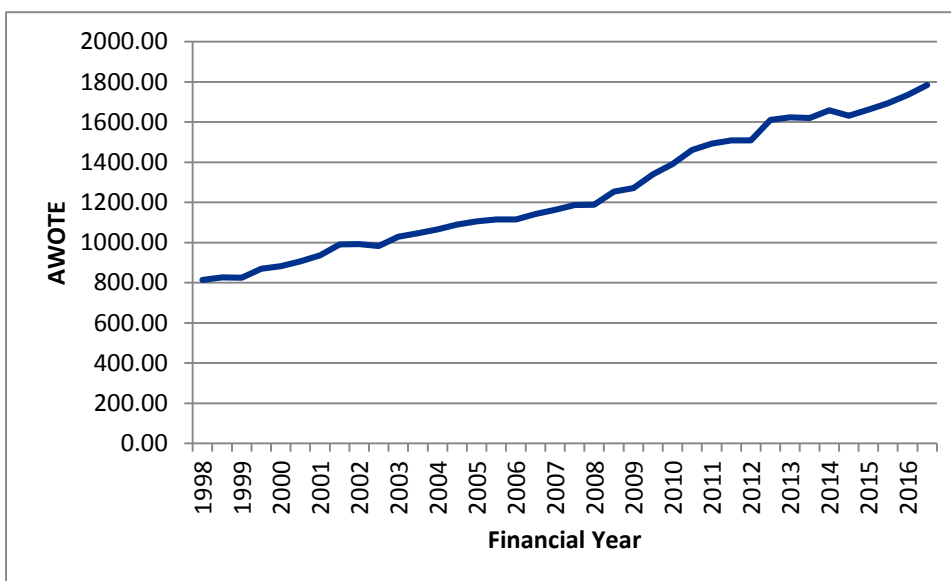
The ABS does not publish a utilities WPI by state. We note that the 10 year average annual growth rate of the Tasmanian WPI closely resembles the average annual growth rate of the Australian WPI. We will assume that the Tasmanian utilities WPI resembles the Australian utilities WPI in a similar fashion.

Wage movements in the utilities industry have been increasing steadily over the last decade. Wage growth in this sector is higher than the national all industry average and has consistently been so for the last 15 years, with growth below the all industries WPI in only 2008 and 2012. The electricity, gas, water and waste sector generally tends to be capital intensive with higher skill levels required and thus commensurate higher wages. The utilities sector has had the second highest growth in employment over the last decade behind mining. Strong growth in utilities employment has primarily resulted from increased infrastructure spending and subsequently required maintenance, following periods of privatisation and rationalisation in the last few years.

Figure 3 shows the relative increase in utilities wages over the 2000 to 2013 period.

Figure 3 ABS wage price index, utilities industry[3]

The ABS AWOTE is a measure of quarterly changes to wage earnings for full time adult employees. The AWOTE index for the utilities sector is considered to be another appropriate measure for projecting growth in labour costs for TasNetworks. The key difference between the WPI and AWOTE is that AWOTE captures changes in productivity as well as price. The WPI primarily captures the underlying price of labour but not costs or changes per employee. AWOTE however, takes into account movements between pay grades, up skilling and other compositional effects of the labour force. Figure 4 shows the increase in average wages across the utilities industry over the period between 1998 and 2016.

Figure 4 ABS average weekly ordinary time earnings (utilities)[4]

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[3] ABS series: A2705170J Wage Price Index Utilities
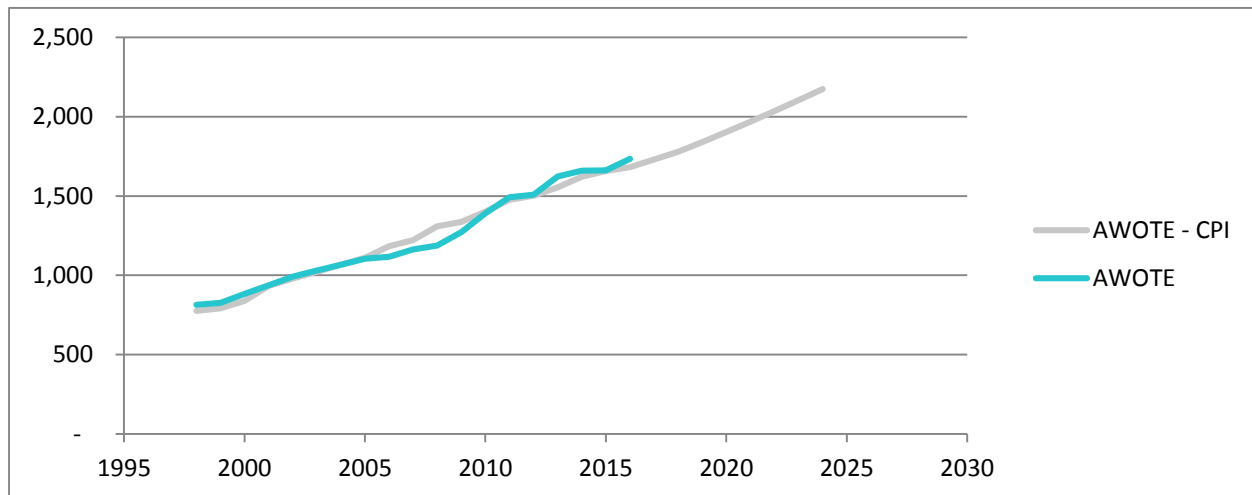[4] ABS series: A84977843V AWOTE Utilities Services

3.4 Cost drivers and methods for determining the escalators

The following cost drivers have been considered in projecting labour and contractors costs relevant to TasNetworks' business:

- WPI – wage price index for the utilities sector

- WPI – wage price index for Australia

- LPI – labour productivity index for utilities

- Hobart CPI – consumer price index for Tasmania

- PPI – other engineering and heavy civil construction producer price index.

To determine the appropriateness of the cost drivers selected, Jacobs conducted an empirical analysis of each cost driver's contribution to AWOTE for the utilities sector. Using multi-regression analysis, it was determined that increases to TasNetworks' labour costs will be a function of increases for Australian CPI. At a confidence level of above 99%, it was determined that Australian CPI was statistically significant in predicting changes to the dependent variable, AWOTE. Figure 5 shows the relationship and trend between CPI and AWOTE for the utilities sector between 1998 and 2024.

Figure 5 Utilities AWOTE and regression against CPI (1998 – 2017)

Having identified these key cost drivers, Jacobs considered TasNetworks' enterprise bargaining agreements and maintenance schedules in order to establish a suitable percentage contribution, or weighting, by which each of these underlying cost drivers were considered to influence the total price of labour or contractor costs.

Table 5 Cost drivers and data sources

Cost Drivers / Economic Indicators	Application (mostly used for)	Sources
Non-residential building construction index	Civil, foundation, building, establishment etc. cost contributions to maintenance	Australian Bureau of Statistics
Wage price index	Price changes in labour for: • Queensland in general • Utilities sector workers	Australian Bureau of Statistics
Australian CPI	All (to convert nominal to real terms) and general impacts from inflation	Australian Bureau of Statistics and Reserve Bank of Australia.
Labour productivity index	Multi-factor changes to utilities sector output per unit of input	Australian Bureau of Statistics
AWOTE	Measure productivity and wage contributions to labour price	Australian Bureau of Statistics

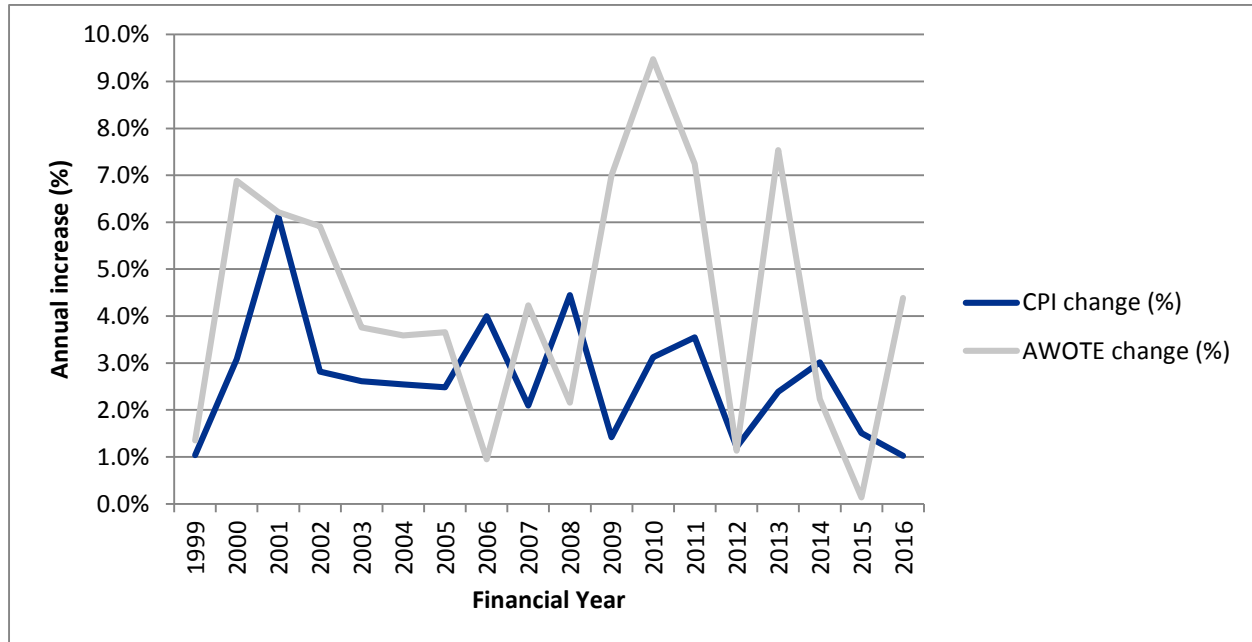## 3.5   Labour and contractor cost escalation factors

The following labour and contractor cost escalation factors have been determined by Jacobs through empirical investigation and economic modelling. It is important to note that the current enterprise bargaining agreement (EBA 2016 - 2019) allocates the higher of CPI or 2% with a cap of 3% for annual wage increases for all permanent and permanent part time staff. As such, Jacobs expects that wages for TasNetwork's staff will increase at this rate until the end of the contract EBA period (with the last increase in June 2019 covering financial year 2019-20).

Jacobs notes that the AER accepted Powerlink's proposed opex in its 2017-18 to 2021-22 determination. Powerlink's accepted labour cost escalation was based on its enterprise agreement for the years covered by that agreement.

The conditions of future EBAs are uncertain, as these depend on negotiations and conditions at the time. However, the current EBA keeps wage increases within the RBAs target range of 2% to 3%. TasNetworks' employees can be reasonably assumed to accept a similar clause in future EBAs if they anticipate weak economic growth similar to current levels in the future.

Labour price escalation is CPI in the near term (until 2020), reflecting TasNetworks' EBA and our forecast of CPI increases above 2%. Post 2020 Jacobs expects that labour costs will increase steadily in line with market expectations for the utilities sector, resulting from sustaining infrastructure investment, labour supply deficits, competition with the mining and construction industries and strong unions keeping wages elevated. Over the last decade utilities wage growth, although volatile, has averaged 1.6% above CPI (Figure 6).

Figure 6 Utilities AWOTE and CPI (1999 – 2016)

The stronger growth average of AWOTE over CPI provides some evidence of the likelihood that wages will continue to increase at a higher rate than 2.5%.

We expect that wages growth for this sector will be higher than the all industry average. Our forecast for labour cost escalation in the short term is in line with the current EBA agreement at CPI. Over the medium term, Jacobs expects that underlying utility labour costs will rise to about 3.5% before reducing down over the longer term.

We consider pegging EBA wage increases to CPI in future EBAs is unlikely, given the long term trend of wage increases around 1.5% above CPI. However, if EBAs covering the period 2021 to 2024 keep wage increases

within the RBA's CPI inflation range of 2% to 3% for the reasons stated above, wage price increases would be capped at 3%. This limit may change in the future after sustained evidence of general wage increases in Tasmania above 3% and a reduction of employee's apprehension of a return to weak economic conditions.

We note BIS Shrapnel's recent forecast of AWOTE for the utilities sector. BIS Shrapnel has forecast AWOTE growth above CPI growth for the reasons we have outlined above. However, BIS Shrapnel's forecast is consistently higher than our forecast.

Table 6 shows labour cost escalation forecasts using both methods. For consistency, with both methods we have used TasNetworks' EBA labour escalation for the years covered by the EBA, 2018 to 2020.

We have conducted a regression of TasNetworks' total contract costs against the drivers of labour prices we have identified. We have identified the WPI for Tasmania and the utilities sector and the labour productivity index of being above 95% likely to predict TasNetworks contract costs.

However, we note that our regression was conducted against TasNetworks' total contract costs, not unit rates for contractors. Without unit rates we cannot have certainty in the contractor price escalation rates we have developed, as changes in contractor costs may be due to changes in scope rather than changes in prices. Without rerunning the regression using contractor unit rates, we do not recommend using the contractor price escalations we have developed.

Our regression shows that contractor cost escalation is somewhat higher than labour price escalation in the near term, with 2018 values projected at 2.44% due to the fact that these rates are not controlled by standardised agreements such as EBAs. The increase in subsequent years trends closer to 3% on average.

Without further work testing our regression using contractor unit rates, we recommend using the Australian Government Treasury's projection of WPI increases for contractor price escalation.

Table 6 provides the year by year projected nominal escalation factors for both labour and contractor costs, as these pertain to TasNetworks' business profile.

Table 6 Nominal labour and contractor cost escalation factors

Financial year end	2018	2019	2020	2021	2022	2023	2024
Labour cost escalation factor	2.00%	2.00%	2.50%	3.00%	3.00%	3.00%	3.00%
Labour cost escalation factor - Alternative BIS Shrapnel forecast	2.00%	2.00%	2.50%	4.4%	4.9%	5.0%	na
Contractor cost escalation factor	2.50%	3.25%	3.50%	3.50%	3.50%	3.50%	3.50%
Contractor cost escalation factor – Alternative econometric forecast	2.44%	2.93%	3.08%	2.95%	2.93%	2.92%	2.91%

Table 7 provides the year by year projected real escalation factors for both labour and contractor costs, as these pertain to TasNetworks' business profile.

Table 7 Real labour and contractor cost escalation factors

Financial year end	2018	2019	2020	2021	2022	2023	2024
Labour cost escalation factor	0.00%	0.00%	0.00%	0.49%	0.49%	0.49%	0.49%
Labour cost escalation factor - Alternative BIS Shrapnel forecast	0.00%	0.00%	0.00%	1.85%	2.34%	2.44%	na
Contractor cost escalation factor	0.49%	1.23%	0.98%	0.98%	0.98%	0.98%	0.98%
Contractor cost escalation factor – Alternative econometric forecast	0.43%	0.91%	0.57%	0.43%	0.42%	0.41%	0.40%

Table 8 shows the year on year cumulative projected real escalation factors for both labour and contractor costs, as these pertain to TasNetworks' business profile.

Table 8 Real cumulative labour and contractor cost escalation factors

Financial year end	2018	2019	2020	2021	2022	2023	2024
Labour cost escalation factor	1.0000	1.0000	1.0000	1.0049	1.0098	1.0147	1.0197
Labour cost escalation factor - Alternative BIS Shrapnel forecast	1.0167	1.0346	1.0497	1.0692	1.0942	1.1209	na
Contractor cost escalation factor	1.0049	1.0172	1.0271	1.0372	1.0473	1.0575	1.0678
Contractor cost escalation factor – Alternative econometric forecast	1.0043	1.0135	1.0192	1.0236	1.0279	1.0321	1.0362