

Wellington experiences hundreds of seismic events each year with many threatening the structural integrity of its significant unreinforced masonry historic buildings. In 2016, the Kaikoura Earthquake damaged buildings across the city and resulted in the closure of many historic buildings for public safety. It is therefore important that Sustainable Development Goal 11.4 which seeks to “strengthen efforts to protect and safeguard the world’s cultural and natural heritage” is prioritised in New Zealand.



Working alongside local stakeholders, Harrison Grierson, a New Zealand owned multi-disciplinary engineering and design consultancy, championed the strengthening of numerous unreinforced masonry historic buildings in Wellington, New Zealand to assist in safeguarding the buildings and the public from masonry failure in seismic events.

Harrison Grierson planners and engineers collaborated with building owners and occupiers to improve the resilience of at-risk buildings by incorporating alternative materials into masonry facades and securing original building fabric. This included integrating structural bracings into facades and cosmetic repair efforts. Best heritage and conservation practices were followed to respect and care for the cultural significance of each building. To improve the protection, in some cases, light-weight materials were used to lessen the damage in an earthquake event and masonry facades were strengthened with new internal supports.

Examples include historic buildings on Cuba Street, Wellington’s prominent cultural and historic centres and a registered Historic Area under national legislation, and Adelphi House, a seven-storey 1920s Chicago-style office building located on the historic Courtney Place.

For Adelphi House, Harrison Grierson seismic engineers investigated the structure and the materials used for the original construction, and conducted international research into the behaviour of old, riveted structural steel connections under seismic loading. They also studied the seismic performance of the building, including the probability of soil liquefaction. Next, they designed a bespoke structural engineering solution for each of the seven stories to strengthen and preserve the heritage value of the building while providing refurbished, modern office and retail space. The solution included providing steel jackets to the existing columns, two new internal composite columns, cross bracing, and strengthened foundations.

The work on Adelphi House brought the building to 100% of New Building Standard, the current earthquake engineering standard, and conserved a desirable and iconic building within the historic centre of Wellington. It is intended that further strengthening projects will continue within Wellington to protect and safeguard the city’s significant historic buildings.

Visit [www.harrisingrierson.com](http://www.harrisingrierson.com) for more projects.

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