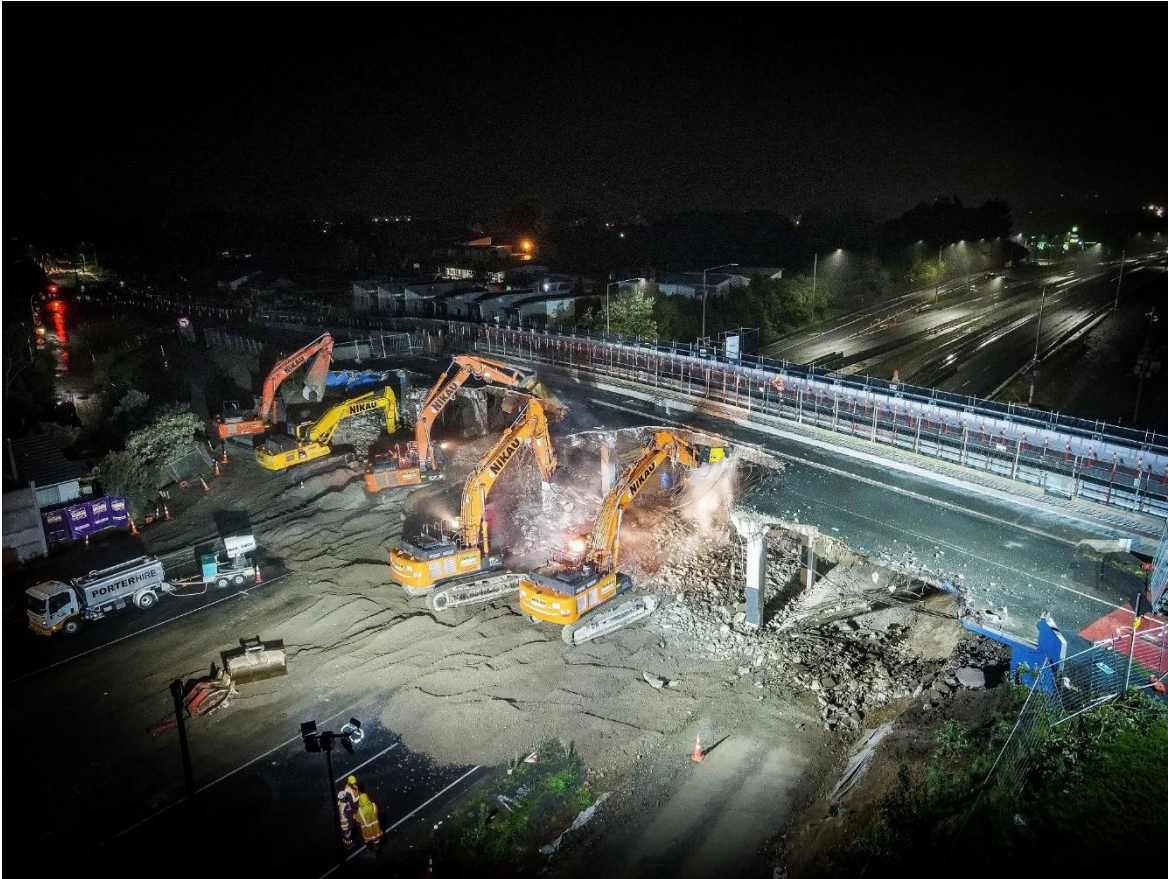


Resource efficiency and waste minimisation case study

# Park Estate Road bridge demolition



In May 2022 the old Park Estate Road bridge was demolished as part of the State Highway 1 Papakura to Drury project. Through good planning and innovative techniques, the project team was able to recycle 100 percent of the waste from the demolition, save time and resources, and minimise disruption to the community.

## What was done

The Papakura to Drury project is part of a larger programme of works designed to support growth in South Auckland. A replacement bridge at Park Estate Road was required as part of this project, as the old bridge's supports were not wide enough to fit the additional motorway lanes underneath.

This demolition and replacement were complex as the previous Park Estate Road was a no-exit on the western side of the bridge. This meant the replacement of the bridge had to be undertaken in stages to maintain access across the bridge to the road beyond at all times. Staging requirements saw half of the new bridge built on the southern side of the existing bridge, and for traffic to be moved temporarily onto this new structure, before the old bridge could be demolished and the second (northern) half of the new bridge rebuilt in the gap created.

Several options were considered for the demolition of the old bridge, including taking it down in sections at night over a two- to three-month period or demolishing it in a single 'hard and fast' exercise. After an

assessment of the options, the project team decided to demolish the bridge during a 14-hour Saturday night closure (between 7pm and 9am when traffic volumes were lowest) because it would be safer and more efficient

The motorway between Papakura and Drury was closed at 7pm on Saturday 21 May and 200m<sup>3</sup> of material was brought in to protect the existing motorway surface before demolition began. Contractors then used four 50-tonne excavators to break down the bridge, supported by a fifth assisting excavator.

[View videos of the bridge demolition on our website](#)

## What the outcomes were

The overnight demolition saw 400m<sup>3</sup> of material brought down and, with careful planning, the project team recycled a remarkable 100 percent of the old bridge. This included approximately 30 tonnes of reinforcing steel, which was separated and sent to scrap dealers to be recycled. The demolition contractor, Nikau, used their own crushing unit to crush the concrete to create GAP65 (a heavy-fill aggregate) and GAP20 to be used on other projects. This 100 percent waste diversion from the bridge demolition is an industry-leading level.

The bridge demolition and clean up all went according to plan and the motorway was reopened two hours ahead of schedule at 7am on Sunday 22 May. This milestone having been achieved, the way was clear for the project team to start building the second half of the replacement bridge in the gap created. The second half of the new bridge has since been built and the new and upgraded bridge was completed in June 2023.

## What we learned

A key insight on this project was the potential for sustainability initiatives to create cost efficiencies *and* improve environmental outcomes. The recycling of the Park Estate Road bridge was initially proposed to help the project team reach their environmental key performance indicators and comply with our resource efficiency requirements. It proved to also become a cost saving measure, as contractor Nikau didn't need to purchase virgin rock, instead using recycled concrete from the project site. Although this incurred a processing cost, the resale of the recycled steel helped to offset this. Through careful planning and design, the Papakura to Drury team have saved time, money, and cumulative nights of community disruption – highlighting the potential for a programme of works to activate broader social and economic outcomes.

## What was remarkable about the initiative

In line with the Waka Kotahi NZ Transport Agency Sustainability Rating Scheme Policy for projects with a capital value of over \$100 million, the SH1 Papakura to Drury project is currently undertaking an Infrastructure Sustainability Council (ISC) rating. ISC's infrastructure rating scheme is Australia and New Zealand's only comprehensive rating system for evaluating economic, social, and environmental performance across the project life cycle.

Sustainable resource use was one of the target areas identified in the project's rating. 'Protecting and enhancing the local environment is a prime consideration in our project planning, and a significant part of that is managing our waste sustainably,' says Waka Kotahi project director Chris Smith.

While the SH1 Papakura to Drury project's overall ISC waste diversion target is 25 percent, the project currently diverts around 70 percent of all project waste from landfill – an industry-leading level of material landfill diversion. With 100 percent diversion from landfill, the Park Estate Road bridge demolition exceeded all requirements and expectations set out in the ISC rating scheme.

These outcomes have demonstrated that commitment and planning results can result tangible reductions in project waste. By achieving and sharing these sustainability outcomes, the SH1 Papakura to Drury project is driving a step change in industry, and what is accepted as business as usual when it comes to resource lifecycle. The project was included as a resource efficiency case study in the ISC [2023 impact assessment report](#).

## Further information

For further information and case studies related to resource efficiency in our projects, check out the [Resource efficiency and waste minimisation](#) section of our website.