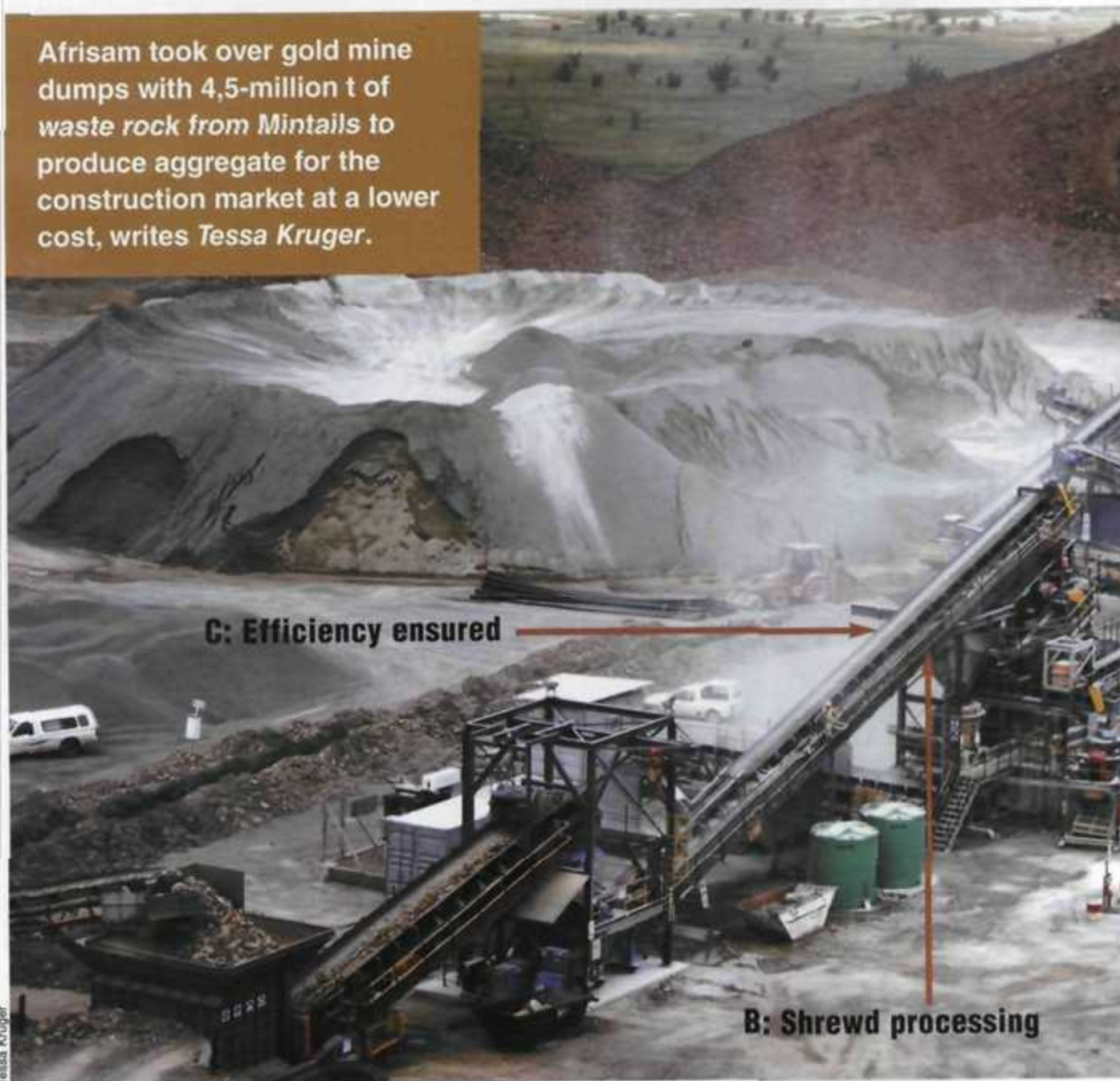


# Quality at lower

Afrisam took over gold mine dumps with 4,5-million t of waste rock from Mintails to produce aggregate for the construction market at a lower cost, writes *Tessa Kruger*.



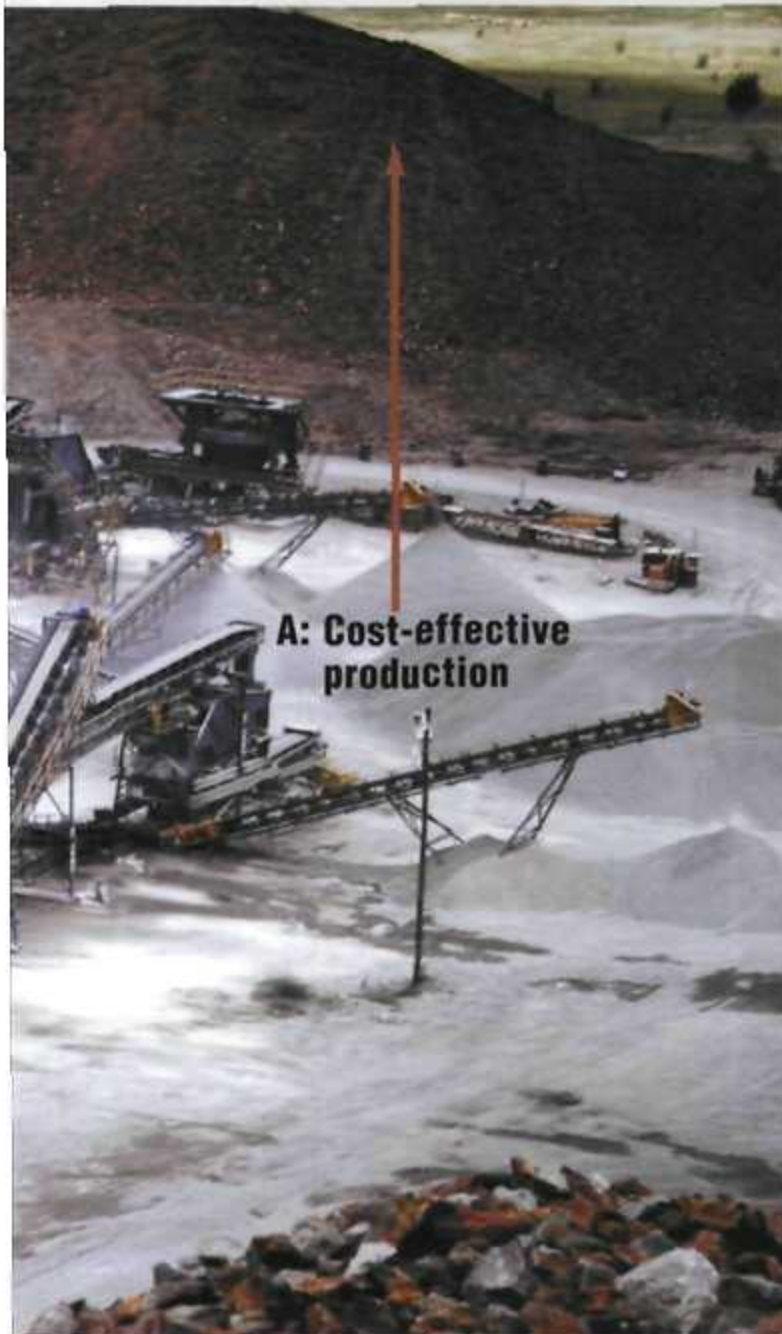
**C: Efficiency ensured** →

**B: Shred processing**

Tessa Kruger

WINNING

# produced cost



**A: Cost-effective production**

## **A: Cost-effective production**

1. Cost-effective loading

## **B: Shrewd processing**

1. Major upgrades averted
2. Simple logistics
3. Screening refinements
4. Big demand products produced

## **C: Efficiency ensured**

1. Round the clock

**A**friSam's Sub Nigel is not your run of the mill quarry or mine dump processing operation. This aggregate-producing operation, located in Johannesburg's East Rand, is the largest of the group's mine dump operations, with as much as 4,5-million t of rock lying bare on gold-coloured dumps waiting to be crushed and screened into various products for players in the surrounding construction and building market. The operation differentiates itself from aggregate-producing quarries by virtue of the fact that loading, hauling, drilling and blasting activities are eliminated, saving the operation about 30% in costs compared to that of a quarry as the rock is ready to be processed in the plant. Maintenance team leader, Ben Lubbe says it is also more economical to establish a mine dump operation compared to a quarry, where overburden first has to be removed in order to reach the rock. He says that the quality of rock loaded from the Sub Nigel dump is similar to the quality of rock found in a quarry. The rock is a reef quartzite that has good abrasion resistance qualities due to its high silica content.

QUARRY SA MARCH 2010 [5]

## A: Cost-effective production

### 1. Cost-effective loading

#### Operational costs cut

AfriSam took over the Sub Nigel operation from its previous owner, Mintails, which extracted gold from the waste rock at the beginning of 2009 and started with the production of various aggregate products from the mine dumps in June 2009. The operation is projected to have a 10-year life. Sub Nigel achieves a 30% saving in costs, comprising a 20% saving in loading and hauling costs due to much lower diesel consumption and a 10% saving in drilling and blasting costs. Some of these cost savings naturally flow through to the bottom line, boosting the operation's profit margin.



Photographs by Tessa Kruger

Sub Nigel achieves a 30% saving in costs, comprising a 20% saving in loading and hauling costs due to much lower diesel consumption and a 10% saving in drilling and blasting costs.

### I Cost-effective loading

#### Transporting a few metres

Production at Sub Nigel starts with two Caterpillar 966 front-end loaders loading the waste rock on the old mine dump and transporting the rock to the feed hopper, which is located only metres away from the nearest dump. As the 20 m<sup>3</sup> large hopper is filled, the rock is separated by a double screen into +40 mm and -40 mm fractions. The smaller fraction is fed to G1 plant, while the larger fraction is transferred by an 80 m conveyor belt to the main plant's holding bin.



Diesel costs have been cut due to the strategic location of the plant.

**WINNING**

# B: Shrewd processing

- 1. Major upgrades averted
- 2. Simple logistics
- 3. Screening refinements
- 4. Big demand products produced

The Sub Nigel operation is functioning with components that are between 15 and 30 years old.

### 30 years without a hitch

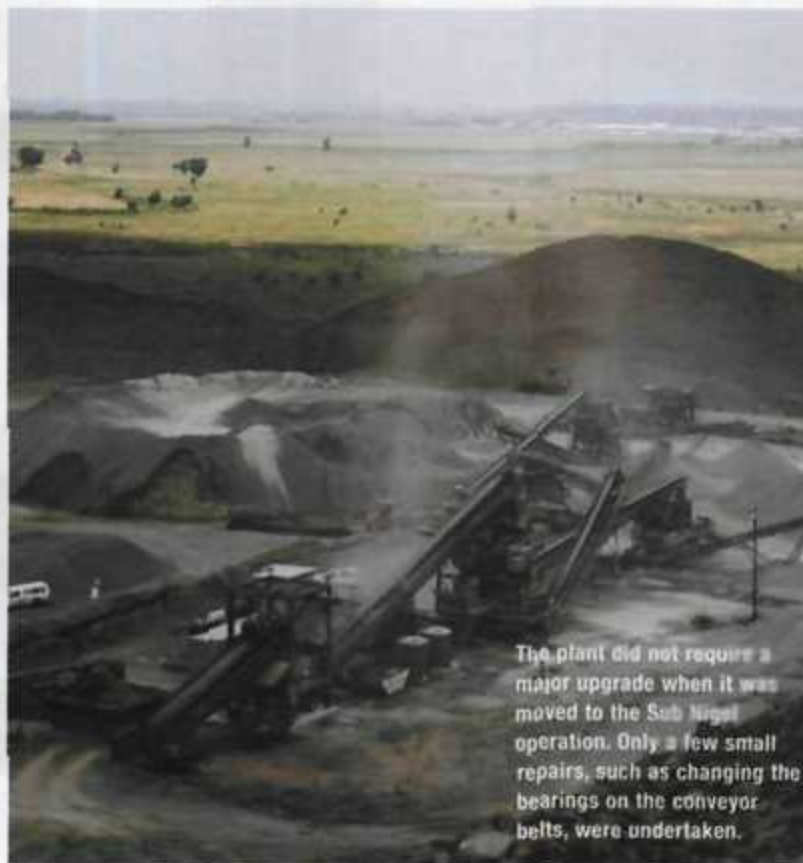
Interestingly, the Sub Nigel operation inherited components of its processing plant from AfriSam's nearby Vogels mine dump operations, which, in turn, took it over from the Modderfontein B mine. As a result, the Sub Nigel operation is functioning with components that are between 15 and 30 years old, but it has been well maintained and runs seamlessly, according to works manager, Louis Sterley.



## I Major upgrades averted

### 800 t – simply the best

Vogels 1 is one of a number of mine dump operations on the East Rand that were processed by AfriSam. However, the operation has reached the end of its life and the property is currently undergoing rehabilitation. Sterley says that the plant did not require a major upgrade when it was moved to the Sub Nigel operation. Only a few small repairs, such as changing the bearings on the conveyor belts, were undertaken. With the transfer of the plant, Lubbe insisted that the Swiss Metso HP 300 crusher came with the plant as many years of experience has taught him that the crusher, which has a throughput of 200 t/h, is simply the best. Lubbe notes that the Metso crusher that is used as the secondary crusher is very effective, despite it being the second-smallest crusher in the HP range.



The plant did not require a major upgrade when it was moved to the Sub Nigel operation. Only a few small repairs, such as changing the bearings on the conveyor belts, were undertaken.