

29 May 2014

DIRECTLINK

QUANTIFICATION OF SELF-INSURANCE COSTS AND ESTIMATION
OF INSURANCE PREMIUMS 2015/2016 TO 2019/2020

VERSION 1





LARGE BROKER OF THE YEAR FOUR YEARS RUNNING

2008 | 2009 | 2010 | 2011

AUSTRALIA AND NEW ZEALAND INSTITUTE OF INSURANCE AND FINANCE

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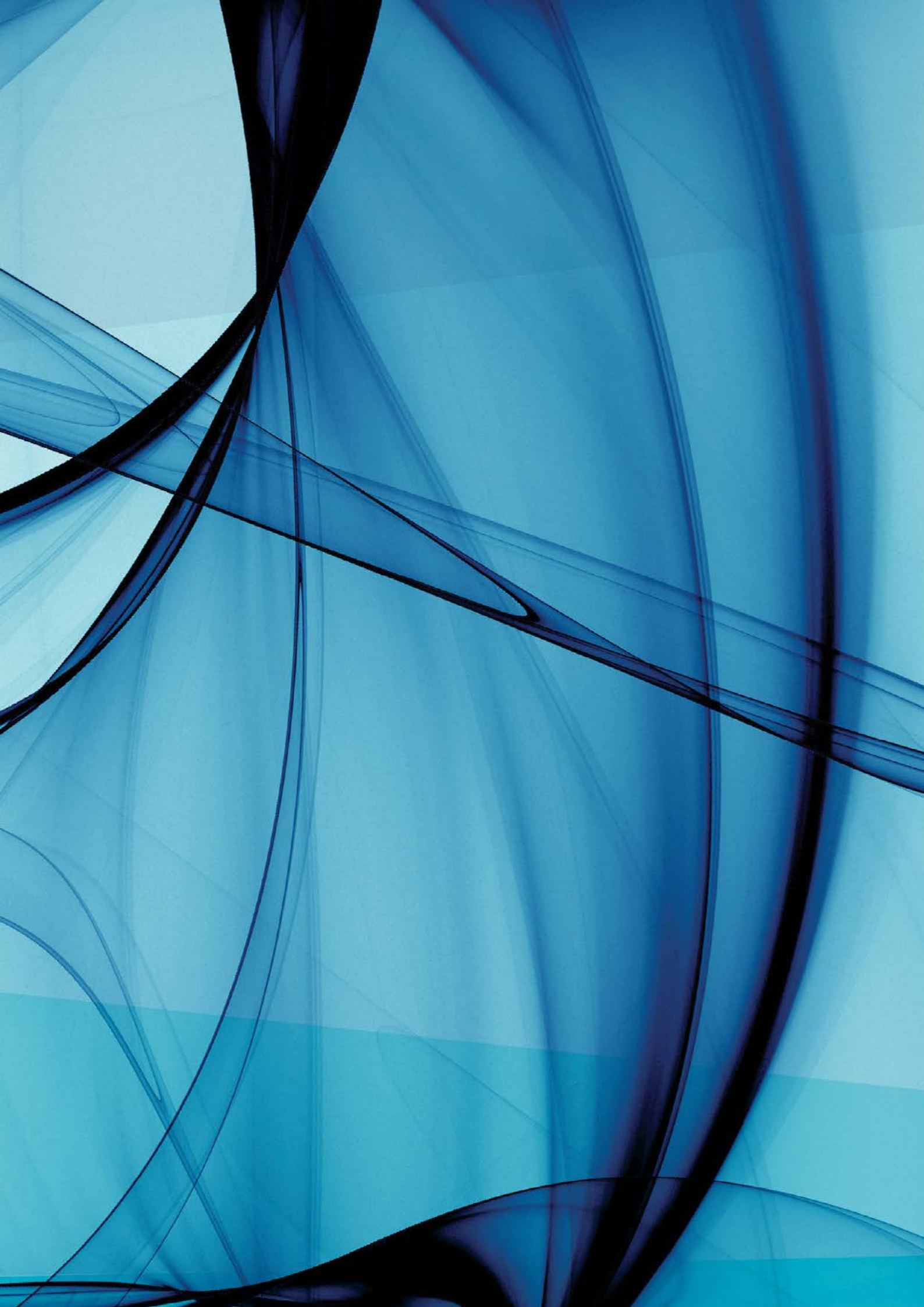
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TABLE OF CONTENTS

| | |
|---|----|
| SECTION ONE..... | 3 |
| INDEX AGAINST REGULATORY INFORMATION NOTICE | |
| 6. RISK MANAGEMENT AND INSURANCE..... | 3 |
| SECTION TWO..... | 4 |
| RELIANCES & DISTRIBUTION..... | 4 |
| SECTION THREE..... | 5 |
| SCOPE & APPROACH..... | 5 |
| SECTION FOUR..... | 6 |
| BACKGROUND INFORMATION..... | 7 |
| SECTION FIVE..... | 9 |
| PREMIUM PROJECTIONS..... | 9 |
| SECTION SIX..... | 15 |
| SELF-INSURANCE ALLOWANCE..... | 15 |
| SECTION SEVEN..... | 21 |
| SELF INSURANCE RESULTS..... | 21 |
| SECTION EIGHT..... | 22 |
| COST PASS THROUGH..... | 22 |
| SECTION NINE..... | 25 |
| CONSULTANT CV'S..... | 25 |
| APPENDIX A..... | 29 |
| RISK ISSUES..... | 29 |
| APPENDIX B..... | 30 |
| LOSS EXPERIENCE..... | 30 |



SECTION ONE

INDEX AGAINST REGULATORY INFORMATION NOTICE – 6. RISK MANAGEMENT AND INSURANCE

| Clause | Report Reference |
|--------|--|
| 6.2 | Section Eight – Premium Projections AER Worksheet |
| 6.3 | Appendix A |
| 6.4 | Section Eight – Premium Projections |
| 6.5 | Not Applicable |
| 6.6 | Entire Report |
| 6.7 | Section Five – Self Insurance Allowance |
| 6.8 | Not Applicable |
| 6.9 | Entire Report |

SECTION TWO

RELIANCES & DISTRIBUTION

Marsh Australia (**Marsh**) has been engaged by Directlink to provide a quantification of self-insurance costs and insurance premium projections in relation to its prescribed services in electricity transmission. This is intended to form part of Directlink's regulatory submission to the Australian Electricity Regulator (**AER**) for the regulatory reset period effective from 2015/2016 to 2019/2020.

Reliances and Limitations

We have assumed that the information provided to us is accurate and complete in all material aspects. We have considered the reasonableness of the data but have not undertaken a complete review to verify the accuracy. We note that our estimates assume insurance coverage for each line of business as per the commercial insurance structure in place – e.g. deductible, limits of liability, sub-limits etc.

The opinions and estimates contained in this report constitute our best judgement as of the date of this report and are subject to change without notice. In our judgement, we have employed techniques and assumptions that are appropriate and the conclusions presented herein are reasonable, given the information currently available

Distribution and Use

This report contains confidential and commercially sensitive information. Marsh agrees that this report may be disclosed to the AER on a confidential basis as part of Directlink's regulatory submission. No other use of, or reference to, our report should be made without prior written consent from Marsh, nor should the whole or part of this report be disclosed to any other person, other than persons for whom it is or has been intended.

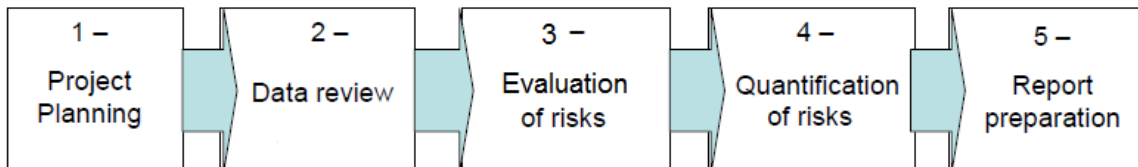
Except insofar as liability under statute cannot be excluded, Marsh, its directors, employees and agents will not be held liable for any loss or damage of any kind arising as a consequence of any use of this report or purported reliance on the Report including any errors in, or omissions from, the utilised models.

This report must be read in its entirety. Individual sections of this report, including the Executive Summary, could be misleading if considered in isolation from each other. In particular, the opinions expressed in this report are based on a number of assumptions and qualifications which are set out in full in the report.

SECTION THREE

SCOPE & APPROACH

The scope of the project involved the following steps:



Marsh created an indicative list of possible sources of risk that were reviewed in accordance with list of risk issues (Appendix A) generated by Directlink in the formulation of their strategic risk register on the 8th April 2014. This process enabled the identification of risks appropriate for self-insurance or cost pass through mechanisms.

The scope of this report is intended to provide estimates of the expected annual cost:

- less than or equal to the insurance deductible, for losses relating to events covered by Directlink's commercial insurance policies, (**below-deductible losses**);
- greater than the insurance limit, for losses relating to events covered by Directlink's commercial insurance policies, (**above-limit losses**); and
- of losses relating to uninsured events (**uninsured losses**).

Costs relating to scheduled and unscheduled maintenance have been excluded from the analysis. Presumably these costs have been included in another part of Operational Expenditure (**OPEX**) allowance within Directlink's regulatory submission.

We have focused on risks that are specific to Directlink's prescribed services as a Transmission Networks Service Provider (**TNSP**) and established a ground-up frequency and severity profile for each. We have then also considered the insurance policy overlay for these risks. We have identified five loss scenarios for the purpose of our analysis. These are as below:

- Working losses;
- Major property loss;
- Decontamination event;
- Catastrophic property loss; and
- Liability event.

With respect to each of the above, we have relied on a combination of loss experience as well as potential losses that have not occurred for Directlink but are deemed credible.

The approaches we have used in calculating self-insurance costs in this report are based on actuarial techniques and can be broadly considered as actuarial advice. However the scope and focus of the analysis in this report has

been on the expected level of losses, no attempt has been made to investigate the potential volatility of these losses, which is usually another key component of actuarial advice.

Events have also been suggested for the cost pass through mechanism. In relation to consideration of events to be nominated for the cost pass through mechanism, we have adopted a number of principles as follows:

- Quantification of such an event, by attaching frequency or severity, cannot be ascribed by reasonable means and is subject to significant uncertainty;
- There has been no past incidences of similar type of such event, or similar events of such magnitude for Directlink, hence could regarded as an unforeseen event; and
- Such an event is beyond the control of Directlink, or Directlink has taken appropriate and reasonable means in order to prevent or reduce probability of its occurrence.

The diagram below summarises how each risk grouping has been incorporated and treated within our approach.

Table 3.1 – Summary of approach

| | Self-Insurance | Cost pass through |
|---|-----------------------|--------------------------|
| Liability - below deductible | ✓ | ✗ |
| Liability - above Limit of Liability | ✗ | ✓ |
| Property total - below deductible | ✓ | ✗ |
| Property total - above Limit of Liability | ✓ | ✓ |

SECTION FOUR

BACKGROUND INFORMATION

Overview

The following section provides an overview of background information considered during the determination of Directlink's self-insurance allowance. Background information is presented under the following four categories:

- Available data;
- Insurance arrangements;
- Loss Experience;
- Risk mitigation measures.

Available data

- Directlink loss experience (2006 – 2014);
- Key risk issues considered for Directlink Strategic risk profile;
- Property underwriting report undertaken by Marsh Risk Consulting in late 2008;
- Risk Evaluation based on Munich Re Hazard Zones (NATHAN Single Risk Assessment Report, 2014 as available to Marsh).

Insurance arrangements

Commercial insurance arrangements are consistent with those described later section of this report. These are generally based on existing commercial insurance policies in place where the APA Group program has been utilised. However adjustments to the program have been made where appropriate in order to reflect open market terms as if the Directlink asset were ringfenced and placed as a standalone program.

The main program operates with a per occurrence deductible of \$0.25m for property damage and the greater of \$1m or a 30 day equivalent contribution for consequential losses.

Notable exceptions include:

- Above ground Powerlines with a property damage deductible of \$1m;
- Flood with a property damage deductible of \$1m;
- Non-physical damage to computer system with a 2 day equivalent deductible subject to a minimum deductible of \$1m per occurrence;
- Above ground powerlines associated with the interconnect between Mullumbimby and Bungalora HVDC converter stations with a limit of liability of \$5m; and
- Land and water contaminant clean-up, removal and disposal with a limit of liability of \$0.1m in the aggregate during any policy year.

Primary and excess liability policies provide cover up to \$300m (Ultimate Net Loss any one occurrence) up until the period 31 October 2014. The primary liability policy operates with a \$100k deductible (each and every occurrence).

Loss Experience

Marsh was provided with information pertaining to the following a claims and incidents between the year 2006 – 2014:

- 2006 – Transformer activated and automatically tripped requiring off site repair
- 2007 – Phase Reactor Damaged;
- 2012 - Fire at converter station caused significant damage to reactors and capacitors.

Please refer to Appendix B for details on the Loss Experience.

Risk Mitigation Measures

In addition to insurances, Directlink employ a comprehensive range of risk management strategies and protection systems, including:

- Maintenance contract incorporates manufacturers requirements and industry best practice;
- Transformer oil is sampled annually;
- Fire fighting equipment is maintained to Australian standards by contractors;
- Critical spares are maintained in a warehouse in Brisbane;
- Oil Bunding and drainage system;
- Electrical protection systems including:
 - Phase failure, over current,
 - Transformer Bucholz protection,
 - Transformer oil/winding temperature alarm/trip ; and
 - Lightning/surge protection.
- Cutting and welding permit system;
- Smoking controls;
- Self inspection program; and
- SOPs and Permit to Work requirements.

Following the 2012 fire event, Directlink are considering options for the installation of a deluge fire sprinkler system.

SECTION FIVE

PREMIUM PROJECTIONS

Overview

The following section provides estimates of the total premium payable by Directlink across the five-year period commencing 1 July 2015, with separate estimates for each year. The premiums constitute base premiums and relevant taxes and levies.

Our estimates incorporate allowances for the following insurance classes:

- Property;
- Liability.

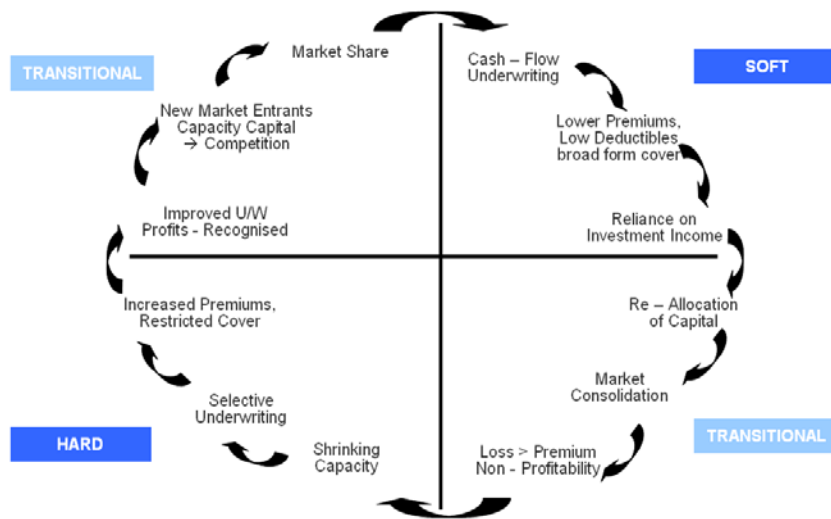
The following section is broken up into three parts:

- Background information
- Property premium projections;
- Liability premium projections.

Background information

Broadly speaking, global property and casualty insurance markets oscillate between hard and soft periods demonstrating the various characteristics illustrated over the page. Soft markets are generally beneficial to the insured offering lower premiums, favourable policy conditions and ample capacity. Conversely, hard markets dictate selective underwriting, shrinking capacity and higher premium levels. In between these two market extremes are transitional phases. Importantly, it is rare for the insurance market to follow the cycle full-circle as events like natural catastrophes and economic influences distort the natural order.

In contemplating Directlink's insurance premiums for the reset period, Marsh have considered property and casualty markets from a global perspective, as capacity has been historically sought from Australia, the United Kingdom and Europe. In view of this, we have adopted the four-stage market model (which is graphically demonstrated over the page) as a basis to arrive at premium estimates from 2015 to 2020. Of note, we do not consider the possibility of one-off market shocks like catastrophe events and financial crises in our projections.



Currently the market for both property and liability is competitive and sitting in the soft market phase, although Energy property business could still be classed as transitioning to soft market. Whilst there have been some recent natural catastrophe events, for example the New South Wales Bushfires, given the abundance of capacity in the market a single event of \$300 billion would be required to transition back to a hard market. On this basis we don't envisage major changes in premium fluctuations over the coming reset period.

One notable exception to this capacity is for bushfire liability where we are seeing insurers contract their available capacity, and in some cases pull out of the market altogether. For this reason we have allowed higher than historical increases for liability premiums as we see this market as being difficult over the next five years.

When reviewing these premium estimates, we draw your attention to the following subjectivities:

- Premiums are estimates only and subject to change
- Premiums are based on the current conditions and parameters of Directlink's policies
- Estimates assume there is no significant change to Directlink's risk profile or claims experience over the projection period

All statutory charges, including GST, Stamp Duty and the Terrorism Levy are based on rates as at 12 May 2014, and are subject to change based on the final placement structure of the program.

The opinions and estimates contained in the Report constitute our best judgement as of the date of the Report and are subject to change without notice. In our judgement, we have employed techniques and assumptions that are appropriate, and the conclusions presented herein are reasonable, given the information currently available.

Property Premium Projections

Loss Experience

Marsh was provided with information pertaining to the following claims and incidents between the year 2006 – 2014:

- 2006 – Transformer activated and automatically tripped requiring off site repair (no claim)
- 2007 – Phase Reactor Damaged \$415,713 (finalised net of deductible)
- 2012 - Fire at converter station caused significant damage to reactors and capacitors. Estimate \$50m (net of excess \$250,000)

Coverage Assumptions

| | |
|-----------------|--|
| Limit Selection | <p>CURRENT LIMIT:</p> <p>AUD 500m in excess of the applicable Deductibles any one loss or series of losses arising out of any one event.</p> <p>Transmission and Distribution Systems \$15,000,000 but not to exceed \$5,000,000 for aboveground power lines.</p> |
| Deductibles | <p>PROPERTY DAMAGE: AUD250,000</p> <p>BUSINESS INTERRUPTION: the greater of AUD1,000,000 or a 30 day equivalent contribution deductible, per occurrence.</p> <p>EARTH MOVEMENT / FLOOD</p> <p>Property Damage: AUD1,000,000; Time Element: the greater of AUD1,000,000 or a 30 day equivalent deductible, per occurrence</p> |
| Key Coverage | <p>Business Interruption: Additional Increased Cost of Working, Increased Cost of Working, Expediting Expenses and Claims Preparation Costs only. Revenue/Earnings not insured.</p> <p>Transmission and Distribution Systems: AUD15,000,000 but not to exceed a AUD5,000,000 limit for aboveground powerlines associated with the interconnect between Mullumbimby and Bungalora HVDC converter stations</p> <p>Earth Movement: AUD250,000,000 in the aggregate during any policy year</p> <p>Flood: AUD250,000,000</p> <p>Computer Systems (non- physical damage): AUD25,000,000</p> <p>Property under Construction: AUD50,000,000</p> <p>Service Interruption Property Damage: AUD25,000,000</p> |

Projection Approach

Our Industrial Special Risks (ISR) premium projections are largely based on an exposure method, which utilises a rate applied to the insurable values. We have selected this method given the claims experience and the expectation that changes in ISR premiums are related to movements in Insured Value.

We have been provided by DirectLink an updated valuation of the assets for insurance purposes as at 23 April 2014, as undertaken by Valquip Consulting. As premiums are required to be stated in 2014/2015 values we have not included any inflation within our premium forecasting for the asset base.

Premiums have increased significantly following the fire loss in 2012 but are expected to begin to reduce in line with market conditions as we move through the reset period, unless further claims result.

We have based our rating indications on the above coverage, i.e. Material Damage, Machinery Breakdown and Additional/Increased Cost of Working cover only not revenue or earnings loss.

In terms of future market movements, the insurance market is currently experiencing one of its most competitive periods and we have therefore budgeted rate reductions for the next three years with a contingency built in for increases in years four and five.

Premium projections

Table 8.1 below shows the estimated future premium projections for Property

Table 8.1 –Premium Projections

| Policy Year | Projection Year | Rate | Base premium | Terrorism | FSL | Stamp Duty | Total |
|-------------|-----------------|--------|--------------|-----------|------------|------------|------------|
| 2014/2015 | 1 | 0.200% | \$ 589,680 | \$ 12,034 | \$ 120,945 | \$ 71,543 | \$ 794,202 |
| 2015/2016 | 2 | 0.195% | \$ 574,938 | \$ 11,733 | \$ 117,921 | \$ 69,755 | \$ 774,347 |
| 2016/2017 | 3 | 0.190% | \$ 560,196 | \$ 11,433 | \$ 114,897 | \$ 67,966 | \$ 754,492 |
| 2017/2018 | 4 | 0.195% | \$ 574,938 | \$ 11,733 | \$ 117,921 | \$ 69,755 | \$ 774,347 |
| 2018/2019 | 5 | 0.200% | \$ 589,680 | \$ 12,034 | \$ 120,945 | \$ 71,543 | \$ 794,202 |
| 2019/2020 | 6 | 0.190% | \$ 560,196 | \$ 11,433 | \$ 114,897 | \$ 67,966 | \$ 754,492 |

| Policy Year | % Change due to Inflation | % Change due to Market |
|-------------|---------------------------|------------------------|
| 2014/2015 | 0.00% | -10.00% |
| 2015/2016 | 0.00% | -2.50% |
| 2016/2017 | 0.00% | -2.56% |
| 2017/2018 | 0.00% | 2.63% |
| 2018/2019 | 0.00% | 2.56% |
| 2019/2020 | 0.00% | -5.00% |

Liability Premium Projections

Loss Experience

Nil Losses

Coverage Assumptions

| | |
|-------------------------------|--|
| <p>Limit Selection</p> | <p>\$650m in respect of each claim or series of claims arising out of any one Occurrence in respect of:</p> <ul style="list-style-type: none"> • General Liability • Advertising Liability <p>\$650m in respect of each claim or series of claims arising out of any one Occurrence, and in the annual aggregate in respect of:</p> <ul style="list-style-type: none"> • Products Liability / Completed Operations • Pollution Liability • Electromagnetic Radiation • Bushfire Liability • Non Owned Aviation Liability <p>\$100m in respect of each claim or series of claims arising out of any one Occurrence, and in the aggregate during any one Period of Insurance in respect of:</p> <ul style="list-style-type: none"> • Professional Liability (Professional Indemnity) |
| <p>Deductibles</p> | <p>Deductibles:</p> <p>The first \$100,000 in respect of each claim or series of claims arising out of any one Occurrence.</p> |

Projection Approach

Our liability premium projections are largely based on our review of the risk exposures and benchmarking in line with DirectLink's peers. Given the nature of DirectLink's operations within a regulatory environment, its revenue, which is often used as measure of exposure for other types of businesses for liability insurance classes, does not appear to be a good measure in this case. Hence we have relied solely on our understanding of the insurance market in particular in respect of other Transmission Networks Service Providers, incorporating any future market movements.

Premium estimates are based on the limit of \$650m which is as a result of the Maximum Foreseeable Loss study currently away and the potential for liability connected with bushfire exposures necessitating an increase of the previous limit of \$300m. The increase in limit of liability is due to be effected in the 2014-2015 period, prior to the start of the next reset period.

In terms of future market movements, the most recent Marsh global insurance market briefing indicates liability premiums may decrease up to 10% in the markets that DirectLink participates in. We also note that as previously indicated we are in the soft stage of the market cycle and this is likely to continue for the majority of the reset period and is reflective of this in our premium projections. We have, however, built in contingency for the hard market conditions around bushfire liability discussed above.

Premium projections

Table 8.2 below shows the estimated future premium projections for Liability.

Table 8.2b –Premium Projections \$650m Limit

| Policy Year | Projection Year | Base premium | Stamp Duty | % Change due to Inflation | % Change due to Market |
|-------------|-----------------|--------------|------------|---------------------------|------------------------|
| 2014/2015 | 1 | \$ 430,000 | \$ 42,570 | 0.00% | 5% |
| 2015/2016 | 2 | \$ 440,750 | \$ 43,634 | 0.00% | 2.5% |
| 2016/2017 | 3 | \$ 429,731 | \$ 42,543 | 0.00% | -2.5% |
| 2017/2018 | 4 | \$ 429,731 | \$ 42,543 | 0.00% | 0.0% |
| 2018/2019 | 5 | \$ 440,475 | \$ 43,607 | 0.00% | 2.5% |
| 2019/2020 | 6 | \$ 451,486 | \$ 44,697 | 0.00% | 2.5% |

SECTION SIX

SELF-INSURANCE ALLOWANCE

Overview

The following sections details five risk scenarios that have been quantified to determine annualised lost estimates used for calculation of Directlink's self-insurance allowance. The five scenarios quantified include:

- Working losses;
- Major property loss;
- Decontamination event;
- Catastrophic property loss; and
- Liability event.

Scenario calculations make reference to Directlink's current commercial insurance arrangements. We are of the opinion that with appropriate insurance policies in place, a self-insurance allowance provides the most efficient approach for managing risk associated with losses below the deductible levels.

Working losses

Working losses represent loss events without significant disruptions to business operations. The following approach has been used to arrive at an annual retained loss estimate:

1. Derive a normalised level of forecast frequency based on historical occurrences
2. Derive a level of forecast severity using the property damage deductible
3. Multiply the forecast severity and frequency to derive the expected annual retained loss value.

Reflective of the loss experience in the last 8 years, we consider it reasonable that such an event could be attributed a 0.25 annual probability or one-in-4 year return period. Thus, to account for working losses, an annual loss estimate of \$62.5k is recommended for inclusion as a component of Directlink's self-insurance allowance.

Major property loss

Major property losses represent loss events where property damage and business interruption is likely to exceed the deductible. Please note that a reference to business interruption is based on Additional Increased Cost of Working cover only and not loss of revenue or profits.

Based on an underwriting report undertaken by Marsh Risk Consulting in late 2008, the following scenarios are provided as examples of credible significant loss events:

- **Fire in Converter Building:** A fire starts in the IGBT stack. Fire detection operates and shuts down equipment. Fire and smoke damage is limited to one enclosure. Property damage is estimated to be \$1m and business interruption \$1.5m.

- **Power Transformer loss:** Fire or explosion incident contained to one unit due to separation distance of approximately 18 meters. Property damage is estimated to be \$1m and business interruption contingent on the availability of a spare unit.
- **Power Transformer loss 2:** Fire or explosion incident causing severe damage to more than one unit. Property damage is estimated to be \$3m with significant business interruption including expediting costs of approximately \$3m.

The following approach has been used to arrive at an annual retained loss estimate:

1. Derive a normalised level of forecast frequency
2. Derive a normalised level of forecast severity
3. Multiply the forecast severity and frequency to derive the expected annual retained loss value.

Based on a statistical evaluation we consider it reasonable that such an event could be attributed a 0.04 annual probability or one-in-25 year return period.

Based on information provided to Marsh the following has been considered when arriving at the estimated forecast frequency:

- The 2012 fire at a converter station had significant impact on operations and caused extensive property damage (estimated claim size of \$50m).
- The 2012 fire is the only incident of such severity since the commissioning of the facility in December 2000.

It is deemed credible that a more likely and less severe event than the 2012 fire would exceed the deductible. Events considered include failure of reactors and transformers, accidental or malicious damage at converter station, fire initiating on site or in surrounding vegetation. Such an event could occur at any reactor or transformer that is part of the Directlink HVDC transmission facility.

Thus, a forecast severity of \$1.25m has been assumed for a significant loss event. The following has been considered when arriving at the estimated forecast severity:

- The current deductible retains losses of \$0.25m for property damage and the greater of \$1m or a 30 day equivalent contribution for consequential losses.
- The \$1m deductible relating to business interruption have been applied for this event however we note it will most likely arise out of expediting costs or increased cost of working.

To account for significant losses, an annual loss estimate of \$50k is recommended for inclusion as a component of Directlink's self-insurance allowance.

Decontamination event

Decontamination events represent loss events where property damage results in the discharge of containment. Such events may include the failure of a reactor or transformer that results in the discharge of oil. Such events are assumed to incur significant contaminant clean-up, removal and disposal costs in excess of the respective sub limit. Such an event is also assumed to incur property damage costs that exceed the deductible.

The following scenarios are provided as examples of credible decontamination events:

- Internal failure of a reactor resulting in discharge of oil and damage to, or coinciding with the failure of, bunding and/or drainage system.
- Explosive failure of transformer resulting in contaminated water, soil & gravel:
 - At Bungalora Converter station there is a farmer's dam behind the site with an overflow stream running beside the site,
 - At Mullumbimby there is a 2 meter concrete water canal along the west and north boundary, running behind transformers. The canal drains into Wilsons Creek.

The following approach has been used to arrive at an annual retained loss estimate:

1. Derive a normalised level of forecast frequency
2. Derive a normalised level of forecast severity
3. Multiply the forecast severity and frequency to derive the expected annual retained loss value.

Based on a statistical evaluation we consider it reasonable that such an event could be attributed a 0.02 annual probability or one-in-50 year return period. Based on information provided to Marsh the following has been considered when arriving at the estimated forecast frequency:

- There have been three incidents involving electrical equipment failures in the last 8 years.
- Such an event may be caused by the internal failure of reactors or transformers. Such an event could occur at any reactor or transformer that is part of the Directlink HVDC transmission facility.
- This evaluation accounts for the balance of probabilities given no such events occur within the period of the available loss history when also accounting for the existence of other independent risks, also not observed in the loss history, and quantified as part of the self-insurance allowance.

A forecast severity of \$1.75m has been assumed for a significant loss event. The following has been considered when arriving at the estimated forecast severity:

- The current deductible retains losses of \$0.25m for property damage and the greater of \$1m or a 30 day equivalent contribution for increased cost of working losses (note we are not insuring loss of revenue);
- Land and water contaminant clean-up, removal and disposal are likely to exceed the \$0.1m limit of liability that operates in the aggregate during any policy year.

- It is deemed credible the failure of a reactor could result in a discharge of oil incurring decontamination costs of \$0.5m beyond the sub limit.

To account for Decontamination events, an annual loss estimate of \$15k is recommended for inclusion as a component of Directlink's self-insurance allowance.

Catastrophic property loss

Catastrophic property losses represent the most severe below deductible losses. Consideration has been given to the following deductible:

- Powerlines with property damage deductible of \$1m and the greater of \$1m or a 30 day equivalent contribution for consequential losses;
- Flood with a property damage deductible of \$1m and the greater of \$1m or a 30 day equivalent contribution for consequential losses;
- Non-physical damage to computer system with a 2 day equivalent deductible subject to a minimum deductible of \$1m per occurrence;
- We have assumed the \$1m business interruption deductible to not apply in this case as consequential losses are likely to be minimal.

Based on an underwriting report undertaken by Marsh Risk Consulting in late 2008, and a risk evaluation based on Munich Re Hazard Zones, the following scenarios are provided as examples of credible catastrophic loss events:

- **Damage to powerlines from earthquake:** Based on Munich Re Hazard Zones, probable maximum intensity MM VI based on a modified Mercalli scale with an estimated one-in-475 year return period. An MM VI event is defined as follows:
 - Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight.
- **Damage to above ground powerlines from windstorm:** Based on Munich Re Hazard Zones, Peak wind speeds between 142 – 200 km/h for Tropical cyclone or Extratropical storm, both with an estimated one-in-100 year return period. Typical effects for wind tropical cyclone wind speed categories are as follows:
 - 125 - 164 km/h (Destructive winds): Minor house damage. Significant damage to signs, trees and caravans. Heavy damage to some crops. Risk of power failure. Small boats may break moorings.
 - 165 - 224 km/h (Very destructive winds): Some roof and structural damage. Some caravans destroyed. Power failure likely.
- **Malicious or accidental damage to powerlines:** Vehicles, aircraft, vandalism, etc
- **Flood at Converter stations:**
 - At Bungalora Converter station a farmer's dam is located at the site boundary with an overflow stream running beside the site. Underwriting report assess flood as a moderate risk.

- At Mullumbimby Converter station a concrete water canal runs along the west and north boundary draining into Wilsons Creek that flows along the north side of the site. Underwriting report assess flood as a moderate risk.
 - Based on Munich Re Hazard Zones the frequency and intensity of flash floods in the region are rated 4 out of maximum of 6.
- **Non-physical damage to computer system:**
 - Unauthorised access may lead to significant costs to contain and rectify the non-physical impacts upon computer systems.
 - Unauthorised remote or onsite access of the SCADA system is deemed credible. The SCADA system connects both converter stations to the APA Dandenong control room in Victoria. The APA facility monitors and controls both operations. The operation can be accessed remotely or on site at converter stations.

The following approach has been used to arrive at an annual retained loss estimate:

1. Derive a normalised level of forecast frequency
2. Derive a normalised level of forecast severity
3. Multiply the forecast severity and frequency to derive the expected annual retained loss value.

Based on a statistical evaluation we consider it reasonable that a powerline or flood event could be attributed a 0.01 annual probability or one-in-100 year return period. The following has been considered when arriving at the estimated forecast frequency:

- This evaluation accounts for the union of independent event frequencies that could result in flood damage or damage to powerlines.
- This evaluation accounts for the balance of probabilities given no such events occur within the period of the available loss history when also accounting for the existence of other independent risks, also not observed in the loss history, and quantified as part of the self-insurance allowance.

Non-physical damage to computer systems has been attributed a 0.005 annual probability or one-in-200 year return period.

Severity of these events have been calculated at the deductible level. Accordingly, to account for catastrophic property losses, an annual loss estimate of \$15k is recommended for inclusion as a component of Directlink's self-insurance allowance.

Liability event

It is considered reasonable that a fire, explosion or oil leak, for which Directlink is responsible, could result in third party damage or injury. Based on a statistical evaluation we consider it reasonable that such an event with sufficient severity to exceed the current liability insurance deductible, but not above the insurance Limit of Liability could be attributed a 0.01 annual probability or one-in-100 year return period. This is based on the following considerations:

- Only a relatively small amount of damage is required to exceed a reasonable level of liability insurance deductible of \$100k (e.g. injury a contractor, vehicle, etc).
- Such an event may be attributable to a number of causes including; electrical equipment failure, fire at converter station, trip hazards, slip hazards (ie. Oil leak).
- This evaluation accounts for the balance of probabilities given no such events occur within the period of the available loss history when also accounting for the existence of other independent risks, also not observed in the loss history, and quantified as part of the self-insurance allowance.

Accordingly, to account for third party liability costs, an annual loss estimate of \$1k is recommended for inclusion as a component of Directlink's self-insurance allowance.

SECTION SEVEN

SELF INSURANCE RESULTS

In total, we recommend Directlink to adopt \$143.5k as an annual cost of self-insurance allowance for each of the forecast years in the upcoming regulatory reset period. Table 6.1 below provides a breakdown by five risk groupings. We have selected these groupings with consideration of the types of Directlink's assets, risk exposure and their insured status (as per commercial insurance policies).

Table 6.1 – Total self-insurance allowance 2014 \$

| Period | Working losses | Major property loss | Decontaminati on event | Catastrophic property loss | Liability event | Total |
|--------------|------------------|---------------------|------------------------|----------------------------|-----------------|------------------|
| 2015-16 | \$62,500 | \$50,000 | \$15,000 | \$10,000 | \$1,000 | \$143,500 |
| 2016-17 | \$62,500 | \$50,000 | \$15,000 | \$10,000 | \$1,000 | \$143,500 |
| 2017-18 | \$62,500 | \$50,000 | \$15,000 | \$10,000 | \$1,000 | \$143,500 |
| 2018-19 | \$62,500 | \$50,000 | \$15,000 | \$10,000 | \$1,000 | \$143,500 |
| 2019-20 | \$62,500 | \$50,000 | \$15,000 | \$10,000 | \$1,000 | \$143,500 |
| Total | \$312,500 | \$250,000 | \$75,000 | \$50,000 | \$5,000 | \$717,500 |

We must note our estimated self-insurance allowance is the expected annual cost of funding future losses, in 2014 dollar values, and is exclusive of any allowance for volatility, cost of capital or expenses relating to settlement of losses. For this reason, they are most likely lower than cost of any commercial insurances, as insurers would most likely be pricing for expected cost of losses, as well as expenses and profit margin.

Additionally, we have recommended a number of events appropriate for the cost pass through mechanism. These are discussed and defined in detail in Section Eight.

SECTION EIGHT

COST PASS THROUGH

Overview

In relation to consideration of events to be nominated for the cost pass through mechanism, we have adopted a number of principles as follows:

- Quantification of such an event, by attaching frequency or severity, cannot be ascribed by reasonable means and is subject to significant uncertainty;
- There has been no past incidences of a similar type of such event, or similar events of such magnitude for Directlink, hence could be regarded as an unforeseen event; and
- Such an event is beyond the control of Directlink, or Directlink has taken appropriate and reasonable means in order to prevent or reduce the probability of its occurrence.

We thus believe in circumstances given the above, the adoption of the cost pass through mechanism will likely be the most effective approach in achieving on an ex-ante basis, an adequate balance between:

- having the incentive mechanisms in place to ensure that prices for consumers are no more than necessary to provide an appropriate level of service;
- whilst still providing Directlink with a reasonable opportunity to recover efficient costs associated with events that are outside of their reasonable control.

It is nonetheless evident from Directlink's numerous risk mitigation mechanisms and protection systems that reasonable steps are taken to manage high severity risks including compliance with relevant acts and regulations. The risk management systems demonstrate non-reliance on risk transfer mechanisms including external insurances and current pass through mechanism. These measures are taken as evidence of Directlink's avoidance of moral hazard or reputational harm under the provision of the effective use of a cost pass through mechanism.

Given the above, we have recommended four events appropriate for the cost-pass through mechanism. We also note a materiality threshold applies before Directlink could consider recovering its costs from the cost pass through mechanism. The threshold being approximately 1% of prescribed revenue. These events are defined in the following paragraphs:

Insurance Cap Event

Whereby:

1. Directlink makes a claim or claims and receives a payment or payments under a relevant insurance policy;
2. Directlink incurs costs beyond the relevant policy limit or sub limit, including costs associated with powerlines associated with the interconnect between Mullumbimby and Bungalora HVDC converter stations;
3. The costs beyond the relevant policy limit materially increases the costs to Directlink of providing prescribed transmission services.

For Insurance Cap Event:

4. the relevant policy limit is the greater of:

- Directlink's actual policy limit at the time of the event that gives rise to the claim, and
- the policy limit that is explicitly or implicitly commensurate with the allowance for insurance premiums that is included in the forecast operating expenditure allowance approved in the AER's final decision for the applicable regulatory control period in which Directlink was regulated.

Natural Disaster Event

Any major fire, flood, wind, earthquake or other natural disaster beyond the reasonable control of Directlink that occurs during the 2015-20 regulatory control period and materiality increases the cost to Directlink providing prescribed transmission services.

A minimum eligibility threshold for consideration is that the eventual impact (in terms of material damage and business interruption costs), net of any insurance proceeds, needs to be at least 1% of Directlink's prescribed annual revenue.

Terrorism Event

An act (including, but not limited to, the use of force or violence or the threat of force or violence) of any person or group of persons (whether acting alone or on behalf of or in connection with any organisation or government), ethnic or similar purposes or reasons (including the intention to influence or intimidate any government and/or put the public, or any section of the public, in fear) and which materially increases the costs to Directlink of providing prescribed transmission services.

We note the costs to Directlink considered in this event should, in theory be net of any recoveries from either relevant insurance policies and / or the Australian Reinsurance Pool Corporation (ARPC) under the Terrorism Insurance Act 2003.

Insurer Default Event

Any event that results in Directlink unable to recover external insurance proceeds to the amount that exceeds the 1% materiality threshold.

This is considered to be beyond the reasonable control of Directlink in the sense that it has conducted adequate due diligence in regards to procurement of its insurance and insurance brokers and ensuring the insurer counterparties are of a minimum financial condition dependent on ratings set by external rating agencies.

Cyber Event

Any event that results in Directlink in direct or third party losses to its digital or network assets as a result of cyber-related external attack. In order for the event to be considered eligible for cost pass through, the impact to Directlink, net of any external insurance or any other third party proceeds, needs to exceed the 1% materiality threshold.

This is considered to be beyond the reasonable control of Directlink as it has reasonable controls and process in place to ensure the security of its digital and network assets.

Environmental Contamination Event

Any event that results in costs incurred by Directlink as a result of environmental contamination by either Directlink, its contractors or third parties that is greater than 1% materiality threshold, after recoveries from insurers or other means, if any.

Reference to other TNSPs

We also note the first three of the above events nominated for cost pass through are similar to those nominated in the AER's draft decision released on 30 August 2013 for SP AusNet's transmission determination 2014-15 to 2016-17. This is highlighted in the SP AusNet's draft decision document published on the AER public website.

SECTION NINE

CONSULTANT CV'S

Joanne Silberberg

Experience

- Jo has been involved in the insurance risk management industry since 2004, when she commenced on the Marsh Graduate program, after completing a double degree in International Business and Law. Jo has accumulated experience in several industry sectors, in particular, Energy (incorporating Power and Utilities, Oil and Gas and Renewable Energy), Mining, Construction and global programs.
- Jo has extensive experience in account management and arranging risk financing programs for power, oil and gas and utility companies.
- Jo has particular experience with Electricity Transmission and Distribution having serviced TNSP's and Distributors in Queensland, New South Wales and South Australia.

Professional Qualifications

- Australian and New Zealand Institute of Insurance and Finance (Fellow)
- National Insurance Brokers Association (Associate Member)
- Certified Insurance Professional
- Graduate Diploma of Financial Services (Insurance)
- Bachelor of Laws
- Bachelor of Business (International Business)

Gary Segal

Experience

Gary is a Consultant for the Business Risk Consulting team in Brisbane. Gary specialises in risk analytics, computer simulation and stochastic modelling. He has conducted quantitative modelling for a range of industries and government organisations throughout Australasia. Gary is experienced in risk modelling and analysis including:

- Qualification and quantification of risks for TNSPs and other utilities
- Modelling and analysis of Maximum Foreseeable Loss scenarios for TNSPs and other utilities
- Self-insurance quantification
- Compilation of corporate risk profiles

Recent projects include:

- Development of stochastic models to assess Limits of Liability for Distribution and Transmission networks
- Calculation of Self-Insurance Allowance for TNSP

Ben Qin

Experience

Ben's current role involves quantitative analysis of insurance-related and self-insurance costs for Marsh Australia, New Zealand and Asia Pacific clients. This includes the review of insurance-related costs for an Australian TNSP for regulatory submission to the AER.

Prior to joining Marsh, he has worked in risk management related roles in varying capacities. These include:

- Self-insurance quantification and actuarial reviews for several Australian self-insurance funds
- Risk quantification and Economic Capital Modeling for an Australian based captive reinsurer
- Development of risk appetite, Enterprise Risk Management (ERM) framework for Tokyo-based insurer

Professional Qualifications

- Institute of Actuaries of Australia (Fellow)
- Singapore Actuarial Society (Fellow)
- Bachelor of Commerce in Actuarial Studies
- Bachelor of Science in Statistics.

APPENDIX A
RISK ISSUES

| Risk Title (Short Name) | Risk Description ("The risk of...") <i>Refer to "Risk Descriptors" for examples of risk types</i> | Impact Description ("Resulting in...") | Current Controls (Ratings require confirmation) | Insurable | Insured |
|---|---|--|---|------------|---------|
| Key Man Risk | The risk of loss of key man from the business | Loss of IP, increased management cost and potential for inefficient management practices | Succession plan Documented Position Description Job rotation Development of skills in direct reports Access to suitably qualified external experts | Partial | No |
| Fire / Flood / EQ / Bushfire | | Loss or damage to operating assets | Fire protection equipment Maintenance Procedures Vegetation management Site security Flood / EQ - plant design and location Hydrants VESDA (Valves) Heat detection Hot work procedures Tag-out procedures Cold work permits | Yes | Yes |
| Regulator / Interference | Changes to regulatory framework (changes to rules) | Catastrophic loss of value to the regulated asset base | Regulatory Team monitoring of environment The Rule change process through the AEMC Maintaining strong working relationship with Regulator | No | No |
| Vandalism / Theft | | | | Yes | Yes |
| Terrorism | | | | Under APCR | Yes |
| Cable Disruption / 3rd Party (Inc planes etc) | | | | Yes | Yes |
| Asset deterioration | There is a risk that the assets will deteriorate over time | Resulting in increased faults, failure, increased operating costs , decreased / ing reliability, and the need for capital expenditure | Asset management strategy and plan Operational maintenance procedures Increased reliability plan (Responding to changes evident / experienced in the assets) | No | No |
| Technical obscence (spare parts etc) | Critical spare parts no longer from the manufacturer (ABB) | Inability to maintain the operating assets in good working order. Increased cost of retro-fitting to accommodate alternative supplies / components / technology | Inventory ABB financial standing - longevity Monitoring international HVDC operators / issues management | No | No |
| Death / injury to employees / contracts / public (on site) | | | | Yes | Yes |
| Travel risk (accidents) | The risk of accidents while travelling on company business | Death or Injury Negligence | Policy Driver training Fatigue Management License Tracking Safeguard Risk Assessment (pre-drive) | Yes | Yes |
| Retention of resources | | | | No | No |
| Increased operating costs result in decreased profits | | | | No | No |
| Resources risk on projects (eg; capex projects) | | | | No | No |
| Inadequately qualified employees / contracts | | | | No | No |
| damage to assets / services in maintenance procedures | | | | Yes | Yes |
| failure to document maintenance processes / procedures / activities | | | | No | No |

| Risk Title (Short Name) | Risk Description ("The risk of...") <i>Refer to "Risk Descriptors" for examples of risk types</i> | Impact Description ("Resulting in...") | Current Controls (Ratings require confirmation) | Insurable | Insured |
|---|---|---|--|-----------|-------------------|
| access to capital | | | | No | No |
| loss of investor support | | | | No | No |
| poor stakeholder engagement / management | | | | No | No |
| breach of management agreement | | | | No | No |
| change of market conditions eg: rule changes (resulting in stranded assets) | | | | No | No |
| machinery breakdown | | | | Yes | Yes |
| loss of power (auxillary) bto site /s | | | | Partial | Yes |
| industrial relations | | | | No | No |
| fines / penalties for failure to meet reporting requirements | | | | No | No |
| loss of connection agreement | | | | No | No |
| encroachment (easement / sites) | | | | No | No |
| Community outrage | | | | No | No |
| loss of easement access rights | | | | No | No |
| compliance failure | | | | No | No |
| supplier dependence (principally ABB) | | | | No | No |
| site contamination (oil / gases) | | | | Yes | No |
| counterparty credit risk | | | | No | No |
| misalignment between capital spend and ROI (capital asset base \$) | | | | No | No |
| cyber-risk / SCADA | | | | Yes | Under APA Program |
| Fraud | | | | Yes | Under APA Program |
| increased technical regulation (imposed) | | | | No | No |
| Failure to comply with GEIP | | | | No | No |
| Community activism / awareness (disruption of electricity "norms") | | | | No | No |
| Infrastructure over-supply / obsolescence | | | | No | No |
| EMF | | | | Yes | Yes |

APPENDIX B
LOSS EXPERIENCE

Energy Infrastructure Investments Pty Limited: Policy No. AN 0041240 ISR / AN 0041241 ISC

Claims experience – Direct Link Only - 24 October 2006 to 30/06/2013

| Period | No | Amount | DOL | Major Cause |
|--------------|----------|---------------------|------------|-------------------------------------|
| 12/13 | 0 | \$ 0 | | |
| 11/12 | 1 | \$50,000,000 | 14/08/2012 | Fire, Direct Link, Mullumbimby, NSW |
| 10/11 | 0 | \$ 0 | | |
| 09/10 | 0 | \$ 0 | | |
| 08/09 | 0 | \$ 0 | | |
| 07/08 | 0 | \$ 0 | | |
| 06/07 | 2 | \$ 415,713 | 04/06/2007 | Phase Reactor damaged |
| Total | 3 | \$50,415,713 | | |

On Behalf of the Company,

G. McKee 29/5/2014
Garry McKee

Manager Property, International Brokers

QBE Insurance (Australia) Limited

