



AusNet Transmission Group Pty Ltd

Transmission Revenue Review 2017-2022

Appendix 5A: Aon Insurance Report

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Insurance Premium Forecast

AusNet Transmission Group

October 2015

AON

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Executive Summary

AusNet Transmission Group has requested Aon Risk Solutions (“Aon”) to provide an independent forecast of their insurance premiums for the upcoming regulatory period 1 April 2017 to 31 March 2022.

Table 1 below sets out Aon’s insurance premium forecast for AusNet Transmission Group for the upcoming regulatory period.

Table 1 – Insurance Premium Forecast – 2017-2022 (\$'000)

Risk Class	2017/18	2018/19	2019/20	2020/21	2021/22	Total
Regulated (Nominal)	5,601	5,883	6,138	6,405	6,684	30,711
Regulated (Real \$2016)	5,331	5,463	5,561	5,661	5,763	27,779

The approach to determine this forecast was to estimate exposure growth and premium rate growth for the forecast period. Using this information, base premiums for the relevant forecast policy periods could be estimated. Statutory charges were then applied to those base premiums. Total costs were calculated and then allocated to the relevant financial year using a straight monthly pro-rata approach.

Details of the premium calculations and all assumptions made are outlined in the following sections of the report.

1. Background and Approach

1.1 Background

AusNet Transmission Group has requested Aon Risk Solutions (“Aon”) to provide an independent forecast of their insurance premiums for the upcoming Transmissions regulatory period (2017/18 – 2021/22).

The purpose and scope of the engagement is to forecast Transmission premiums, which involves forecasting AusNet Services-wide premiums and then allocating a share to Transmission.

Aon has developed a comprehensive forecast for the 2017/18 to 2021/22 regulatory period, which is explained and set out in this report. This forecast reflects Aon’s expert view of what AusNet Transmission Group can reasonably expect in relation to its insurance premium costs given Aon’s understanding and knowledge of AusNet Service’s specific circumstances and the likely insurance market conditions which will apply in the next regulatory period. Aon has relied upon the latest insurance costs incurred by AusNet Services as the base cost of its forecast as actual costs represent the most accurate and reliable starting point for developing a forecast.

1.2 Scope of Services

The scope of services for this consultancy is to provide an independent forecast of AusNet Transmission Group’s insurance premiums for the upcoming 2017/18-2021/22 regulatory period.

For each major class of insurable risk, we will outline:

- The systematic drivers of each insurance class;
- Review the historical premium costs and circumstances that have influenced any changes over the current regulatory period;
- Provide a premium forecast for the 2017/18-2021/22 regulatory period, including outlining:
 - The quantification method adopted including forecast changes to exposure and premium rates;
 - All the assumptions and data relied upon in undertaking that quantification, and where those data / assumptions have been sourced from;
 - A specific assessment as to how costs should be properly allocated to the Transmission network, and what this allocation should be; and
- Aon’s independent assessment of future insurance premiums;

1.3 Approach

The approach to calculate the insurance premium forecast is outlined below:

- Determine the base premium costs (i.e. excluding charges) for all risk classes for all of AusNet Services' business (Transmission and Distribution) in the current policy period.
- Estimate future changes to exposure and base premium rates.
- Using the changes to exposure and base premium rates, calculate forecast base premiums for the relevant future policy years.
- Apply the appropriate allocation amount to the overall base premium to determine the base premium that relates to the Transmission business.
- Add estimated statutory charges (such as Stamp Duty, Fire Services Levy and Terrorism Levy) based on expected base rates for the forecast period.
- Calculate nominal policy year premium forecast for each risk class, including statutory charges.
- Calculate the nominal financial year premium forecast for each risk class, by splitting the premium according to the number of months contributing from each policy year.
- Remove the costs relating to the non-regulated part of the Transmission business (as outlined in section 1.4).
- The result provides the nominal and real insurance premium forecast for 2017/18-2021/22.

1.4 Non-regulated costs

Aon assumes the costs relating to the non-regulated part of the Transmission business are 9.42%.

This assumption is derived from AusNet Services's regulatory accounts where unregulated assets make 9.42% of total Transmission assets. The non-regulated split is based on AusNet Services' forecast of the ratio of regulated to non-regulated assets at the midpoint of the 2017-22 period. This results in an opening Regulated Asset Base / opening unregulated asset figure split of 90.58% to 9.42% respectively.

This approach is consistent with the approach used in determining the unregulated portion of the Transmission business for the 2014-17 Transmission regulatory period, as approved by the AER.

1.5 Factors that Affect the Cost of Insurance

When pricing insurance, underwriters will typically consider the risk that is being insured. Pricing for major classes is usually determined as a premium rate multiplied by a measure of exposure (i.e. declared asset values, annual revenue, number of vehicles etc.). Whilst exposure is largely determined by the insured, premium rates are determined by the insurer and are largely out of control of the insured.

It is important to recognise that insurance premium rates (and therefore insurance premiums) are subject to external factors that AusNet Services' other operating costs are not. Whilst insurance premiums largely reflect the risk that is being insured, other factors have considerable bearing on insurance pricing, particularly for low frequency, high severity risks. These external factors include:

- recent claims activity of all insureds;
- local and global natural catastrophes;
- insurer competition;
- market capacity (amount of available insurer capital); and
- capital requirements.

Policy limits and deductibles also influence the cost of insurance. Unless otherwise stated, insurance policy limits and deductibles are assumed to remain constant for the purpose of this analysis.

Additionally, taxes and statutory charges need to be paid by the insured. These are determined by the government and can change quite regularly. A perfect example of this is the 2013/14 change to the fire services levy in Victoria; which is now recovered through council rates rather than Property insurance premiums.

All commentary in this report relates to changes to base premiums in nominal values (unless otherwise stated). Additional calculations have been applied to determine statutory charges, taking into consideration expected statutory charges in the upcoming regulatory period (for which at this stage, no changes are anticipated).

1.6 Allocation of Costs to the Transmission Business

For each class of risk considered in this analysis, AusNet Services purchases insurance cover for its entire business: Distribution and Transmission. As such, only a portion of the overall costs are allocated to the Transmission business.

The determination of that allocation (which will vary by risk class) is a matter for AusNet Services' internal review, however, we have commented on the reasonableness of the projected allocation based on our understanding of AusNet Services' risk profile between the different parts of the business.

Aon notes that the AER's final decision in relation to insurance premiums does influence (up or down) the allocation of costs to the Transmission business, and that this will have an equal and opposite impact on the Distribution business.

In Aon's vast experience in advising clients on premium allocation methodologies and its impact on prudent risk management, we recommend that any decision around allocation should remain with the business, without the influence of external parties (unless requested). The proviso is that the allocation amount should not be unreasonable and the methodology should remain consistent when the regulatory proposal for the Distribution business is submitted.

1.7 Data

The following data was relied upon in determining historical and forecast insurance premiums:

- Historical insurance premiums:
 - Prior to 2011: provided by AusNet Services
 - 2011 onwards: provided by Aon premium summary sheets and reconciled with actual invoices
- Historical exposure:
 - Property: based on declared asset schedule updated annually by AusNet Services
 - Motor: based on historical underwriting submissions
- Aon's Insurance Market Update Q3; 2014
- Utilities Liability Limit Benchmarking (Appendix 3).

2. Summary of Results

Table 2 below outlines Aon's view of an appropriate insurance premium forecast for AusNet Transmission Group for the upcoming regulatory period. These amounts are for both the regulated and non-regulated part of the Transmission business.

Table 2 – Insurance Premium Forecast by Risk Class – 2018-22 (\$'000 nominal)

Risk Class	2018	2019	2020	2021	2022	Total
Liability	1,865	2,002	2,102	2,207	2,318	
Property	3,585	3,728	3,877	4,032	4,194	
Motor	195	212	230	250	272	
Miscellaneous (All Other)	469	480	492	505	517	
New Policies	71	73	74	76	78	
Total	6,184	6,495	6,777	7,071	7,379	33,905

Non-regulated costs are removed from the total (as outlined in section 1.4) to determine the regulated forecast. Table 3 shows nominal and real values of the regulated insurance premium forecast.

Table 3 – Nominal and Real Insurance Premium Forecast – 2018-22 (\$'000)

Risk Class	2018	2019	2020	2021	2022	Total
Total Transmission	6,184	6,495	6,777	7,071	7,379	33,905
Less: Non-regulated (9.42%)	-583	-612	-638	-666	-695	-3,194
Regulated (Nominal)	5,601	5,883	6,138	6,405	6,684	30,711
Regulated (Real \$2016)	5,331	5,463	5,561	5,661	5,763	27,779

3. Analysis by Risk Class

3.1 Liability

3.1.1 Systematic Drivers

Liability insurance provides AusNet Transmission Group with cover for third party personal injury, third party property damage and third party financial loss. Liability risk can largely be split between two levels of severity:

- **Attritional** – one-off third party personal injury, property damage or financial loss. This relates to losses that would usually be below \$250k, but even in an extreme circumstance would still be below \$5m.
- **Catastrophic** – significant third party personal injury, property damage or financial loss resulting from a major event, such as a bushfire or major unplanned outage. This relates to losses that could potentially be well above \$5m, but have a low likelihood of occurrence.

Attritional losses do not have a material impact on premium changes. These losses are inherently consistent and are already priced into the insurance premium in the primary layer. Catastrophic losses, however, are the real focus of underwriters and are therefore the real drivers behind any changes to premiums.

The key liability exposure for AusNet Transmission Group is bushfire liability risk. This risk would relate to the vast majority of their current premium and this is evidenced by their recent loss experience.

3.1.2 Review of Prior Regulatory Periods

Overall base premium costs have increased sixfold between the 2008/09 policy year and the 2014/15 policy year.

There are a number of reasons that have contributed to this substantial increase:

- Significant claims from the Black Saturday Bushfires in 2009 contributed to a direct 227% increase from 2008/09 to 2009/10.
- AusNet Services shared a joint program with Jemena prior to 2013/14, which created cost-efficiencies. These insurance programs were placed separately for the 2013/14 renewal, meaning that there is a step change equating to a 17% increase in the overall cost of Liability insurance.
- Increases to the overall policy limit in 2010/11 and again in 2011/12 would have had a modest impact on the overall premium increase.
- An increase to the policy deductible for Bushfire Liability in 2009/10 would have alleviated a further premium increase in that year.
- Insurance market factors have contributed to steady increases over the period and are expected to continue to influence premiums in the future (as outlined in Section 3.1.5).

3.1.3 Exposure

Unlike many other policies, Liability premiums are not necessarily correlated with a measure of exposure. Whilst one might expect that network size or annual revenue may be appropriate drivers for changes to premiums, the extent of these changes are immaterial in comparison to the real factors that influence Liability premiums (as discussed in Section 3.1.6).

Due to this, an exposure forecast is not included in the analysis of Liability premiums.

3.1.4 Premium Rates

General Overview

According to insurer statistics, bushfires in Australia are more frequent than any other country in the world. The exposure to catastrophic bushfire losses, measured in terms of loss of life, injuries, property damage and economic loss, is increasing given demographic shifts and urban expansion. Some also suggest that climate change may be a contributing factor.

All major cities in Australia are experiencing rapid growth at the margins which are housing an increasing proportion of their inhabitants. The major underlying reason is economic, as outer suburban housing is much cheaper than in the city Centre. It is also driven by lifestyle choices, including a desire to be nearer to the bush. Those seeking lifestyle changes and lower priced property in many cases are part of a massive development boom along much of Australia's coast ("sea-changers") and in some inland towns ("tree-changes").

Despite the ever increasing number of new mitigation measures such as building codes, weather warnings, fire location information, firefighting training, predicting fire behaviour and informing fire safety, once a major bushfire takes hold in weather conditions favourable for rapid fire development and spread they are almost impossible to put out through human attempts at fire control and suppression. The focus becomes limiting the economic impact from property damage and loss of life.

From the available data and information, it is apparent that there is a systemic risk of bushfire in Australia with the frequency of major events closely correlated with weather and climatic conditions. Longer and hotter fire seasons increase the risk of major fires and are often referred to as 'mega-fires'.

The State of Victoria, in particular, is susceptible to a high level of bushfire risk as demonstrated by table 4 below.

Table 4 – Deaths as a result of bushfires per 100,000 people by state 1900 - 2009

	ACT	NSW	QLD	SA	TAS	VIC
Deaths	9	105	17	46	64	537
Average Population (1900 – 2009)	124,683	3,834,682	1,712,703	918,011	326,562	2,841,917
Deaths per 100,000 residents	7.22	2.74	0.99	5.01	19.60	18.90

Appendix 3 includes bushfire statistics from 1900 to 2009 that demonstrate a high frequency of material bushfire events in Victoria (plus other States and Territories), thereby highlighting AusNet Service's exposure to bushfire liability risk.

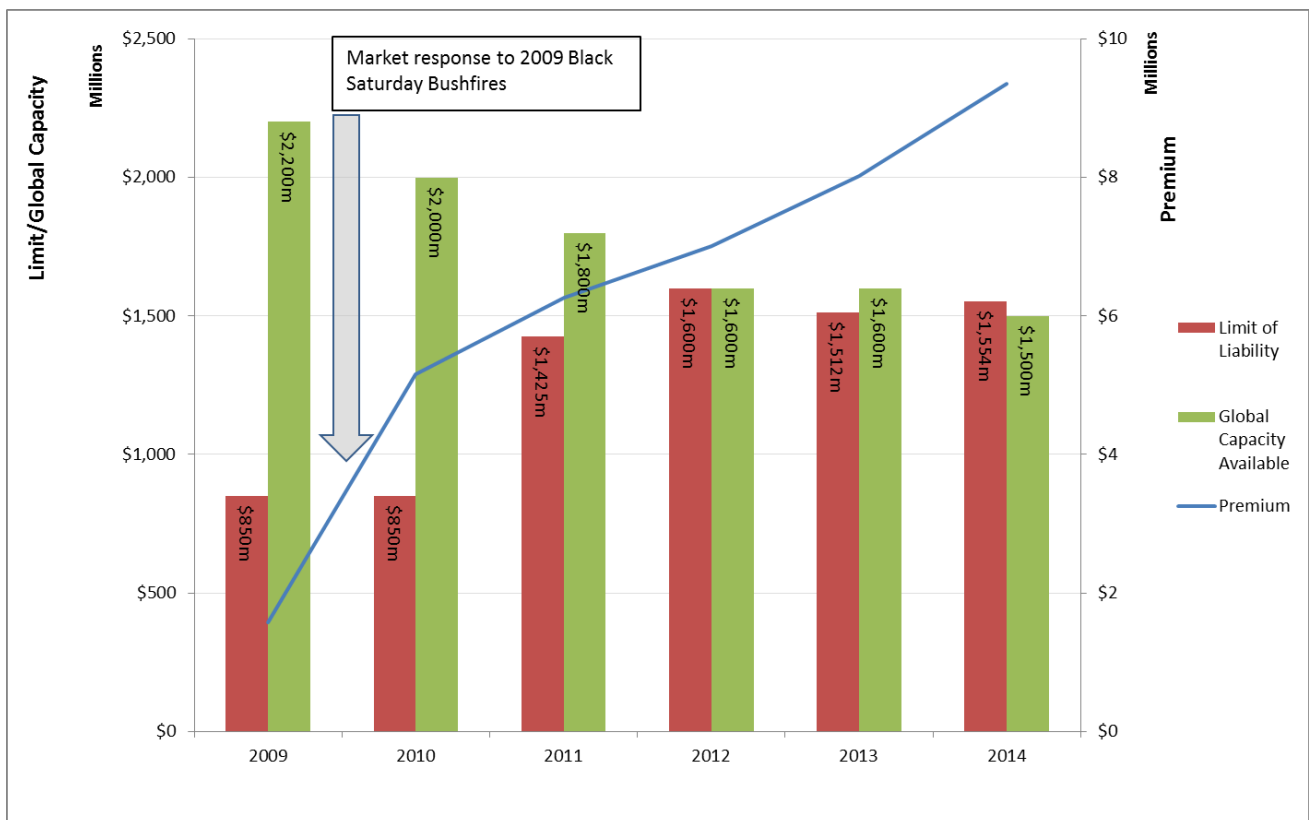
Market Factors

The Bushfire Liability market is still volatile after the Black Saturday fires in 2009. Recently the Kilmore East and Murrindindi class actions against AusNet Services and other parties involved in the legal action settled for a reported \$500m and \$300m respectively, for which insurers are expected to make a major contribution. In response to catastrophic events of this nature, the insurance market will look to re-rate risks, particularly if the event characteristics (e.g. its magnitude) were unexpected. The re-rating of a risk will take time to reach a steady state as the full quantum of the event becomes known.

At present further class action activity is underway or developing relating to bushfires in NSW and Victoria, continuing to ensure that future changes to pricing and market capacity remain likely, with the extent of those changes uncertain. Two such examples are the Mickleham Road and Yarram (Jack River) class-actions brought against AusNet Services during 2014.

Since 2009, global capacity for Bushfire Liability has been slowly declining, as outlined in Chart 1 below.

Chart 1 – Market Response to 2009 Black Saturday Bushfires



Note: Global capacity in Chart 1 excludes Australian capacity.

This declining capacity impacts on the ability to maintain current pricing of Bushfire Liability. Aon's Insurance Market Update Q3 2014 advised that while the general liability market remains relatively stable on the whole, the stability does not extend to bushfire exposure for this reason.

"Not so in the case of bushfire exposure. Rates are still considered hard and overall capacity continues to decline, particularly as insurers now closely monitor their aggregate exposure over all clients and all states of Australia."

Bill Pavey, Aon Placement Director – Casualty

Appendix 3 includes bushfire statistics from 1900 to 2009 that highlights AusNet Service's exposure to bushfire liability risk.

AusNet Services's Specific Factors

[C-I-C]

3.1.5 AusNet Services Insurance Limited

AusNet Services' Liability insurance premium includes a portion underwritten by AusNet Services' captive insurance company, AusNet Services Insurance Limited.

AusNet Services Insurance Limited writes coverage for the final [C-I-C] of AusNet Services' [C-I-C] limit for the policy year ending 30 September 2015. The captive is domiciled in Guernsey and administered by the captive manager Aon. Premium for this capacity and coverage is determined by the captive manager who balances the global market rates against Aon's experience as a leading provider of captive insurance services and internal rating models.

3.1.6 Allocation to Transmission

[C-I-C]



[C-I-C]

3.1.7 Insurance Premium Forecast Calculations

Aon believe that it is likely for premiums to increase up to 20% per annum over the upcoming regulatory period. This is based on a number of reasons (as outlined in Section 3.1.5), namely:

[C-I-C]

Based on this, it would not be unreasonable for AusNet Services to budget for premium increases up to 20% per annum over the next three years, however, Aon consider that a prudent organisation would budget for premium increases of at least 10% over the next policy periods up to and including the 2017/18 policy year, followed by a 5% increase in the remainder of the regulatory period.



Table 6 below outlines the calculation of the insurance premium forecast based on a 10% per annum premium increase over the next policy periods up to and including the 2017/18 policy year, followed by a 5% increase in the remainder of the regulatory period.

[C-I-C]

3.2 Property

3.2.1 Systematic drivers

Property insurance provides AusNet Transmission Group with cover for damage to insured assets. Insured assets largely include substations, terminal stations and any other non-network assets declared under the policy.

Given the size of the policy deductible (\$500,000 each and every claim), insured losses would largely relate to the following:

- **Machinery Breakdown** – typically a Power Transformer failure, which has only moderate frequency and expected severity of less than \$10m.
- **Catastrophic – Single site** – fire / explosion or weather event that severely impacts a major site. Low likelihood.
- **Catastrophic – Multi site** – weather event that creates an aggregated exposure across multiple sites. Unlikely to lead to major damage at any one site. Moderate likelihood.

The key driver of changes to AusNet Transmission Group's Property rates will be a frequency of Machinery Breakdown losses. This is largely what caused rate increases in 2009/10 and 2010/11. In addition to this, other factors that could influence Property rates include:

- General market conditions (insurer competition and market capacity);
- Recent global catastrophes; and
- Recent industry loss experience.

3.2.2 Review of Prior Regulatory Periods

For AusNet Services as a whole, base premium costs have increased by 149% between the 2008/09 policy year and the 2014/15 policy year.

There are two main reasons that have contributed to this increase:

- Exposure (declared asset values) has increased by about 92% over the six year period. This would correspond with a direct increase in the premium.
- Premium rates have increased by about 30% over the six year period (largely in 2009/10 and 2010/11). This increase was due to multiple claims in 2009 and 2010 relating to a number of power transformer failures.

3.2.3 Exposure

The exposure measure for Property is declared asset values.

Declared asset values for the Transmission business have increased by 89% over the seven year period from 2009 to 2016, meaning that the geometric average increase was 10% per year.

Given the importance of this factor in the overall premium forecast, we have also considered a bottom-up approach to determining an appropriate growth rate for the regulatory period 2017/18 to 2021/22, and this is set out below.

The following factors comprise in exposure growth:

- A. Standard price inflation;
- B. Construction costs inflation (over and above standard price inflation);
- C. Increases relating to capex replacement program; and
- D. Inclusion of any new assets (ie. network growth).

This approach is consistent with the approach used in determining the exposure growth for the 2014-17 Transmission regulatory period, as approved by the AER.

A. Standard Price Inflation

Standard price inflation is assumed to be 2.5% per annum.

B. Construction Costs Inflation

Experts from Aon Valuation Services (“AVS”) have advised that current construction costs for insured Transmission assets do not exceed standard price inflation. As such, a factor to apply over and above standard price inflation is 0%.

C. Increases Relating to Capex Replacement Program

AusNet Services has advised that real capex costs will be approximately \$565m over the upcoming 2017/18 – 2021/22 regulatory period (approximately \$113m per year). In order to assess the impact of the expected \$565 capex costs would have on declared asset values, Aon and AusNet Services have investigated known capex projects and measured the value of projects after capex spend against value before commencement of capex spend.

AusNet Services has advised that partial re-builds will attract an average uplift of 20% in the declared values per capex. The uplift associated with new re-builds will depend on the actual site being re-built. The following four assets are examples of current and planned new re-builds:

- Heatherton (HTS) – 2015/16 replacement cost is \$46m, Post re-build replacement cost is estimated at \$53m
- Richmond (RTS) – 2015/16 replacement cost is \$143m, Post re-build replacement cost is estimated at \$167m
- West Melbourne (WMTS) - 2015/16 replacement cost is \$64m, Post re-build replacement cost is estimated at \$126m
- Brunswick (BTS) - 2015/16 replacement cost is \$31m, Post re-build replacement cost is estimated at \$225m
- Sprinvale (SVTS) – 2015/16 replacement cost is \$60m, Post re-build replacement cost is estimated at \$77m

For these stations, total 2015/16 current replacement cost is \$343m and the total post re-build replacement cost is estimated at \$647m. This is an increase of \$304m in real costs, which equates to an uplift of approximately 47% of the capex associated with new re-builds.

AusNet Services also has seven partial re-builds planned during the same period totalling \$153m of capex with a 20% uplift in declared values, as outlined above. The weighted average uplift per capex of both partial re-builds and new re-builds is therefore approximately 42% in this instance.

This value has been applied to the planned capex for the upcoming regulatory year to determine the exposure growth associated with this factor. The result is a real \$47m increase per year (42% of real \$113m capex per year). This equates to approximately a 1.5% increase on the 2015/16 total declared values allocated to Transmission of approximately \$3.5b.

D. Network Growth

AusNet Services has advised no growth for the regulated Transmission business, consistent with its role as owner and operator of the network, and the Australian Energy Market Operator's role as the Victorian transmission augmentation planner. As such, we assume this factor to be 0%.

Conclusion

Using a 'bottom-up' approach and considering each of these four factors, we arrive at an exposure growth estimate of 4.0% per annum, which is made up of 2.5% CPI and 1.5% capex program.

Taking into account the historical growth rates of 10% per annum, exposure growth of between 4.0% and 10% per annum would not be unreasonable.

Aon recommend that a prudent organisation would forecast exposure growth of at least 4.0% per annum.

3.2.4 Premium Rates

Given that AusNet Services' premium rates have remained relatively flat for the past 5 years, Aon expects premium rates for AusNet Services to continue to remain relatively flat for the remainder of the regulatory period, assuming that loss experience tracks as expected or better.

Aon's Insurance Market Update, Q3 2014 suggests that market competition is at an all-time high due to a continual increase in capacity in the global marketplace in 2014. This means that market conditions are favourable in general and this is currently the case for AusNet Services.

“In many cases, large corporate and global clients have enjoyed double-digit reductions in rates on like-for-like exposures. With the ever-increasing oversupply of capacity continuing to dictate market forces, far more substantial reductions are available with the right strategy in place, particularly where a client’s risk profile fits the broadest insurer appetite.”

Ben Rolfe, Aon Chief Broking Officer

Loss ratios for insurers on AusNet Services Property program have been reasonably healthy over the last five years. However, developing claims from a late January 2014 failure at the Ringwood North Zone Substation (an Electricity Distribution related claim) and a July 2015 Ballarat B1 Transformer failure puts AusNet Services’ overall favourable loss ratio at risk. As of August 2015, these claims are expected to settle for \$2m and \$4m respectively.

Balancing upward pressure on rates from a likelihood of loss basis (such as the developing Ringwood North Zone Substation and Ballarat B1 Transformer claims totalling up to \$6m) with favourable market conditions, Aon expects rates for AusNet Services to increase by 5% per year for policy years ending 2017 and 2018. This would be followed by flat rates for the regulatory period 2018 to 2022.

3.2.5 Allocation to Transmission

The allocation to Transmission is based on the proportion of declared asset values. This has ranged from 61% to 76% over the current regulatory period, with a proportion of 70% in 2014/15. The recent renewal of the property policy confirms the reasonability of the forecast split, with the Transmission proportion being 70.8% for the 2015/16 year. Furthermore, AusNet Services conducted an independent valuation of all the Transmission Terminal Stations as at March 2015 further affirming that the 70% allocation is appropriate.

In providing a premium forecast, we have assumed that Transmission has 70% of the declared asset values.

The 70% split is based purely on declared Transmission Asset Values / Total Group declared Asset Values.

3.2.6 Insurance Premium Forecast Calculations

Based on information provided by AusNet Services and our view of forecast changes to exposure and premium rates (as outlined in the preceding sections), Aon considers that a prudent organisation would budget for premium increases reflecting:

- Exposure Growth: 4.0% per annum - as explained in section 3.2.3.
- Premium Rate Growth: 0% per annum - as explained in Section 3.2.4.

Table 8 below outlines the calculation of the insurance premium forecast based on the assumptions outlined in the previous section.

Table 8 – Insurance Premium Forecast – Property

Policy Year (ending 28 Feb)	2018	2019	2020	2021	2022	2023
Change to Exposure	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
Change to Premium Rates	5.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Premium Basis	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast
Base Premium						
AusNet Services Declared Values	5,373,450,451	5,588,388,469	5,811,924,008	6,044,400,968	6,286,177,007	6,537,624,087
Insurance Rate	0.0839%	0.0839%	0.0839%	0.0839%	0.0839%	0.0839%
AusNet Services Premium	4,508,338	4,688,672	4,876,219	5,071,268	5,274,118	5,485,083
- Transmission Allocation	70%	70%	70%	70%	70%	70%
- Transmission Premium	3,155,837	3,282,070	3,413,353	3,549,887	3,691,883	3,839,558
Statutory Charges						
Total Stat Charges (excl GST)	416,967	433,646	450,992	469,031	487,793	507,304
Total Premium (excl GST)						
- Transmission Premium	3,572,804	3,715,716	3,864,345	4,018,919	4,179,675	4,346,862
Regulatory Year (ending 31 Mar)	2018	2019	2020	2021	2022	
- Total Transmission Premium (Nominal)	3,584,713	3,728,102	3,877,226	4,032,315	4,193,608	
- Regulated Transmission Premium (Nominal)	3,247,033	3,376,915	3,511,991	3,652,471	3,798,570	
- Regulated Transmission Premium (Real \$2016)	3,090,573	3,135,801	3,181,691	3,228,252	3,275,495	

3.3 Motor

3.3.1 Systematic drivers

Motor insurance provides AusNet Transmission Group with cover for damage to their own vehicles as well as damage to third party property (where the damage is caused by AusNet Services' vehicles).

Motor is mainly an attritional risk. Frequency for AusNet Services is approximately one claim every two days and the severity rarely exceeds \$50k per claim (average would be approximately \$5k).

Motor premiums are driven by loss experience. Given that loss experience for sizeable fleets is relatively consistent, Motor underwriters will typically look at five years of loss experience and base rates on that loss experience. Due to this, technical pricing (based on actuarial modelling) is typically a good guide to a reasonable premium. If market premiums are materially above technical pricing, then there is usually an opportunity to find another market at a more competitive rate. Similarly, if market premiums are materially below technical pricing, then market pricing will usually increase (unless there is another market willing to offer unsustainable pricing below the technical rate).

3.3.2 Review of Prior Regulatory Periods

For AusNet Services as a whole, base premium costs have increased by 94% between the 2008/09 policy year and the 2014/15 policy year.

There are two main reasons that have contributed to this increase:

- Exposure (number of vehicles) has increased by about 40% over the six year period. This would correspond with a direct increase in the premium
- Premium rates have increased by about 37% over the six year period equating to a geometric average of 5.4% per annum.

3.3.3 Exposure

The exposure measure for Motor is number of vehicles.

Vehicle numbers the business have increased by 41% over the six year period, meaning that the geometric average increase was 5.9% per year.

AusNet Services has forecast growth in vehicle numbers of 6% per annum for the next five years. This is in line with historical growth.

On the basis that historical growth reflects future growth, this approach is not unreasonable.

3.3.4 Premium Rates

Historical premium rate increases have averaged 5.4% p.a. over the six year period period.

Premium rates per vehicle are applied to the number of vehicles. As such, they are expected to increase in line with inflation in the long-term. Given that rate increases have exceeded inflation recent years suggests that AusNet Services' frequency and value of claims has exceeded insurer's expectations.

Furthermore, increased exposure would lead to an increase in claims frequency. This would place upward pressure on AusNet Services' motor claims experience.

Aon estimate that premium rates will continue to increase at 5% per annum in the 2015/16 and 2016/17 policy periods, thereafter increasing in line with inflation (2.5%) for the remainder of the regulatory period.

The 5% increase for the years ending 2016 and 2017 is in line with the 2016-20 Electricity Distribution regulatory forecast.

3.3.5 Allocation to Transmission

The allocation to Transmission is based on the balance sheet asset split, which is 40% for Transmission.

AusNet Services allocates the Group book assets on a 60/40 split to Distribution/Transmission respectively. This approach is consistent with the approach undertaken in the Electricity Distribution review.

3.3.6 Insurance Premium Forecast Calculations

Motor premiums are underwritten differently to Other Classes. As such, Aon has considered Motor separately and focussed on estimating changes to exposure and premium rates, as these factors will directly influence premiums going forward.

Table 9 outlines the calculation of the insurance premium forecast based on the assumptions outlined in the previous section.

Table 9 – Insurance Premium Forecast – Motor

Policy Year (ending 30 Sep)	2017	2018	2019	2020	2021	2022
Change to Exposure	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%
Change to Premium Rates	5.0%	2.5%	2.5%	2.5%	2.5%	2.5%
Premium Basis	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast
Base Premium						
Vehicle Numbers	1,206	1,278	1,355	1,436	1,522	1,613
Rate (Per Vehicle)	349	358	367	376	386	395
AusNet Services Premium	421,181	457,614	497,197	540,205	586,933	637,702
- Transmission Allocation	40%	40%	40%	40%	40%	40%
- Transmission Premium	168,473	183,045	198,879	216,082	234,773	255,081
Statutory Charges						
GST	16,847	18,305	19,888	21,608	23,477	25,508
Stamp Duty	18,532	20,135	21,877	23,769	25,825	28,059
FSL	0	0	0	0	0	0
Total Stat Charges (excl GST)	18,532	20,135	21,877	23,769	25,825	28,059
Total Premium						
- Transmission Premium	187,005	203,180	220,756	239,851	260,598	283,140
Regulatory Year (ending 31 Mar)	2018	2019	2020	2021	2022	
- Total Transmission Premium (Nominal)	195,093	211,968	230,303	250,224	271,869	
- Regulated Transmission Premium (Nominal)	176,715	192,001	208,609	226,653	246,259	
- Regulated Transmission Premium (Real \$2016)	168,200	178,292	188,989	200,329	212,348	

3.4 Other Classes

3.4.1 Systematic drivers

Other classes include a range of ancillary risk classes as outlined in Appendix 1.5.

Premiums for these classes are typically driven by market conditions and recent claims experience.

Given that losses for these policies are usually low frequency, premiums would usually be negotiated as a 'roll-over' (same premium as prior year) in a claims-free year. However, occasionally market factors may cause an increase or decrease in premiums. On other occasions there may be a shift to the exposure or significant premium increases due to recent claims experience.

3.4.2 Review of Prior Regulatory Periods

There were three major changes to Other Classes in the current regulatory period related to Personal Accident insurance and the take up of an Environmental Liability policy and Portable Equipment policy.

- **Personal Accident** - In 2012/13, AusNet Services changed the deductible structure, which resulted in a higher level of retained costs and lower insurance premiums. The overall impact of this change is an expected reduction in total cost (premium plus retained losses).
- **Environmental Liability** - In 2013/14, AusNet Services incepted a Pollution Premises Liability policy to cover for costs associated with the clean-up and associated fines and penalties caused by a gradual release of pollution.
- **Portable Equipment Insurance** - In 2014/15, AusNet Services incepted a Portable Equipment policy to cover \$9.24m worth of portable equipment.

3.4.3 Exposure

Underwriting exposure is typically stagnant for these types of risks. Whilst the underlying exposure (such as revenue, employee numbers, network size) may be slightly growing, it does not typically have a flow-on effect to insurance premiums.

Due to this, we have assumed 0% exposure growth for the purpose of this analysis.

3.4.4 Premium Rates

Given that losses for these policies are usually low frequency, premiums would usually be negotiated as a 'roll-over' (same premium as prior year) in a claims-free year. However, occasionally market factors may cause an increase or decrease in premiums. On other occasions there may be a shift to the exposure or significant premium increases due to recent claims experience.

Based on this, it is not unreasonable for an organisation to budget for increases in the range of 0% and 5% for these risk classes.

Aon suggest that AusNet Services budget for a 2.5% increase in line with inflation.

3.4.5 Allocation to Transmission

The allocation to Transmission is based on the balance sheet asset split, which is 40% for Transmission.

AusNet Services allocates the Group book assets on a 60/40 split to Distribution/Transmission respectively. This approach is consistent with the approach undertaken in the Electricity Distribution review.

Aon agreed that this is not unreasonable.

3.4.6 Insurance Premium Forecast Calculations

Table 10 below outlines the calculation of the insurance premium forecast based on the assumptions outlined in the following sections.

Table 10 – Insurance Premium Forecast – Other Classes

Policy Year	Expiry Month	2017	2018	2019	2020	2021	2022
Change to Exposure		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Change to Premium Rates		2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
Premium Basis		Forecast	Forecast	Forecast	Forecast	Forecast	Forecast
Base Premium Summary By Expiry Month							
D&O and Environmental	4	663,175	679,754	696,748	714,167	732,021	750,322
Personal Accident	6	122,367	125,426	128,562	131,776	135,070	138,447
Other	9	258,066	264,518	271,131	277,909	284,857	291,978
- Transmission Allocation		40%	40%	40%	40%	40%	40%
Transmission Base Premium							
D&O		265,270	271,902	278,699	285,667	292,808	300,129
Personal Accident		48,947	50,170	51,425	52,710	54,028	55,379
Other		103,227	105,807	108,452	111,164	113,943	116,791
Transmission Premium (incl Statutory Charges)							
D&O		294,318	301,676	309,218	316,948	324,872	332,994
Personal Accident		54,331	55,689	57,081	58,508	59,971	61,470
Other		110,732	113,500	116,338	119,246	122,227	125,283
Regulatory Year (ending 31 Mar)			2018	2019	2020	2021	2022
- Total Transmission Premium (Nominal)			468,529	480,242	492,248	504,554	517,168
- Regulated Transmission Premium (Nominal)			424,393	435,003	445,878	457,025	468,451
- Regulated Transmission Premium (Real \$2016)			403,944	403,944	403,944	403,944	403,944

3.5 New Policies

3.5.1 Systematic drivers and recommendation

Cyber Risks/Network Security and Privacy (“Cyber Liability”) insurance has been developed in recent years in response to growing global experience and understanding of network security risks. This class of insurance is now sufficiently matured to cost effectively cover material risks which are uninsured by more traditional policies (e.g. liability insurance). A Cyber Liability style policy can provide cover for first party and potential third party costs following network security breaches, data breaches and privacy breaches. This includes notification to a regulator and/or customers, business interruption costs, cyber extortion costs and third party claims. The take-up of Cyber Liability insurance is emerging as an important component of an insured's risk reduction strategy in the utility sector as the potential repercussions of this threat and the associated disruption to services is becoming more evident with the increased reliance on information technology in the delivery of services.

Aon recommend the class of insurance to be included within AusNet Services' insurance program, at a likely cost in the region of \$150,000 (plus charges) per annum for a limit of liability of [C-I-C].

3.5.2 Review of Prior Regulatory Periods

This policy was not purchased in prior regulatory periods.

3.5.3 Exposure

Underwriting exposure is typically stagnant for these types of risks. Whilst the underlying exposure (such as revenue, employee numbers, network size) may be slightly growing, it does not typically have a flow-on effect to insurance premiums.

Due to this, we have assumed 0% exposure growth for the purpose of this analysis.

3.5.4 Premium Rates

Aon suggest that AusNet Services budget for a 2.5% increase in line with inflation, consistent with the approach used in the 'Other' classes of insurance.

3.5.5 Allocation to Transmission

The allocation to Transmission is based on the balance sheet asset split, which is 40% for Transmission.

AusNet Services allocates the Group book assets on a 60/40 split to Distribution/Transmission respectively. This approach is consistent with the approach undertaken in the Electricity Distribution review.

Aon agreed that this is not unreasonable.

3.5.6 Insurance Premium Forecast Calculations

The table below outlines the calculation of the insurance premium forecast based on the assumptions outlined in the following sections.

Table – 11 Insurance Premium Forecast – New Policies

Policy Year (ending 30 Sep)	2017	2018	2019	2020	2021	2022
Change to Exposure	0%	0%	0%	0%	0%	0%
Change to Premium Rates	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
Premium Basis	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast
Base Premium						
AusNet Services Premium	157,594	161,534	165,572	169,711	173,954	178,303
- Transmission Allocation	40%	40%	40%	40%	40%	40%
- Transmission Premium	63,038	64,613	66,229	67,884	69,582	71,321
Statutory Charges						
Total Stat Charges (excl GST)	6,934	7,107	7,285	7,467	7,654	7,845
Total Premium						
- Transmission Premium	69,972	71,721	73,514	75,352	77,236	79,166
Regulatory Year (ending 31 Mar)	2018	2019	2020	2021	2022	
- Total Transmission Premium (Nominal)	70,846	72,617	74,433	76,294	78,201	
- Regulated Transmission Premium (Nominal)	64,173	65,777	67,421	69,107	70,834	
- Regulated Transmission Premium (Real \$2016)	61,080	61,080	61,080	61,080	61,080	



Appendix 1 Insurance Premium Forecast

A1.1 Insurance Premium Forecast - Summary

A1.2 Insurance Premium Forecast - Liability

A1.3 Insurance Premium Forecast - Property

A1.4 Insurance Premium Forecast - Motor

A1.5 Insurance Premium Forecast - Other

A1.6 Insurance Premium Forecast – New Policies

A1.1 AusNet Transmission Group Insurance Premium Forecast - Summary

Regulatory Year (ending 31 Mar) Risk Class	2018	2019	2020	2021	2022	Total
Liability	1,864,563	2,002,185	2,102,294	2,207,409	2,317,780	
Property	3,584,713	3,728,102	3,877,226	4,032,315	4,193,608	
Motor	195,093	211,968	230,303	250,224	271,869	
Miscellaneous (All Other)	468,529	480,242	492,248	504,554	517,168	
New Policies	70,846	72,617	74,433	76,294	78,201	
Total	6,183,743	6,495,114	6,776,504	7,070,796	7,378,625	33,904,784
Less: Non-regulated Portion (9.42%) :	-582,509	-611,840	-638,347	-666,069	-695,066	-3,193,831
Total Regulated Business (Nominal)	5,601,235	5,883,275	6,138,158	6,404,727	6,683,559	30,710,953
Total Regulated Business (Real \$2016)	5,331,336	5,463,205	5,560,868	5,660,846	5,763,212	27,779,466

Notes:

1. All values are taken from calculations outlined in the remainder of Appendix 1.

A1.2

AusNet Transmission Group

[C-I-C]

A1.3
AusNet Transmission Group
Insurance Premium Forecast – Property

Policy Year (ending 28 Feb)	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Change to Exposure									4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
Change to Premium Rates									5.0%	5.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Premium Basis	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast
Base Premium															
AusNet Services Declared Values	2,439,039,868	3,115,818,727	3,145,272,222	3,310,542,705	3,745,968,070	4,296,670,001	4,682,621,744	4,968,057,000	5,166,779,280	5,373,450,451	5,588,388,469	5,811,924,008	6,044,400,968	6,286,177,007	6,537,624,087
Insurance Rate	0.0625%	0.0656%	0.0875%	0.0884%	0.0884%	0.0884%	0.0809%	0.0761%	0.0799%	0.0839%	0.0839%	0.0839%	0.0839%	0.0839%	0.0839%
AusNet Services Premium	1,524,400	2,043,977	2,752,113	2,927,215	3,312,222	3,799,159	3,788,241	3,780,691	4,128,515	4,508,338	4,688,672	4,876,219	5,071,268	5,274,118	5,485,083
- Transmission Allocation	76%	71%	70%	69%	61%	69%	70%	71%	70%	70%	70%	70%	70%	70%	70%
- Transmission Premium	1,164,621	1,443,803	1,927,161	2,016,197	2,016,197	2,634,302	2,651,769	2,676,729	2,889,960	3,155,837	3,282,070	3,413,353	3,549,887	3,691,883	3,839,558
Statutory Charges															
Total Stat Charges (excl GST)								351,776	381,838	416,967	433,646	450,992	469,031	487,793	507,304
Total Premium (excl GST)															
- Transmission Premium								3,028,505	3,271,799	3,572,804	3,715,716	3,864,345	4,018,919	4,179,675	4,346,862
Regulatory Year (ending 31 Mar)											2018	2019	2020	2021	2022
- Total Transmission Premium (Nominal)											3,584,713	3,728,102	3,877,226	4,032,315	4,193,608
- Regulated Transmission Premium (Nominal)											3,247,033	3,376,915	3,511,991	3,652,471	3,798,570
- Regulated Transmission Premium (Real \$2016)											3,090,573	3,135,801	3,181,691	3,228,252	3,275,495

Notes:

1. The 2014/15 Property base premium of \$4,332,954 is for a 14 month period, bringing the historical renewal date of 1 January forward to 28 February. For the purpose of the forecast, the premium has been annualised to \$3,788,241 for the 2014/15 policy period, which is consistent with the insurance rate of 0.0809%.
2. Statutory charges are assumed to be 10% for GST and 10% for VIC Stamp Duty.
3. The premium for the financial year is split according to the number of months contributing from each policy year.
4. Base premium excludes charges as detailed in section 1.3.
5. All values are nominal AUD.

A1.4

AusNet Transmission Group Insurance Premium Forecast - Motor

Policy Year (ending 30 Sep)	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Change to Exposure								6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%
Change to Premium Rates								5.0%	5.0%	2.5%	2.5%	2.5%	2.5%	2.5%
Premium Basis	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast
Base Premium														
Vehicle Numbers	759	796	838	941	1,032	1,168	1,073	1,137	1,206	1,278	1,355	1,436	1,522	1,613
Rate (Per Vehicle)	231	236	254	289	281	271	317	333	349	358	367	376	386	395
AusNet Services Premium	175,000	187,915	213,176	271,995	290,000	317,000	340,000	378,420	421,181	457,614	497,197	540,205	586,933	637,702
- Transmission Allocation	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%
- Transmission Premium	70,000	75,166	85,270	108,798	116,000	126,800	136,000	151,368	168,473	183,045	198,879	216,082	234,773	255,081
Statutory Charges														
GST							13,600	15,137	16,847	18,305	19,888	21,608	23,477	25,508
Stamp Duty							14,960	16,650	18,532	20,135	21,877	23,769	25,825	28,059
FSL							0	0	0	0	0	0	0	0
Total Stat Charges (excl GST)							14,960	16,650	18,532	20,135	21,877	23,769	25,825	28,059
Total Premium														
- Transmission Premium							150,960	168,018	187,005	203,180	220,756	239,851	260,598	283,140
Regulatory Year (ending 31 Mar)										2018	2019	2020	2021	2022
- Total Transmission Premium (Nominal)										195,093	211,968	230,303	250,224	271,869
- Regulated Transmission Premium (Nominal)										176,715	192,001	208,609	226,653	246,259
- Regulated Transmission Premium (Real \$2016)										168,200	178,292	188,989	200,329	212,348

Notes:

1. Statutory charges are assumed to be 10% for GST and 10% for VIC Stamp Duty.
2. The premium for the financial year is split according to the number of months contributing from each policy year.
3. Base premium excludes charges as detailed in section 1.3.
4. All values are nominal AUD.

A1.5
AusNet Transmission Group
Insurance Premium Forecast - Other

Policy Year	Expiry Month	2015	2016	2017	2018	2019	2020	2021	2022
Change to Exposure			0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Change to Premium Rates			2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
Premium Basis		Actual	Forecast/ Actual ³	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast
<u>Base Premium Summary By Expiry Month</u>									
D&O and Environmental	4	714,251	647,000	663,175	679,754	696,748	714,167	732,021	750,322
Personal Accident	6	90,500	119,382	122,367	125,426	128,562	131,776	135,070	138,447
Other	9	245,631	251,772	258,066	264,518	271,131	277,909	284,857	291,978
- Transmission Allocation		40%	40%	40%	40%	40%	40%	40%	40%
<u>Transmission Base Premium</u>									
D&O		285,700	258,800	265,270	271,902	278,699	285,667	292,808	300,129
Personal Accident		36,200	47,753	48,947	50,170	51,425	52,710	54,028	55,379
Other		98,253	100,709	103,227	105,807	108,452	111,164	113,943	116,791
<u>Transmission Premium (incl Statutory Charges)</u>									
D&O		317,051	287,140	294,318	301,676	309,218	316,948	324,872	332,994
Personal Accident		40,182	53,006	54,331	55,689	57,081	58,508	59,971	61,470
Other		105,396	108,031	110,732	113,500	116,338	119,246	122,227	125,283
<u>Regulatory Year (ending 31 Mar)</u>					2018	2019	2020	2021	2022
- Total Transmission Premium (Nominal)					468,529	480,242	492,248	504,554	517,168
- Regulated Transmission Premium (Nominal)					424,393	435,003	445,878	457,025	468,451
- Regulated Transmission Premium (Real \$2016)					403,944	403,944	403,944	403,944	403,944

Notes:

1. Statutory charges are based on the split of statutory charges for the 2014/15 policy period. It is expected that there will be no material changes to statutory charges going forward.
2. The premium for the financial year is split according to the number of months contributing from
3. D&O, Environmental and Personal Accident Actual premiums for policy year ending 2016 are used as the base year for the forecast.
4. Base premium excludes charges as detailed in section 1.3.
5. All values are nominal AUD.

A1.6 AusNet Transmission Group Insurance Premium Forecast - New Policies

Policy Year (ending 30 Sep)	2017	2018	2019	2020	2021	2022
Change to Premium Rates	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
Premium Basis	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast
<u>Base Premium</u>						
AusNet Services Premium	157,594	161,534	165,572	169,711	173,954	178,303
- Transmission Allocation	40%	40%	40%	40%	40%	40%
- Transmission Premium	63,038	64,613	66,229	67,884	69,582	71,321
<u>Statutory Charges</u>						
Total Stat Charges (excl GST)	6,934	7,107	7,285	7,467	7,654	7,845
<u>Total Premium</u>						
- Transmission Premium	69,972	71,721	73,514	75,352	77,236	79,166
Regulatory Year (ending 31 Mar)		2018	2019	2020	2021	2022
- Total Transmission Premium (Nominal)		70,846	72,617	74,433	76,294	78,201
- Regulated Transmission Premium (Nominal)		64,173	65,777	67,421	69,107	70,834
- Regulated Transmission Premium (Real \$2016)		61,080	61,080	61,080	61,080	61,080

Notes:

1. Statutory charges are assumed to be 10% for GST and 10% for VIC Stamp Duty.
2. The premium for the financial year is split according to the number of
3. Base premium excludes charges as detailed in section 1.3.



Appendix 2 Liability Limit Benchmarking

**Aon Australia Electricity Distribution and Transmission companies
Liability Policy : Limit of Liability**

[C-I-C]

Liability Limit Benchmarking- North America & Australian Utility and Power Generation Entities

[C-I-C]

Appendix 3 Bushfire Statistics 1900 - 2009

A3.1

Significant bushfires and bushfire seasons in Australia 1900 -2009

Year	Location	State	Buildings	Deaths
2013	Central Highlands, East coast (Bicheno), Forestier and Tasman Peninsulas	TAS	203	1
2011	Margaret River	WA	53	0
2011	Roleystone and Kelmscott	WA	104	0
2009	Black Saturday Bushfires	VIC	3,500	173
2007	Kangaroo Island	SA		1
2007	Boorabbin National Park	WA		3
2006	Alpine Shire, Benalla, Indigo Shire, Mansfield Shire, Corangamite Shire, Golden Plains Shire, Baw Baw Shire, East Gippsland, Latrobe, Wellington Shire, Moyne Shire, Wangaratta	VIC	51	1
2005	Eyre Peninsula, Adelaide Hills	SA	337	9
2005	Wilson's Promontory	VIC		0
2005	Ararat, Baw Baw Shire, Glenelg Shire, Golden Plains Shire, Greater Geelong, Horsham, Latrobe, Moorabool Shire, Moyne Shire, Murrindindi Shire, Northern Grampians Shire, South Gippsland Shire, Southern Grampians Shire	VIC	416	4
2003	Namadgi National Park, Uriarra, Pierces Creek and Stromlo settlements, Cotter, Corin, Tidbinbilla, Mt Stromlo, Duffy, Holder, Chapman, Kambah, Curtin, Lyons, Murrumbidgee valley, Coppins Crossing	ACT	581	4
2003	North-eastern Victoria, Gippsland	VIC	41	1
2002	81 local government areas in Greater Sydney, Hunter, North Coast, Northern Tablelands, North-west Slopes, North-west Plains, Central Tablelands, Southern Tablelands, Illawarra, South Coast	NSW	86	2
2002	Including Flinders Island, northern fringe of Hobart	TAS	13	0
2002	Glenaroua	VIC	1	0
2002	Big Desert	VIC	1	0
2000	Portland region	VIC		0
2000	North-western Victoria	VIC	5	0
2000	Dadswells Bridge and surrounds, Horsham, Stawell, Barratt region	VIC	6	0
1999	Grampians	VIC		0
1998	Western District	VIC	60	0
1998	Trentham	VIC	60	0
1998	Linton	VIC		5
1997	Perth and south-west of state	WA	15	2
1997	Dandenong Ranges, Creswick, Heathcote, Teddywaddy, Goughs Bay	VIC	50	3
1997	Winton, Romsey	VIC		0
1997	Caledonia River area of Alpine National Park, Carey River State Forest	VIC		0
1995	Berringa	VIC		0
1995	South-western districts	VIC		0
1990	Strathbogie Ranges	VIC	166	1
1985	Mugga Lane, Red Hill, Mount Majura, Tharwa, Symonstown, Googong-Queanbeyan area	ACT		1
1985	Including Maryborough, Avoca, Little River, Wilson's Promontory	VIC	680	5
1984	Western Division	NSW		4
1983	Mt Osmond, Mt Gambier, South Barwon	SA	333	28
1983	Greendale	VIC		2
1983	Cann River	VIC		0
1983	Mt Macedon	VIC	50	0
1983	Monivae, Branxholme, Cockatoo, East Trentham, Mt Macedon, Otway Range, Belgrave Heights, Warburton, Cudjee, Upper Beaconsfield, Framingham	VIC	2,500	47
1983	Cann River	VIC		0
1982	Launceston, Hobart, Broadmarsh	TAS	46	1
1980	Sunset Country and Big Desert	VIC		0
1979	Mudgee, Warringah and Sutherland Shires, Goulburn, South Coast	NSW	14	5
1978	South-west of state	WA	6	2
1978	Bairnsdale	VIC	36	2
1977	Penshurst, Tatyoon, Streatham, Creswick, Pura Pura, Werneth, Cressy, Rokewood, Beeac, Mingay, Lismore, Little River	VIC	456	8
1974	Bourke to Balranald, Cobarr Shire, Moolah-Corinya—most of the Western Division	NSW	50	3
1974	North-west of state	SA		0
1972	Mt Buffalo	VIC		0
1969	Lara, Daylesford, Bulgana, Yea, Darraweit, Kangaroo Flat, Korongvale	VIC	251	23
1968	South Coast	NSW	250	14

Year	Location	State	Buildings	Deaths
1968	Dandenong Ranges, The Basin, Upwey	VIC	64	0
1966	South-east, Hobart	TAS	4,000	62
1965	Longwood	VIC	6	7
1965	Gippsland	VIC	60	3
1962	The Basin, Christmas Hills, Kinglake, St Andrews, Hurstbridge, Warrandyte, Mitcham	VIC	454	32
1962	Southern district	VIC	1,000	1
1961	Dwellingup and south-west of state	WA	160	0
1957	Blue Mountains, Leura	NSW	170	4
1957	Mt Gambier	SA		8
1952	Central and southern districts, including Benalla area	VIC		10
1951	Wagga Wagga and district, Pilliga	NSW		11
1951	Molongolo valley, Mt Stromlo, Red Hill, Woden Valley, Tuggeranong, Mugga Hill	ACT	42	3
1943	Central and western districts, Morwell, Yallourn	VIC	500	51
1942	Hamilton, South Gippsland	VIC	30	1
1939	Narbethong	VIC		2
1939	Large areas of the north-east and Gippsland, the Otway and Grampian Ranges and the towns of Rubicon, Woods Point, Warrandyte, Noojee, Omeo, Mansfield, Dromana, Yarra Glen, Warburton, Erica	VIC	1,300	71
1938	Dubbo, Lugarno, Snowy Mountains, Canberra	NSW	400	13
1938	Uriarra, Mt Franklin, Tidbinbilla, Cuppacumbalong, Booroomba, Lanyon	ACT	2000	1
1932	Gippsland and other areas across Victoria	VIC		9
1926	Noojee, Kinglake, Warburton, Erica, Dandenong Ranges	VIC	1000	60
1914	Gippsland, Grampians, Otway Range	VIC		0
1913	Chelsea (Melbourne)	VIC	164	0
1912	Willaura	VIC	15	0
1905	Dandenong Ranges	VIC		12
1900	Hamilton, Bealiba, Warrenbayne, Wangaratta, Euroa, Warrnambool	VIC	50	0
1900	Meredith, Warrnambool, Pyrenees Range, Gippsland	VIC	100	3

Notes:

1. Source is 2009 Victorian Bushfire Royal Commission Report, Volume 1, Appendix B and Appendix C

A3.2

Deaths as a result of bushfires per 100,000 people by state 1900 - 2009

	ACT	New South Wales	Queensland	South Australia	Tasmania	Victoria	
Deaths ^{1,2}	9	105	17	46	64	537	
Average population 1900 - 2009 ³	124,683	3,834,682	1,712,703	918,011	326,562	2,841,917	
Deaths per 100,000 residents	7.22	2.74	0.99	5.01	19.60	18.90	

Notes:

1. Source is 2009 Victorian Bushfire Royal Commission Report, Volume 1, Appendix B and Appendix C
2. NSW and QLD Deaths sourced from Haynes et al
3. Source is the Australian Bureau of Statistics - Australian Demographic Statistic

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