

A scientific approach to flood damage

A government enquiry into flooding insurance delivered stern warnings to the industry. Now, an engineering firm is collaborating with industry to help deliver better outcomes for all claim assessments.

WHEN THE Parliament of Australia delivered a report detailing the findings of its inquiry into insurers' responses to claims from the 2022 floods in Queensland, NSW, Victoria and Tasmania, it came with a clear message for the industry.

"Policyholders need to be treated better," wrote Dr Daniel Mulino, the Chair of the House of Representatives Standing Committee on Economics.

The floods triggered the greatest number of claims lodged for any natural disaster in Australian history – more than 300,000.

Mulino titled the report *Flood failure to future fairness*, a name that he said reflected the "collective failure by insurers to meet their obligations to policyholders after the 2022 floods".

When Deniz Bekir FIEAust CPEng NER EngExec, CEO of the forensic engineering and building consultancy Silver Wolf Projects, saw the committee's findings, he knew the insurance industry had a problem. He also knew that he wanted to help it provide a better response to future claims.

"When someone makes a claim on an insurance policy, the insurer is obligated to investigate causation to

enable their policy response," he said. "The *Flood failure to future fairness* report identified that the current General Insurance Code of Practice and use of experts in providing reporting on causation for property damage hasn't been up to standard.

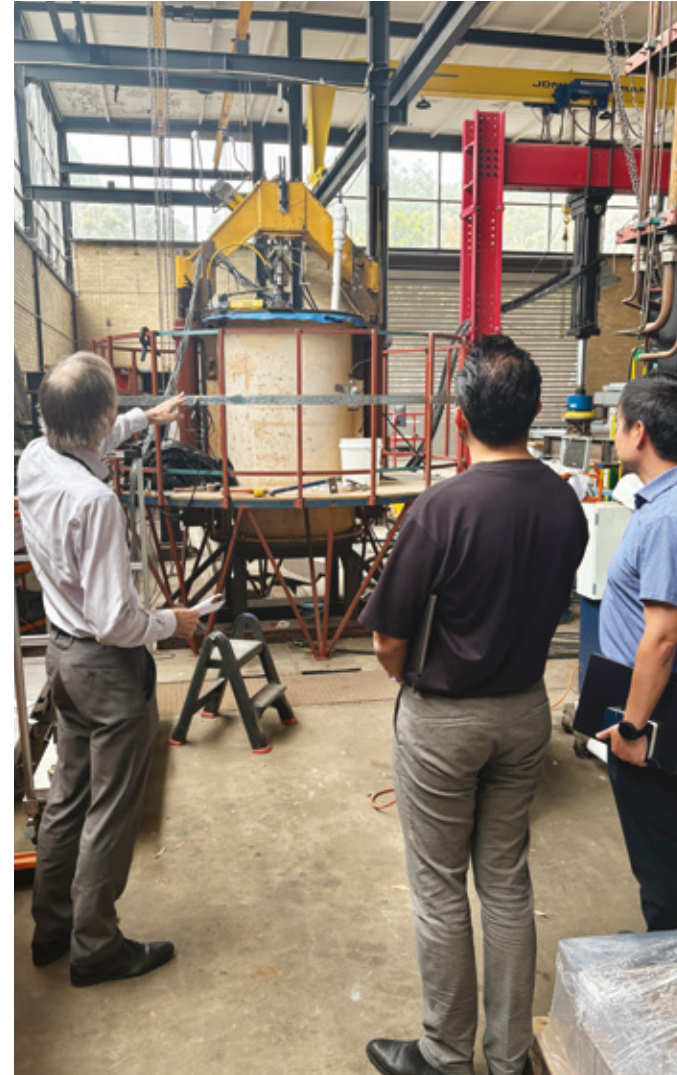
"It was identified that many insurers were drawing on opinions of experts who had formed conclusions without factual engineering basis on the cause of building movement, and damage that consequentially led to incorrect or poor decision outcomes."

Responding to the recognition across the industry that standards needed to improve, Silver Wolf Projects was instrumental in establishing the Association of Insurance Building and Engineering Consultants (AIBEC) in 2024, a national industry-based association for people who work with the insurance sector, including engineers.

Working empirically

Bekir said AIBEC aims to assist all stakeholders by improving the training and delivery of expert reporting services towards higher-quality outcomes.

"One of the major issues of contention with insurance claims regards the movement of buildings



ABOVE:
A tour of the University of Sydney's engineering facilities.

that have been subject to escape of liquid or flooding events," he said.

"In a flood or after a pipe has leaked, the ground may or not move due to its exposure to moisture or saturation. At the moment there is no empirical guideline that all stakeholders can use to determine what is damaged, whether it was damaged and therefore to enable the insurer to make a qualified decision on policy response."

At the moment, an engineer assessing damage would draw on their training and experience, including the use of measuring tools such as a floor level survey (FLS) – which varies greatly depending on the engineer – to form a subjective assessment of what damage took place and how it was caused.

Bekir said the limitation of this method is that, as a floor survey is limited to measuring the current geometry at the time of the inspection, without reference to a pre-event FLS, a datum of movement cannot be established. This prevents a true and evidential establishment of cause, timing or extent of soil-related movement.

As such, current investigation is not an accurate forensic representation of resulting ground or building movement from a ground saturation. This leads to assumptions rather than analysis based on factual engineering principles and data.

"A home might have a bathroom leak that has caused some damage, but the owner might make an insurance claim for damage 30 m away in another room outside of the leak's zone of influence.

"But we have no engineering basis for adjudicating whether the

BELOW:
Nik Housh, Deniz Bekir, Professor David Airey and Associate Professor Yixiang Gan.

leak caused that damage. Buildings move after a water leak, but also naturally as well. The damage might be a result of the leakage or it might not be, or it may be preexisting damage that has been exacerbated."

To help consulting engineers deliver more reliable and consistent results, AIBEC wants to help engineers take a rigorous and empirical approach to assessing damage which will improve expert reporting and the claims handling outcome for all stakeholders.

"That would be subject to understanding three things," Bekir said. "One would be the length and extent of the leak. Second would be the ground condition itself – understanding what the geotechnical conditions are and what the reactivity of the ground would be subject to it getting wet and drying. Thirdly, understanding the structure itself: what it is and how it would move subject to ground and foundation movement.

Currently we have a FLS that is one equation with multiple unknowns, he said.

"It's going to benefit all stakeholders involved in the claims handling process of property insurance claims."



"If we look at property damage as 'one equation, one known and many unknowns', at present we consider assessing property damage resulting from flood or escape of liquid utilising FLS alone cannot establish pre-loss conditions, determine when movement occurred, define zone of soil influence, quantify soil expansion or shrinkage or distinguish leak-related movement from seasonal or historic effects."

Doing the research

To ensure engineers can approach flood damage and other similar claims with rigorous thinking based on scientific principles, the organisation is partnering with the University of Sydney in a research study to produce a set of guidelines for the industry.

Working with Associate Professor Yixiang Gan of the School of Civil Engineering, Silver Wolf Projects and AIBEC aim to develop a formalised and empirically rooted approach engineers can take when assessing insurance claims.

"It's going to be a 12-month research project headed up by the university itself.

"When you want a credible independent guideline or basis for all stakeholders, bringing academia into the process – a body that has no stakeholder in the outcomes – allows the guidelines to draw purely on the science and engineering.

And the outcome of the research will be truly innovative.

"The innovation is to solve an issue that affects a lot of claims. It's going to benefit all stakeholders involved in the claims-handling process of property insurance claims. It will be used by not only engineers and experts; it'll be used by the insurers themselves. It'll be used by loss-adjustment assessors, brokers and the insured.

"All properties are insured and the assessment of claims on that insurance is critical. People need the comfort to know that there are engineers who use scientific principles and technology in their reports on any damage." ○