Where did you say was the landslide?

Fixing soil erosion.

By Lt Col E.H. Jacobs, SO1 Fixed Assets Manager, RFIM Durban

Over the weekend of 25 and 26 October 1999 the Durban area experienced heavy downfalls, which led to the landslides at the Bluff.

During the early months of 2000, Durban experienced more heavy downfalls, which led to ever bigger landslides, until one ended below the foundation of the single quarters building (E Block).

Another important reason for the landslide and soil erosion was the poor maintenance of the soak pit system for storm-water drainage at the Bluff Military Base. The rehabilitation project was planned to be carried out in three phases, of which Phase 1 was emergency repair following the landslide and countering the effects of the soil erosion.

Phases 2 and 3 would have been carried out over a two to three year period, but this was not completed because of a lack of funds. These phases will entail a storm-water system, which will be in the form of two vertical shafts sunk below sea level to allow the storm water to drain directly onto the seabed. These shafts will be sunk at strategic points and all the storm water in the area will be directed via piping and channels to the shafts where it will then be directly discharged into the sea.

The estimated cost of Phases 1, 2 and 3 (the rehabilitation) was set at approximately R24 million, of which R3 million was made available for immediate repair and rehabilitation (Phase 1).

Part of the repair and rehabilitation involved reinstating the natural vegetation in the area where the landslide took place. One must remember that the donga or large gully that needed to be rehabilitated was 8 m deep and 200 m long and had been a problem for many years, and was then dangerously enlarged by the extreme floods that occurred in 1999. Thus the reinstating of the natural vegetation was a very important part of the project. Detailed, sound and thorough research had to be done to avoid the proliferation of invasive plant species.

Noted ecologists such as Roddy Ward, Debra Roberts, Richard Boon and Geoff Nichol were consulted to help find the correct interim vegetation to be planted, which would help restore the natural vegetation as quickly as possible.

To prevent further headward erosion towards E Block a combination of gabion baskets, Reno mattresses, non-woven geotextiles and vetiver grass (Vetiveria zizanioides) was being used. The objective is to inhibit erosion so that the natural vegetation can re-establish itself and ultimately cover all of the repair materials. The vetiver was planted in a succession of steps, or small terraces (about 309 mm high by 600 mm wide). It was constructed along the base of the gully to cover the buried storm-water drain. The purpose is to reduce the velocity of surface run-off so as to inhibit erosion and encourage the deposition of sand washed down from the sides of the gully.

The vetiver grass cultivars that were planted have been used for more than 130 years in KwaZulu-Natal for surface stabilisation. Although not indigenous to the Bluff, the grass propagates itself only by root division and is therefore not invasive. The rehabilitation work on Phase 1 started on 22 May 2000 and was completed on 19 September 2001. Phase 1 (the rehabilitation) was a huge success, as the soil and vegetation have been restored.

The landslide that occurred in October 1999.

Phase 1 (the rehabilitation) started in May 2001 and was completed in September 2001.

The finished product - Where did you say was the landslide?