BMW R1200 GS OFF-ROAD TYRE COMPARISON

Covering some of the “off-road” tyres locally available in the sizes 170/60-17 and 120/90-19

ABSTRACT

This is the result of a short series of tests comparing the performance of the off-road tyres locally available for the latest generation large bore adventure bikes, conducted by a group of amateur riders from Bloemfontein, South Africa.

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Introduction

The build-up to this story spans several years. Two things. I have had many phone calls from tyre distributors. And I am aware of a few friends who get the same calls. They all go more or less like this: "Hey, I would like to send you a set of tyres to test." "OK, with pleasure" "Let me know what they are like" "No Problem". Few months later: "How did you find those tyres?" "Not bad. Nice. Good grip. Smooth ride. And no punctures. I really like the tyres." And sometimes a few more questions. But nothing too earth shatteringly technical. That is the one thing. Secondly, I have listened to many camp fire and small town pub discussions about tyres. "If only I had the right tyre…." All of this, stirred together, results in a maze of black (rubber) art with no proper understanding amongst users, and the poor distributor gets very little value for his money from the "tests" done on tyres he has to give away. In desperation, I have seen more than one distributor announce on their websites things like: "Alfie Cox says it's a great tyre" or "Jan Staal's choice". But we keep getting the calls. So, lately I have been reluctant to accept these "test" tyres, because I felt bad about the (lack of) information that you can feed back from a solo tyre test over undefined and varying terrain with no point of reference. A bright moment flew through my thoughts one day. Why don't we do a "proper" tyre test? Where we take identical bikes with different tyres and subject them to identical conditions and measure the performance. I mentioned the idea to Nelus at Safari 4x4 and he was immediately excited. Johan at Sovereign was also on board before I could share the detail. And the idea went from thought to foetus…..

It was not too long before we had six sets of tyres. And six identical bikes, all BMW R1200 GS LC's. I specifically chose the 1200 GS LC, because it is a relatively new model with tyre sizes dictating that all the manufacturers in this market develop new rubber for this application. It is a difficult application, a bit of a nightmare for the tyre people actually. The small contact patches between the bike and the road have to transfer 125 hp in any terrain imaginable, from smooth and hot African tar to snow and mud and sand and rocks and gravel. All the acceleration (not unlike that of the fastest cars around), braking (at the same rate as gravity), cornering (with sparks) and just cruising along (at speeds that can land you in prison) all involve working the tyres. No other tyre application has to withstand this kind of treatment. And we as riders expect a tyre with great traction in all conditions, no punctures and eternal life.

We would have liked identical riders too, but six identical riders were not so easy to come by. So six friendly volunteers had to take on this tough job. A date was set, the last weekend of August 2016. And the riders were ready. Myself, a half-jack of all trades; Nelus, the chief of all things at Safari 4x4, Johan, the chief of all things financial at Sovereign Motorrad (my favourite BMW shop); John, a chief banker and GS Trophy World Champion; Sakkie, chief builder of huge solar systems and wind farms; and Roelof, chief of selling 4 wheeled cages. Pieter found out about the trip. He has a new 1200 Adventure, and he tagged along to take the pictures of all six the test bikes together. All the riders are experienced enough to destroy a tyre in in a fairly short space of time. They enjoy a head shake, they are not frightened by it. Get my drift? (No pun intended….) The testing dictated that we operate at the periphery (or slightly outside) of the circle of limits set by the manufacturers, in order to cause some accelerated wear. And to simulate the real conditions encountered on a typical off-road expedition without having to cross a border. In short, if John tried not to wheelie, and Johan tried to wheelie, we would be more or less in the right place.

The next thing was the route. I wanted to get about 1500 km of gravel road done, just to induce and measure some wear. We had two days. And we are in the middle of the country. So any direction is good. But, a flat salt pan would be nice to get some testing done with a sprinkling of joy added. And Verneukpan is a famous pan. So, the plan was to leave early Saturday morning, go do some tests and sleep on the pan, then head back home the next day. A few detours through the buzzing metro's of Jagersfontein, Fauresmith, Luckhoff, Orania, Strydenburg,

Vanwyksvlei, Carnarvon, Victoria West, Hanover and the like made it easy to get the distance. Nelus took it upon himself to make a route on the GPS, and we arranged some logistics like saving the phone number of the fuel attendant in Vanwyksvlei and arranging food for the evening on the pan. Each rider knew what to bring along. And no top boxes, that just brings undue admin when they start falling off and destroy rear sub-frames. All was set.

The tyres were fitted the day and night before departure. We received the following test tyres, all sized for the 1200 LC's (Rear: 170/60 R17; Front: 120/80 R19) from the local distributors, in alphabetical order:

Tyre	Speed Rating	Load Index	Mass (kg)	Construction (Rear)
Anlas Caprax	R: Q (160 km/h) F: T (190 km/h)	R: 69 (325 kg) F: 60 (250 kg)	R: 7.7 F: 5.8	Tread: 2 x Polyester, 2 x Aramid Sidewall: 2 x Polyester
Contnental TKC 80	R: Q (160 km/h) F: Q (160 km/h)	R: 72 (355 kg) F: 60 (250 kg)	R: 6.6 F: 4.7	Tread: 2 x Nylon, 2 x Aramid Sidewall: 2 x Nylon
Metzeler Karoo 3	R: T (190 km/h) F: T (190 km/h)	R: 72 (355 kg) F: 60 (250 kg)	R: 7.6 F: 5.2	Tread: 2 x Rayon, 1 x Steel Sidewall: 2 x Rayon
Mitas E10 V1	R: Q (160 km/h) F: Q (160 km/h)	R: 72 (355 kg) F: 60 (250 kg)	R: 8.1 F: 5.4	Tread: 2 x Polyester, 2 x Aramide Sidewall: 2 x Polyester
Mitas E10 V2	R: Q (160 km/h) F: Q (160 km/h)	R: 72 (355 kg) F: 60 (250 kg)	R: 8.4 F: 5.2	Tread: 2 x Polyester, 2 x Aramide Sidewall: 2 x Polyester
Pirelli Scorpion Rally	R: T (190 km/h) F: T (190 km/h)	R: 72 (355 kg) F: 60 (250 kg)	R: 7.5 F: 5.5	Tread: 2 x Rayon, 1 x Steel Sidewall: 2 x Rayon

TKC 80 **CAPRAX** **KAROO 3** **SCORPION RALLY** **E10 V1** **E10 V2**

All the tyres were easy enough to fit and balance, and we all ran the pressure at 2.0 to 2.2 bar. With the new bikes, going lower at speed will cause damage to rims. And higher makes the ride bumpy. Tyre manufacturers will always ask for higher pressures. Less heat is generated when tyres flex less, so "the harder the better" will always suit them. Less wear and less chance for compound separation at speed. If you want to ride at these higher pressures, do not waste your money on "knobbly" tyres. A road tyre is just as good (or should I say bad?) at 3 bar.

The purpose of this story is not to dwell too much on the joy of riding and the wonderful scenery, etc. It is more about the tyres. So, I will try and stick more to reporting about the tyres. And I would like, at this point, to add a disclaimer: "We did the tests with the tyres we had on the day, and a few follow-up days. And we report here what we saw. We do not proclaim this to be a conclusive work of research. We would need many more days and tyres for that. We do however share the information freely, in order for you, the reader to walk away having shared in our findings. Use it, don't use it……"

We also extend a **big thank you** to all the tyre distributors for providing all the tyres. Without you, there would be no excuse or reason for this ride. We postponed the test a few times, waiting and hoping for the Michelin Anakee Wild, because from their advertising it looked like they could be a player in this market. But we ran out of patience. And the others wanted to see results. And we wanted to ride. Maybe they will come one day. Then we can maybe do another ride.

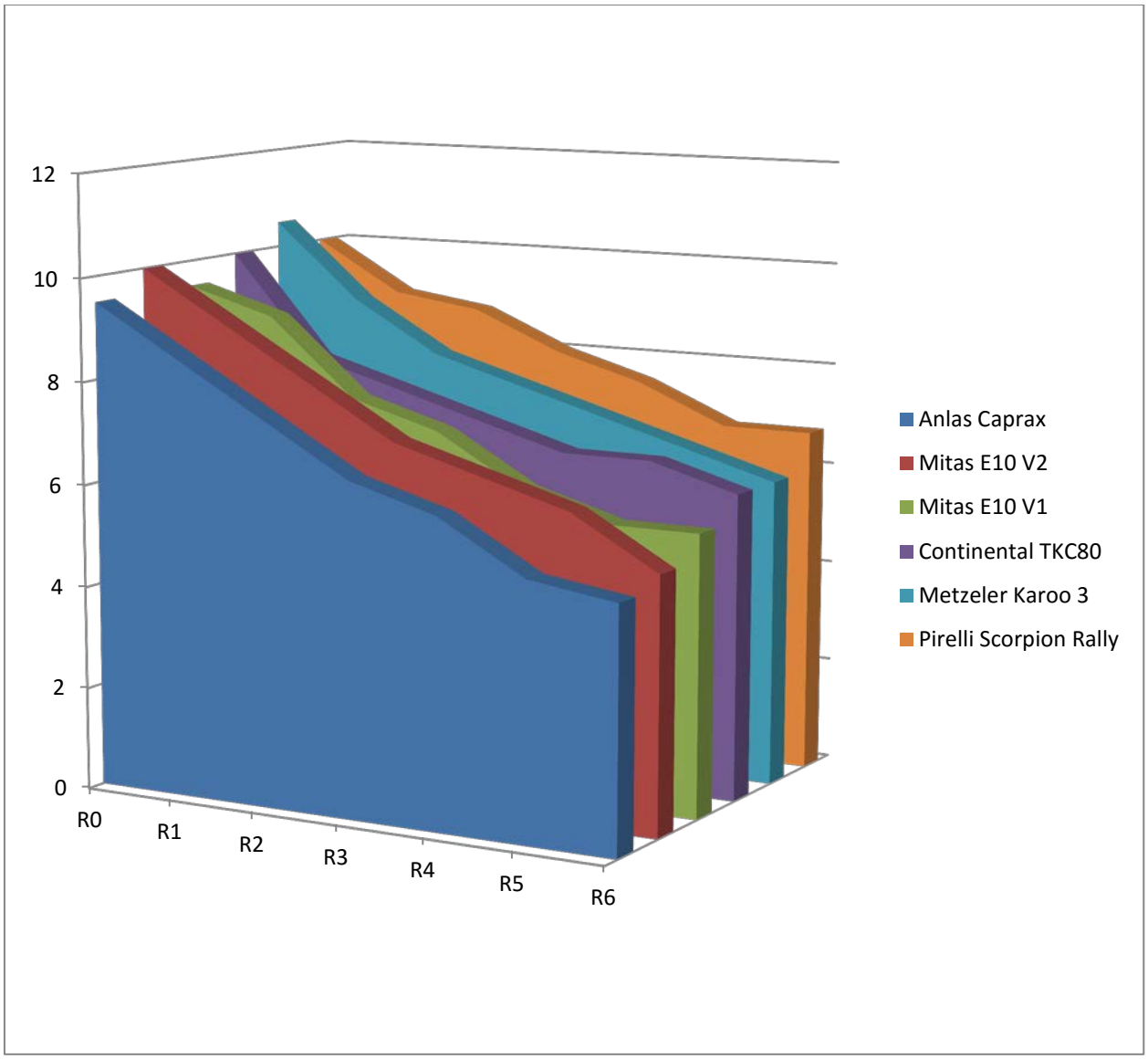
Test 1: Tyre wear.

Before departure, and at each fuel stop, we measured the tread depth. On the same marked spots every time, at two locations on each tyre. The results were recorded on a clip board, which was in a purpose made water and dust proof pouch, nicely made by Safari 4x4. The measurements were done with a proper depth Vernier, meticulously operated by Nelus. We could not afford to stick to the legal speed limits all the way. We had distance to cover and the sun is a moving object. Let us call it 120 + VAT…. We did not do this any different to the way we would ride on a "normal" trip or expedition. To be fair, we took it easy for the first 2 hours, whilst it was still dark. We figured it would be good to get some riding in before sunrise, so we could be on the pan early enough. And breaking in the tyres at lower speed was also not a bad thing. That took us to Luckhoff, where the fuel station opens at 7. All well planned and executed….. And then we did some riding.

1 Nelus in action with the depth vernier and reading glasses

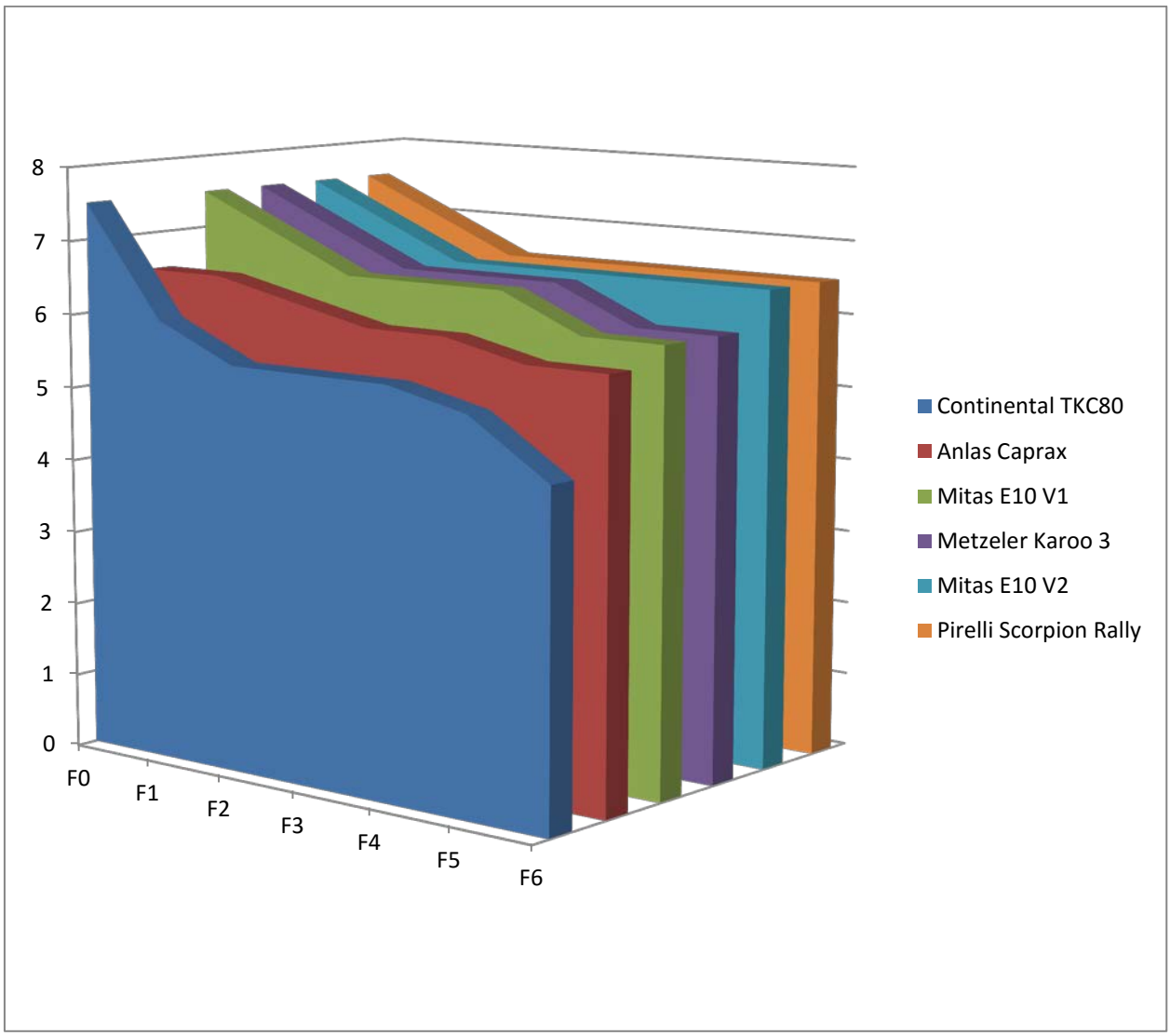
This is what we found:

Rear Tyres:



- The chart shows the remaining tread depth in mm, at each stop, starting from new.
- The slowest wearing tyre was the Pirelli Scorpion Rally.
- The Mitas E10 V1 was not a great tyre to ride – the bike was snaking quite badly at speed. We should mention that this is an experimental tyre and it is not commercially available. It would probably not be either. So, the V2 should be seen as the representative for Mitas.
- The TKC 80 did well from a wear perspective. Johan is a "less aggressive" rider, and his average speed was a little lower than the rest, although still above the legal limit for freeways….. It shows that the tyre can do well. This result had to be subjected to some scrutiny, seeing that it was perceived to be a softer compound, from previous TKC 80 experience. Which we did on two occasions, subsequent to this test. More about that later.
- As a general purpose gravel road tyre, at speeds of about 140 km/h or less, any of these tyres would be just perfect.
- Values recorded from R5 to R6 were on the N1 freeway. Speed a little lower than on the gravel, due to the ever present threat of speed traps. Especially on a Sunday afternoon. On some tyres the tar caused accelerated wear and on some the wear rate was slower. Interesting – look at the chart.

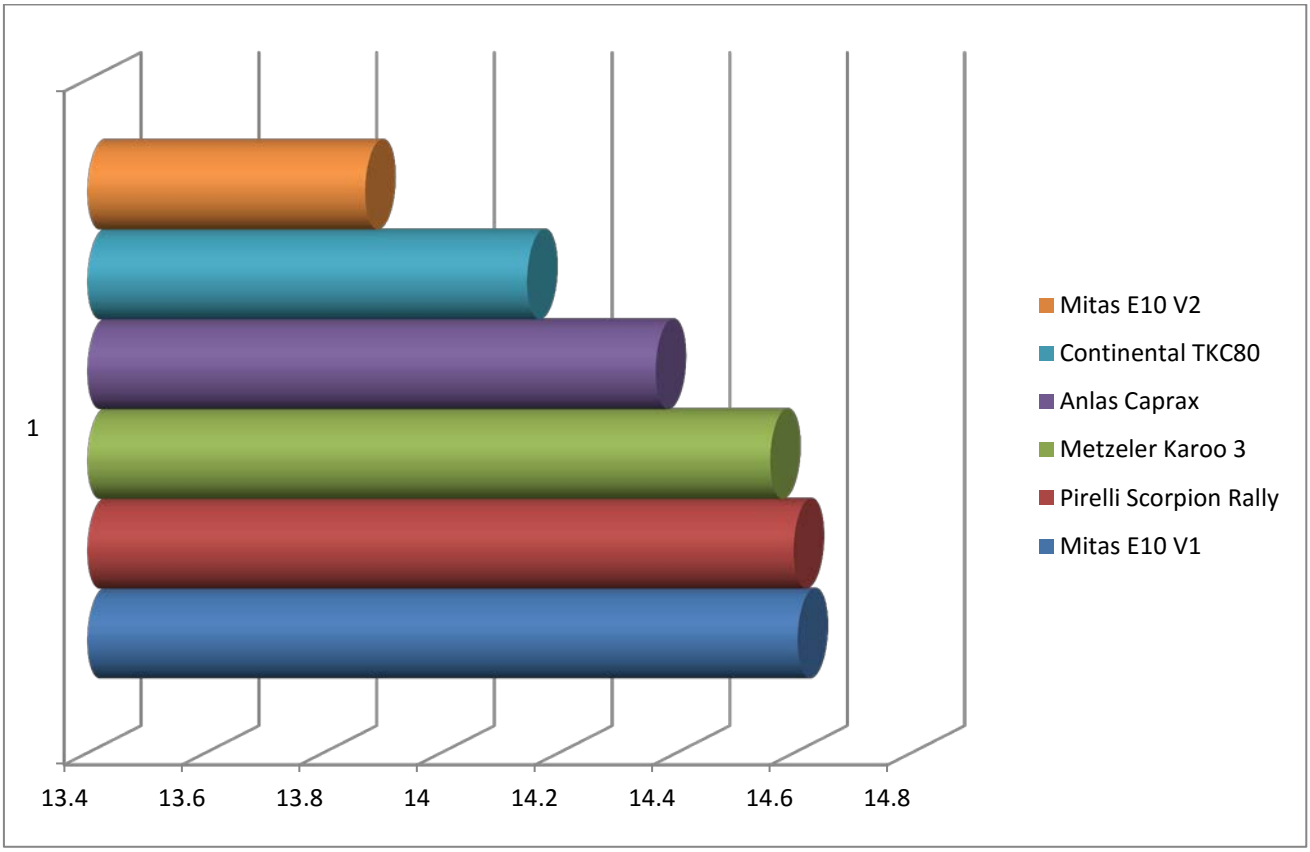
Front Tyres:



- Pirelli Scorpion Rally still the slowest wearing tyre.
- Continental now showing more wear, and softer compound.

Test 2: Acceleration and Traction on the pan

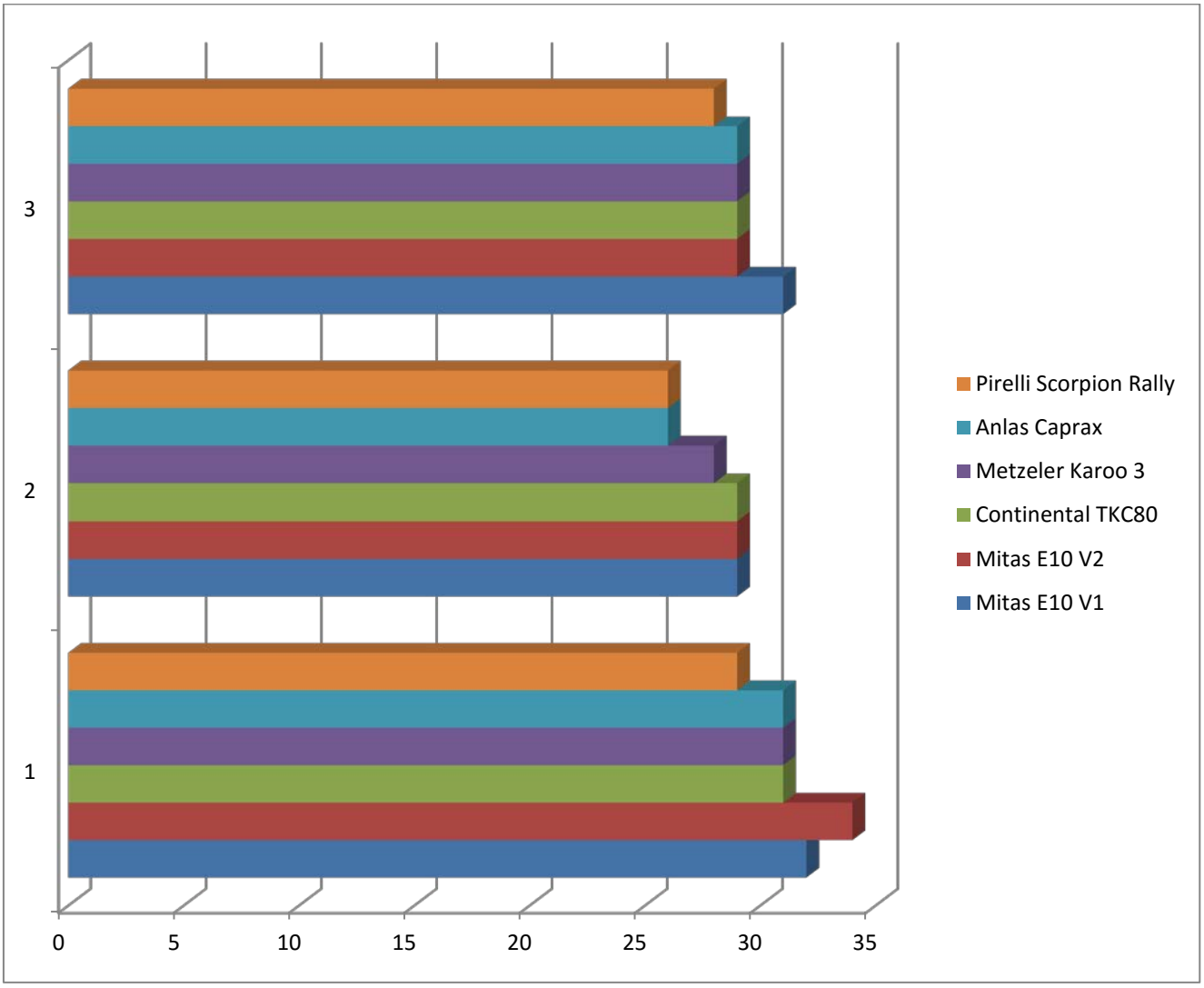
The surface on Verneukpan is sandy and loose, but not like deep, soft sand. Only a "crust" of dry and loose material and then it is hard. Weird feel to it, but wonderful to ride once you are used to it. So, high speed riding is possible. Each rider took each bike and Pieter recorded our times, starting from stationary position, and accelerating over about 400m, giving our very best. Enduro Pro Mode, ABS and Traction Control off. Max speeds reached were just short of 200 km/h. The sound of the bikes here brought a lot of satisfaction…. A summary of the average times of each tyre is shown below:



- The best times were recorded by the softer and / or more aggressive tyres.
- The Mitas E10 V2 is a fairly hard tyre, but the sharp edged knobs seem to make good traction.
- Continental TKC 80 “felt” good on the pan. All riders liked the confidence it brings in the softer terrain.
- The harder compounds were very similar – Anlas Caprax, Metzeler Karoo3, Pirelli Scorpion Rally.
- Note that there is less than 1 second difference between the slowest and fastest results.

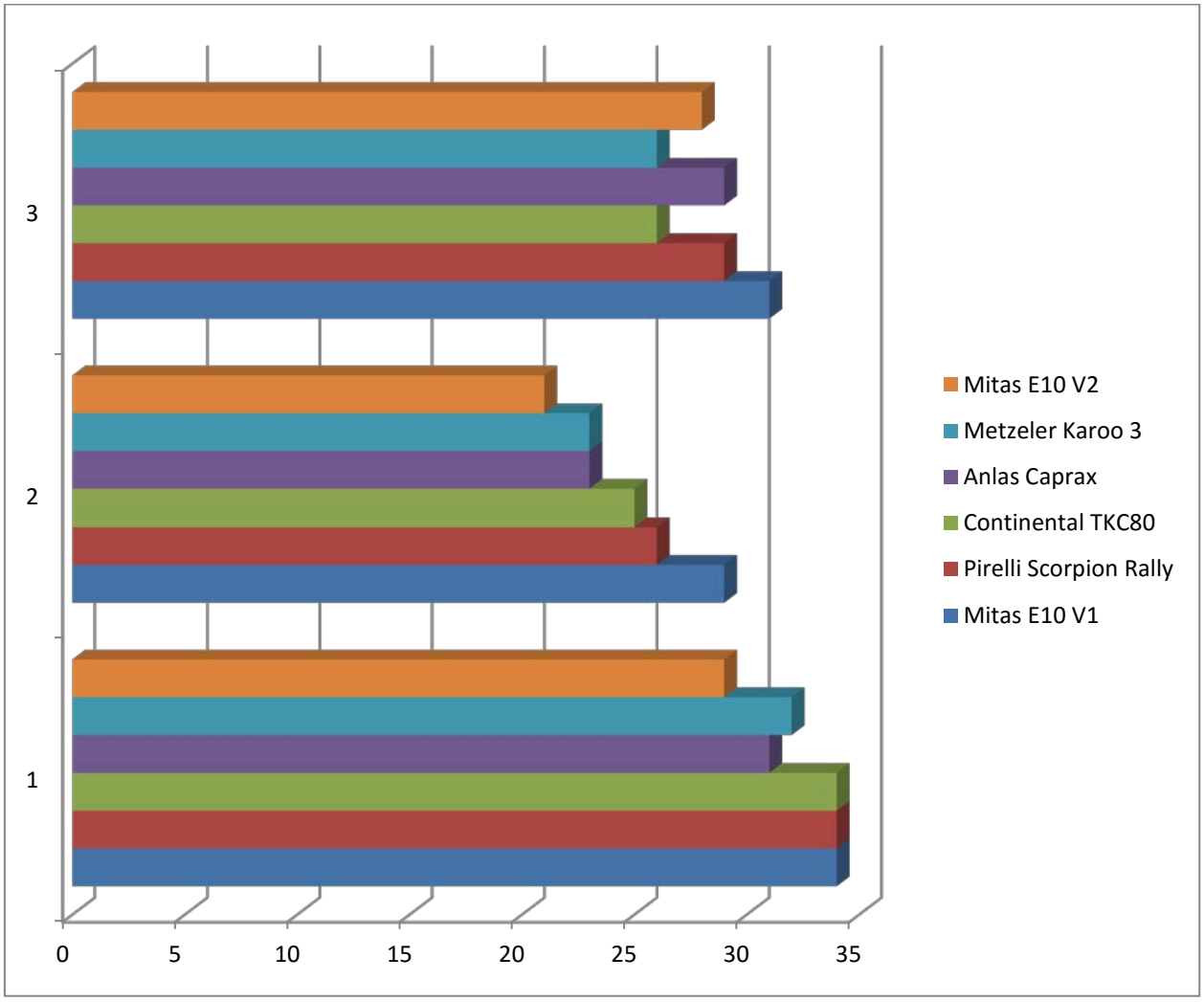
Test 3: Braking Performance

This was an interesting test. We were running out of daylight, so we picked 3 riders to do the test on each of the six bikes. First, we had ABS on in Enduro Mode, braked as hard as possible from 80km/h to 0, and measured the distance.



- The results are grouped per rider. The ABS system does the control, and the slight variations are more about reaction, accurate speed, braking start point, etc. You can see the ABS stopping point quite clearly in the similarity of the Rider 2 and 3 results and the consistency between tyres for all the riders.
- Strangely, the Pirelli Scorpion Rally posted consistent results slightly better than the others here. Not sure if it is just coincidence.

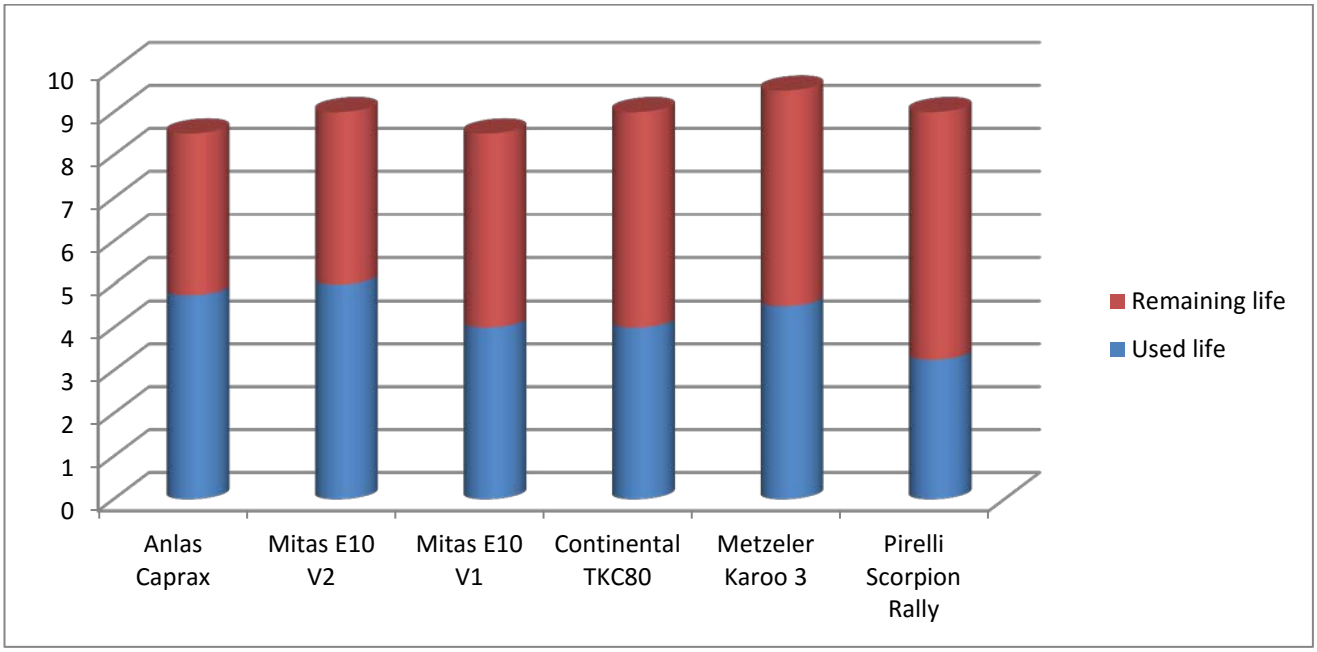
Then, we switched the ABS off, and repeated the test.



- Here, rider input and the confidence inspired by the tyre now dictates stopping distance.
- The two Mitas E10's performed very differently here. The V1 version showed the longest braking distance, with the V2 being the "best", although the tread pattern is the same. V1 showed the worst braking distance with all 3 riders. This tyre just did not seem to "gel" with the group.
- Slightly "better" braking performance from the Anlas Caprax and Metzeler Karoo 3 was recorded. The difference could be in the cupped shape of the tread?
- Continental TKC 80 not too bad either – as expected.

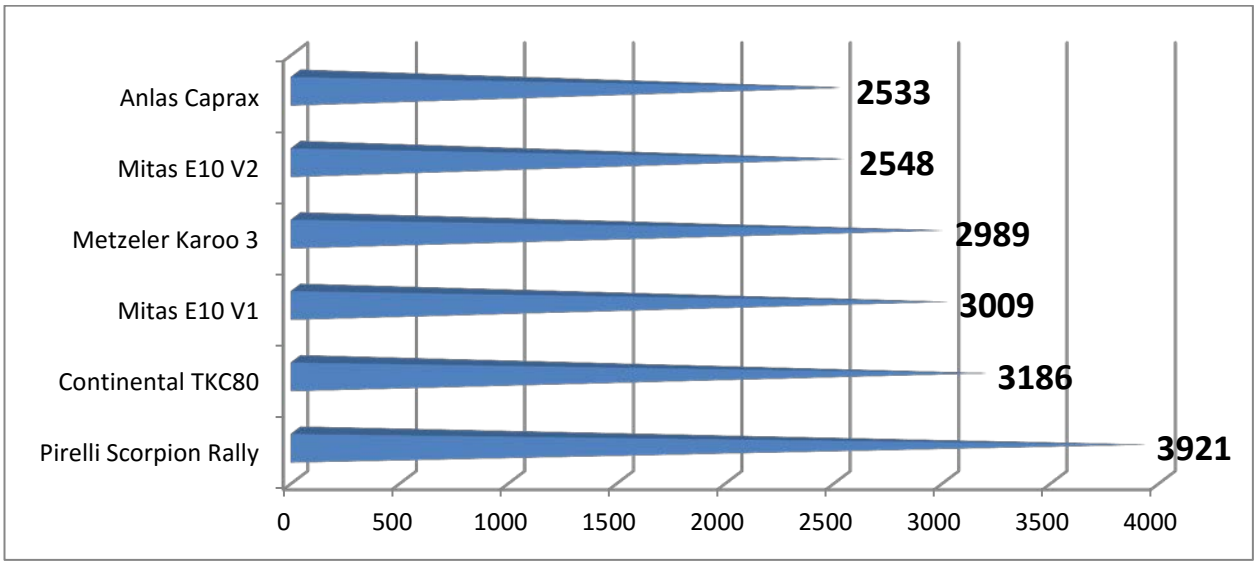
Test 4: The Expected mileage test.

To form an understanding of the wear recorded over the entire trip, here is chart showing the used life and remaining life in mm for each tyre. We only plotted this for the rear tyres. For meaningful results on the fronts, we would need another rear each and another trip….



- The Pirelli had the most life left – to be expected from the hard compound.
- The new tread depth of the Anlas places it at a bit of a disadvantage. At 9.5 mm, it has the "lowest" knobs as a new tyre.
- The Continental would probably "lose" a few slots if operated at higher speeds. It does however show that it lasts well when operated within its design parameters. And we did not wait long for Johan to catch up at the stops. There is a lesson in being sensible and looking after your equipment.

Expected life in km was extrapolated from the data. We considered 1mm tread depth in the centre as end of life.



- If the Anlas had the same starting tread depth as the Karoo 3, it would post similar life.

- Pirelli Scorpion posted the longest expected life. Characteristic of the hard compound.
- Metzeler once again in the middle of the range.
- Failure mode of the harder tyres shows pieces breaking out of knobs. No catastrophic failures however.

Test 5: The Next Step

Looking at the results above, I needed to reconfirm the Continental TKC 80 wear results. We have come to know the Conti over the years as a soft tyre with good traction, but I did not expect it to wear so "well". Was the compound now different? So I bought a set and fitted them to my bike. Just to make sure the test was proper, I took the 1200 Adventure and added my good wife and some luggage. Direction West Coast. To stop and look at the flowers. My suspicions were confirmed. The tyre lasted about 400 km, before it was destroyed by a puncture. The cause was a knob being ripped near the side wall, and tearing into the tyre. Yes, any tyre can get a puncture. But a softer and lighter construction would be more likely to be damaged by stones and other road hazards. Coincidence you might say. So we did another compound test. A 1200 GS on a gravel road for 70 km at brisk pace. It lost all the knobs. So, we have enough info to confirm.

Test summary:

So which is the best tyre for the latest 1200 GS? The answer is simple. There isn't one! Each of the tyres has an intended application. You need to match yourself and your bike and your intended riding terrain to the tyre. Please keep in mind that the testing was done in harsh conditions and the reporting is based on that. Note that we rode in challenging conditions (the bikes showed some wear), but all the tyres lasted the trip with no punctures. The gravel roads dictated staying awake. The culverts are not flat surfaced. You get airborne and fly. Thick sand comes without prior notice. "Middelmannetjies" are loose and full of sharp stones. Ruts can swallow half a wheel. All of this confirms that there is no bad tyre. They are all good. But some are better at some applications. Here is a short summary, from perceptions of the riders, for each of the tyres:

Tyre	Summary
Anlas Caprax	This is the new kid on the block. Traction not as good as the "proper" knobblies – a little bit of lateral movement noticed in front during high speed cornering. Very direct feedback – little bit harsh even. We rated it as a good alternative for the Karoo 3. It looks like this tyre will become a household brand. Very little road noise on tar. It is a good all-round tyre. Call it "50/50" if you like.
Contnental TKC 80	Best tyre for traction. If rock climbing in Lesotho or muddy / sandy gravel roads is your destination, this is the tyre. But for those long straight Karoo roads at speeds nearing the sound barrier, with a loaded bike, it is not the best. Except if you are going to adhere to the speed rating and/or limits. If you are going to stay below 140 km/h all the time, it is good for any application. If that is possible on a LC…. The tyre construction cannot sustainably withstand the full power delivery of the bike. But the tyre is great if behave like a gentleman in conditions more suited to hooligans.
Metzeler Karoo 3	If percentages **had** to be used, this would be a 70/70 tyre. It is not 50/50. It is better than 50% on tar and better than 50% off-road. Still the best all-purpose tyre. Not the greatest at any one application. But good enough for anything. And it is a strong tyre with the right speed and load ratings for the bike. A GS should be sold with these fitted as standard.
Mitas E10 V1	Not commercially available. Therefore no comments. But we did not like it…..
Mitas E10 V2	This Mitas is the first one I have had, that did not boil the knobs out from inside. They generate less heat, due to the harder compound and less "flex" in the knobs. Traction is good, runs particularly well in the sandy stretches. Some "weaving" at high speeds but not serious. If you need to do the TKC 80 type terrain, but there are fast gravel roads as

	well, this is your tyre. Harder compound causing breaking out of chunks of the knobs, but only at higher speeds in rough terrain. This could be a good expedition tyre.
Pirelli Scorpion Rally	The Pirelli is a good looking tyre. But the compound is too hard for the traction expected in an off-road tyre. Weaving and head-shake noticed at high speeds. It wears well, and the aggressive tread pattern provides OK traction whilst it is new. Not so great in the rocks however. Also losing some chunks of the knobs at speed. If a knobbly tyre and good mileage is what you are after (whilst compromising a bit of traction), here is your solution.

The tested results show what they show. However, once the dust has settled, the mileage vs traction equation is still valid. Soft compound = More Grip = Less Life. Hard compound = Less Grip = More Life. The tread pattern can distort this truth for a while, but eventually the truth will win. We did not have enough time or tyres to get the averages to even out. But the fuel stop and camp fire discussions basically ended with this perceived truth:

Continental TKC 80	Mitas E10	Anlas Caprax	Metzeler Karoo 3	Pirelli Scorpion Rally
More Life				
Less Traction				

Final notes about tyres in general:

- Never ever fit new tyres when you are in a hurry. You stand a good chance to destroy any tyre if you rush out the shop and give your best to get home.
- New tyres are slippery. The mould release is a waxy agent, and it is still on the tyre when you buy it. Start slow!
- Wheel balancing is important. Do it regularly.
- Spoke tension. Check your spokes every time you get off the bike. It is easy to notice loose ones.
- Always be ready to fix your own punctures. Have the kit on the bike. And have the knowledge to use it.
- Look at your tyres from time to time. Spot damage early and do something about it if you need to.
- Tyres have a significant impact on the JOY you derive from your biking investment. Forming an understanding, and sensibly selecting the right tyre for the right job is a critical ingredient of the recipe for successful trips. Experience brings wisdom. And your reality is not the same as the next rider's.
- We wanted to bring in the price of the tyres. But not everyone was happy to share numbers. So, please look at what your local dealer offers. And be ready to accept that, with these tyres, your rubber is likely to cost more per km than your fuel.

I say thank you to everyone who came along. Each one of you brought a unique dimension which made the trip memorable. And thank you to you for getting to this point reading, that was no easy feat. If you would like to chat further, feel free – becskloof@telkomsa.net.

Ride on.
Stefan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