

# Australia: State government report indicates Opal Tower should not have been reoccupied

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An interim report by three academic engineers into Opal Tower has detailed serious major damage and minor damage to the building's structure and indicates problems with both the design and construction. It states that the damage "indicate[s] factors of safety lower than required by standards."

The report was commissioned by the New South Wales (NSW) state government and released four days after the builder and its engineers claimed the building was safe to reoccupy.

The building was partially evacuated on December 24, and fully on December 27, after the walls on the tenth floor cracked. Further investigation has revealed other damage. The builder, Icon, has placed props throughout the damaged sections of the building. Some residents moved back in last weekend after Icon and its engineers declared the building safe.

The report has concluded that while the foundations are sound and the building will not collapse, there are a number of problems, including "major damage" on five floors of the building.

It stated: "A number of design and construction issues have been identified, a combination of which probably caused the observed damage to some structural members in the Opal Tower building."

It noted that further investigation is required on a range of issues and advised that residents should not reoccupy the building until it can be determined that no "structural member" is overloaded, which it assesses caused the cracking.

The 17-page report by the three academics—John Carter, Mark Hoffman and Stephen Foster—was released to the public on January 14, despite an initial deadline of January 11. The report is brief, with only six pages of text and ten pages of diagrams and images.

The major damage was observed on levels 4 and 10,

in the hob beams, which support the large concrete panels flanking the inset slots, or recessed atriums, on the edge of the building. The atriums are an architectural feature of the building, distinguishing it from most other buildings. A hob beam or upstand beam stands above the concrete floor slab of a building, unlike normal beams that sit below or at the level of the floor.

In addition to the cracking in the panels and the "major damage" and "minor damage" to a separate hob beam on level 4, cracking was also observed in floor plates between Levels 3 and 4. The use of the term "major damage" is significant because builders are required to repair "major damage" if it has caused a building to be uninhabitable.

It recommends that "further analysis be undertaken on the structural design of the hob beams and associated structural members with similar details levels 4, 10, 16 and 26, and consideration be given to strengthening them at these other locations throughout the building."

The wording of the report suggests that the authors have concerns about the effectiveness of the bracing that has already been installed and that they fear there may be undiscovered problems elsewhere.

The report clearly stated: "[B]efore residents re-occupy the building the designers must ensure that no structural member is overloaded as a result of any load redistribution likely to have occurred as a consequence of the observed damage to the structure of the building."

In other words, such work had not been done to the satisfaction of the authors.

Icon is nevertheless insisting that residents can return to Opal Tower, with the complicit silence of the NSW and federal government authorities. The CEO of WSP,

Icon's engineer who designed the building, told the *Australian* on January 17: "The majority of the building, we believe, is safe for reoccupation."

The re-occupation list issued by Icon only showed 276 apartments. This means residents of 120 apartments will be forced to continue to live in hotels or elsewhere while work takes place to address the structural faults.

The interim report was given limited terms of reference. The authors nevertheless felt compelled to make assessments such as this:

"Preliminary consideration of the bearing capacities of the hob beam at the locations of the connection of the beams with columns C21 and C38 on Level 10 and with columns C16 and C34 on Level 4 indicate factors of safety lower than required by Standards."

Building structural design should always include a large safety factor to carry loads greater than those expected. The very fact of the cracking shows that these beams and panels were over-stressed, beyond what they could withstand.

The report also noted that the authors have not been provided with all the information they requested from WSP in order to assess the design. The withholding of critical information cannot be dismissed as a purely technical issue.

Aside from indicating problems in the design, the report also detailed five significant deficiencies in the construction of Opal Tower.

The report agreed "in principle" with the plan by WSP to repair the damage. But is stated: "[I]t is recommended that independent and qualified structural engineers should be engaged to check the final proposal in detail before major rectification works commence."

At the conclusion of the report, the authors stated: "Before residents re-occupy the building the designers must ensure that no structural member is overloaded as a result of any load redistribution likely to have occurred as a consequence of the observed damage to the structure of the building."

The implication is this has not been done. The instruction to residents that they can return to their homes is therefore reckless. The question needs to be posed as to whether people's safety is being put at risk, to both get the crisis out of the media, for the sake of the industry and to protect the narrow commercial interests of Icon and WSP.

The first response of both the NSW Liberal-National Coalition government and the Labor Party opposition was to scapegoat "cowboy certifiers."

But the true extent of the problem is now emerging. A report in the *Australian* on Wednesday said the NSW cabinet will be considering, as early as next week, "plans for proposed reforms—which would regulate engineers, builders, architects and other building practitioners."

Michael Teys, a strata consultant, told *Smart Property Investment* this week: "People are going to have to die, I think, before we will have an honest look at what the problems are. For government to say it's more about education and it's more about increasing surveillance on certifiers, they simply missed the point."

Sandy Eskander, one of the owners of an Opal Tower apartment, told a press conference on January 14 that "we will not return to the site until it is set and built as we had originally purchased it" and until "engineers have said on letterhead that it is safe for reoccupation."

He also stated: "People have been buying into the Australian dream but unfortunately this has become the Australian nightmare for us."



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