



Working to restore & enhance our rivers

REVETTING AND SUPPORTING RIVER BANKS

4.5 Supporting bank slips and exposed tree roots

River Skerne

LOCATION – Darlington, Co Durham, NZ 301160

DATE OF CONSTRUCTION – October 1995 / November 1996

LENGTH – 40 metres, 9 metres

COST – Bank Slip £3k, Tree Roots £400



Slipped slope during work – September 1995

DESCRIPTION

Slipped slope

During works, water seepage from gravel at the bottom of a newly excavated river bank caused it to slip. As the bank was close to banded industrial fill, repair was necessary. The route of a proposed footpath was also at risk if this bank remained unstable.

Exposed roots

The roots of a mature willow had been exposed during river bank re-profiling works and were being undermined by high flows and damaged by people. Although in no immediate danger, this tree had become an important resting place, providing the only shade along this bank. Positioned on the apex of a meander, it was decided to protect the roots using a simple revetment.

DESIGN

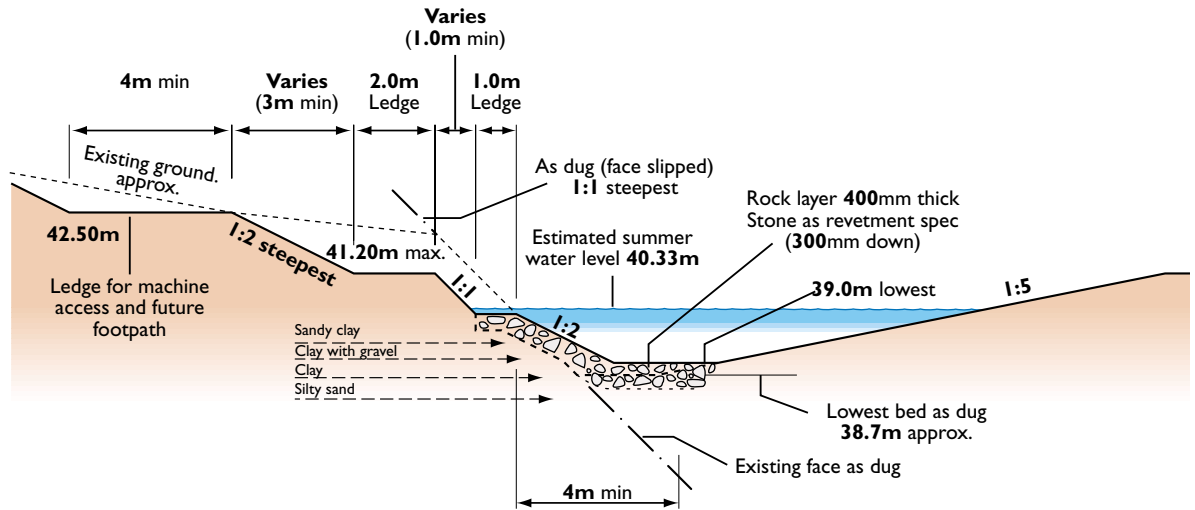
Slipped slope (fig. 4.5.1)

To stabilise this slope it was reformed incorporating a rock layer using stone sized 300mm 'down' as specified for use on nearby revetments (see 4.2). Ledges of varying widths were introduced at metre intervals up the slope, above water.

The underwater rock layer added weight to the toe of the slope to help support it and was free draining. The upper bank re-profiling removed weight from the slope further stabilising it. The ledge closest to water level was subsequently planted with trees to add visual amenity as well as a longer term revetment via their root system. The upper ledge later incorporated a new footpath.

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Figure 4.5.1
PROFILE OF SLIPPED SLOPE



Slipped slope 2 years after repair – 1997





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Figure 4.5.2
PROFILE OF EXPOSED ROOTS

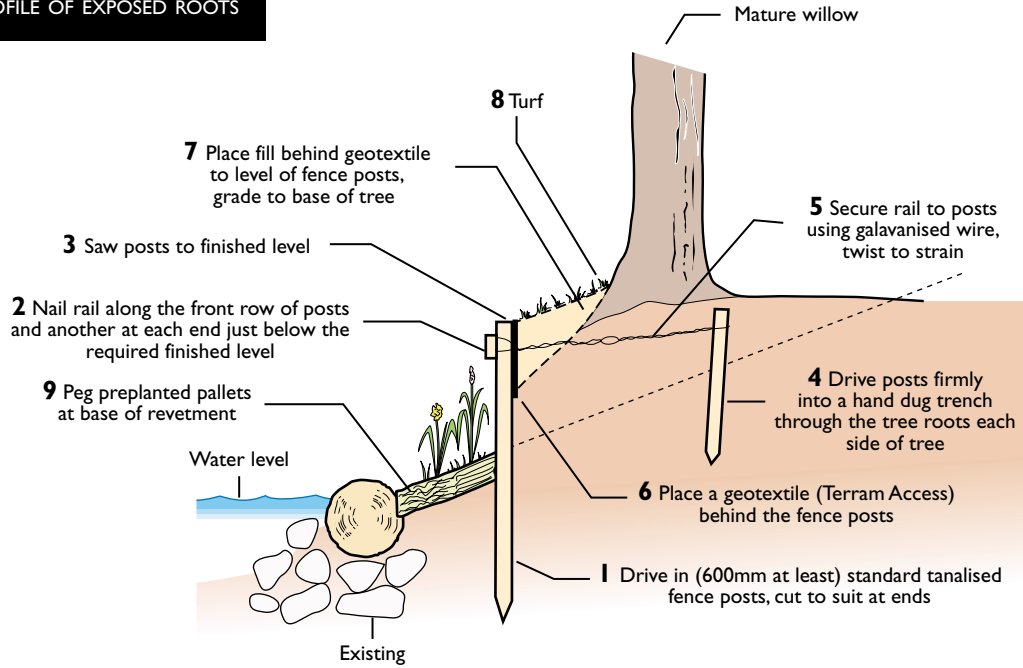
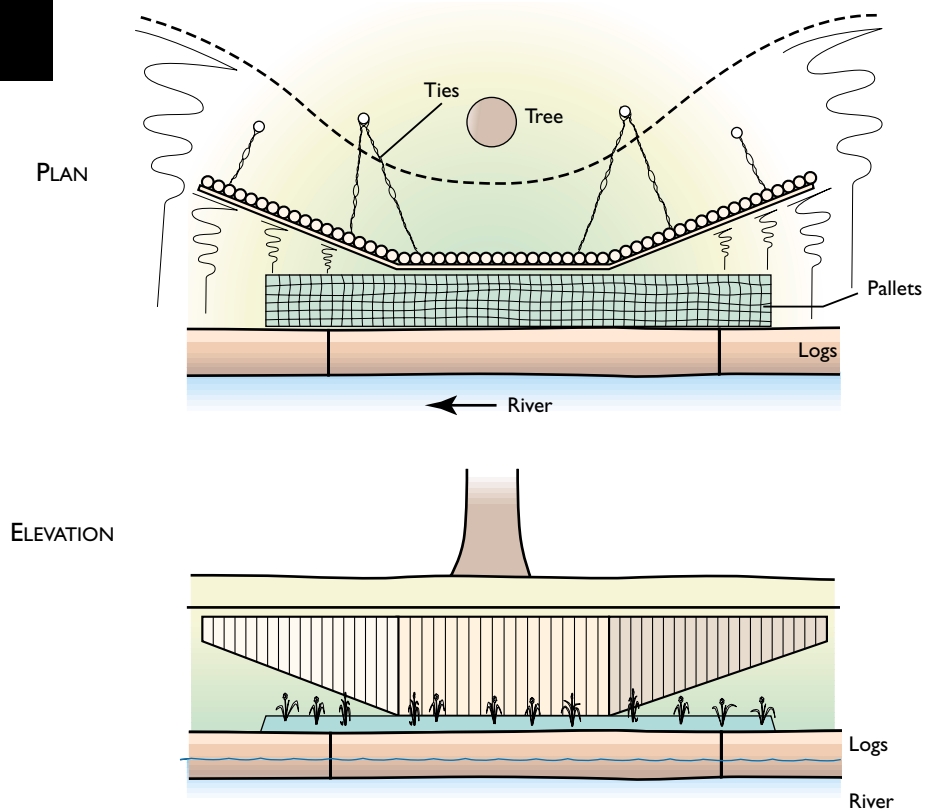


Figure 4.5.3
PLAN AND ELEVATION



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Exposed roots (figs. 4.5.2 – 4.5.3)

The design had to ensure that people could continue to use the spot without further damage. Vertical fence posts were used torevet the bank before back-filling with soil. A geotextile, ‘Terram Access’, was placed behind the posts to prevent soil migration. Turf was placed on the surface to achieve an instant result.

SUBSEQUENT PERFORMANCE 1995–98

The bank slip has remained stable and appears natural with no visible signs of support. Water continues to seep from the bank and maintains a small wetland habitat on the ledge above river level.

The revetment of the exposed roots has performed well, following many high flows since its construction. The roots are no longer exposed and the turf and other planting has grown to give added protection. Well used by a variety of people, the structure has become a seating area providing shade.



Protected roots after work completed – February 1997

