CASE STUDY

ICI House

DTP VicPlan web map

The place

ICI House (also known as Orica House) in East Melbourne, just outside the city's CBD Hoddle Grid, was one of the first high-rise buildings in Australia. Completed in 1958 to a design by architects Bates Smart McCutcheon, it was the tallest building in Australia until 1961.

The building features one of the first true glass curtain facades in Australia, constructed with specialised German glass fitted to a steel and concrete frame. The prismatic form and uncompromising architectural expression heralded by the building became synonymous with progressive corporate architecture in the economic boom of the 1950s.

ICI House is managed by its current owners, Charter Hall.

HERITAGE COUNCIL VICTORIA

Location

East Melbourne, City of Melbourne

Traditional Owners

Wurundjeri People

Main Impacts

Double the number of very hot days

More **intense** downpours

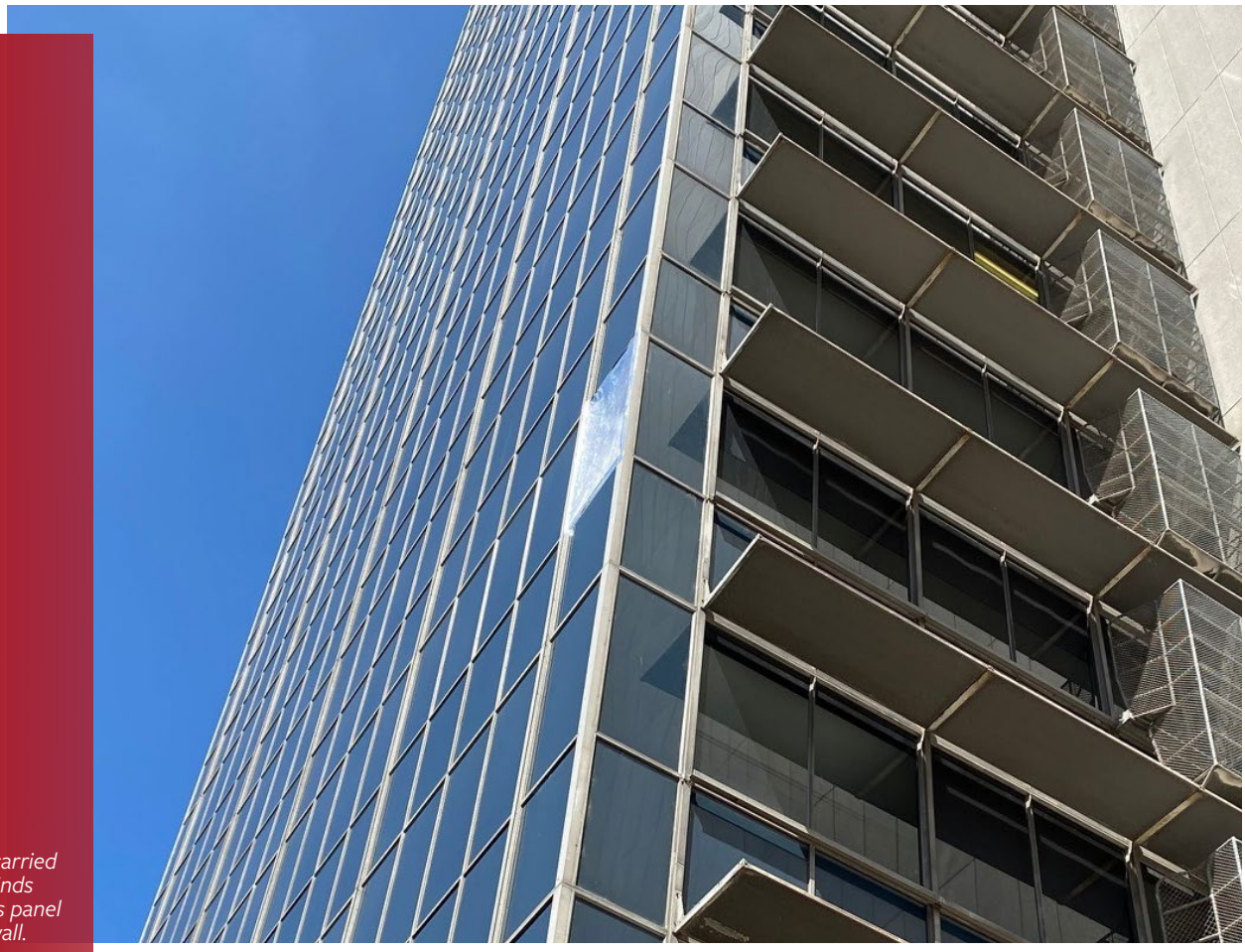
Type

Postwar high-rise office building, comprising:

- glass curtain wall
- metal and concrete elements.

Heritage Listing

National Heritage List



In 2021, debris carried by gale-force winds damaged a glass panel of the curtain wall.

Heritage significance

ICI House is significant as the first International Style skyscraper in Australia, redefining height restrictions in Melbourne. It is an example of Australian architecture engaging with new trends in international architecture in the 1950s, notably in the use of glass curtain wall technology and the innovative use of materials and construction methods such as precast concrete units in structural members and flooring.

Climate change impacts

As a high-rise building in an urban setting, ICI House is expected to be impacted by more frequent hot days. Local urban temperatures are predicted to increase by several degrees because of extra heat radiated from buildings, roads, footpaths and other hard surfaces. More frequent and intense storms are also expected. This will increase the risk of damage to the significant curtain wall facade and put pressure on existing drainage infrastructure.

Site vulnerability and heritage impacts

The external envelope of ICI House is exposed to heating by the sun, and water and wind pressures, particularly on its eastern, southern and western façades, as well as heating from within the building. This is exacerbated by its elevated position and urban context.

The original design elements, most notably the glass curtain wall, are vulnerable to extreme weather, especially high winds, gales and hailstorms, as windblown particles and debris can cause major damage. In 2021 debris carried by gale-force winds damaged a glass panel of the curtain wall.

Other heat-related impacts already experienced at ICI House include the accelerated deterioration of materials, including glass (and silicone over-sealant), metal and concrete, caused by increased radiant heat from direct and reflected sunlight and more extreme external temperatures.

Other climate change vulnerabilities are associated with the physical qualities of a glass and concrete structure (such as heat retention and radiation) and the environmental performance of the building. The original design of many postwar office blocks like ICI House required air-conditioning to provide occupant comfort. Its performance and that of the façade was limited by the technologies at the time. The building will be put under increasing pressure as a result of intensifying climatic conditions. The greenhouse effect of the glass façade, which traps heat inside the building, and the high heat gain through the glass in summer are other challenges for the building's environmental performance.

Building Code requirements relating to improving energy efficiency in deteriorating climatic conditions (such as increasing temperatures) will force some change or adaptation of the external fabric, which could impact the heritage significance. Appropriate responses should consider the use of materials that are visually sympathetic to the original fabric.

Current management for climate resilience

The building owner manages the building under a suite of asset management, environmental management and life-cycle plans and other policies. The company is taking a proactive role in reducing the impacts of climate change on both ICI House and the environment. The building has been evaluated in terms of its carbon footprint and carbon neutrality, and has a 4.5-star energy rating, which is comparable to contemporary buildings in the Melbourne CBD. This has been achieved through a variety of strategies, including:

- using sheer curtains or block-out blinds on one side of the building to reduce the heat load
- installing a centralised air-conditioning plant to replace underperforming independent plants
- installing more efficient lift systems that use considerably less energy.

Monitoring the impacts of climate change is also an important part of the current management strategy. Any deterioration is noted during regular inspections of the building structure, and may result in a more extensive investigation and remedial action.

When damage or deterioration has occurred, the heritage significance and the history of the building are considered when repairing or replacing material. The original architects, Bates Smart, are still present on the site, enabling the building manager to draw on their experience and intimate knowledge of the building, its materials and history.

An environmental management plan has been initiated to assess both the resilience and investment return of the building. Relevant information about the building and its history continues to be collated and centralised for future management and research use.

Climate change will accelerate deterioration of materials, e.g., more frequent and intense storms will lead to recurring damage to gutters.

Impacts related to heat already experienced at ICI House include debonding of silicone over-sealant in the curtain wall.

Discussions with relevant stakeholders are ongoing. This includes quarterly sustainability management meetings with tenants to discuss both the performance of the building and tenancy operations from a sustainability point of view, including considerations regarding energy, water and waste management.

Potential strategies for building resilience

A prioritised climate change adaptation plan for ICI House, being prepared by Charter Hall (the current owners), will guide future strategies. The plan will include monitoring the climate change impact on the building as well as its impact on the environment. Strategies for building resilience could include:

- ensuring the curtain wall can resist high winds
- inspecting the glazing system, structure and fixings annually and undertaking timely repairs when required
- upgrading the heating, cooling, lighting and lift systems to incorporate contemporary energy efficiency designs and technologies
- upgrading the glazing system to improve its performance if this can be done without impacting significance.

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