

CASE STUDY

JOHNSONVILLE TUNNEL 3

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INTRODUCTION

The Johnsonville rail line, running through a series of cuttings and tunnels between Wellington and Johnsonville, underwent an upgrade that included rockfall protection works around the Tunnel 3 portal. The greywacke rock in the area—predominantly sandstone with some mudstone beds—was highly to moderately weathered, closely fractured, and unstable, requiring targeted stabilisation measures.

PROCESS

Works were carried out without interrupting train services, requiring block-of-line closures at night, on weekends, and during weekday intervals between train movements. Vegetation and loose rock were first removed from the slope. A total of 55 rock anchors, each 6 metres deep, were installed, with 9 anchors tested to 150kN for acceptance. Geobruigg Tecco mesh was applied over 800m² of the slope, with additional 13mm galvanised mid-face cables installed to enhance mesh strength.

OUTCOME

The project delivered improved rockfall protection at the Tunnel 3 portal while maintaining uninterrupted rail operations. The anchored mesh system provided a durable solution for long-term slope stability in a challenging geological environment.

