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<https://www.theguardian.com/culture/2023/may/09/cultural-vandalism-powerhouse-museum-plans-to-dismantle-landmark-steam-engine-described-as-extremely-risky>

‘Cultural vandalism’: Powerhouse Museum’s landmark steam engine under threat, experts warn

Kelly Burke The Guardian Tue 9 May 2023 13.56 AEST

Experts claim dismantling the world’s oldest working rotative steam engine is ‘extremely risky’, but museum says specialist engineers have advised it can be done safely

The world’s oldest working rotative steam engine could be at significant risk, experts say, if Sydney’s Powerhouse Museum goes ahead with plans to dismantle, store and then electrify part of the 1785 Boulton & Watt: a priceless antique whose components are “as fragile as 200-year-old glass”.

The warnings about the engine – a gem of the museum’s collection – follow [serious claims](#) of neglect of other exhibition items which were recently raised by current staff and former board members, after Guardian Australia broke news of [an allegedly “buried” report](#) that could have thwarted its controversial \$500m redevelopment.

On Thursday, the new Labor arts minister, John Graham, met with executives to thrash out the contentious future of the Powerhouse, Australia’s largest science and technology museum. Touring the institution, Graham was met by members of the Powerhouse Museum Alliance, a collective fighting to keep it intact. One member delivered a letter to the minister, calling on him to make publicly available all documentation by the previous Coalition government over the new [\\$915m Powerhouse Parramatta](#), scheduled for completion in 2025; and the [conversion of the Ultimo](#) site into a commercially driven creative arts, design and events precinct.

Under that plan, the world’s oldest working rotative steam engine – the [1785 Boulton & Watt](#) – will be dismantled and placed in storage before being reassembled at the redeveloped Ultimo site, where the power source that creates the steam will be converted from gas to electricity.

In a statement, a Powerhouse spokesperson maintained that the steam engine would be safely dismantled and stored, as it has been in the past. “The care and preservation of the Museum collection is our highest priority,” the statement said.

But experts have described the move as “extremely risky” given the age and “cumulative fatigue” of the steam engine, with one of Australia’s leading industrial revolution technology experts describing it as an act of “cultural vandalism”.

An act of ‘cultural vandalism’: steam engine goes electric

The prized centrepiece of the museum’s 135-year-old collection, the Boulton & Watt steam engine is the largest and most historically significant among more than a dozen steam engines that form the Powerhouse’s permanent Steam Revolution exhibition. It is also the only one

the museum's CEO, Lisa Havilah, has given public assurances that it will be returned to Ultimo after the redevelopment.

The Boulton & Watt has been part of the museum's collection since its arrival in Australia in 1888. In the 1920s it was electrified, then restored back to its original steam operation in the 1980s, at a cost of about \$2m at the time, according to the founding Powerhouse director Lindsay Sharp.



The 1785 Boulton & Watt steam engine at the Powerhouse Museum in Ultimo. Photograph: Kelly Burke/The Guardian

In 2022 budget estimates, Havilah said both the government and the museum had made a commitment to “retain [the engine] permanently” in the renewed Ultimo site. An internal Powerhouse source said that an earlier plan had been to convert the engine to electricity, which would keep it operating – without steam – once returned to Ultimo. The Powerhouse spokesperson has denied this option was on the cards, with a spokesperson saying that only the engine's boiler will be converted from gas to electricity. “This will have zero impact on the type and quality of steam provided to the engine,” the statement said. The conversion would be part of the Powerhouse's commitment to achieve net zero operation by 2025, the spokesperson said.

But museologists and experts said any modifications to the engine's operation would be risky, and would detract from its historical significance.

The University of New South Wales emeritus professor David Phillip Miller is one of Australia's leading experts in technology of the industrial revolution. Miller said that dismantling of the Boulton & Watt – and introducing an electrical component – would be an act of “cultural vandalism” that formed part of a “greater travesty”: the dismantling of the Ultimo museum's entire steam engine collection.

“The Boulton & Watt [has] come to be regarded as one of the great marvels of the modern world,” he said. “In terms of the development of industrial civilisation, this is a landmark object, and very rare.” The Boulton & Watt engine is one of only three of its type still in existence that date back as far as the early 1780s, and the only one still operating under the steam technology of the late 1700s.

“The working Boulton & Watt draws people from around the world,” said Debbie Rudder, who was previously the Museum’s curator of power technologies for 23 years. “Historians, industrial revolution enthusiasts, steam enthusiasts come from Britain and all round the world to Sydney to see it operating.”



Entrepreneur Matthew Boulton and engineer James Watt, whose steam engine was commemorated in a £50 banknote. Photograph: Bank of England/PA

‘As fragile as 200-year-old glass’: experts warn against moving engine

The museum spokesperson said the Boulton & Watt had a history of being safely dismantled, stored and reassembled, both in 1888 when it arrived in Australia and in the 1980s when it was restored and housed in a custom-built space in the newly designed museum.

“Citing history, engineering specialists have confirmed that the Boulton & Watt could be safely dismantled into custom parts, placed into custom stillages and stored in a controlled environment again at Castle Hill,” the statement said.

But an April 2023 independent report, commissioned by the Powerhouse Museum Alliance, strongly advised against ever moving the steam engine again “unless absolutely essential”, due to “cumulative fatigue” of its fragile components that have weakened over time.

The report’s author, the Sydney mechanical and structural engineer Steve Muscat, told Guardian Australia: “It’s like [playing with] the tab on a can of coke. You can only do it so many times before the tab snaps.”

Miller agreed that dismantling and moving the engine is “extremely risky”. “We’re talking about metal components 250 years old and they do get brittle,” he said.

“Frankly it was risky when it was moved here in the 1880s, but it’s getting riskier by the moment, not the least because we don’t really have the [old engineers] anymore who know exactly how to do this kind of thing ... they’re all gone.

“You would need months and months and an army of engineers and curators and conservators to do that kind of job properly ... [The museum] seems to think it’s just like some kind of Ikea project, that you can just take a thing apart and put it together again.”

Similar advice was given to the museum more than 40 years ago. The UK’s world steam engineering expert Jonathan Minns travelled to Sydney in 1980, where he advised the museum’s then director Lindsay Sharp that once the engine was installed in its purpose-built space, it should never be moved again.

“Jonathan was unequivocal,” Sharp said. The engineer, who died in 2013, warned him that components of the engine were “as fragile as 200-year-old glass”. Sharp said Minns repeated this advice in a report that current staff at the Powerhouse, some who are speaking to Guardian Australia, were unable to locate among the conservation archives. The Powerhouse’s executive did not respond to questions about the Minns report.