

CASE STUDY

SIMEON QUAY SHOTCRETE

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INTRODUCTION

From May to July 2014, Abseil Access was contracted by City Care under the Stronger Christchurch Infrastructure Rebuild Team (SCIRT) to stabilise a loess slope above the Orion substation on Simeon Quay, Lyttelton. The slope had partially collapsed following drainage damage sustained during the 2011 Canterbury earthquakes. The objective was to restore stability and prevent further erosion while meeting SCIRT's strict quality and performance requirements.

PROCESS

The stabilisation design featured a staggered soil nail grid consisting of 28 epoxy-coated steel tendons, each 25 mm in diameter, installed into 6 m deep, 150 mm diameter holes. Rope access and specialised cliff-face drilling equipment were used to complete all drilling. Four anchors were tested to design load after 72 hours, achieving 70 MPa grout strength at 28 days—well above specification. The lower slope was secured with Macmat-R netting, anchored with Duckbill erosion mat anchors installed using a pneumatic jackhammer. Once the upper slope was stabilised, geocomposite drainage strips and SE82 reinforcing mesh were applied, followed by a 150 mm layer of shotcrete applied via both rope access and an Elevated Work Platform.

OUTCOME

The works were completed within the scheduled construction window, meeting all quality assurance requirements and exceeding SCIRT's design specifications. The Orion substation and surrounding area were left with a stable, reinforced slope, ensuring long-term protection from future erosion events.

