

# Preventative maintenance can prevent 'that sinking feeling'

By [Louw Kannemeyer](#)

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Potholes are the bane of many motorists who take to roads across South Africa. The persistent rains in recent months across large parts of Gauteng and the northern provinces have again led to frustration among road users who have to deal with potholes, mostly on roads that are not managed by SANRAL.



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Road users dread the possibilities of running into gaping potholes and will often take extreme measures to avoid close encounters. It is scant comfort to note that this aversion is not restricted to South Africa.

In Brisbane, Australia, the *Courier Mail* recently complained bitterly about “calf-deep” potholes that opened up on the Bruce Highway the busiest road along the country’s east coast. Canadians, too, love to recount tales of how they have to manoeuvre through “obstacle courses” on the freeways, especially at the end of the winter season.

These examples also demonstrate the role of weather conditions as important contributing factors in the development of potholes.

In the northern hemisphere, the permafrost thaw, along with the melting of snow after winter can cause substantial damage to roads.

## The leading cause of potholes on SA roads

In warmer climes, such as South Africa, the beating sun results in surfacing layers drying out and becoming brittle, which results in cracks developing in the surface layer. If no maintenance is performed on these cracks, then with the next rains, water is able to penetrate through these surface cracks to reach underlying crushed rock and gravel layers that are used in the construction of most South African roads.

These crushed rock and gravel layers reduce the cost of road construction in South Africa by nearly 40% when compared to countries in Europe and the United States. The downside, however, is that as soon as these crushed rock and gravel layers become moist, they lose most of their strength, and along with that their ability to carry the imposed tyre loads, which results in the formation of potholes.

This ingress of rainwater through the surface is the leading cause of most potholes on South African roads, and that is why most potholes appear after prolonged periods of rainfall, and also why potholes are more prevalent on roads in wetter provinces of South Africa such as Mpumalanga and KwaZulu-Natal.

## **Prevention is better than cure**

In addition to the obvious cost that motorists have to incur for damaged tyres and suspensions, potholes pose major dangers to road safety. Drivers who hit a pothole at speed, or swerve to try and avoid it, can easily lose control of their vehicles and cause accidents.

The best cure for potholes is to prevent them from developing in the first place.

That is why preventative maintenance has been at the core of SANRAL's approach to managing the 21,946 km of national roads under its jurisdiction.

## **SANRAL's preventative maintenance approach**

SANRAL's preventative maintenance approach consists of daily activities to ensure rainwater drains away from the road as quickly as possible.

This includes the opening and clearing of blocked storm water pipes and culverts, the cutting back of vegetation, the collection of litter and debris and the repair and reshaping of gravel shoulders. The next focus of our daily activities is to identify any surface cracks that have developed and seal them as soon as possible.

Each of the 21,946 kilometres of national roads is covered by a three to five-year routine maintenance contract to perform the abovementioned daily activities.

## **More than 80% of daily activities performed by local small contractors**

As part of these contracts, it is required by SANRAL that more than 80% of the daily activities be performed by local small contractors according to SANRAL's prescribed standards. This has obvious downstream benefits in terms of sustainable local job creation, SMME development and the empowerment of black-owned and women-owned enterprises.

In addition to the daily activities, SANRAL's preventative maintenance approach also includes periodic activities that are performed every eight to twelve years. These periodic activities consist of the application of a new surfacing layer on top of the old surface layer, ensuring that risk of rainwater penetration is minimised as far as possible, even though ageing cracks not visible to the human eye.

## **Preventative maintenance approach 18 times cheaper**

SANRAL's experience has shown that its preventative maintenance approach is 18 times cheaper than following a reactive maintenance approach (wait for a pothole to develop, and then repair it). In addition, it has enabled us to prolong the life of most national roads well beyond their original 20-year design life – currently, more than 75% of the SANRAL national road network is older than 20 years.

This is further collaborated by the condition of the SANRAL national road network on which currently only 3.3% of the network is rated as in poor condition, which is well within the international norm of 10%.

For the road user, the success of SANRAL's preventative maintenance approach over the past 19 years should be obvious when they compare the number of potholes they encounter on a SANRAL national road, to the number of potholes on roads managed by other authorities.

### **ABOUT THE AUTHOR**

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