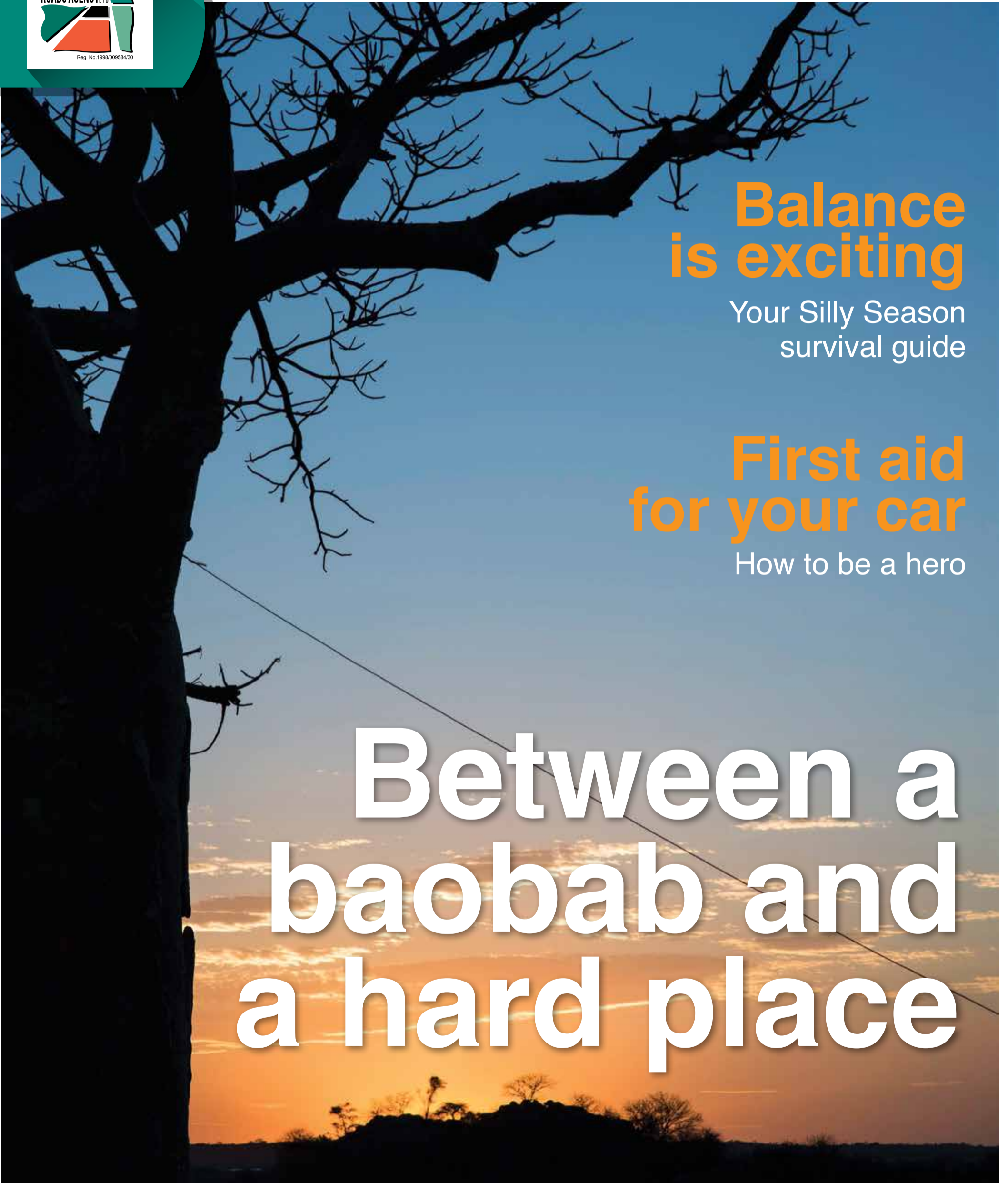


BY THE WAY

Creating wealth through infrastructure

ISSUE 11



Balance is exciting

Your Silly Season survival guide

First aid for your car

How to be a hero

Between a baobab and a hard place

Letters

Road funding is a serious problem

Our roads create a dilemma for government. There is simply not enough money to maintain the network appropriately and significant money is needed for the construction of new roads or upgrade of existing ones.

We have a serious funding problem. Note: we are talking here of preserving what we've got. Many people believe the fuel levy is the solution. According to 2012/2013 figures, the fuel levy (at 80c per litre) contributed R40bn to the tax pool.

The fuel levy is a general tax. It is not an indirect user-pay mechanism for road users, as it is not ring-fenced for road maintenance or upgrades. Many believe that an increased and ring-fenced fuel levy is the answer to fund new builds.

Some claim that an additional fuel levy of 5c per litre would have paid for the Gauteng Freeway Improvement Program (GFIP) rather than the e-tolling mechanism. Two questions: Is this feasible, given the already significant pressure to increase the tax base? And is it fair that the rest of the country pays for Gauteng's road upgrades?

No. We would need an additional fuel levy of 40c to 80c just to address the maintenance backlog and start addressing the maintenance gap.

Where will the money needed for maintenance and new builds come from? To answer this question, I have classified all our roads into four categories. The answer is different for each category.

The first is national roads, under the jurisdiction of SANRAL, but specifically excluding those parts of the national roads that run through metropolitan areas. SANRAL will continue to maintain these using its budget for operations for the non-tolled roads and its tolling income on the tolled roads. As traffic counts warrant, some of the non-tolled sections will be tolled. Over time, we should see a greater portion of the maintenance and upgrade costs of these roads covered with tolling revenue.

The second category is provincial roads that also fall outside metropolitan areas (thus semi-urban and rural). This includes paved and gravel roads. Any form of tolling on these roads is not feasible and this category can only be financed through the fiscus.

The third category includes the neighbourhood roads in our towns and cities. Direct funding is partly from the fiscus. National Treasury would probably resist any further direct funding.

The fourth category is a mixture of national, provincial and main municipal roads in metropolitan areas. These roads form a complex and interactive web of routes used by commuters daily. These roads likely carry close to 80% of the total traffic in the country. They are highly congested. Combined funding from SANRAL, the relevant province and the relevant metro should in most cases be sufficient. It is in the funding of new builds and upgrades that a significant funding gap exists. The high traffic volumes on these roads make direct tolling financially feasible and potentially a strong generator of capital. It is evident that funding the capital cost of category four through direct tolling is more equitable than funding it through the fiscus.

– Tiaan Claassens

Edited. The full version of this article first appeared on voices.news24.com

Talk to us

We love hearing road stories and comments. Send yours to pressoffice@nra.co.za and you might end up on our Letters page

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Who wants to wander around a mall laden with heavy bags, when you can spend time with your feet up, sipping holiday cocktails? Beat the crowds this Christmas with our online shopping timesavers



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KZN has some gorgeous spots that are no less breathtaking than the regular tourist traps

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The construction of the new N1 to Beitbridge encountered some enormous baobab trees, which have been carefully relocated by SANRAL. Easier said than done...

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Autonomous cars are all the rage these days, but is a driverless system really better? Monash civil engineering lecturer Alexa Delbosc talks highway platooning in a human world

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This year it's all about balance

This month, we love...



Stripped Collective's wireless charging side table

In a world where you can shop, socialise, blog, watch films, play games and order take-out on your smartphone or tablet, the battery-life of these devices has become of paramount concern.

If you're constantly pawing your touchscreen, it's important to have a decent charging source – especially if you don't want the nice lady from Google Maps to flake out on you while you're driving to that meeting in Timbuktu. So the arms race for the perfect device charger is well and truly at its peak. Wouldn't it be nice if you didn't have to fiddle with myriad plugs, adaptors and awkward wires? What if you could just drop your phone on the nearest surface and have it charge overnight?

Joburg industrial design trio Stripped Collective has created a modern take on the classic bedside table. Their industrial mid-century modern table has a wireless charging pad built right into the surface. Sleek, simple and functional, the wireless charging bedside table truly is where bespoke furniture meets technology.

Plonk your device on the table and the wireless charger activates. When the battery is full, the pad automatically switches off.

Stripped Collective's side tables are made to order, so you're not confined to a single table design. Visit their website, tell them what you want and get a beautiful bespoke piece for your space that doubles as the most useful item in your home.

Check out www.strippedcollective.co.za or email Graeme Adams at strippedcollective@gmail.com.

Editor's Note



Vusi Mona

Tragically, 1 755 people died on South African roads last Christmas (1 December 2015 to 11 January 2016), an increase of 220 (14%) from the previous year.

These are not mere statistics. These are the precious lives of men, women and children, snuffed out through careless behaviour on our roads. Transport Minister Dipuo Peters has urged all drivers to make this season's road death toll zero.

"Most traffic incidents are preventable and all drivers must take responsibility. No one wants to see more people killed on our roads over Christmas," she said. "As always during this period, we will see an increased police presence on our roads. The most important driver safety advice for holiday driving is: 'look up and stay back'. Look well ahead to identify hazards and maintain a minimum two-second following distance. This will reduce your crash risk by half."

This edition of By The Way has tips on how to save time and money this festive season (Pg 3; 10) and how to get your car holiday-ready (Pg 15). And if you want to visit the Garden Province, there's a great travel feature on KwaZulu-Natal on Pg 7.

We welcome the new CEO of SANRAL, Skhumbuzo Macozoma, who succeeds Nazir Alli – who has retired after 18 years at the helm (Pg 4).

More about the content: Pg 5 provides a few definitions for those of us who don't mean the same thing as engineers when they say "pavement".

For those more in tune with nature, turn to Pg 12 and 13, where we talk about an African icon at the heart of many traditions – the majestic baobab tree. SANRAL has delicately translocated one in Limpopo.

The agency is doing its share to save the planet. Old asphalt, ripped up during road repairs, is being recycled. Grass cut at the side of roads is gathered to help feed livestock during the drought. On Pg 21 you'll see that conservation really is at the heart of SANRAL's operations.

Finally, enjoy your festive season, be safe and we'll see you in 2017.



Holiday shopping is not for sissies. Here's how to cheat the crowds this Christmas

Nick Cowen

As the mercury rises and the Festive Season draws ever closer, many are dreading the prospect of Christmas Shopping (with a capital S). There are few things in life guaranteed to sour one's Xmas cheer than running the gauntlet through a packed shopping mall (screaming children in tow or not). As much as it feels Scrooge-like to say so, Christmas is a massive effort.

Fortunately options exist for those with an online connection and the desire to leave all the heavy lifting to someone else.

While South Africa does lag a little behind the rest of the world when it comes to online shopping, it's a steadily growing sector and consumers have more options available to them by the day.

South Africa's biggest online shopping website is easily takealot.com and the retailer runs deals and discounts on an almost daily basis. Whether you're looking for a bottle of perfume, a new hardback book, a decent bottle of wine or a GoPro for the budding photographer in your life, Takealot has

exactly what you need – and most of the site's items are cheaper than if you bought them in a shopping mall. Since it merged with online retailer kalahari.com last February, Takealot's selection of goods has ballooned.

Of course, the world's biggest and most renowned online shop, Amazon, has yet to launch an official presence in South Africa. That doesn't mean that local consumers can't buy goods from Amazon – they just need to be a bit canny in how they order them.

Given the fact that the postal system leaves a lot to be desired and the fact that many of the vendors in the Amazon marketplace don't send goods to South African addresses, you may think that much of what Amazon has to offer is off-limits to South Africans. But you'd be wrong.

The saviour for every Christmas shopper this year is a delivery service called Aramex Global Shopper. It essentially allows South African consumers to sidestep their geographical disadvantage. Buy items from any online retailer out there and have them delivered right to your door. Sound good?

The way it works is pretty straightforward. Simply head over to the Aramex Global Shopper website (www.aramexglobalshopper.com) and open an account. Doing so costs \$45, but this is a once-off payment. Once you've opened an account, Aramex will send you a list of postal addresses for its depots around the world.

When you visit a site like Amazon – or indeed, the likes of Firebox and Lootcrate – that doesn't deliver to South Africa, just make your purchase and then enter the address of the nearest Aramex depot. The item will then be delivered there and shipped to Aramex's courier service in South Africa.

The catch? Consumers will have to pay the local courier service to deliver their item and they will need to send it to a residential or a work address, as they need to be present to sign for it. That said, Aramex opens up such a new range of possible purchases, the extra few bucks are worth it.

How would you fancy owning a PSVR headset ahead of its launch in South Africa? Well now you can.



NEW SANRAL CEO is up to the task

Allyson Lawless

Skhumbuzo Macozoma joins SANRAL as its new CEO at a crucial time, but there is no question that he is up to the task.

The lifeblood of the country's economy is its transportation infrastructure. The expanding road network in South Africa, compared with the infrastructures of many other countries, is the envy of the world.

However, the existing roads infrastructure is gradually beginning to crumble. New roads are required to cater for population shifts and traditional funding sources are not able to cover what is needed to get the job done.

It took a long time for the SANRAL Board to decide on a suitable leader for the roads agency. The serving CEO, Nazir Alli, had to postpone his retirement several times.

Finally, there was consensus that in Macozoma we had the right person to guide SANRAL towards helping the government to achieve its sixth outcome, "to provide an efficient, competitive and responsive economic infrastructure network".

SANRAL is committed to the provision of an effective national road network, operated in an environmentally responsible manner. The concomitant benefits include the creation of decent jobs, skills development and upliftment of communities, including rural ones, ultimately to make a significant contribution to the creation of a better South Africa for all its citizens.

Skhumbuzo Macozoma takes over the executive leadership of an organisation that is highly regarded both locally and globally for the quality of its corporate governance and excellence in engineering.

I am confident that Macozoma is more than adequately equipped to lead the national roads agency into a new era of growth and an expanded mandate to manage South Africa's road infrastructure.

As only the second CEO in the nearly two-decade history of SANRAL, Macozoma inherits a well-oiled machine with a high-performing technical team.

He brings with him strong professional credentials and an impressive track record of leadership and service in the industry. SANRAL is fortunate to have found someone of his calibre and experience.

Macozoma takes over the executive leadership of an organisation that is highly regarded both locally and globally for the quality of its corporate governance and excellence in engineering and project management.

SANRAL now manages a national road network of almost 22 000 km in all nine provinces. It is responsible for all national roads and a growing number of provinces are requesting the agency to assume responsibility for their strategic roads.

Macozoma holds a BSc (civil engineering) and an MSc in the same field. He served as chief officer: transport and logistics of the 2010 FIFA World Cup Local Organising Committee from 2008 to 2010 and served as a transport manager in the same committee from 2007 to 2008.

Prior to that, he was chief director: integrated infrastructure network development in the national Department of Transport (2003-2007) and was a



Skhumbuzo Macozoma, new SANRAL CEO

project manager and research engineer for the CSIR from 1993 to 2002. He also served as managing director of the Johannesburg Roads Agency. He is presently the CEO of the Electronic Tolling Company and has in the past served as a non-executive director of SANRAL.

As a professional engineer and with a wealth of engineering industry knowledge, Macozoma will be welcomed within the broader sector, the construction industry and the investor community.

His appointment comes at a critical time, when SANRAL is in the process of implementing some major projects, such as the building of the N2 Wild Coast highway and upgrading of Moloto Road, north of Pretoria, and the N3 between Durban and Pietermaritzburg, which is the busiest road freight corridor in South Africa.

SANRAL is spending billions of rands to maintain and upgrade existing routes, while also investing in new infrastructure that will open new vistas for economic freedom and social upliftment.

Macozoma has his work cut out for him. He will be heading a team that will see deteriorating roads being repaired; additional capacity being added; dangerous segments being eliminated and new routes that are shorter and safer being carved into the national landscape.

I would be remiss if I did not pay tribute to Nazir Alli, the founding CEO of SANRAL, who has retired after 18 years at the helm.

Alli is a visionary who truly understands the crucial role of roads in connecting

people to places and keeping the wheels of the South African economy turning.

He will be best remembered for the emphasis he placed on ensuring there would be a pipeline of civil engineers by investing in Science, Technology, Engineering and Mathematics (Stem) education.

We wish him some well-deserved rest and feel assured that we will be able to draw on his experience and knowledge.

SANRAL Board member Allyson Lawless is a structural engineer who has spent the past 40 years playing a developmental role in the engineering profession. Her experience in the field spans countries including Namibia, the UK and South Africa. She is a professional engineer, registered with the Engineering Council of South Africa; a chartered engineer with the UK's Engineering Council, a fellow of the South African Institution of Civil Engineering and a fellow of the London-based Royal Academy of Engineering.



FREE DLOZI MEMBERSHIP

CHOOSE LIFE. BUCKLE UP.

Road Traffic Management Corporation, a lead agency in road safety.



Intersection

Passion and patience got newly registered engineer Madoda Mthembu where he is today

Civil engineering is one of the most exciting and rewarding professions to be in. Especially if, like Madoda Mthembu, you have a passion for creating infrastructure that adds value to society.

Madoda – who although born in Katlehong, east of Johannesburg, grew up with seven siblings in Nkandla, KwaZulu-Natal – is a qualified civil engineer with a BSc in civil engineering and Masters in management of technology and innovation (MSc Moti).

He is a project manager at SANRAL and has been with the agency for eight years.

“I am responsible for the maintenance of Routine Road Maintenance (RRM) projects, ad hoc maintenance of road sign projects and reseal projects. At the moment, I’m busy with tender documents for strengthening existing and new facility projects.”

We caught up with Madoda to talk about crossroads, bridges and myth-busting.

What is the best part of what you do?

Doing my tasks with passion; seeing the benefits of my labour.

What’s the worst?

Having to repeat assignments because I missed a detail.

Bridge or intersection?

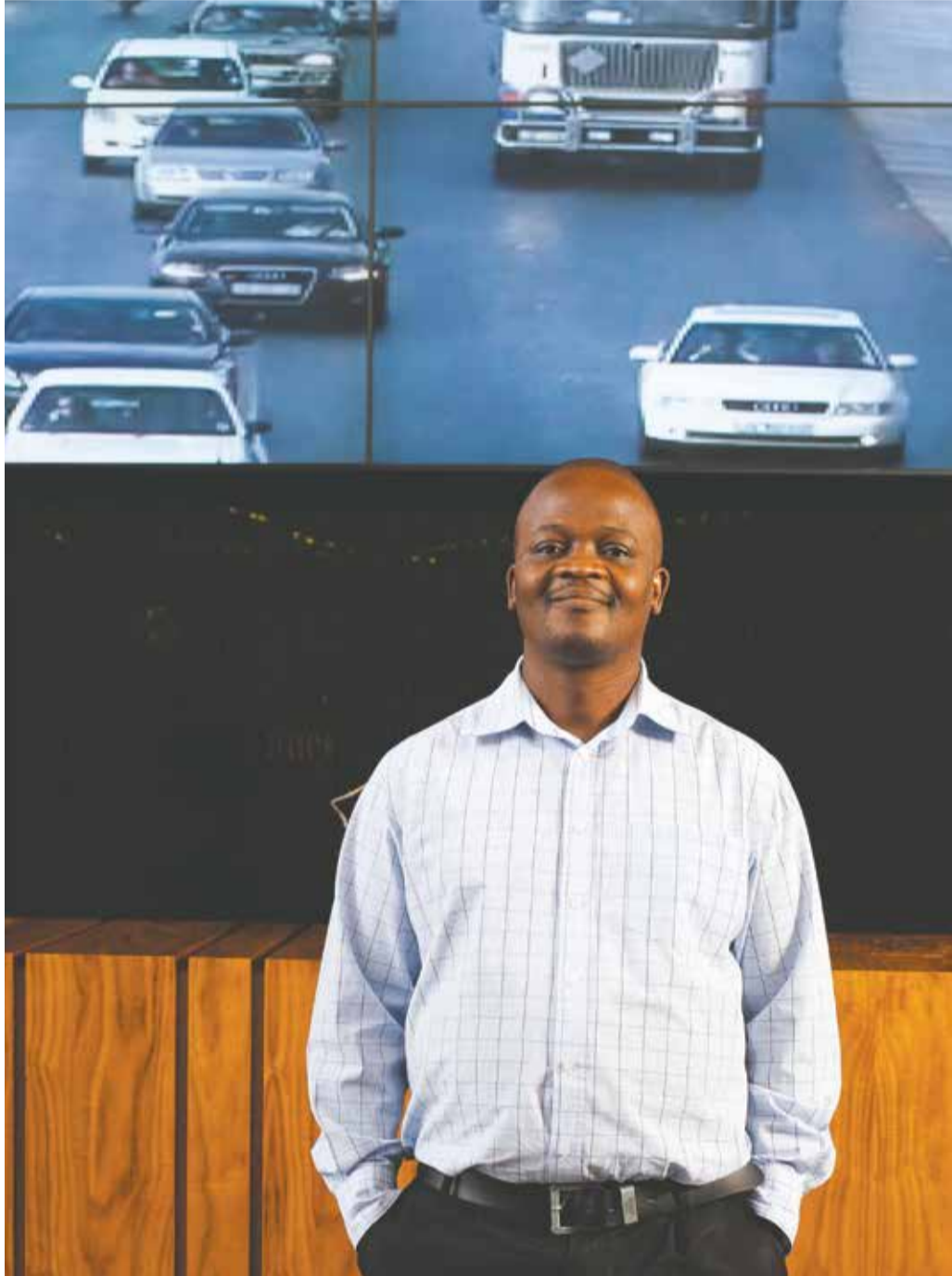
Intersection – it carries the meaning of crossroads in a positive way. It signifies a meeting of destinies and how each individual waits and gives another individual the chance to proceed in life, without losing anything in the process. To make it in life, you will inevitably cross paths with people who have been there and made it before you.

Which structure in the world do you wish you had designed?

A cable-stayed bridge like Nelson Mandela Bridge in Johannesburg.

Any myths around engineering you’d like to bust?

Engineers are not hard, emotionless people. In addition to their excellent technical abilities, they can be good managers of people.



Madoda Mthembu looks right at home at the Traffic Control Centre in Midrand, where we caught up with him.

“Civil engineers are the brains behind most compelling structures that surround us, from tall buildings to remarkable roads and bridges; even energy and water facilities like dams and power stations that serve thousands of communities.”

Madoda successfully registered with the ECSA as a professional engineer in October and SANRAL is proud to have him and all its other dedicated engineers serving the nation. May they continue to build bridges to a better future.

FACT BOX

One of the greatest achievements for a South African engineer is to be professionally registered by the Engineering Council of South Africa (ECSA). Ever-increasing globalisation – and South Africa’s participation in it – has made it critical for our country to become competitive internationally. Registration with the ECSA contributes substantially to this and it’s an important part of maintaining high standards in the engineering profession. The engineer wishing to be registered is assessed by other professionals who are knowledgeable about engineering.

Learn the Lingo

Pavement vs pedestrian walkway

Usually when people say “pavement”, they mean “pedestrian walkway”. But actually, the “pavement” refers to the structure of the road in terms of its layers (thickness).

Bituminous road vs tarred road

We no longer use tar in the construction of roads, we use bitumen, so we no longer refer to new tarred roads.

Highway vs freeway

A highway can be any type of road, including local streets. A freeway is a higher-order road like the N1, which can only be accessed via interchanges.

Keeping you informed...

Plan your journey in advance to **avoid the peak periods**

- On the **N1 Northbound and N4 Westbound** peak periods can be expected from **12 noon to 8pm** on the **9th, 15th, 16th & 23rd of December 2016**
- On the **N1 Southbound and N4 Eastbound** peak periods can be expected from **12 noon to 8pm** on the **2nd & 8th of January 2017**

Keeping you safe...

- Bakwena has once again entered into an initiative with Imperial I-Pledge and Europcar for six additional route patrol vehicles to assist with route surveillance & road users who require assistance along our route during this busy period. This partnership with Imperial and Europcar has led to a drop in incidents along our route over the past four years.

Keeping you moving...

- During peak periods all lanes at our toll plazas are open and in full operation

Bakwena
N1N4 toll

f **BakwenaN1N4**
t **BakwenaN1N4**
0800 BAKWENA
0800 2259362
www.bakwena.co.za

WHOA!

KEEP THE CELEBRATION FOR THE DESTINATION.

As we all head out to our well deserved break, let's take it easy and say 'whoa' to dangerous behaviour on our roads. Let's say 'whoa' to drinking and driving.

Drinking gives you a false sense of security, reduces your reaction times and concentration. Don't spoil your holiday.

If you've gone beyond your limit, do the right thing and don't drive drunk.

SANRAL.
Beyond roads.

CHEKiCOAST
save a life
A SANRAL INITIATIVE

Your first ports of call

Take the road more travelled and the trip less common

In Gauteng, it is fondly called “Durbs”, the place you go to when you go on holiday, in that lush province between the Eastern Cape, Swaziland and Mozambique, with the Indian Ocean in the east and the Drakensberg in the west. It helps that it’s a comfortable drive down – six hours on the N3, managed and maintained on behalf of the South African National Roads Agency, by concessionaire N3TC.

There will be many trucks on the highway too. In fact, about 10000 a day. So drive carefully. They’re taking goods from the country’s economic hub, Gauteng, to its busiest port, Durban.

Once you’re in KwaZulu-Natal, you will be faced with a wide variety of choices; magnificent game parks and great beaches, to name just two.

But there’s something far more interesting you could try the next time you visit the province: go port-hopping, starting in the south, with Port Edward. Visit the Beaver Creek Coffee Estate, which offers guests a daily tour, focusing on the distinctive flavours of the world’s coffee regions and the skills needed to make the perfect cup. You can also drink freshly roasted coffee to go with some of the delicious cakes. If you like it, take some beans home.

If you have time – and need a second cup – visit the North Sand Bluff Lighthouse, where you can also have a light meal before you enjoy the magnificent all-round view.

Then go north along the Hibiscus Coast until you get to Port Shepstone. There you’ll find the rich Protea Reef, where deep sea fishermen go to test their skills, out to sea in boats or simply off the beach.

A further hour north is the continent’s largest shipping terminal, Durban. The obvious thing to do here is have a lovely meal right on Maydon Wharf and take a boat cruise on a small craft around the harbour and out to sea... well, maybe have the meal once you’ve come back if you’re not sure how your stomach will react to the trip.

Then head northward on the beautiful N2 with its spectacular interchanges. Drive slowly so that you can look at them consciously. They are really something special – Umgeni and Mount Edgecombe in particular.

Northward and ever north, halfway to the Mozambican border, to the world’s largest coal terminal, Richards Bay.

What you have to do here is go on the famous Zululand Birding Route. It includes the harbour itself and the nearby game reserve. Be prepared for large sandbanks, mud flats, extensive mangroves, freshwater pans, forest areas and birds. Plus, hippos and crocodiles!

It is a gorgeous walk.

Back to the N2 and even further north – it turns inland here – is the town, er... make that townlet, of St Lucia. There is a lot to do, especially visiting the extraordinary wetland that is a Unesco World Heritage Site.

But you go to this little town for a very different reason.

Here you’ll find real peace and quiet, just to let you relax and recharge those batteries that got you through the first four ports. Port number five is “feet-up”. And there’s just about nobody to see you do it: the town’s population is just over 1000 people. Yes, really. Feel that? That’s relaxation tapping you on the shoulder and clearing its throat...



1

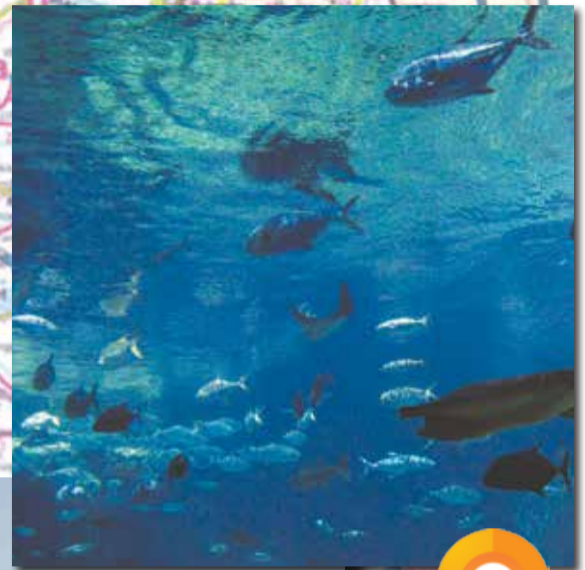
2

3



4

5



KZN Top 5

1. Port Edward
2. Port St Johns
3. Durban
4. Richards Bay
5. St Lucia

N2 make-over brings Myddleton together



Aerial view of the N2 through Myddleton in the Western Cape

The small community of Myddleton straddles the N2 to the east of Caledon. It was established when coloured people were displaced from the nearby Caledon, under the reprehensible apartheid-era Group Areas Act.

To add to its woes, the community was split in half by the N2 highway. This division lasted for many years and created a dangerous pedestrian situation for residents having to cross the road to attend school or church.

Access to Myddleton was gained by two level intersections (known as “at-grade intersections”) directly onto the N2. The eastern access was particularly poor, because the geometry of the road did not allow for the required sight distance from the east. This was identified as a road safety and a community development issue that SANRAL could solve.

SANRAL Project Manager Renaldo Lorio said the aim was to consolidate the two accesses into a single one, as well as to provide grade-separated crossings that linked the severed halves of Myddleton.

This was achieved by constructing two new bridges on the N2, in the vicinity of the accesses and linking the internal roads of Myddleton (Vlei Street and Berg Street). An on-ramp and an off-ramp were constructed at the Western access point to create a new grade-separated access. That way there are no conflict movements (right-turn movements) on the N2, which has significantly improved safety on the road.

The southern portions of Vlei Street and Berg Street, as well as a part of the northern portion of these streets, were rehabilitated as part of the access improvements.

Construction began in January 2013 and was completed in May 2014, after the contractor was granted an extension on the time for completion (originally scheduled to be a 12-month contract). The installation of piled foundations presented unforeseen difficulties, since the sub-surface conditions encountered were different from those originally expected.

The completed project was worth R45.4m. At the peak of the construction activities, 114 local people were employed. The total spend on labour was R2.5m, which equates to 50 full-time jobs (on an annual basis). R5.1m was spent on

black-owned SMMEs – 10 were used to work on the project.

Lorio said it was pleasing to see how the new grade-separated crossings positively impacted the community.

Since completion, a number of new houses have been built in the area and improvements have been done on others. Apart from the obvious growth, Myddleton looks a lot better these days.

The town was established as a mission station about 165 years ago, said Glen Carelse, Ward Councillor for the area at the Theewaterskloof municipality, long before the N2 was built. The Ou Kaapse Wapad then served as a route between Caledon and Swellendam, crossing through the southern part of the mission station, dividing the settlement from its agricultural land. The national road was later rerouted and constructed further north, to run through the settlement.

Carelse said that after many years of this geographic division, the two halves of Myddleton have finally been united – something for which he fought very hard.

Since completion, a number of new houses have been built in the area and improvements have been done on others. Apart from the obvious growth, Myddleton looks a lot better these days.

Holidays will start sooner with the N3 upgrade

The long trek to Durbs-By-The-Sea in heavy holiday traffic is the bane of every motorist who desires nothing more than to reach their holiday destination as quickly as possible.

Who wants to be stuck behind a gigantic truck when crashing waves and the tantalising smell of lamb chops on the braai beckon?

Congestion on the N3 will soon be just a memory, as work progresses on the R15bn upgrading of the freeway from Durban to Cedara outside Pietermaritzburg.

Upgrading of the N3 is essential if one of government’s strategic integrated projects – linking the Port of Durban with Gauteng, South Africa’s economic heartland – is to succeed. It is currently the busiest road freight corridor in South Africa.

SANRAL Eastern Region Planning, Design & Construction Manager Ravi Ronny said the N3 carries in excess

of 40 000 vehicles per day around Pietermaritzburg, increasing to more than 100 000 vehicles per day towards Durban, and consists of a mix of urban commuter traffic, long-distance traffic and on some sections, more than 25% of the traffic is heavy vehicles.

“In excess of 44 million tons of freight per annum is carried on the N3 corridor, with approximately 9 000 heavy vehicles using the national road per day on the KwaZulu-Natal portion of the network,” Ronny said.

“Durban is by far South Africa’s busiest port, with over 80% of goods moving along this corridor by road. Therefore, the need to consider the best economic solutions to ensure the seamless flow of freight is very important,” he said, adding that any blockage on the N3 closure would be tantamount to a national crisis.

The upgrading of the N3 will see the addition of two and three lanes per direction, resulting in an eight- to

10-lane freeway, over a distance of 84km; the upgrade of 27 interchanges and the realignment of Key Ridge

to reduce steep grades. A ring road around Pietermaritzburg is also being investigated.



SANRAL’s Eastern Region Manager, Logashri Sewnarain, flies over the N3 highway.

Traffic control centres shed the load



Trucks approach a weigh bridge in Heidelberg.

Overloaded trucks cause serious damage to roads, but the Traffic Control Centres (TCCs) along our national roads ensure the safety of users through load control and traffic law enforcement.

The Heidelberg TCC on the N3 is one of the busiest, operated by N3TC on behalf of SANRAL.

The N3 is an important corridor used by the freight industry, as well as holiday makers travelling to the coast. Some motorists think of heavy vehicles as a nuisance, but they play an important role in our economy, moving goods and driving commerce.

According to SANRAL's Northern Region Manager, Ismail Essa, the maximum load that a truck can carry is 56 tons. If a truck is overloaded to 60 tons for example, a single trip can do more damage to the road than 80 000 cars.

The Heidelberg TCC handles about 92 500 trucks per month, in both the north- and southbound lanes. There is a satellite station in the vicinity that handles about 44 500 trucks per month. It is aimed at drivers who use back-routes to avoid going through the Heidelberg TCC.

"The latest research conducted by the CSIR shows that overloading causes about R5bn damage to the national road network. This can be avoided if there is proper law enforcement and proper load controls," Essa said.

Chief Provincial Inspector Joseph Mosia said an overloaded truck damages road infrastructure – and the driver is not in a good position to control the vehicle in motion.

As motorists make their way to the coast to take a break after a long year, Heidelberg TCC ensures that the road is preserved and safer to drive.



Environmental management for N2 Wild Coast

An erica in the Tsitsikamma National Park

SANRAL has initiated its environmental management programme to protect the botanical diversity and natural heritage of the Eastern Cape, as part of conservation plans for the N2 Wild Coast Road (N2WCR).

Earlier this month, the national roads authority appointed a service provider that will be responsible for search and rescue, horticultural services and the rehabilitation of threatened, protected and rare plant species.

"All SANRAL projects are carefully monitored and evaluated. The environment and communities of the Wild Coast are our first priority," said the agency's Southern Region Manager, Mbulelo Peterson.

"In close cooperation with the National Botanical Institute – and with the input of environmental authorities and groups – all rare, endangered and endemic species will be translocated to suitable nurseries. We do this with the aim to both re-establish

"The environment and communities of the Wild Coast are our first priority."

flora in an existing conservation area and to assist with the rehabilitation of disturbed areas after construction," he said.

The route for the N2WCR has been planned to minimise the impact on

The environmental management programme for the N2WCR entails:

- Establishing and maintaining plant nurseries
- Rescuing plant material listed as protected, vulnerable or rare, along with additional plant species suitable for rehabilitation
- Involving local communities to harvest plant materials
- Plant propagation of suitable species
- Assisting contractors with rehabilitation through the reintroduction of rescued and propagated plant material and seeding
- Assisting contractors with the maintenance of rehabilitated areas, including weeding, watering, replanting and repair of damaged areas

environmentally sensitive biomes and existing human communities and settlements. SANRAL will ensure the preservation of flora where there is a degree of intrusion.

Peterson said the roads agency and the Eastern Cape Parks and Tourism Agency will announce more details on the environmental off-set agreement at a later date. The agreement is designed to mitigate the unavoidable impact of the N2 Wild Coast Road on the local environment.

Governing your own finances



SANRAL's budget an unqualified success

Since 2003, SANRAL has had its financial reports declared "unqualified" by the Auditor-General. In business, no one talks about a "clean audit" – that came from former Cooperative Governance and Traditional Affairs Minister Sicelo Siceka, who announced his "clean audit" drive in 2009. The key thing is to achieve an audit without matters of emphasis. There are three types of opinions the auditor can include in its report...

1. **Unqualified Opinion:** This means that the annual financial statements present fairly in all material aspects of the business's

financial position and performance.

2. **Adverse Opinion:** This is where majority of the annual financial statements are accurate, but there are one or more areas that do not present fairly or contain a material error. An explanation of the exact area and its implications will usually be added to the audit report.

3. **Qualified Opinion:** This means that the annual financial statements are not accurate and do not present fairly the material aspects of the business.

Hot tips on how to budget for your December and January

The New Year is almost upon us. It's a time of rest, relaxation, perhaps a well-deserved holiday and even a fresh loot of Christmas presents. Many of us get our end-of-year salaries a little early, but let's not forget that December is a looong month financially speaking.

So given that January's payday is a way off – and the end of the year is pretty expensive – here are a few tips to keep your pocket healthy.

Have a plan

Many of us boggle at the idea of how we're going to keep ourselves liquid this time of year, but budgeting a little beforehand can make a huge difference – and it's surprisingly simple. Famously liquid investor Warren Buffet has said: "Don't save what is left after spending; spend what is left after saving."

It's good advice. As soon as your salary is paid, shove some money into a separate savings account before you've spent anything. Think of this money as

just another overhead cost, like paying your rent or your levies and electricity. The money isn't yours anyway, it's part of your cost of living.

This amount should be enough to cover your basic January expenses – food, petrol, a night out (or two).

Know the bottom line

Not knowing your exact bank balance – especially if you use a credit card – means you are constantly under stress. Counter-intuitively, this can lead to emotional, or binge-spending (which almost always results in regret and financial insecurity).

At the beginning of the month, check your bank balance and open up that calculator app. First, subtract all your overhead costs for the coming month from the full balance. This includes groceries, petrol, rent, rates and taxes, water and lights, car repayments, bond repayments and credit- and store-card debt.

Next, decide how much you want to save for the lean part of January. It is crucial to save – even if it is a little at a time. And hey, if it doesn't benefit you significantly this coming January, doing this every month will definitely benefit you next January. The important thing is to

start. Get used to it. Stop living payday-to-payday.

Once you've set aside some savings and you've paid your expenses, divide the remaining number by the number of weeks left in the month. This is how much money you can spend per week in a normal month. But because it's December, you know that you will need a little extra for entertainment/presents. Divide the amount of money you have per week in two. Spend half on treating yourself and/or your family and half for incidentals.

Entertain at home

This one is self-explanatory. Going out for lunch and dinner – even if it's to a reasonably priced restaurant – can add up to a lot of unnecessary spending. Hold gatherings at your home and invite a few friends. It's summer; enjoy a braai or a potluck where everybody brings something delicious. Spend time putting together a good playlist and eat, drink, dance and be merry in a safe space that doesn't charge you a premium. Home should be where the party is this season.

Don't go crazy for Christmas

Shop for fresh food at butchers and

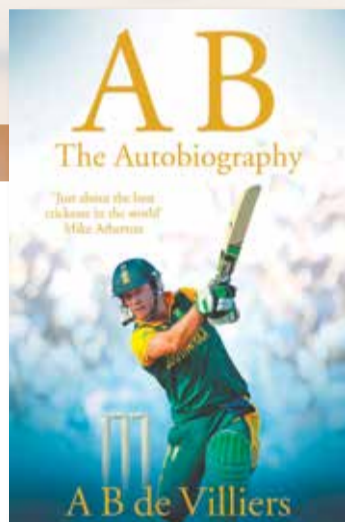
farmers' markets. Not only is this healthier for you, it will save you loads of cash, as supermarket food and pre-packaged meals can seriously dent your wallet before you even realise it. Convenience is far too often overpriced for what you're getting. Instead, buy only the cleaning products you need from the local supermarket and remember that many of these are multi-purpose.

If you're buying presents for Christmas, there are a few strategies to use. First, only buy presents for your family. Attempting to cover your friends' Christmases is unnecessary. Trust us, your friends will understand. Instead, invite them 'round for a nice meal and a visit; chances are they'll appreciate a little social contact more than a physical trinket wrapped in paper they'll toss in the bin anyway.

Gifts for your family require more thought than cash. Get creative; make it personal. Instead of waltzing through a massive shopping mall with a basket, visit your local open-air market and take your time. There are often treasures to be found at a fraction of the price. Then, get yourself some art supplies and make your own labels for the presents you want to wrap. And remember: stick to one gift per family member; don't go overboard.

Books

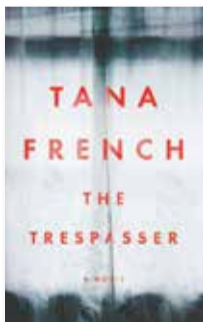
for the long road



AB: THE AUTOBIOGRAPHY

A B de Villiers

Widely recognised as one of the world's most talented cricketers and finest batsmen, AB writes his own life story, concentrating on The Game, with lots of detail that will remind us of how we felt at Wanderers or Newlands or in Sydney or London. He tells it all: his beginning as the youngest of three sports-mad brothers in Warmbaths, the ups and downs of this engaging sport, the political intrusions and the participation of the crowds. This is a heartwarming read.



THE TRESSPASSER

Tana French

The latest Tana French was one of the hotly anticipated crime thrillers of the year. And in true French fashion, the award-winning Irish writer did not disappoint.

One of the detectives we got to know in *The Secret Place*, Annette Conway, is back on the scene and abrasive as ever. She is still not well liked; male colleagues in the Dublin Murder Squad want to get rid of her (the only woman on the team). She and partner Stephen Moran are up against a psychopath. Worse, she thinks she knows the possible killer from somewhere. Typically French, in this novel we have different

storylines, confusion, surprises, are fed obtrusive clues, have haunting moments – and hate it when the story ends. It's one for the older readers.



MISS PEREGRINE'S HOME FOR PECULIAR CHILDREN

Ransom Riggs

For young adults, teenagers and kids, this is an old favourite in new reprint and it comes in partnership with the film release. The movie version, directed by Tim Burton (starring Eva Green, Judi Dench and Samuel L Jackson) is visually spectacular and closer to Grimm than Disney. It is perhaps more suited to older children than kids. Today's young ones, though, are addicted to imaginative flights of fancy onscreen, between book covers and on their device screens, and might take the darkness in their stride. Beware though, this book requires parental guidance, but the story remains a beloved best.

The mysterious island off the coast of Wales, the abandoned orphanage with its crumbling ruins, strange photographs, peculiar children. Were these strange children dangerous? Were they kept separate from other people? Are they still alive? What's with the photographs of levitating girls and invisible boys?



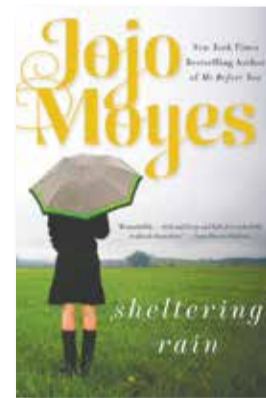
Jingle

Gordon Korman

For our much younger readers, we look at the latest of the Swindle series. Number 8 of Swindle was published in September and young ones will be happy to get together again with Griffin Bing and his friends.

Bing and company are not very happy, though. They're not allowed to go away for the Christmas holidays, they are to stay home and take part in an Xmas extravaganza. To add to the misery, they are scripted as elves for the show. Elves!

And then a thief makes his dastardly appearance – something is stolen (worth \$10m) and the band of friends are blamed. They have only one option: to forget about being elves and avenge themselves as sleuths. Somebody has to catch the thieves.



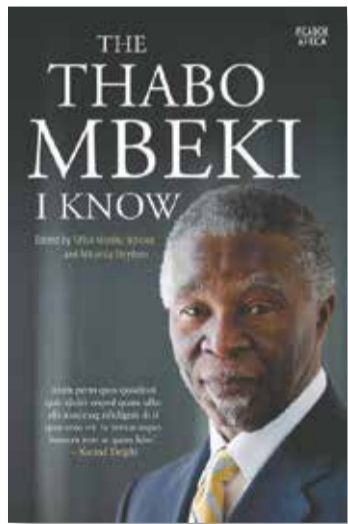
SHELTERING RAIN

Jojo Moyes

And what is Granny, who does not care for cricket or politics or strange children or murder, going to read? There is always good old Jojo Moyes. From the bestselling author of *Me Before You* and *The Last Letter From Your Lover* – not to mention a previous winner of a Romantic Novel Of The Year award – *Sheltering Rain* was published in May. Enjoy this family saga of a daughter, her mother and grandmother – and a treasure trove of family secrets, love, duty, subtle twists and the distresses and anguishes of relationships. Happy reading, Gogo.

The holiday season is here. That means more time for reading – and gifting – good novels. Book markets have been lively this year, so nobody can claim to be stuck for choices.

For that special someone, you have to know what they like – is it detective novels, history, adventure, love, politics, sport? Let's take the last two options – politics and cricket – and add crime. With the mess our politics is in right now and the resurgence in our cricketing fortunes, these topics interest one and all. And crime is an unfortunate part of our daily lives.



THE THABO MBEKI I KNOW

Edited by Sifiso Mxolisi Ndlovu and Miranda Strydom

This is a collection of essays by a host of people who knew our former president and dealt with him. They tell us how he was and how he is (the young man, the exile, the statesman, the leader in Africa, the embattled human being, the outstanding thinker, the person once thought of as a Renaissance-man). And their perspectives differ – they are not all praise-singers and so we get an honest review.

It's a book to reassess Mbeki's contribution to South Africa.



BETWEEN A BAOBAB AND A HARD PLACE

Ever seen a tree move? Here's what it's like...

Georgina Guedes

I am on a barren, red landscape, surrounded by large earth-moving vehicles. It feels as if I'm on another planet – like Mars, except that it's blindingly hot here. It's already 30 degrees at seven in the morning and will peak later today at 41. Yesterday's heat still radiates up through the red earth beneath our feet and I know that soon the shimmering air will match it.

My surroundings are not entirely stripped of life. Atop a nearby hill stands a single, towering baobab, its knuckly branches reaching emphatically skywards, and below in a dip is a cluster of dusty shepherd trees. These trees are the reason that I'm here with a team from SANRAL.

The seam of red that has been gouged through the Limpopo bushveld will be the new route of the N1 highway, skirting the congestion in the town of Musina and carrying road users back and forth from the border town of Beitbridge. But since we're in baobab country, it's impossible to build a road without running into some of these ancient trees along the way, and the roads agency has committed to transplanting them – along with other protected species like the shepherd trees – to minimise any harm progress may cause the environment.

The final baobab

We are here to witness the removal of the final baobab. The rest of the route has already been cleared and this tree is the last one in the way of the construction. Moving a baobab is no small task – the trees can weigh anywhere between 20 and 80 tons – and today's endeavours will involve two tractor-loader-backhoes (or TLBs, as the engineers call them) and an excavator.

Considering the sheer scale of the effort, the first question that springs to mind is: Why they don't just build the road around the baobabs?

Daniel Kwele, the consulting boffin with KBK Engineers, who have been contracted to build the road for SANRAL, explains that roads are geometrically designed for speed and safety. "You can't just put kinks in a freeway."

Also, he says, despite the seemingly huge effort and expense involved in moving the trees, it would cost a lot more to widen the curve of the road to avoid them. And even if they did, it's likely that they would encounter more protected trees on the new curve. It's pretty hard to avoid baobabs in this part of Limpopo.

The TLBs hollow out trenches on the one side of the tree while stacking up a pile of sand on the other. The idea is that once the roots are loose, the TLBs will tip the tree onto the supportive pile of sand, then move around to lift it onto the sled and drag it away.

“Instead of cutting down the trees, if we can, we relocate them to an area that's not affected by the construction.”

Of course, there are the environmental concerns of working with trees that are hundreds of years old.

“For all projects, we have an environmental management plan,” says Victoria Bota, SANRAL's Northern Region Environmental Officer.

“We want to minimise or avoid adverse environmental impact. We first have to get a permit from the Department of Agriculture and Forestry – and that comes with certain requirements. Instead of cutting down the trees, if we can, we relocate them to an area that's not affected by the construction.”

Dispensing with the easy stuff

First things first. The shepherd trees. Daniel explains that studies have shown when these trees are more than 3m tall, they generally don't survive the move, so a man is dispensed with a measuring tape to assess which will make the cut. If a protected tree is removed rather than transplanted, a new sapling is planted and nurtured elsewhere to replace it.

The TLB makes its way down to the movable trees and, with effortless grace, its digging arm simply plucks them from the earth. I had expected some mechanical groaning and grinding, but the digger slides through the rocks and soil like a hot scoop through ice-cream. Almost indifferent with the effortless, it carried the shepherd tree to its new spot, where it was to be planted out of the way of the freeway.

A few short trips later, all the shepherd trees were in their new locations. The TLBs turned to the baobab. Moving this behemoth is not such a simple task.

The team explains to me that it is trying a new approach today – attempting to lift the baobab onto a custom-built sled, to avoid damage to the roots as it's dragged to its new location. But first, some digging.

Not so fast...

Unfortunately, the best-laid plans go often awry and this particular baobab had embedded its roots rather firmly in a piece of rock. Here now, is the grinding and churning of machinery that I had expected, with little result. Ultimately, one of the engineers expresses some concern that the TLB could overturn, so everyone takes a break while waiting for a backup crane to arrive from another construction site.

We all seek shade around the vehicles – but the sun is rising higher and now merely casting narrow, crescent shadows. I go off to inspect the hole that's been dug for the baobab and filled with frothy brown water. I consider a swim...

The crane eventually arrives, anchors itself on the uneven ground and then, with a great roaring and creaking, the tree is eventually tipped. The team has abandoned all hope of getting it on to the sled, and so begins the slow process of dragging it to the waiting hole.

While every care is taken, it seems unlikely to me that any living thing could survive such a violent upheaval, but Victoria assures me that they have called in expert consultants who know exactly what they're doing.

Marius Venter is one of these. He is a director of the Sand River Resort, where baobabs are abundant and has, over the years, become something of an expert in their safe relocation.

“We moved the first tree for SANRAL and today we're moving the last one on this road,” he says. “We've also done some for the mines. All in all, we've moved more than 100 baobabs – without one mortality.”

He explains that baobabs are fairly hardy and are used to growing in a dry climate. After the move, the trees are fed and watered extensively and will lap up the attention and settle down quite happily in their new location.



SANRAL's Victoria Bota at the relocation of the last of about 20 baobab trees from the road reserved for the Musina bypass of the N1 national route

And finally, it rests

Today's baobab swings into its hole and is nudged and shifted into position by the TLBs, which look for all the world like two solicitous dinosaurs fussing over a giant, scraggly baby. Great heaps of sand are piled onto the roots and pounded down to make a muddy nest. I look back at the tree's old hill and it's as if the baobab had never been there.

Having witnessed the move, we depart, intending to return at sunset for a final photograph when the vehicles have left the site.

The sky is resplendent with dazzling streaks of red and gold when we return to bid the tree farewell. A little battered, but not much worse for the wear, the baobab now rests peacefully, towering above the thorn trees, soon to overlook a new freeway – and possibly become a landmark in its own right. I am pleased to have borne witness to how powerfully man can influence nature for the good,

The biggest in the world

Not far from Musina is another, far more famous baobab – the “Big Baobab” in Modjadjiskloof, famous for being the widest of its species in all the world. It has been carbon-dated to be over 1 700 years old and has even been featured on the front page of the Wall Street Journal.

Baobabs that old start to hollow out in the middle and this open space has been put to fairly good use by the owners of the farm on which it grows. It's now a bar that can host up to 60 people. It has even been the site of a few weddings!

Day visitors to the tree are welcome at R25 a head, and children under 3 can visit for free. Why not stop by the Big Baobab on your next visit to Limpopo?

Cultural significance

Aside from being extremely useful trees ecologically – providing food for elephants and baboons and shelter for bees, bats and any other creatures – the baobab is also greatly revered by local Venda communities. Long ago, kings, elders and leaders would hold meetings in the shade of these massive trees to discuss important matters. The shelter wasn't the only benefit, though, as the tribal leaders also believed that the spirit of the baobab would help them to make wise decisions.

Legend has it that the baobab was planted upside down with its roots sticking up as a joke by the gods (others say this was done in anger). But no matter what the beliefs surrounding this magnificent tree, the baobab is an iconic symbol of Africa, known as a provider of all basic needs – food, water, shelter.



Engineers prepare the baobab for the big move



Relocation of one of many shepherd trees from the road reserved for the Musina bypass


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First aid for your car

It is that time of the year again when many South Africans will head off for their long-awaited summer holidays. SANRAL's Southern Region Manager, Mbulelo Peterson, provides a few tips on how to make your journey there and back safer.

"It is always important to obey the rules of the road. Maintain the prescribed speed limit for each area. Wear your seat belt, don't talk on your cell phone while driving and keep a safe driving distance," said Peterson.

He stressed the importance of checking your vehicle before going on a long trip and to plan your trip in advance.

"Make sure your car is in a roadworthy condition. Check your tyre pressure, oil and water. Make sure your tyres are inflated properly and remove tyres with a thread less than 3mm. Also remember to take a break after every two hours when you travel."

Wearing a seat belt at all times can minimise the risk of injury and death in case of a collision and if you're travelling with smaller children, keep some activities handy should you encounter any delays.

Your just-in-case:

Make sure your car is stocked up with the following before any long trip...

First aid kit: Pain medication (tablet and syrup form); antiseptic ointment; scissors; gauzes and bandages.

Cell phone and car charger: Don't just keep your phone on you, keep it charged. You might need to contact emergency services if you or someone else on the road is involved in a crash. Plus GPS and Google Maps are a boon to any traveller.

Fire extinguisher: Figure out where you will place the fire extinguisher in your car – and make sure everyone in the car knows how to use it.

Vehicle safety kit: Highly recommended. This can consist of an emergency safety triangle, a reflective



safety bib and a first aid kit. The reflective safety bib will come in handy if you have a puncture and you need to stop on the side of the road; you can also put out your safety triangle so other cars can see you clearly.

Torch and spare batteries: Very handy if you have car problems at night. Invaluable even.

A word from the experts



Car crash injuries can be minor (cuts, scrapes, burns), or they can be life-threatening and include hemorrhaging and pulverised bones. It is important to recognise the tireless and brave efforts of South Africa's EMTs along our country's highways to save lives and be there when it counts. We chatted to ER24 about what happens on the road and what to do in an emergency.

What injuries do you see the most in collisions?

The most common are back and neck injuries. These are usually associated with smaller collisions and where vehicles overturn, or someone collides with the back of another vehicle. Other common injuries include cuts, bruises and fractures. With motorbike collisions, we often see severe fractures and head injuries. Serious motor vehicle collisions tend to result in head injury and possible internal injuries.

What's the most useful piece of kit to have before the paramedics respond?

A basic first aid kit is always a bonus. It is also important to know how to use it. Always use the gloves in the first aid kit before you touch any patient on a scene – not only to protect you, but to protect the patient as well. Bandages are also important. Stop any severe bleeding as soon as possible. Uncontrolled bleeding is often the cause of death in these situations.

Do not forget to phone emergency services and explain to them exactly what you see – how many vehicles, how many patients, is anyone trapped? Is there a fire?

What do you do if you have no formal first-aid training?

If you have no formal training, do not worry. You can still help. Remember to phone emergency services and ask the agent on the line to provide you with "telephonic first aid". The agent will then guide you on what to do. By simply placing a call to the emergency services, you have already made a huge difference.

Should you wish to assist and have no training, remember not to move the patient. Ask them to remain still where they are. If they are not in immediate danger, there is no need to pull them from a vehicle – this may cause more damage or injury.

If you can see any severe bleeding, tell the person to apply direct, constant

pressure on the wound if you do not have gloves. If you do have gloves, apply pressure and apply a bandage to stop the bleeding. Again, do not move the patient and ask them to remain calm until help arrives.

What should you have in your car's first aid kit?

Usually, first aid kits are stocked with standard equipment, no matter where you buy them from. However, we have seen that many kits do not cater for usage in cars. They are often focused on accidents in the home. So, to ensure you have the correct items in your first aid kit before you buy it, have a look at the contents list. You can also purchase various first aid kits from ER24.

The basic equipment you will need in your first aid kit ranges from bandages (various sizes), gauze, scissors, plasters (various sizes), splints (disposable), gloves (latex or non-latex), a reflective vest and a flash light. Other items such as disinfectant, smaller plasters, personal medicine, ointments, tweezers etc are used at home and not on the scene of an accident. That said, it is important not to administer any medication to someone involved in an accident. Do not give them any of your medication or any water.

What do paramedics need to know before they treat you?

We need to know what injuries you sustained (what we can see visually at that moment). This will enable us to quickly identify the seriousness of the injuries and see if we need to take immediate action for a specific injury or call for further resources.

The second thing we need to know is the patient's medical history and identity. We often arrive at serious incidents where we cannot obtain any information on the patient. We do not know if the patient has any underlying medical condition (which might have contributed to the crash). No information available on the next of kin to inform them where the patient is being transported to. If we cannot establish an identity, we transport the patient to a government facility as an unknown patient. Unfortunately, in many cases people steal wallets, cell phones and other personal belongings from the injured prior to our arrival. Items are also often lost or broken during the crash.



Making friends with owls

N3TC gives The Owl Box Project its wings

In Pietermaritzburg, a group of conservationists has introduced The Owl Box Project as part of a research initiative on the urban ecology of owl species, between the Raptor Rescue Rehabilitation Centre and the University of KwaZulu-Natal.

This year, N3 Toll Concession (N3TC), the company managing the N3 Toll Route between Cedara in KZN and Heidelberg in Gauteng, came onboard to provide much-needed funding to The Owl Box Project.

Project Manager of The Owl Box Project Tammy Caine said: "With N3TC's support, we can now reach far more people and educate more communities on the vulnerability of owls and the need to protect this species."

"We particularly focus on educating children in schools in rural communities. Education is key to the success of any


conservation project.

"Apart from the natural threats to owls, such as being hunted by predators, getting ill, starving, or injuring themselves in the wild, humans continue to threaten the survival of our owl species. Poisoning, direct persecution, habitat destruction and collisions with fences and vehicles make owl populations extremely vulnerable," said Caine.

"In rural areas, fears and superstitions around owls are still rife. We find that working with children in these communities is proving successful to allay these fears."

Since The Owl Box Project started, local residents are far more willing to be actively involved and facilitate owl box installations, rehabilitation programmes and owl releases.

The Owl Box Project has already installed 91 owl boxes for Spotted Eagle Owls, Barn Owls and Wood Owls, among others. Boxes have also been installed for bats and mixed species and 20 release enclosures have been established to facilitate owl releases.

 Check out The Owl Box Project on Facebook at facebook.com/owlboxproject

Prevention cheaper than cure

Adequately maintaining road infrastructure is essential. Bakwena N1/N4 toll concessionaire's commercial manager, Liam Clarke, explains why this is cost-effective and saves millions of rands in the medium- to long-term.

Maintaining a road is exactly the same principle as maintaining your home. If you don't regularly do it, your dream house can turn into a nightmare. Every home will have maintenance issues at some point.

The reality is that the repairs need to be done regularly in order to maintain the home properly. It can be overwhelming to do everything at once, but the good news is that keeping things under control

by following a plan to prevent and repair damage timeously means proper maintenance can be easily managed and cost-effectively achieved.

Routine, preventive maintenance is achieved by creating a checklist of jobs and performing these activities regularly. If cracks and potholes were left unrepaired, it would not be long before they would become a dangerous obstacle for unsuspecting motorists. Bakwena is conducting a resal program on the N4 west, from the M17 Garankuwa interchange to the R24 in Rustenburg. The importance of maintenance cannot be over-emphasised. When funded appropriately and managed well, maximum value is achieved.



Three rhino becoming heavyweights

Much has been written about Trans African Concessions' adopted rhino babies, Wyntir, Tana and Mabush. The care of these three has changed considerably over the last six months. Until recently, the trio were still mostly on a liquid diet, drinking two litres of milk seven times a day. However, they were recently put solely on solid food – field grass and supplemented dry feed.

Each of the rhino consumes about 10kg of food daily, which is complemented with mineral-enriched water. And it's obvious that what they are eating is good for them as they all weigh more than half a ton.

Their typical day at Care For Wild Rehabilitation Centre near Mbombela has also changed from when they were calves. These days, they get an early

start and by 8:30am, they're let out of their boma to graze the camp with other rhino orphans residing at the sanctuary. This allows them to bond with their own species – a vital factor in their rehabilitation. The Centres intends releasing them into the wild again one day.

Allowed to roam, take long naps and graze freely for most of the day, the trio is then returned to the boma they share in the late afternoon, where they are fed dry feeds such as hay and specially formulated rhino pellets.

Of course, with the threat of poaching still very real, the rhino not only have their horns removed regularly, they also have a 24-hour bodyguard team dedicated to their safety.

Beautiful Blueberries

the fruit superhero



In this edition, we focus on blueberries – the little fruit that softens dry skin, boosts your brain and may even help prevent cancer.

Blueberries are in season in summer. To consume fresh fruit and vegetables seasonally makes sense on many levels. It is more readily available and costs less because it didn't have to be flown from halfway across the world. It also has more flavour because it has been ripened naturally. Seasonal sampling also teaches us that there is a time for everything in life. So, eating ripe, beautiful blueberries over the festive season is something to look forward to each year.

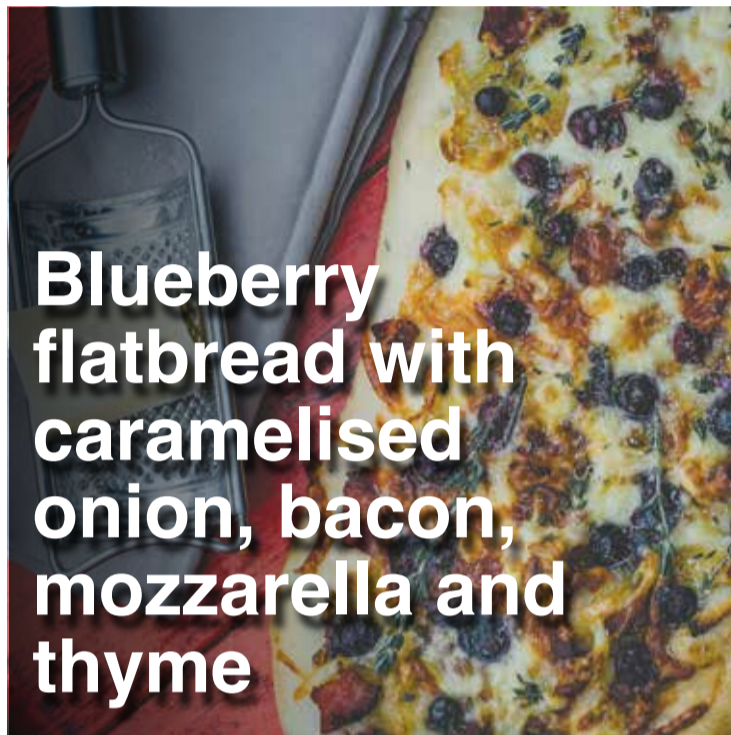
Health benefits:

Blueberries are packed with iron, phosphorous, calcium, magnesium, manganese, zinc, vitamin K, vitamin C, vitamin A, vitamin B6, folate, fibre and various phytonutrients.

- Maintains healthy bones
- Lowers blood pressure
- Helps to manage diabetes
- Can ward off heart disease
- Can help protect cells against free-radical damage
- Assists with healthy digestion
- Increases satiety
- Fights wrinkles

Storing blueberries:

Blueberries can be stored in the refrigerator for 10-14 days. Blueberries also freeze well – up to one year. Do not wash them until they're ready to use. They also don't need to be thawed. Just rinse quickly with cold water and use.



Blueberry flatbread with caramelised onion, bacon, mozzarella and thyme

This fragrant flatbread is ideal for an al fresco lunch or dinner served with a fresh garden salad and a cold beer or chilled white wine.

(Makes 2 flatbreads/ focaccia)

Use store-bought bread dough OR make your own

Dough:

500g white bread flour
1 tsp fine salt
Pinch of white pepper
1 sachet dried yeast
1 tsp caster sugar
2 Tbsp olive oil
2 Tbsp fresh thyme leaves (optional)
325ml lukewarm water

Method:

In a large bowl, combine the flour, salt, sugar, thyme and yeast. Make a well in the centre and pour in the olive oil and water. Using a fork and with circular movements, slowly bring in the flour and mix with the water until the sticky dough comes together. Form the dough into a ball, flour a clean surface and start kneading the dough for up to 10 minutes or until it is smooth and springy.

Rub a bowl with olive oil, place the dough inside, cover and let it rise in a warm place until it has doubled in size. This can take up to 1½ hours.

While the dough is rising, start preparing the toppings for the flatbread.

Toppings:

2 onions, thinly sliced
1 Tbsp olive oil
2 Tbsp butter
Pinch of salt
Pinch of white pepper
1 Tbsp brown sugar
2 cloves garlic, minced

Method:

Heat a medium pan over a low heat and add the olive oil and butter.

When melted, add the onions and salt. Cover with the lid, stir occasionally and cook until transparent and lightly browned. Add the brown sugar, pepper and garlic and cook uncovered for a further 5 minutes. Set aside.

Rest of the toppings:

(Use quantities according to taste)

Grated mozzarella cheese

Smoked bacon, roughly cut and fried in olive oil until cooked but not crispy

Fresh thyme leaves

Blueberries

Method:

When the dough is ready, punch it back to let some of the air out, divide and roll out on a lightly floured surface. You can make two bigger flatbreads or four smaller ones. This dough doesn't have to be rolled out too thinly, because it is more a bread than a pizza.

Lightly oil 2 baking trays and pre-heat the oven to 200°C.

Place your rolled-out dough on the baking trays, make indentations with your fingertips and drizzle olive oil over. Then start applying the toppings (quantities according to taste).

Scatter on the caramelised onion and bacon bits, then the grated mozzarella cheese, sprinkle with fresh thyme leaves and lastly push the fresh blueberries into the dough. Season lightly with sea salt and freshly ground black pepper.

Bake for approximately 30 minutes, depending on the thickness of your dough, until the crust is golden and the cheese is bubbly. Remove and serve warm with grated parmesan.



Refreshing Blueberry-Lavender lemonade

Ingredients:

1 cup water
1 cup caster sugar
2 cups blueberries
A few sprigs of lavender
2/3 cup freshly squeezed lemon juice
4 cups sparkling water

Method:

Place the water, sugar and blueberries in a saucepan over a low heat and bring to the boil.

Turn the heat down and cook for 5-7 minutes, until the blueberries burst open and the sugar has dissolved. Keep aside and add the lavender sprigs. Put the lid on the saucepan and let it infuse for 30 minutes.

Place a sieve over a jug and strain the mixture to get rid of any pips. Discard the blueberry pulp with the lavender sprigs.

Add the lemon juice and place in the fridge until chilled.

When ready to serve, fill the jug up with the sparkling water and stir until combined.

Serve with fresh blueberries and sip while soaking up some summer.



Family business rocks E.Cape roads

Nwabisa Mugubasi with staff of Sokhazimla

A mother-and-daughter team from the Eastern Cape has gained a firm foothold in road construction in the province, developing skills along the way.

Sokhazimla Trading is an active participant in construction activities on the N2 project near Port Elizabeth, where its teams work closely with the main contractor, RoadMac.

Sokhazimla's work included the installation of subsoil drains on the Stanford Road intersection and it was also responsible for glass grids between the Commercial Road and Burman Road off-ramps.

Nwabisa Mugubasi, who works with her mother, Nontsokolo, says her company has benefited greatly from the training SANRAL offers to small and emerging enterprises.

"They go very far to accommodate and empower small contractors. Every opportunity with SANRAL has been positive for us," she says.

Nontsokolo registered Sokhazimla Trading in 2004 while her daughter was still at school. After completing her studies in project management and road construction, Nwabisa gained some experience with an architectural firm before joining her mother in the business.

The company is registered as a level 1 B-BBEE enterprise and has acquired a 2CE PE rating from the Construction Industry Development Board.

The extra mile

"As an SMME, we see the difference SANRAL makes with the training courses it provides," says Nwabisa. "We have benefited from the training, especially gaining experience in the procedures required for the completion of tender documents.

"We hope to grow with SANRAL." Sokhazimla's headquarters are in

KwaDwezi and the company has another office in North End. It employs six permanent staff and can accommodate up to six additional people, depending on the size of the project.

Mbulelo Peterson, SANRAL's Southern Region Manager, says the agency supports the growth of emerging enterprises and job creation through the application of participation goals in all its contracts.

"A predetermined percentage of the main contractor's total contract value must be allocated to the subcontracting of SMMEs," he says.

Creating employment, facilitating empowerment



Theresa Cupido, The founder and managing director of the ATN Group

From humble beginnings, with five employees and two bakkies, a Cape Town company has grown into a successful construction group that has worked on major road maintenance programmes over the past six years.

Theresa Cupido, founder and managing director of ATN Group, says her company has just completed four contracts for SANRAL, to the value of R41m, on the N1 and N2 in the Western Cape.

With its head office in Stikland, ATN is a 100% black- and female-owned company with a primary focus on routine road maintenance and provides work for 50 permanent employees and up to 200 contract workers at a time.

"The work we do includes the general cleaning of road reserves, culverts, repairing flood damage, upgrading of storm water and sewerage pipes,

vegetation control and the construction of gabions," says Cupido.

She first became aware of opportunities in the construction and civil engineering sectors when South Africa was gearing up for the 2010 Soccer World Cup. SANRAL's continued support has helped to grow the company, with contracts enabling ATN to plan ahead for at least three years within a stable environment.

In 2014, Cupido received the award for Job Creator of the Year at the 2014 Sanlam Business Partners Entrepreneur event. The award recognised the significant role she has played in employing and empowering people in the industry.

Paying it forward

"Owning a business and empowering people has always been my dream, as

I grew up in a family of business-minded individuals," Cupido says.

As part of its commitment to training and development, ATN employs both skilled and semi-skilled industry professionals and ensures that there are fixed systems in place to transfer expertise across all levels. This ensures that 2% of its annual turnover is spent on training and internship programmes.

"In addition, our routine road maintenance contracts are split between local temporary labour and contract employees to encourage job creation within the industry. We assist smaller industry players and subcontractors through an enterprise development programme, which creates opportunities to become industry compliant," she says.

Is a driverless system better?

Autonomous cars are not immune to human behaviour

Alexa Delbosc

Human error contributes to 75% of road crashes. Drivers introduce unpredictability into the mathematical simplicity of traffic flows. Unlike machines, people have slow reaction times and short attention spans. If we could eliminate the human factor, we would have cities teeming with safe, efficient cars. Right?

Wrong. As long as there are humans in the transport system, we cannot ignore the human factor. To do so grossly overestimates the promised benefits of driverless cars.

Think like a human

First, there are immediate technological hurdles. At high speeds, all interaction is already vehicle-to-vehicle. We travel too fast on a freeway to communicate at a human level, so we rely on infrastructure and technology to do the work for us – from using indicators to following dynamic signage.

But that changes at low speeds, when drivers do have to interact at a human level – making eye-contact with another driver or giving the nod to a pedestrian.

How will an automated vehicle know whether a pedestrian near a zebra crossing is waiting to cross or chatting on the phone? How will it

process regional differences in body language? Google is already training its cars to recognise a cyclist's hand signals, but we have a long way to go.

Without human gestures, how will the rest of us learn how to anticipate the actions of driverless cars?

Making humans comply

One of the issues with the utopian vision promised by driverless cars – cities where parking is converted into parks, or intersections where traffic lights aren't needed – is that it only works if 100% of the vehicle fleet is automated and individual ownership makes way for a fleet of shared taxis.

But how many people will opt in? If you don't trust the technology; if you get motion sickness; if you enjoy driving classic cars, or if you just don't like the idea of being driven by a car that never jumps the queue, then a driverless car is not for you.

It's no wonder that forecasts of the market penetration of driverless cars vary so enormously. For example, estimates from the Netherlands range from 7% to 61% of the vehicle fleet by 2050. Even if we do reach 100% automation, we still cannot ignore humans.

Smart automated intersections promise to remove the need for traffic lights and allow twice as much traffic to use

the roads. But how will non-automated cyclists approach these intersections? How will pedestrians cross them?

We may reach a stage when the road safety benefits of driverless cars are so evident that non-automated cars are made illegal and we'll wonder why humans were ever trusted to drive. But until that day, we will be living in a messy world of haves and have-nots, with all the infrastructure required for both systems to run in parallel.

No more car ownership

Some claim driverless cars will mean we move beyond individual ownership. Car-sharing systems have existed for decades in the US, yet fewer than 1% of Americans are members. Even optimistic estimates top out at 10% of the market.

Car-sharing has enormous potential in compact cities such as San Francisco or inner Sydney, where individual car ownership is expensive or impractical and many trips can be completed by public transit, cycling or walking.

But if you live in a rural area, have child seats or carry goods in your car, it's unlikely that car-sharing will be desirable for you.

Gaming the system

If driverless cars are owned by individuals, it opens the door to gaming

the system. Humans tend to make any system work for their individual gain. When that happens, the congestion benefits promised by driverless cars are likely to be undermined by human nature.

The more attractive you make driverless car travel, the more people will do it. If you can catch up on emails during your hour-long drive, why bother taking the train?

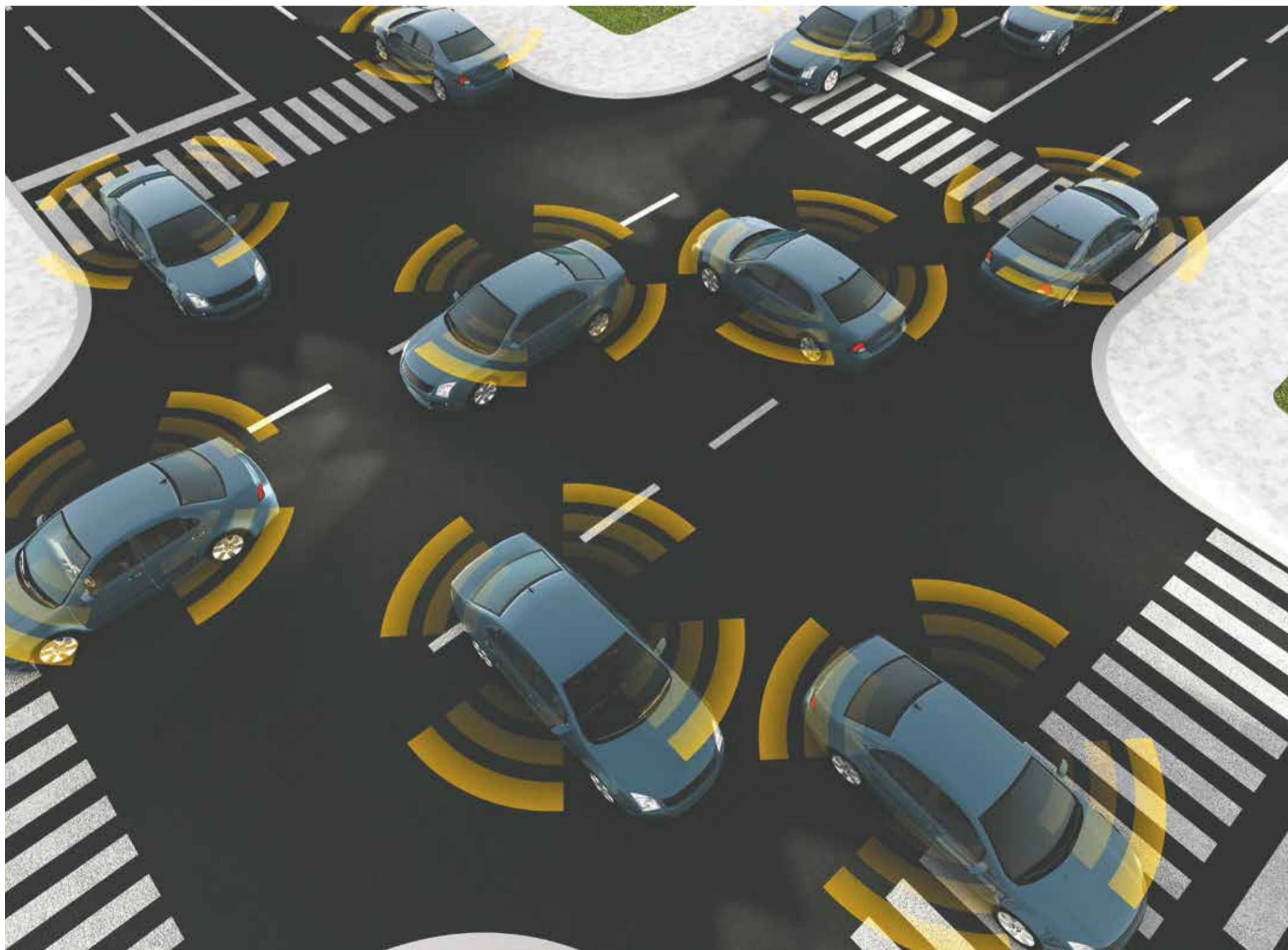
But some of the tactics that might remove the hassle from driverless travel could also worsen it.

Allowing driverless cars to run without passengers opens up enormous potential for exploitation. Why pay for parking when you can send your car back home to park (doubling the trips in peak hour in the process)? Why bother to find a spot at all if your car can circle the block by itself while you order a latte?

Despite all the hype, no one really knows what the future of driverless cars will look like. But as long as humans are leaving their homes, we cannot ignore the human factor.

Dr Alexa Delbosc is a civil engineering lecturer and transport academic at Monash University in Melbourne, Australia

This piece first appeared on theconversation.com/au as "A future world full of driverless cars... seriously?!"



SANRAL-supported students at COSAT shine

If the crop of young people coming through the Centre for Science and Technology (COSAT) in Khayelitsha is anything to go by, our future is in good hands

Mnyamezeli Vandala



Mnyamezeli is the head boy at COSAT. He grew up in Cape Town and comes from a family of five, only one of whom has a regular job. His name in Xhosa means “perseverance” – and not for nothing.

He applied six times for enrolment at COSAT, but every time he was told that the school was full. “But I never gave up,” he says. “I even came to see the school principal, Mrs Cooper, stuttering my words. I think in the end it was my good results that helped me gain admission.”

Mnyamezeli loves all his subjects, but says languages are important to him. “I like books, reading and English. Language proficiency can open doors. I also enjoy acting and poetry.”

His dream is to get further education outside of South Africa and returning to give back to his community. “The biggest challenges for me right now are poverty, gangsterism and crime. Sometimes I am afraid to walk in the township.

“SANRAL’s support means the world to me. I am assured of a decent meal at school, a uniform, class fees and extra classes.”

Mnyamezeli’s dream is to come back from university and apply his knowledge and skills locally, as well as motivate youngsters to follow their dreams.

“I once got a pearl of wisdom at a career exhibition. ‘We are not born to fit in; we are born to stand out.’ This is my message to my fellow students. In order

for you to stand out, you need to set goals and stick to them.

“Some day, I want to be an oncologist. It is a long road ahead, but this is what I want to do. My grandmother died of cancer and I want to be able to help people like her.”

Asisipho Fente



Asisipho was born in Qumbu in the Eastern Cape and her family moved to Cape Town and settled in Khayelitsha when she was in primary school.

Asisipho likes all four of her subjects at school. She finds Physics quite a challenge, but enjoys the problem-solving aspect of it. One of the biggest issues in her life is poverty and the crime in Khayelitsha. “I am so grateful to SANRAL, which supports me with money for transport so I don’t have to walk to school.”

She likes debating and for the past three years, she has represented COSAT at a national level. SANRAL also helps to facilitate the event.

After completing high school, Asisipho wants to keep studying – subjects such as social entrepreneurship, computer science and mathematics interest her.

“I want to be a social entrepreneur and spend my time and energy giving back to my community and creating opportunities for them.” Asisipho’s message to her fellow learners is to have a clear vision and a dream to chase.

Luvuyo Sidumo



Luvuyo enrolled at COSAT when he was in Grade 8 and worked very hard to gain entrance. He comes from a family of five and grew up in Khayelitsha. His consistently good results helped him get into the school.

Luvuyo is passionate about Life Sciences and would like to study medicine after his Matric year in 2017. He sets high goals for himself and wants to study overseas at either Harvard in the US or Oxford in the UK. His long-term vision is to come back to the community where he grew up to open a facility for underprivileged children.

He says poverty remains a major challenge and he is grateful for the opportunity that SANRAL has provided to facilitate his studies.

“My immediate goal is to matriculate with straight-As. Education is so powerful, it has the ability to change your life, but at the same time, you need to set clear goals and have a positive outlook on life – which many of my friends don’t have. I hope I am setting a good example for them.”

Outside school life, Luvuyo enjoys hip hop music and he loves to write songs for his friends about everyday life.

“My role model is Tefelo Mathibane, a former COSAT pupil who is now a third-year student at UCT’s Medical School. I want to follow in his footsteps.”

Pinda Fortuin



Pinda Fortuin is the top student in her class. She grew up in Khayelitsha and lives with her parents and three other family members. Only her mum is presently employed.

For Pinda, poverty is a big challenge. She says she is grateful to SANRAL for providing her with the means to attend school at COSAT. She enjoys maths.

“I just love it when I eventually get the answer to a complex problem,” she enthuses.

Pinda is considering more than one career option at the moment – among them pharmacy and engineering.

Her vision is to return to her community after she has completed her studies and add value to the community. “I would like to help others because I know what it is to struggle.”

She is already helping learners from a nearby primary school with their homework and is in charge of projects.

Her role model is her mum, who has given her as much as she can over the years. Pinda loves drama and acting. She also practices meditation to help find inner peace.

Her message to her fellow learners is: “Don’t compare yourself to others; find your own way. When there are challenges and difficulties, remember that a calm sea does not create a skilful sailor.”





War on wastage

Much of SANRAL's research is aimed at reducing its carbon footprint. Initiatives include use of, and ongoing research into asphalt, which is bitumen-based and more environmentally friendly. Built using

porous asphalt or pervious concrete, water-saving paved surfaces allow storm water to drain through the surface into a catchment area below.

Asphalt also helps filter sediment out of runoff water, which is another

benefit. This surface can turn runoff into infiltration, restore the subterranean water levels of a site, improve water quality and eliminate the need for detention basins. In addition, asphalt surfaces do not leach and so have minimal impact on the environment. Asphalt requires about 20% less energy to produce and construct than other pavements and while there is a reduction in energy during the

construction, there is also less energy consumed by commuters on an asphalt surface.

Recycled roads may sound like science fiction, but we're doing it at SANRAL. We use reclaimed asphalt to reduce the use of resources such as aggregates, bitumen and diesel (not to mention saving on the considerable water consumption in the production of these resources).

Asphalt helps restore subterranean water levels

Drought relief for farmers



The drought in some parts of South Africa has decimated farmland, causing farmers severe financial difficulty and destabilising food security throughout the country.

In a bid to alleviate some of the devastation experienced by livestock farmers, SANRAL concessionaire Trans African Concessions (TRAC) has donated more than 48 bales of grass to Free State farmers. This was after TRAC was contacted by a Barberton farmer, who offered to sponsor the transportation of the grass if TRAC supplied it.

According to agricultural organisations, commercial and subsistence farmers have lost thousands of head of cattle from a lack of fodder. Although the majority of the affected farmers are based in the Free State, quite a distance from the N4 Toll Route, this situation has created a national crisis – not only causing food scarcity, but also escalating food prices. TRAC's donation was made possible

through grass cuttings undertaken routinely by TRAC as part of its concessionaire responsibilities. TRAC teams cut and baled grass in the Schoemanskloof area for more than three weeks, after which the bales were loaded and transported to the drought-stricken areas.

In Middelburg, TRAC packed more than 400 bales, which were donated to AgriSA's Project Hope Grass.

"The drought is a harsh reality for South African farmers. In the cities we are, to a large extent, shielded from the devastating consequences of the worst drought in 30 years," said TRAC CEO Graham Esterhuysen.

"However, it affects every single one of us in one way or another. TRAC believes in lending a helping hand and we have often donated our grass off-cuts to those who request it. It only made sense to send the grass to those most in need this year – the farmers. And we sincerely hope it alleviates their plight."



Impact of drought on road construction

Fast facts about drought

The major drought that caused hardship across South Africa in 2015 also resulted in serious challenges for road construction. For example, SANRAL projects in the Northern Cape, along the N7 to Okiep, had to contend with an increase in the cost of water, sourcing water from areas more distant than anticipated.

The levels of dams and boreholes dropped fast and farmers could no longer afford to assist SANRAL, as they had to prioritise farming needs.

It was a sobering reminder to SANRAL and the road construction industry to take water-saving measures extremely seriously and to explore alternative sources of water.

- South Africa's rainfall in 2015 was the lowest since records began in 1904
- South Africa is the 30th driest country in the world
- The drought is caused by El Niño and climate change
- Some dam levels are as low as 30%
- Food production, particularly maize, has dropped
- The price of staple foods has skyrocketed
- Water management strategies including rations and differential pricing have been implemented in urban areas
- 1.58 billion kilolitres of water a year is lost through system leaks
- SA's water needs will exceed supply by 2030



Drunk driving is the single largest contributor to fatal car crashes

Research indicates that 50% of people who die on the roads have a blood alcohol concentration above 0.05 gram per 100 millilitres. The 2015 WHO Global Status Report on Road Safety shows that while some improvements have been made in South Africa's road safety, there remains a significant room for improvement.

Be a responsible driver and obey the rules of the road.

Road Traffic Management Corporation, a lead agency in road safety.

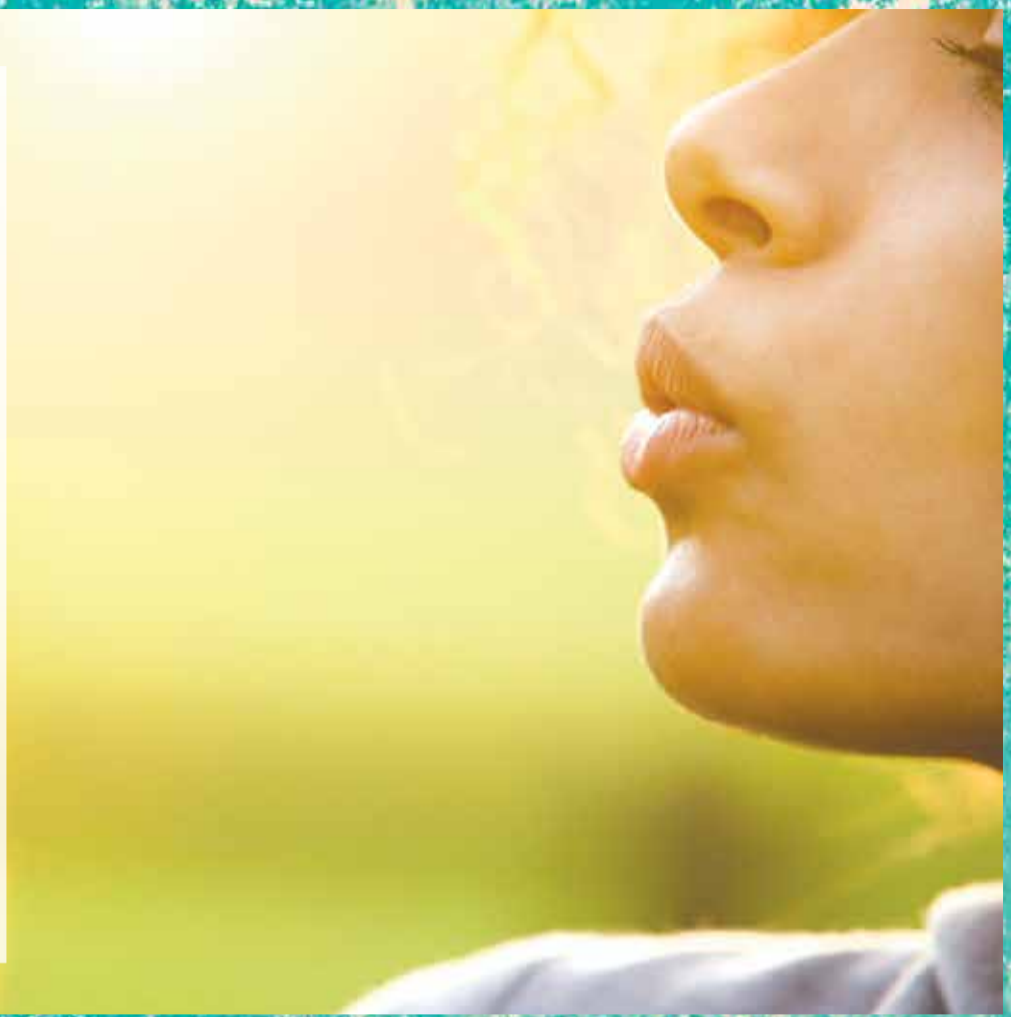


Road Traffic
Management Corporation



Your festive season

survival guide



This year, focus on generosity, gratitude and good cheer

Lebohang Thulo

For the next month or two, there will be no shortage of talk of family vacations, holiday parties and everything in between. While all very exciting, this season can be overwhelming.

But I'm here to argue that it is possible to help navigate the trickier aspects of this time of year.

The first step is to remain focused on the most important part – this is an opportunity for celebration and reflection – despite the ever-increasing noise surrounding the season.

With that in mind – here is a useful guide to make it through the peak of summer.

1. Take time to celebrate

The end of a year and the beginning of a new one is a universal reason to party. For most of us, this means taking part in the various festivities at work and at home. This year, instead of getting caught in all the festive noise, be intentional about your reasons for celebrating – whether it is goals accomplished or making it through a particularly rough year – they are worth celebrating.

2. Reflect

Between the office parties and family reunions, schedule some time to reflect on what you have accomplished this year. What worked? What didn't? What did I

learn? Where did I grow? Who should I thank? What am I grateful for?

3. Give the gift of yourself



So much of the focus of this season is on family bonds. This year, why not expand your definition of family? Give of your time through acts of service. Volunteer to one of the multiple charities and NGOs that work to make our communities better or help to spread the cheer by making a donation – even if it's cookies from the holiday batch you baked.

4. Don't overcommit

As much as the holidays are a time to spend with family and friends, it's worth remembering that you also need to give yourself plenty of time out to relax. Take an afternoon walk, listen to great music, get a massage, visit a spa, read a book, watch those movies that you somehow never got to throughout the year.

5. Declutter and organise

Along with new experience and memories, most of us pick up quite a

bit of "stuff" along the way. By clearing out some of the clutter, not only may you find something that you can donate to others who might need it – but you also get to start the year on a fresh, more organised footing.

6. Manage the shopping stress

Believe it or not, there are some people who see the inside of a shopping mall more times in December than they do the whole year. And even for some of us who are regular shoppers, this season can be a bit stressful with all the Christmas shopping ads and crowds. If you can't avoid malls altogether, stick to these rules: shop online if you can; shop with a plan and, most importantly, don't go to a shopping mall on Christmas Eve.

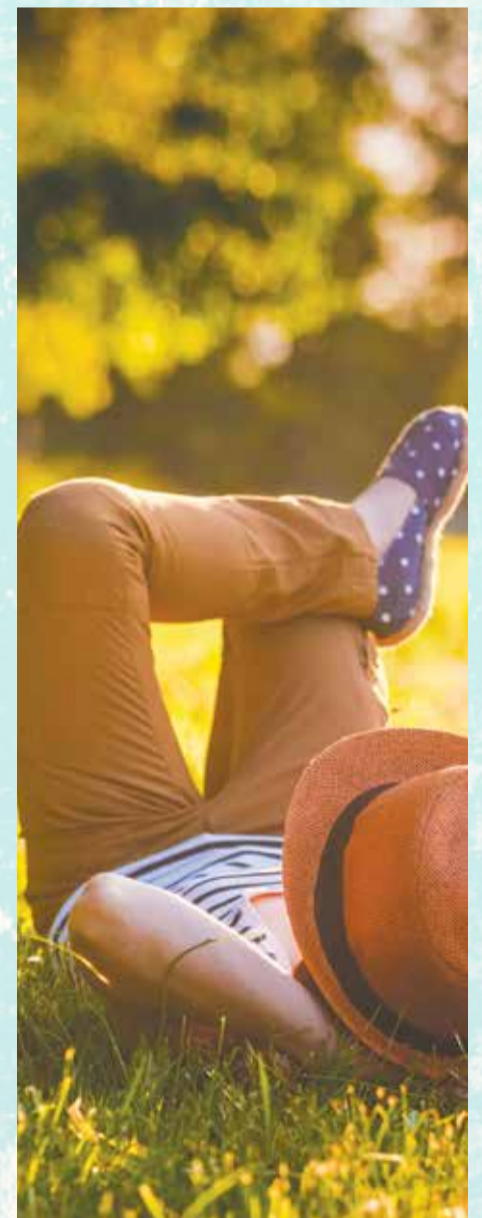
7. Bring the fun to you



If you can't make it to the fun, bring the fun to you. This message is for those who have to work during the festive season. Allow some holiday spirit into you. It's bad enough that you have to work while family and

friends might be on holiday, so a fun, lighthearted environment at work can still be highly productive.

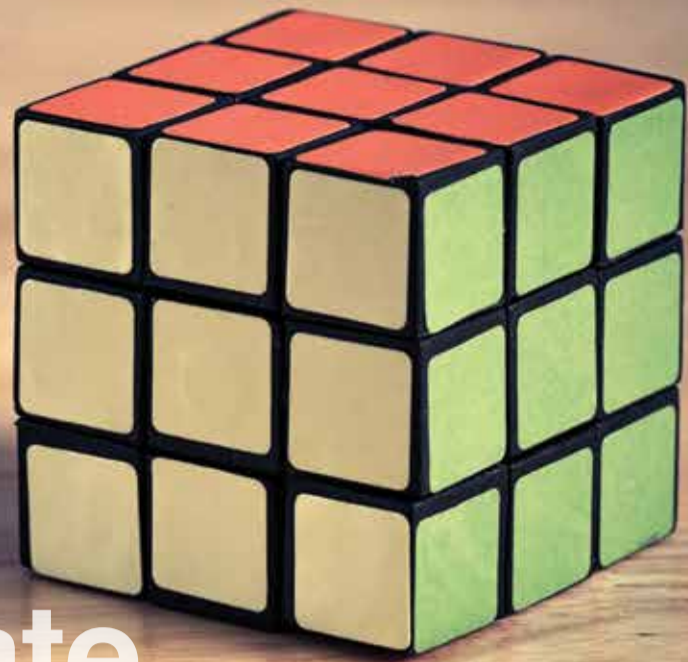
8. Say thank you



Maybe there's someone out there who has made a real difference to your life this year. In a world of SMSs and emails – go the extra mile and send a handwritten note to say thank you for what they did and tell them how it impacted your life.

Scramble your brains with our boffin-baffling crossword puzzle

Captivate & fascinate



CROSSWORD Some answers can be found in By The Way

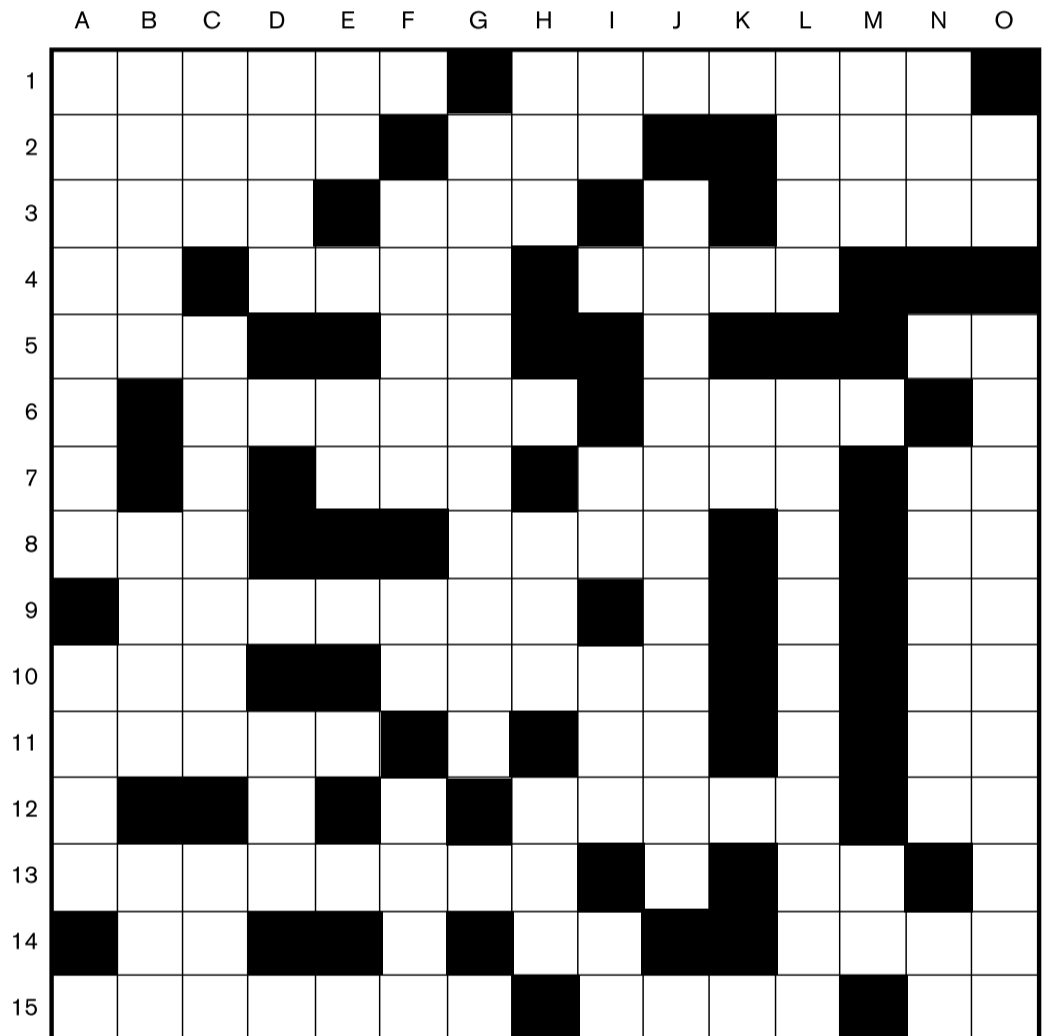
ACROSS CLUES

- A1: What tree was removed and replaced by SANRAL on the N1 highway to Beitbridge?
- H1: First name of SANRAL's Peterson, who gives tips on safer journeys
- A2: Opposite of higher
- G2: Parson bird or abbr. for Port of Entry
- L2: Motion away from higher up
- A3: Defined space for a particular use
- F 3: Slang for debutante
- L3: Surname of SANRAL's exiting CEO
- A4: Abbr. for Saint
- D4: Hindmost part of car or whatever
- I4: Thin skin or coating; also used in photography
- A5: Expression: "Tit for....."
- F5: Abbr. for Resident Magistrate
- N5: Slang for "yes" or "fine"
- C6: Name one of the 3 rhino adopted by Trans African Concessions
- J6: Indian language. Other than Hindi
- E7: Donkey
- I 7: Sail in the air without flapping of wings or use of an engine
- N7: Common for mother
- A8: Bowels or entrails
- G8: Exchange by way of barter
- N8: Affirmative answer or vote
- B9: Little seaside townlet in SA with some 1000 inhabitants
- N9: Abbr. Delaware
- A10: Four-winged social stinging insect
- F10: Acronym for Centre for Science and Technology
- N10: Afrikaans abbr. for East London
- A11: Mistake
- I11: To exist
- N11: Abbr. for Defence Intelligence
- H12: Transparent precious stone –pale green, light blue, yellow or white
- N12: Exact or proportionate position

- A13: New CEO of SANRAL
- L13: Unit for measuring
- B14: 6th note on music scale
- H14: Irish for dad
- L14: Iranian title
- A15: The world-renowned one "who took a long walk to freedom"
- I15: Tools for loosening soil or turf
- N15 Abbr. for South Africa

DOWN CLUES

- A1: Act of blowing up with explosives
- B1: Great artery issuing from heart
- C1: Under obligation to pay
- D1: Grizzly and polar are members of the family
- E1: Symbol of Argon
- H1: Rabble, tumultuous crowd
- I1: Shakespeare: "to... or not to..."
- L1: Round, yellow Dutch cheese with red rind
- M1: Texting "lots of love" or "laugh out loud"
- N1: Which night bird gave its name to the ... Box Project"
- G2: What is another name for informal consent to treat an accident victim
- O2: Symbol of nickel
- F3: Small, pointed missiles
- J2: Transport Minister's full name
- C5: Succession of light chirping sounds
- O5: Where in Cape Town is the Centre for Science and Technology?
- E6: Symbol for sodium
- K6: Symbol for radium
- L6: What type of car will remove the human factor from the traffic system
- I7: "I told you..." – warned in vain
- N7: First name of SANRAL civil engineer Mthembu
- B8: One who uses
- H8: Past tense of "is"
- F9: Abbr. of "carbon copy" or "cubic



* Solutions to this crossword can be found in the next issue

- centimeter"
- A10: Bright light or look or smile
- I10: Short for Abraham, eg ...Lincoln
- D11: Expression of surprise or exultation
- F12: When water or liquid heats up
- H12: Not good
- B13: French for "In the manner of" – two words
- C13: Metal vessel for keeping or preserving of food
- M13: Abbr. Medal of Honour
- I14: Expression of sorrow or regret
- N14: Roman copper coin or abbr. for Anglo-Saxon

