With rapid urbanisation and growing population in Africa, what we must now focus on doing (and legislation will be required) is to capture rainwater as close to where it falls and use it appropriately – the concept is called “at-source rainwater management.”

At-Source Rainwater Management Methods

Green roofs and vertical greenery
The increased use of green roofs, which has gathered significant momentum over recent years, presents a vegetated surface, which will capture and use rainwater for plant growth. Green roof systems have been shown to retain 60-100 percent of the rainwater they receive. Beyond improving rainwater retention, green roofs also act as natural filters to improve the quality of rainwater discharged into drains.
Sub-surface water management
This technique, utilising modular tank systems, allows cost effective rainwater management on any scale due to its versatility. When encased in an impermeable geomembrane, the tank system can be used for harvesting and retention (or storage) of water, which can then be pumped and put to good use.

Simple steps, such as replacing concrete pipes or open culverts with engineered, reinforced vegetated channels, can have a massive impact on both the quantity of water discharged into a natural waterway following a storm event, and also the quality.

Permeable natural surfaces
Frequently overlooked, there are many options for designers that provide a pervious surface that result in natural drainage into the ground underneath. Permeable surfaces do not require additional drainage measures and are very cost effective compared to traditional construction methods.

Permeable hard surfaces
Several methods are available to construct permeable hard surfaces using tiles, stones and timber. One of the most common is to create elevated decking, pedestrian walkways or roof terrace applications using pedestal support systems.

These pedestal supports can effectively form a void beneath the deck, which in some cases can be up to 1 metre, for rainwater to drain off quickly to sub-surface treatment systems rather than running off or ponding at the surface.

Similar to green roofs, vertical greenery systems with substrate contained for planting can store substantial amount of water for later use by plants.
Our Challenge
Right now few countries have any policies in place in regards to at-source rainwater management, but there are plenty of guidelines that offer advice. For example, Singapore’s PUB have launched the ABC Water Programme, so if a development follows certain criteria, they are awarded points, and then after achieving a certain point value, the development can apply for certification.

However, there are only a few countries in the world that have effective legislation, and it will take more pro-active governments to make at-source rainwater management an enforceable legislation with urban drainage management plans; when they recognise this as a priority.

Conclusion
We are faced with water shortages especially in urban environments – due to changes we have adopted in how we use our land, and the rapid growth we are experiencing – especially in Africa – is not going to stop.

We need to build cities with pervious surfaces, engineer adequate storage for rainwater, allow this water, wherever possible, to be reintroduced back into the environment as effectively as possible and replace the concrete, asphalt, roofs and roads with as much vegetated or permeable surfaces as possible.

THE NEXT STEP
Thank you for reading this article and should you require further information on innovative solutions for at-source rainwater management, do enquire with our technical representative present at Booth 517 during the Cape Construction 2017 Trade Expo.