The University of Adelaide PhD student, Brendan Scott, has recently proven the worth of rolling dynamic compaction with a Broons ‘Square’ Impact Roller during a compaction trial at the Lake Vermont Coal Mine in Queensland’s Bowen Basin.

The mine is introducing Liebherr T282C ultra-class haul trucks with a gross weight of 600 tonnes and was looking to confirm the level of compaction necessary during the construction phase of new haul roads at the mine which could support the fully laden trucks.

The aim of the trial was to find a relationship between the number of passes of the Broons ‘Square’ Impact Roller, layer thickness, moisture content and corresponding density to develop a method specification for the ongoing earthworks. Fill layers up to 1500mm were adopted for the compaction trial with different sections of the trial pad subjected to a varying number of passes with the Broons Impact Roller.

The fill used to construct the test pad was shot rock material that was carted by haul trucks and dumped on the test pad (haul road) being constructed, spread with a dozer; moisture conditioned and compacted using the ‘Square’ Impact Roller.

Testing techniques used to confirm the effectiveness of the Impact Roller included survey monitoring, nuclear density testing at targeted depths and Dynamic Cone Penetrometer (DCP) testing, all of which were complemented by laboratory testing to characterise the fill. The tests were confirmed by on-site visual observations by an experienced geotechnical engineer.

Results of the compaction trial indicated that up to 1500mm layers of shot rock could be successfully compacted with 20 passes of the Broons ‘Square’ Impact Roller and, the fill material and moisture content was deemed by the project personnel to be representative of the construction method proposed for the project.

Nearly 100 mines throughout Australia and overseas have proven the application of the Broons ‘Square’ Impact Roller in a variety of uses at their site over the last 40 years and many have expanded their use of the Impact Roller because of its versatility and proven performance. Brendan has been involved in research and compaction trials at a significant number of these sites.
Towed by a 270-330hp tractor the 1.3 metre wide BH-1300HD with 12 tonne compactor module and wider BH-1950MS will compact the subgrade and provide a solid foundation on which to erect infrastructure and build haul roads.

Broons can tailor a package to suit individual mines involving wet or dry hire of their unique Australian designed and made equipment and can be contacted on (08) 8268 1988 or info@broons.com to further explain how companies can benefit from the use of this unique technology. Machines are available for rental right around Australia.