

March 2020

Bermuda Monetary Authority

Wildfire and Typhoon Survey Results



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1 EXECUTIVE SUMMARY

This report summarises key results from the Authority's *Wildfire and Typhoon Survey*, which collected claims and other data for California Wildfires 2017-2019, Australian Wildfires 2019 and Japan Typhoons 2018-2019. The survey captures a material portion of the Bermuda general insurance market and also includes non-commercial classes such as Special Purpose Insurers (SPIs).

Survey results show that the Bermuda insurance market¹ has been a material contributor to the recent wildfire and typhoon insurance losses incurred in California and Japan, respectively. The Bermuda market incurred \$9.2 billion gross claims (\$5.1 billion net) in the last three years of the wildfire losses in California and \$9.6 billion (\$5.4 billion net) in the last two years of typhoon losses in Japan.

Despite the materiality of some of these loss events to the local communities, economy and overall insurance market, the observed impact to the Bermuda insurance market has been minimal both in terms of total available funds² as well as total insurance limits.

¹ Also referred as 'Bermuda market' in this report.

² i.e. Capital and Surplus (C&S).

2 INTRODUCTION

As a prudent supervisor, the Bermuda Monetary Authority (Authority) periodically sends market surveys to solicit information from Bermuda registrants. Results from these surveys help shape policy decisions, highlight our interconnectedness with other jurisdictions, and support our risk-based approach to supervision.

This report summarises key results from the Authority’s ‘*Wildfire and Typhoon Survey*’. The survey requested claims, and other, data for California Wildfires 2017-2019, Australian Wildfires 2019 and Japan Typhoons 2018-2019. Information was requested both for annual aggregate losses as well as specific major events such as the Camp and Tubbs California Wildfires or the Jebi and Hagibis Japan Typhoons. These are devastating to affected communities. The claims paid and expected to be paid by Bermuda insurers³ demonstrate the role of Bermuda’s insurance capacity in rebuilding these communities, which suffer tremendous damage after natural disasters. This report underlines the importance and financial resilience of the Bermuda market in supporting markets around the world. It also promotes understanding of the use and importance of models for the selected catastrophe events.

The survey covers Bermuda-registered insurers which have exposure to the named perils, primarily general business commercial insurers (Class 4, Class 3B, Class 3A), Special Purpose Insurers (SPIs) and Bermuda Groups⁴. A select number of limited purpose insurers (e.g. Class 3, Class 2, Class 1) were also included. The survey had a total of 91 participants, 14 of which were Groups and the remaining 77 Legal Entities. The results presented in this report are, however, on a smaller sample (67) to avoid double counting⁵ the 14 groups and 53 legal entities which do not form part of a Bermuda Group for the basis of the numbers presented. Lastly, as not all participants had exposures to both the wildfires and typhoons peril, the sample size for the specific peril is smaller than the total. A more detailed breakdown of the participants contributing to the loss statistics presented in the report is provided below.

Number of Participants by Grouping and Insurance Class			
Exposure to Surveyed Peril	Wildfire	Typhoon ⁶	Both
Group			14
Class 4			13
Class 3B			8
Class 3A			11
Other			21
All Insurance Classes	65	50	67

The total capitalisation of the participating entities was in the region of \$100 billion of Capital and Surplus (C&S) as of 31 December 2019.

³ The term ‘insurer’, and ‘insurance’, is used consistently with the Insurance Act definition, referring to a person carrying out insurance and reinsurance business.

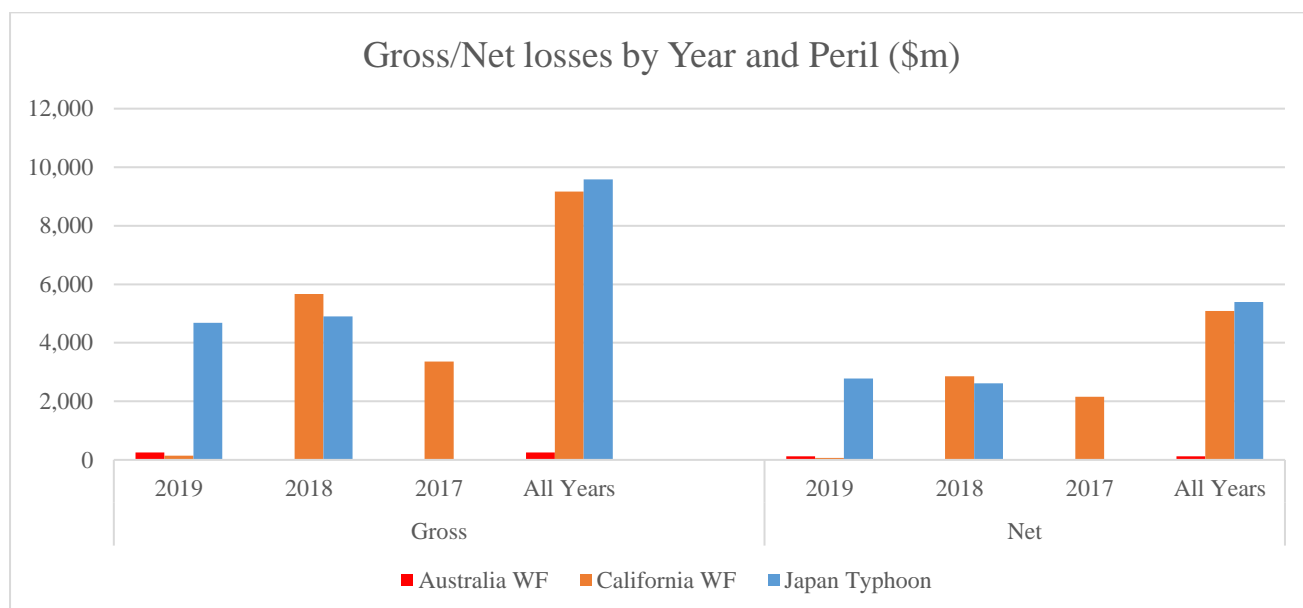
⁴ Additional information on Bermuda’s multi-licence system can be found on the [licensing page of the BMA website](#).

⁵ Legal entities which are part of Bermuda Groups have been excluded from the statistics as they are already captured under the Group submissions.

⁶ The survey and the displayed results are specific to Japan Typhoons. The generic term ‘Typhoons’ (instead of Japan Typhoons) may be used some times in the report.

3 PERIL LOSS INFORMATION

3.1 Gross and Net Losses



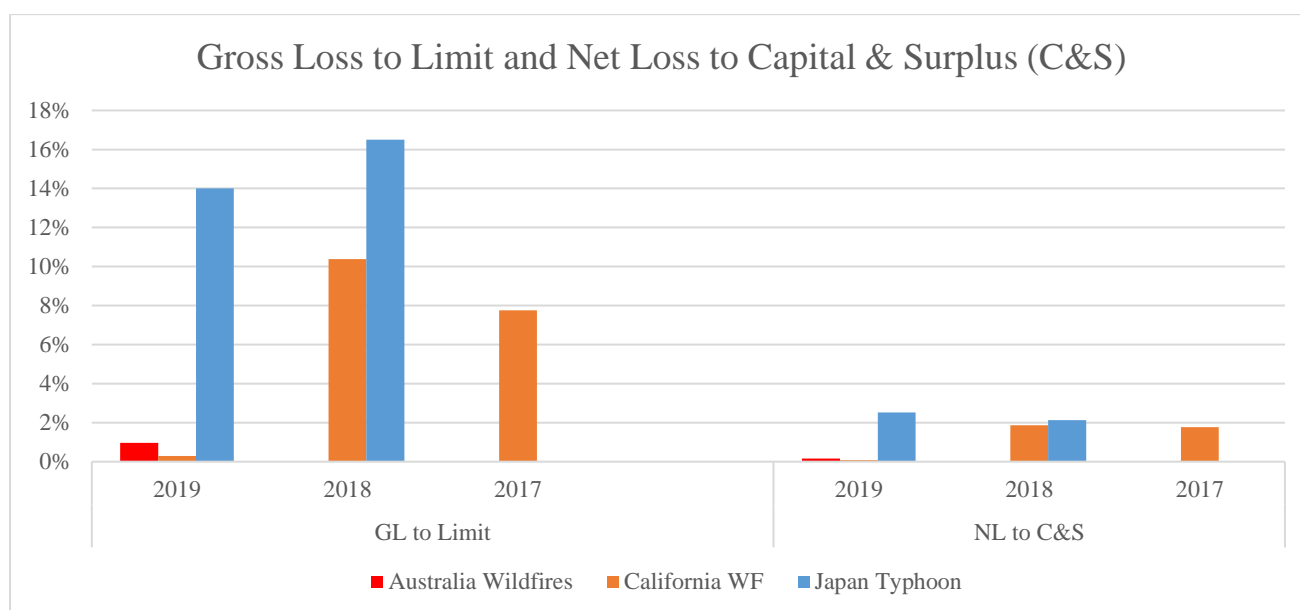
Peril/Year	Gross Losses by Year and Peril (\$m)				Net Losses by Year and Peril (\$m)			
	2019	2018	2017	All Years	2019	2018	2017	All Years
Australia WF ⁷	255	N/A	N/A	255	117	N/A	N/A	117
California WF ⁸	148	5,663	3,359	9,170	70	2,858	2,158	5,085
Japan Typhoon	4,683	4,901	N/A	9,583	2,778	2,616	N/A	5,394
All Perils	5,085	10,564	3,359	19,008	2,965	5,474	2,158	10,596

Bermuda insurers incurred approximately \$9.2 billion gross claims (\$5.1 billion net) in the catastrophic wildfire events occurring in California over the last three years. An equivalent amount of losses (\$9.6 billion gross and \$5.4 billion net) was incurred from the typhoon events occurring in Japan during 2018 and 2019. The incurred losses from the recent wildfires in Australia are currently estimated at \$255 million.

⁷ Australia Wildfire.

⁸ California Wildfire.

3.2 Market Resilience to Surveyed Catastrophe Losses



Peril/Year	Gross Loss to Limit by Year and Peril			Net Loss to C&S by Year and Peril		
	2019	2018	2017	2019	2018	2017
Australia WF	1.0%	N/A	N/A	0.2%	N/A	N/A
California WF	0.3%	10.4%	7.8%	0.1%	1.9%	1.8%
Japan Typhoon	14.0%	16.5%	N/A	2.5%	2.1%	N/A

From a solvency perspective, none of the surveyed perils have had material impact on the financial position of the Bermuda market. The historic annual gross losses have only been a fraction of the market's total capacity, with the 2018 Japan Typhoon Gross Loss to Limit ratio at 16.5% being the most severe. The highest observed Net Loss to Capital and Surplus (C&S) ratio is from the 2019 Japan Typhoon loss, at 2.5%⁹.

⁹ Displayed Net Loss to C&S ratios only cover the sample of insurers that have exposure to the specific event or set of events rather than the total sample of insurers surveyed.

4 DETAILED EVENT LOSS INFORMATION

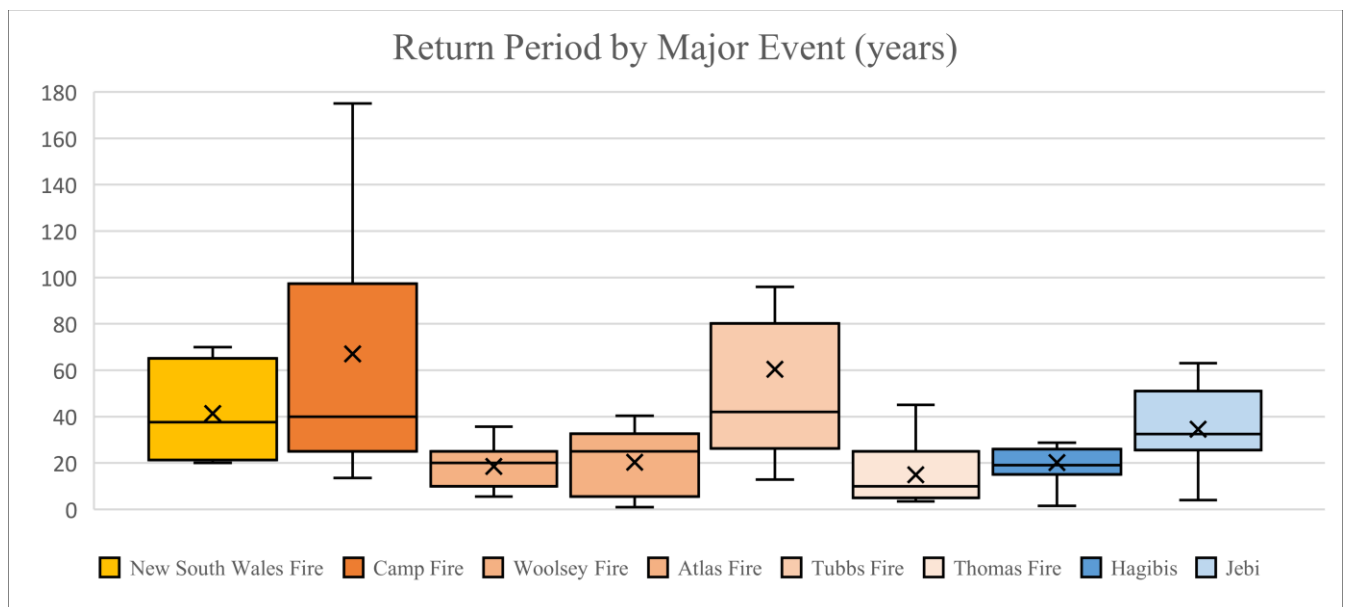
4.1 Gross and Net Losses by event

The event generating the most substantial gross loss was Typhoon Jebi at \$4.1 billion with Typhoon Hagibis (\$2.6 billion) and Camp Fire (\$2.5 billion) creating the next most significant losses. This order is also maintained on a net of reinsurance basis with Typhoon Jebi estimated at \$2.3 billion. The ceded reinsurance ratio generally hovers between 35% and 55%.

The 2019 wildfires experienced in California have been quiet when compared to 2018 and 2017. This is also confirmed by the relative size of losses incurred by the Bermuda market between these three years.

	Year	Event	Gross Loss (\$m)	Net Loss (\$m)	Ceded Ratio
Australia WF	2019	New South Wales Fire	201	98	51%
	2019	Southeast Queensland Fire	6	2	69%
	2019	All Events	255	117	54%
California WF	2019	Kincade Fire	101	56	45%
	2019	Walker Fire	0	0	
	2019	Saddleridge Fire	31	1	98%
	2019	All Events	148	70	53%
	2018	Carr Fire	68	28	59%
	2018	Camp Fire	2,512	1,483	41%
	2018	Woolsey Fire	1,265	627	50%
	2018	All Events	5,663	2,858	50%
	2017	Atlas Fire	310	220	29%
	2017	Tubbs Fire	1,913	1,245	35%
	2017	Thomas Fire	506	333	34%
2017	All Events	3,359	2,158	36%	
All Years	All Events	9,170	5,085	45%	
Japan Typhoon	2019	Typhoon Hagibis	2,616	1,547	41%
	2019	All Events	4,683	2,778	41%
	2018	Typhoon Jebi	4,099	2,275	44%
	2018	All Events	4,901	2,616	47%
All Years	All Events	9,583	5,394	44%	

4.2 Return Period of Major Events



Participants were requested to submit their estimated return period¹⁰ for each event, the resulting distribution of responses is summarised in the graph above.

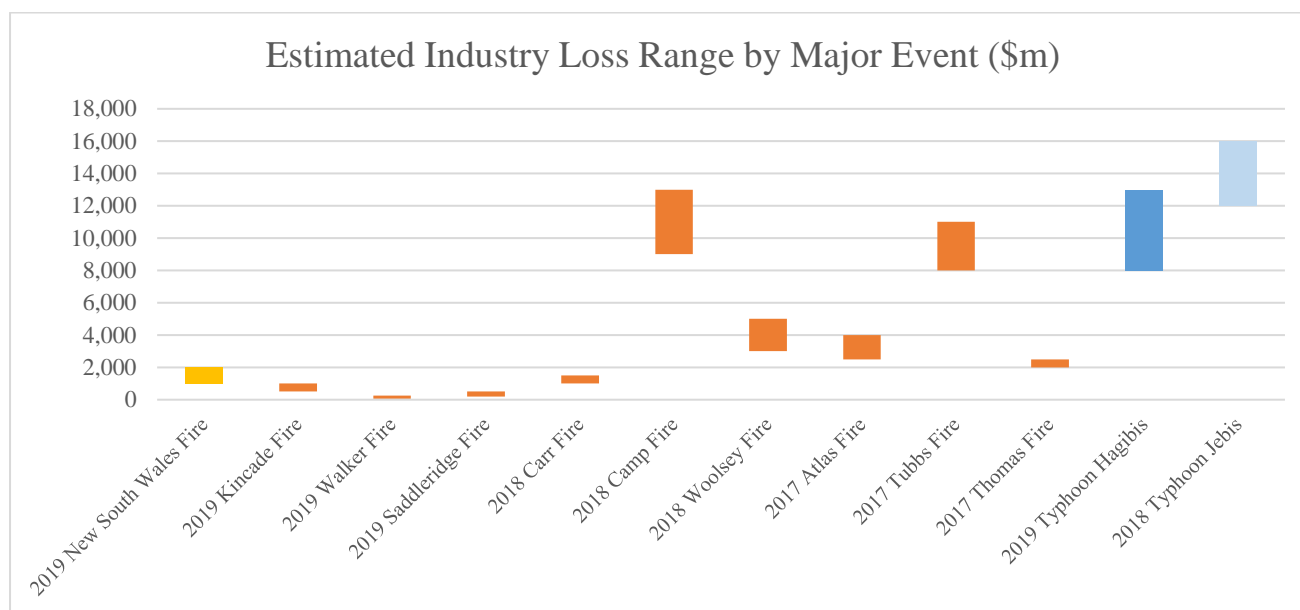
Reported return periods are generally aligned with the magnitude of the gross losses incurred by the Bermuda market. Among the California Wildfire losses surveyed the Camp Fire event with a mean

¹⁰ It is noted that return periods are specific to the participant's exposure profile.

return period of 67 years was considered the most extreme loss, while Jebi was the most extreme Japan Typhoon loss with an average return period of 35 years.

The width of the interquartile range return is generally narrower for the Japan Typhoon events, which is likely a reflection of the underlying models being at a more developed stage compared to the corresponding models of the Wildfire peril.

4.3 Industry Estimates of Major Events



Participants were requested to submit high and low insurance industry loss estimates for each of the surveyed events. The graph is an amalgamation of these responses. The range of industry estimates tends to be wider for the more recent and more material events.

5 MODELS USED

Models used for Japan Typhoon Survey	
Model	% of Participants Using Model
AIR	35%
RMS	23%
Other	42%

The table shows participants' responses in respect to the catastrophe models used to complete the Japan Typhoon survey. Approximately one-third of participants used AIR¹¹ to model the claims information requested in the Japan Typhoon section of the survey. RMS¹¹ was the second most used modelling platform while the remaining 42% responded that they use other models, which include other commercial platforms and proprietary tools. A considerably smaller proportion of participants reported using AIR and RMS to model the wildfire losses.

¹¹ Catastrophe modelling company.