



## Annexure C

### EVALUATION OF ALTERNATIVE WEARING COURSE FOR GRAVEL ROADS

In recent years the industry has developed special synthetic (polymer) products to be used on gravel roads for primarily dust suppression and faster and more effective water discarding on gravel roads.

The surface area of gravel roads deteriorates due to basically loss of fines. This takes place by way of dust generated when the roads are dry and secondly water run-off during rainstorms. The polymers developed binds the fines in order that dust forming is minimized and secondly that fines loss during rainstorms is also minimized.

The products are used extensively by the mining industry where dust is a health and safety issue on their main haul roads. The success of the product is based on many factors but mainly is a product of the gravel composition (grading) and the repair of the surface if the road surface is damaged. Repair of the road surface in case of damage is fairly easy. We have calculated the cost using polymer on a test section of 1 km based on the assumption that the polymer treated gravel course will last at least 4 years before it needs to be sprayed with polymer again. In discussions with the developers of the product they believed that it would last longer than 4 years.

The advantageous and dis-advantageous of using polymers can be listed as follows.

<b>Advantageous</b>	<b>Dis-advantageous</b>
1. Less gravel to be imported which from an environmental viewpoint is beneficial to all.	1. Higher initial cost.
2. Increase travelling cost due to borrow pits becoming further away from site is limited.	2. Unknown quality of product in specific application.
3. Dust forming is limited specifically near the office.	
4. Enhanced ride quality	

As can be seen in the cost estimates (Attachment C.1 and C.2) the first-year cost for the Polymer case is R 918 118 vs the normal gravel case of R 219 962. Even looking at the total cost over 4 years the normal case remains cheaper (R 592 042 vs R 918 118).

The question then becomes why consider this. It must be kept in mind that the assumed road quality and therefore ride quality of the polymer sprayed gravel layered will be superior to the normal gravel layer. What is clear is that the polymer layer will perform better, but the question is will it be worth the additional cost.



It will probably only be in the next 4 years that the real benefit will become quantifiable. This additional cost will only be proved or dis-approved by installing a test section. A test section of 1 km is proposed. It is our believe that the reliability of the polymer layer will be longer on the sections of main roads after the four ways stop. Therefore, if the increased performance of the polymer layer justifies the additional cost on the test section, the rest of the main roads will only do even better.

This is a serious departure from the present methodology of maintaining the roads and it is therefore the responsibility of each owner to give serious consideration for the construction of this test section and the additional cost thereof.

**It is proposed that:**

We go ahead with a test section of 1km at the additional cost of approximately R700,000 and that this is financed 50% from the contingency fund and 50% by a special levy of R3,000 per Erf.