# Weather forecast: predictably unpredictable

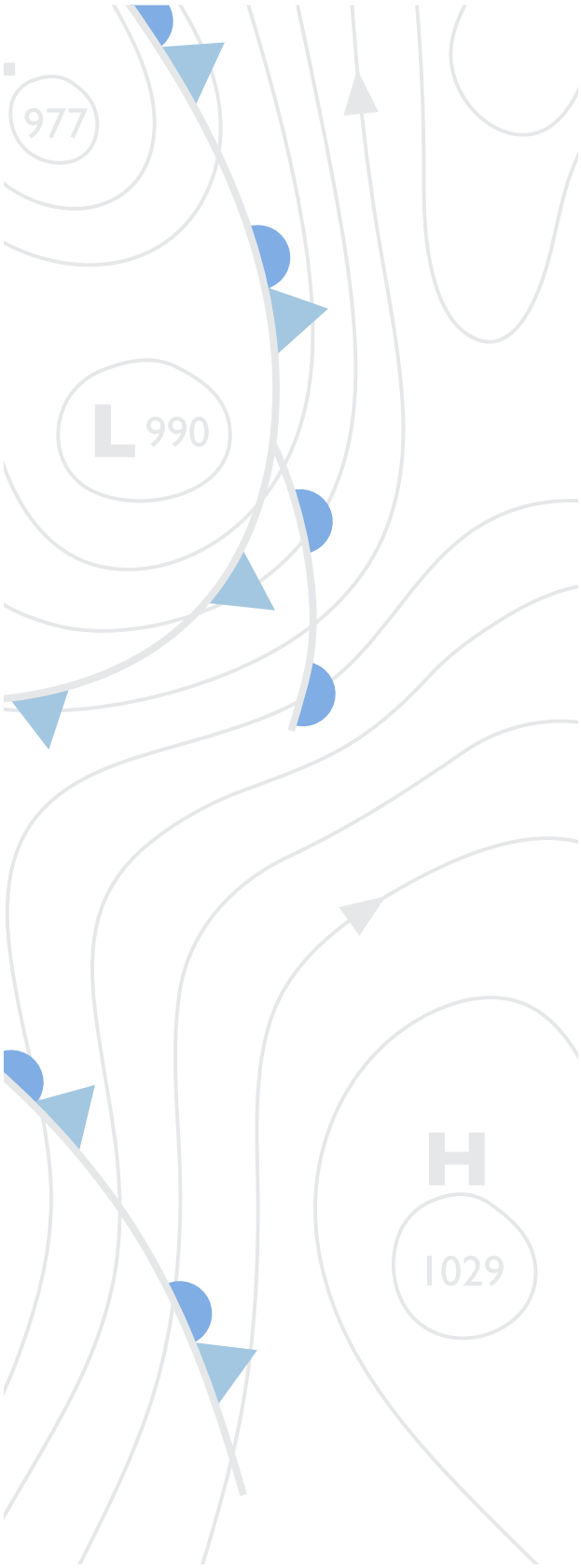
## What the increasing incidence of long-tail weather events means for the construction sector

# Weather forecast:
## predictably unpredictable

Weather has always been more than a source of small talk to the construction industry. In this sector it can be critical to profitability. From damage or destruction of an uncompleted project to simple logistics like site and supply chain access, or conditions that make work impossible resulting in blown completion dates and void contracts, weather events are serious business.

The last 12 months demonstrate extreme weather is becoming more common[1], and this trend is likely to continue, according to Bureau of Meteorology senior meteorologist, Dr Blair Trewin.

These episodes of extreme weather are sometimes referred to as long-tail weather events. 'Long tail'[2] refers to a high number of occurrences that deviate from the norm. In recent years the frequency of abnormal weather events is making them more probable.




## 2017 estimated Australian weather-related insurance losses:

# $2,564,147,943

*Insurance Council of Australia*

[1] 'Climate change increasing the intensity and impact of extreme weather', BOM tells emergency managers, Ben Deacon and Kate Doyle, ABC News, updated 4 Sep 2017

[2] Statistics How To, www.statisticshowto.com/long-tail-distribution/

## Probability

The World Economic Forum's *Global Risks Report 2018*[3] identifies that extreme weather events are rated as the number one risk in terms of likelihood of occurring and second only to weapons of mass destruction in impact.

Environmental issues rank among the top 10 risks in both estimated likelihood and impact, with related flow-on consequences such as ecosystem collapse, food and water crises, spread of disease and involuntary migration. Man-made disasters, failure of climate mitigation and adaption are key aspects of this elevated risk.

## Insurance losses

Last year's Insurance Council of Australia's Catastrophe Database[4] estimated losses totalled $2,564,147,943, compared to $1,219,827,095 the year before. Of the year's 12 catastrophic weather events responsible for this figure, 10 were storms.

Australia's worst year for extreme weather and insurance losses in recent history was 2011, according to the Insurance Council of Australia (ICA) database, with Cyclone Yasi, the Queensland floods, WA fires and Melbourne storms accounting for $8,974,938,000. But insurance is a global business, and the 2017 fires in California and tornadoes in the south-east of the United States, flooding in Thailand, drought in east Africa and a tsunami in Japan added up to a global total of US$136 billion[5] in insured losses from catastrophes. The insurance capital market has taken a pounding and as a result insurers can be expected to be more risk averse.

## Managing weather risks for construction contractors

The insurance market has developed a new product to cover weather contingency risk for contractors. Weather risk insurance has historically been a common risk management solution in the power/energy industry, and is now increasingly available to the construction sector.

This insurance doesn't require physical loss or damage to activate the policy, nor are there traditional conditions and exclusions to navigate. It works by predetermining a 'trigger event' based on weather risk – such as extreme temperature, rainfall or wind – then tailors the insurance payout to reflect the contractor's financial exposure to the event, which might involve liquidated damages and/or prolongation costs, and/or other losses.

Typically the product has a certain number of days ('strike') that the payout applies from, which operates as a type of deductible or self-insured retention for the contractor. The product is easy to understand and provides a very quick payout as there is an independent and pre-defined resource for determining a claim: the nearest Bureau of Meteorology (BOM) site to the works.

It is important to note that weather insurance is similar to a derivative and therefore doesn't require the insured to justify an actual loss – it simply pays the predetermined amount to the extent of the number of weather-affected days that exceed the strike during the construction period.

Gallagher's team has broad experience with helping contractors cover the weather contingency risk on individual projects via either a simple trigger, being number of days exceeding a certain threshold, or as a multi-trigger policy with several different strikes applicable over the construction period.

Talk to Gallagher's construction team if you would like to learn more.

*Roger Irvine, Head of Construction – Australia and Asia*

3. *The Global Risks Report 2018* 13th Edition, World Economic Forum
4. ICA Catastrophe Database, ICA DataGlobe, Insurance Council of Australia
5. 'Global insured losses of US$136 billion are third highest on sigma records', Resilience Today, 21 December 2017

## Commercial relevance

The Intergovernmental Panel on Climate Change (IPCC) outlines that some of the adverse weather impacts of climate change may include sea level rises, floods, droughts, cyclones and heat waves. The occurrence of such events has the potential to cause damage to, or destruction of, infrastructure, including buildings that are being constructed.

Construction businesses must adapt quickly to these changing conditions in terms of the impact of weather events on the profitability of construction projects through delays or damage, destruction, remediation or reconstruction costs.

So how should building contractors respond to these changed conditions? According to a recent industry-compiled report, just over half (56%) of disaster losses in Australia in 2017 were covered by insurance.

The ICA confirms that risk mitigation at the planning and design stages of construction, from site selection to risk mapping evidence based on the existence of levies, and building resilience in terms of reduction of physical risk to inhabitants should be reflected in lower insurance premiums. Planning and forethought will be essential to profitability where extreme weather events are concerned.

> *When construction firms become unable to predict weather patterns and develop emergency plans for weather variables, it puts their entire business at risk.*
>
> **Extreme Weather and the Construction Industry, CMiC Evolve**[6]

# Case study

## Time critical

When winds with gusts exceeding 100 kilometres per hour hit Victoria in late July 2017, they ripped the roof off a cold store under construction. The principal contractor had been engaged to build the facility at an existing warehouse property in Melbourne, with a hard deadline for completion in time for the arrival of stock to be kept refrigerated.

The wind penetrated under the leading edge of the roof and lifted away the PVC membrane sealant, removing about half of the covering. With the first delivery of pallets of stock scheduled in two weeks' time, the integrity of the roof structure needed to be reinstated, made watertight, fully insulated and the internal temperature of the cold store reduced to -4$^0$ Celsius.

Under the contractor's annual contract works policy Gallagher immediately appointed a preferred loss adjuster and instigated submission of the claim for approval. The contractor quickly provided estimates for reinstatement of the damage which were assessed as reasonable and the approximately $1.5 million works were approved for timely completion.

6. 'Extreme Weather & the Construction Industry', *Evolve* online magazine, CMiC

## Steps to building resilience

Identifying physical and transitional climate risks and integrating them into strategic and operational planning enables organisations to improve their climate resilience and may also provide a competitive advantage.

Organisations are subject to pressure to do this from investors, policymakers, regulators, customers, supply chains and competitors. Initial steps include assessment of vulnerability of operations and facilities, factoring climate risk into enterprise risk management programs and using scenario analysis to facilitate decision making.

The important issue is how climate risks – both direct physical risks and indirect transitional risks – affect the business's bottom line. Technology, resources, impact and policy are key factors to consider in terms of these influences.

Technology refers to investment in designs and products that support low-carbon emissions, a trend that is already gaining traction in the construction sector. Sustainability and environmental conservation values are recognised through the international Green Star rating system nationally administered by the Green Building Council of Australia (GBCA).

Chronic weather patterns such as changes in temperature and rainfall may affect the availability of resources or how they are used, reflected in project costs, while the physical impacts of extreme weather events include damage, destruction and interruption to works.

Policy and regulations can be expected to increasingly take into account the need to slow climate change and reduce the impact of extreme weather events. In Australia, a Senate report likely to generate findings with far-reaching implications for the civil construction industry in particular is due for completion mid-2018.

In conducting this analysis, organisations should make extended projections, beyond the 12 to 18-month timelines usually applied to risk assessments. Indirect financial risks arising from transitioning to more a climate-resilient risk management model are a complex component of this type of audit. These could involve operational restrictions, the need to access new products and technologies, regulatory impacts and sourcing qualified suppliers and vendors.

In addition to identifying areas of required risk mitigation, businesses should also be looking to leverage opportunities presented by the need to respond proactively to climate risks.

These include expanding market share and investor base for projects, diversification of business activities (to include remediation, for example) and reducing operating costs through increased efficiencies.

# Extreme weather events are rated as the world's number one risk in terms of likelihood

*The Global Risks Report 2018*

### Senate inquiry and report

On 9 May 2017 the Senate referred the issues below to the Environment and Communications References Committee for inquiry and report[7] with the working title of 'The current and future impacts of climate change on housing, buildings and infrastructure, accounting for the full range of projected climate scenarios'. The report is due on 27 June 2018.

Matters for consideration include:

a. recent and projected changes in sea level rises and storm surge intensity
b. recent and projected changes in temperature and precipitation
c. recent and projected changes in extreme weather, including heatwaves, bushfires, floods, and cyclones
d. recent and projected changes in natural coastal defence systems including coral reefs, kelp and mangrove forests
e. the impact of these changes on the vulnerability of infrastructure in coastal areas
f. the impact of these changes on water supply and sewage treatment systems
g. the impact of these changes on transportation, including railways, roads and airports
h. the impact of these changes on energy infrastructure, including generators and transmission and distribution lines
i. the impact of these changes on health, education and social services infrastructure, including hospitals, schools and aged care
j. the impact of these changes on private and public housing
k. the impact of these changes on public recreation and tourism facilities
l. the impact on financing and insurance arrangements for housing, buildings and infrastructure
m. the adequacy of current state and Commonwealth policies to assess, plan and implement adaptation plans and improved resilience of infrastructure
n. any other related matters.

## What to expect

One of the effects of the continuing increase in the occurrence and severity of adverse weather conditions is likely to be risk allocation in construction projects.[8] This has contractual implications for pricing and time frames for project completion, with the responsibility for identified risks generally being transferred from the principal to the builder, according to the Australian division of law firm Norton Rose Fulbright.

Other parties affected by risk allocation include the organisations bearing responsibility for project design. Legislative changes need to be anticipated and the fitness for purpose of a project's design should recognise the possibility of adverse weather events during construction and specify how the plans address this risk.

"Building design that is responsive to the location is increasingly important and different designs should attract different premiums," the ICA's Campbell Fuller says. "Insurance is looking at how better to recognise owners' efforts at makng buildings more resilient."

7. 'The current and future impacts of climate change on housing, buildings and infrastructure', Parliament of Australia
8. 'The impact of climate change on the risk allocation of construction projects', Norton Rose Fulbright, September 2014

## The fine print

The wording of both contracts and insurance cover needs to be structured with care. Principals are likely to require definitions of adverse weather events and specifications about the extremity of an event; contractors are likely to require that weather conditions be included in the concept of *force majeure* as applied in contracts.

Contract wordings may need to address:

- whether an adverse weather event is likely to result in the intent of contract being frustrated, in consideration of the fact that most contracts do not contain *force majeure* clauses, and how the contract should respond to this
- principals could be concerned with who carries the cost of insuring an unfinished building project and to what extent, since contractors are not generally required to insure against damage caused by extreme weather events
- whether contractors are to be compensated for remediation of work due to an adverse weather event in cases where the contractor's own insurance provides cover
- whether contractors should be allowed extra time or payment if the works site becomes inaccessible for the delivery of labour and materials.

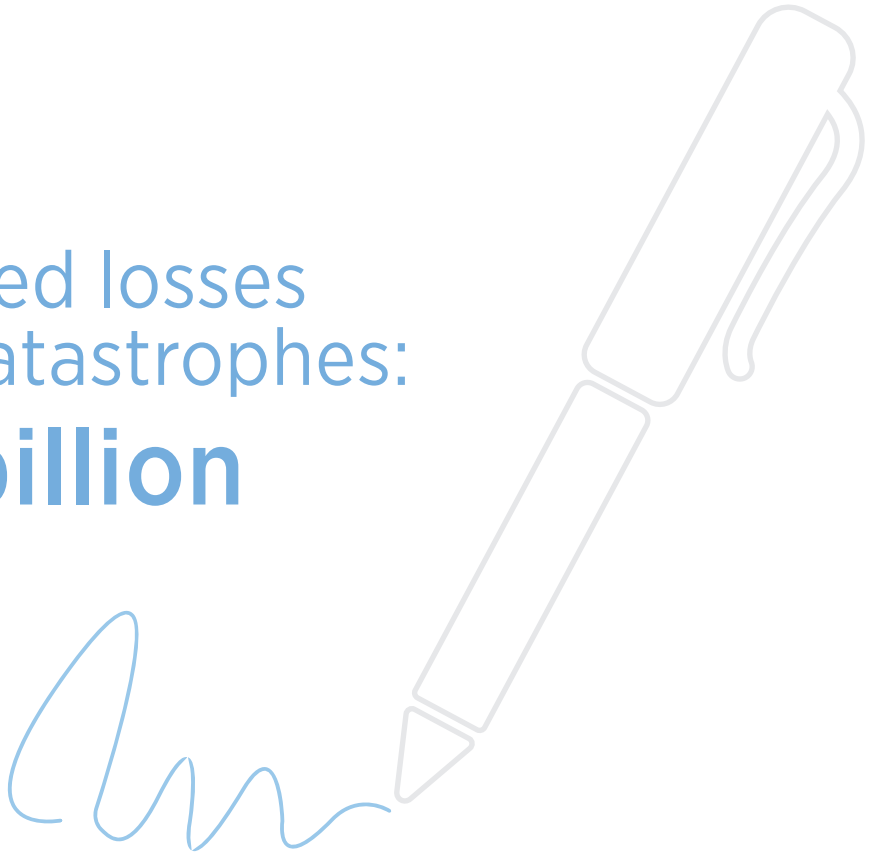
Terms and conditions[9] that may be subject to adjustment include:

1. compliance with changes to legislation, such as the Building Code (BCA), where they are controversial or costly to implement, and greater focus on the project design in the context of fitness for purpose obligations
2. entitlement to claim relief for adverse weather conditions during construction, with corresponding clarification of the severity of conditions eligible and how these should be measured
3. relief available under *force majeure* increasing in scope from natural disasters to include severe weather conditions (there is no common-law application for *force majeure* so the extent of the claimed relief must be built into the contract)
4. some latent conditions entitlements leading directly to claims for relief without being subject to due diligence criteria (weather conditions are usually excluded from latent conditions entitlements).

Global insured losses from 2017 catastrophes:

**US$136 billion**

*Resilience Today*



9. 'The impact of adverse weather events on the construction industry', Gadens, 15 December 2017

# In conclusion

Extreme weather is affecting the construction sector at all levels, from government regulations down to individual contractors. These events are occurring more frequently and, due to population density and the cost of building in today's economy, are increasingly expensive.

Appropriate responses are necessary, whether they are internal and reflected in organisations adopting new protocols and approaches to managing risk or external and expressed through regulatory controls and requirements, or conditions for obtaining project finance. For all organisations involved in construction it is vital to profitability.

Construction businesses should look to review their existing insurance cover before they are affected by an extreme weather event. Utilising the expertise of established construction and infrastructure insurance experts is essential and can help with risk assessment, identifying areas where specific cover is required, as well as structuring mitigation plans and responding to individual project requirements.

> *Industry participants should ensure they have a close working relationship with their insurance broker, as this will assist them to select appropriate insurers and policies.*
>
> **Brent Turnbull, Gadens**

Gallagher is one of Australia's – and the world's – largest insurance broking and risk management companies.

With 25+ regional and metropolitan branches nationally, we understand local business communities because we're part of them ourselves. That's why we're the broker of choice for over 100,000 Australian businesses, from micro-SMEs to multinational corporations.

# Gallagher's construction sector expertise

Gallagher's construction insurance brokers are dedicated industry experts. Our claims executives are aligned to local brokers and branches to ensure strong local relationships, but our claims management processes draw on the Gallagher's global capacity to obtain the best results for our clients. Our processes are designed to provide client advocacy when it is needed and we monitor insurer performance on our clients' behalf.

## Talk to us:

**Roger Irvine**
Head of Construction - Australia and Asia
**T:** +61 2 9242 2035
**M:** +61 424 005 448
**E:** Roger.Irvine@ajg.com.au
Connect with me

**Angela Vella**
Practice Leader, Construction
**T:** +61 2 9242 2059
**M:** +61 403 921 604
**E:** Angela.Vella@ajg.com.au
Connect with me

Connect and join the conversation

@AJG_Australia |

Gallagher

Insurance | Risk Management | Consulting