

MEDIA RELEASE

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MAKING AN IMPACT ON AUCKLAND'S NORTHERN BUSWAY



In a breakthrough into the ground improvement market on New Zealand's North Island, the Broons BH-1300 "Square" Impact Roller owned and operated by Taylors Contracting Co Ltd of Brightwater on the South Island, has worked in the Auckland region since the summer of 2005-2006. Broons Hire (SA) Pty Ltd, the Adelaide-based Australian company from whom Taylors purchased an Impact Roller some years ago, secured a contract with Fletcher Construction Ltd as part of the \$300 Northern Busway Project on behalf of Transit NZ and NSCC. Works commenced in 2005. (Further information on the project is available at www.busway.co.nz)

The impact roller has a "square" module weighing approximately 8t, that impacts the surface about twice per second as the unit is towed along at 10-12km/h. The high energy impact results in much deeper compaction than can be obtained with conventional rollers.

In the preparation for the new Akoranga Station just north of Esmonde Road, the ground improvement work involved proof-rolling the subgrade for a T-shaped section of new access road that straddles an old landfill. The old landfill had a clay capping of substantial thickness and the design consultants, Opus International Consultants Limited, wished to reduce long-term settlement potential by compacting the underlying waste. One alternative was to employ dynamic compaction (whereby a large mass is dropped from a crane), but vibration concerns and nearby existing buildings were significant disadvantages.

The consultants chose impact rolling in order to generate some settlement in the waste, as well as to improve the density of the clay subgrade for the new road sections (formed by the landfill's clay cap) and to mitigate the risk to adjacent buildings.

Impact rolling covered the former paved roadway and the old landfill adjacent to an arts centre and golf driving range. Every 10 passes the surface was lightly trimmed using a grader to even out the wheelpaths and maintain a good ride for the operator, which provided an ideal opportunity to measure the induced settlements.

The specification called for rolling to "effective refusal" (the point at which the rate of increased settlement has reduced to an insignificant amount), and Fletcher used GPS for settlement monitoring. All designated areas received 40 passes of the impact roller over a period of less than two weeks. Settlements of up to 200mm were recorded. Vibration monitoring on the nearby buildings did not trigger any readings of concern, even at the very sensitive level for historical structures.

The use of the impact roller for ground improvement and proof-rolling provides a speedy, safe and cost-effective approach to ground improvement.

