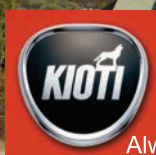


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ON THE COVER

Historical gardens. See article on page 25.

OBITUARY: RENZO DERKSEN 1970-2016

Renzo Derksen was born in Pretoria, the youngest of five children, and matriculated from Hoerskool Pretoria Noord. Thereafter he studied for his National Diploma in Horticulture at the (then) Pretoria Technikon. Whilst still studying, he ran his own landscaping business and left the technikon course to pursue business opportunities within the industry.

In 1995 he was employed by Exotica Retail Nursery and being willing to start at the bottom, he worked on the nursery floor selling plants. This broadened his already existing plant knowledge and his potential was soon realised. He was promoted to the wholesale and marketing side of the business and spent a further five years gaining more experience in sales and business management.

He left Exotica and joined the maintenance division of Real Landscapes in the late 1990's, developing this in the Pretoria region where he made excellent connections with new clients and suppliers. Many of these remained loyal to him throughout his career, appreciating his charisma and dedication.

He was later appointed as the Pretoria director of operations under the Servest banner, further expanding this division into interior plantscaping and rentals. In addition he started the landscape installation division, a challenge he was very excited about and in which he achieved great success. Under the Servest banner of Golftek, he moved into golf course construction, reinforcing his firmly held belief that nothing was impossible if you put your mind to it. With Golftek, he worked on projects such as Eye of Africa and the Highland Gate golf course in Dullstroom.

In pursuit of further challenges, he left Servest and tackled a two year installation project for a hotel group in the Seychelles. He then returned to South Africa and founded BoldGreen, of which he was director for six years until his passing. BoldGreen specialises in installation of new projects as well as maintenance, in the fields of business, industrial and residential landscaping. The company presently has maintenance sites in Durban, Cape Town, Johannesburg and Pretoria, and some installation work has also been undertaken in Windhoek, Namibia. In everything he did with BoldGreen,

Renzo Derksen



Renzo's aim was to help build a future for all its employees. A puzzle banner in his office stated his vision for the company: landscaping should be fun, have quality, care about people and look after the environment.

During the course of his landscaping career, Renzo received numerous SALI awards with the help of his co-workers, who looked up to him with huge respect. He successfully undertook installation and rehabilitation work for Lengau Lodge in the Waterberg, receiving awards in the categories of Best Waterwise Project, Best Construction and Best Overall Award for Landscaping.

Renzo loved exploring nature and enjoyed cycling, woodwork, renovating and motorbike riding. With his eye for quality and being a perfectionist, he assisted his wife Esmé with her jewellery making business. He loved trees and could sit and stare at their beauty for hours on end; his favourites were *Acacia galpinii* and *A. sieberiana*.

Ever the prankster, Renzo was known to remove his shoes at parties, insisting that others do the same. He would dance with all his friends and later sneak up on them saying "Waa jou koene?" (where are your shoes?)

Renzo was very close to his 83 year old mother and had weekly dinners with her on regular basis. He also had a close and loving relationship with Esme and her two grown children, Martin and Odette, from her previous marriage. They were a close knit family who spent time together.

Gustav Malan, a long-time employee who supplied the information in this obituary, says Renzo was "a mentor, boss, colleague, friend of note and an excellent contractor. His teachings, wonderful people skills and knowledge will live on in everyone who had the honour of knowing him. A massive tree in the forest has fallen, but it opens up the canopy for sunlight to hit the forest floor and for seedlings to sprout again."

Landscape SA extends its heartfelt condolences to his family, friends and colleagues. Rest in peace Renzo.

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East side garden and guest lodge

SPANISH FARM GUEST LODGE

The landscaping of Spanish Farm Guest Lodge in Somerset West, Cape Town was designed and installed by Graham von Hoesslin of GvH Landscapes. He received a SALI Gold Award of Excellence for it in the category of Landscape Construction with In-House Design, as well as the Mayford Trophy for the Best Use of Colour in the Landscape.

Von Hoesslin says his brief was to create a natural, predominantly indigenous garden with the emphasis on colour and plants that would attract wildlife, for example fruiting and flowering plants to attract nectar feeding and fruit-eating birds, as well as flowering plants that would attract bees and butterflies. The client had a fairly large cycad collection which was rescued from the excavation of the site and kept in a nursery to be replanted into the new garden.

Von Hoesslin's design philosophy was to integrate the garden as naturally as possible into the existing, surrounding fynbos. The guest lodge was designed around an eco-friendly concept integrating roof gardens and eco pools with effective, natural planting selected from species of the Cape floral kingdom. These blend the lodge into the natural fynbos backdrop and beautiful mountain and ocean views. The property is situated at the base of the Helderberg mountains, on an old homestead that formed part of the greater Spanish Farm before it was sub-divided for residential purposes. In clear weather, Cape Point is visible.



Main homestead fire pit and seating area next to the pool

Hard landscaping and eco pools

Von Hoesslin says the site was "quite a challenge" as it had heavy clay soils and the terrain was very steep; retaining walls and terraces were therefore installed in the form of gabion walls and natural terracing with rock. Large amounts of topsoil were brought in for the flower beds and backfilling of terraces.

Pathway steps were made out of authentic sleepers and large sandstone boulders were used for soil retention, in conjunction with the step construction. Natural pine bark was used as the material for pathway surfaces.

The eco pool consists of four swimming pools which are all interconnected with natural filtration ponds; water is filtered by means of aquatic plants such as *Juncus effusus*, *Gomphostigma virgata*, *Cyperus papyrus*, *C. alternifolius* and *Typha capensis*. Anthony Philbrick of Wetland Pools designed and installed the eco pools, which are all linked together, with the wetlands forming the peripheral planting to the gardens. There is a long stream through which the water flows, moving from pool to pool and from wetland to wetland. Different plants were placed in different areas, so some wetlands have deep water and tall *Cyperus papyrus*, whereas others have water lilies. The bigger the wetland the more stable it is. This system is very stable and large, containing in total 313 cubic metres of water.

The whole system runs on five pumps, drawing an average of 200W per pump. The pools are designed so that each one overflows into a wetland and the surface of each pool is well skimmed at all times. Because each pool or wetland overflows into the next, the system works like a long river and the bottom wetland is then filled to keep the whole system topped up.



Lower south facing garden with interconnecting pathways leading to guest lodges



View from the main homestead looking south over the roof gardens in the direction of Cape Point



Roof garden on top of main homestead garages, with *Lavatera thuringiaca rosea* in the foreground



Pelargonium peltatum cascading over gabion walls



Main entrance avenue into Spanish Farm



Sleeper pathway leading through the meadow garden to the main lawn terrace

Soft landscaping

New garden species used were selected mainly from plants of the Cape floral kingdom but there are some old fashioned exotics including *Murraya exotica*, *Camellia japonica*, Fuschia hybrids and Hydrangeas. Von Hoesslin says the farm's old, existing garden still comprised "old fashioned favourites" and he therefore selected some of these to tie the project together. There was also an old cycad collection spread out through the garden; these included *Encephalartos brevifoliolatus* and *E. arenarius*.

He says that in nature, one finds all colour combinations and he therefore was not restricted to a specific colour palette. "I've therefore used soft pastel colours as well as bright oranges, pinks and reds. Plant species and combinations were selected so that there would always be something flowering throughout the year, but the garden is at its best in spring and summer," he explains.

The following plant types were used: ● bulbous: *Watsonia* sp. mixed, *Crocsmia aurea*, *Chasmanthe bicolor*, *Babiana* sp., *Crinum moorei*;

● herbaceous perennials and groundcovers: *Scabiosa incisa*, *Agapanthus praecox* (Peter Pan, Africana, White Ice, Black Panther); ● flowering shrubs: *Orthosiphon labiatus*; *Salvia chameleagnea*, *Salvia africana* Lutea, *Protea cynaroides*, *Erica* "Fairy Bells" and *Leucadendron argenteum* (there were existing specimens of these growing on the site); ● trees: *Diospyros whyteana*, *Combretum erythrophyllum*, *Curtisia dentata*, *Salix mucronata*, *Celtis sinensis*.

Numerous water wise species were used and the garden has experienced two very dry summers since installation, but managed to survive. Kikuyu lawn was selected at the client's request to fit in with other existing lawn areas on the property.

Irrigation on the site is mostly above ground watering, with a borehole at the bottom of the property feeding holding tanks from where the irrigation system and pumps are fed. Drip irrigation is used on the roof gardens to minimise water loss due to the strong winds experienced at certain times of the year and the intense heat in summer.



The eco pool

Roof gardens

The roof gardens were designed by the architects, Lennard and Lennard, as an eco-friendly concept to green the building so that it would blend into the natural environment and “disappear into the landscape”. Species used on the roof gardens were selected to be drought hardy and resistant to the strong winds experienced frequently.

The main house at Spanish Farm overlooks the guest house project, hence the planted roof for the latter. Planting was done in shallow soil on flat concrete walkways with a steel I – beam edging and in variable depth soil on top of flat barrel vaults over the living/dining and kitchen areas.

Preference

Von Hoesslin says he prefers to do his own design work as he enjoys the creative inspiration that comes from this. “Being involved in the process from the beginning is an evolving thing because in many instances, the project is already underway when various unknown factors and challenges arise, particularly when we start earth shaping. There are sometimes additional requests from the client which we can then easily accommodate, leading to a good end result.” **lsa**

Information and photos supplied by Graham von Hoesslin of GvH Landscapes.



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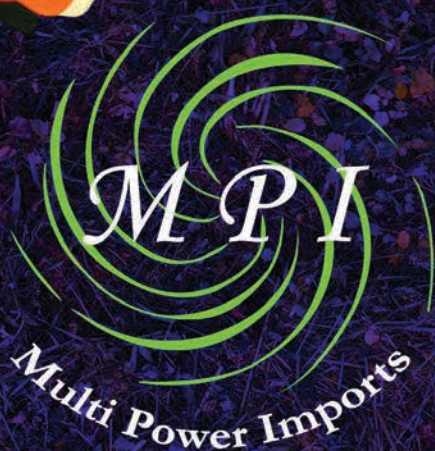
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The hotel and eco pool



HOTEL VERDE

Project Team

Client: Hotel Verde, Cape Town

Landscape Design and Installation: Pink Geranium Nursery

Sustainability: Ecolution Consulting

Hotel Verde, a short distance away from Cape Town International Airport, was opened in 2013 and is the first hotel in Africa to offer carbon-neutral accommodation and conferencing. The hotel is energy efficient, has a grey water recycling system and a “zero waste to landfill” goal. These and many other aspects have earned it a 6 star rating from the Green Building Council of South Africa (GBCSA). It is also the only hotel in the world to have received a double platinum LEED certification from the United States Green Building Council.

James Fisk of Pink Geranium Nursery was engaged to design and install a vertical green wall at the hotel and while this was underway, the client rented the adjacent property which was a detention pond. Once this had been secured, the brief was to create a beautiful area where hotel guests could exercise and relax. Fisk's design philosophy was therefore to design a sustainable landscape that was well-suited to the environment. With the surrounding areas in close proximity to the airport having a “stark and industrial feel”, he set out to create a garden where guests could feel “at home, away from home”.

The advantages of the site were that access to it was easy and water was plentiful due to the high water table (sub-terranean water) in the area. “You can practically dig for water by hand,” says Fisk. Disadvantages were that he and his team were landscaping in sand and had to use large amounts of compost. The area is also windy and this was dealt with by

planting pioneer plants as well as a higher density of plants per square metre.

Soft landscaping and planting

The landscaping is required to increase the site's biodiversity, as well as that on the adjacent land. It is mostly indigenous with year round colour provided by Aloes, Arums and Kniphofia in winter, Euryops, Pelargoniums, Vygies, Pincushions and Proteas in spring, Agapanthus “Purple Delight” and “Hanneke” in summer and drifts of Leonotus and Crassula varieties for autumn. All plant material is hardy and well-suited to the site and the selection used has attracted a good range of insects and birdlife to the garden.

Only a very small area around the pool has lawn as it consumes much water and requires regular mowing, detracting from the hotel's ethos of a sustainable landscape.

Trees, which were hand-selected by the client from Just Trees in Paarl, were planted in drifts and clumps; near the eco-pool a small Milkwood forest has been planted, and at the outside gym area there is a forest of *Syzigium cordatum*. Other trees include *Acacia karoo*, *Ficus natalensis*, *Erythrina lysistemon*, *Syzigium guineense* and *Podocarpus falcatus*.

Although food waste is removed by a commercial composting company, a portion of it is kept and composted on site to provide the compost needed for the hotel's gardens. Another small portion of the food waste is composted by means of Bokashi.

Vertical green wall

The green wall installation was a Wallflore system imported from The Netherlands and the first to be installed in Africa. Fisk says he made a special trip to The Netherlands in order to study and understand the installation procedure and method.

The client requested a double sided green wall that would act as a room divider; one side to face the lobby and the other to face the bar.



Above and below: The eco pool is cleaned by water being circulated through aquatic plants



In order to construct this, a steel frame was required to mount the wall panels. The client also asked for an organic shape that ran horizontally across the wall.

In terms of plants used, Fisk says he was guided by what European countries are planting on indoor walls and blended local plants such as *Plectranthus*, *Crassula* and *Senecio* into the wall.

Grow lights were installed to compensate for the lack of natural light but stretching of plants still occurred on the darker side of the wall and many had to be replaced. Fisk says the plants that responded best were a range of ferns as well as *Chlorophytum*. Foliage is the most important factor when installing an indoor wall and this needs to be sustainable, he says. Another critical factor for the wall is the maintenance programme; plants require pinching, pruning and feeding at regular intervals.

The wall is irrigated with a drip system positioned above and below the panels, and a pump with a timer provides the correct amount of water. Irrigation times are adjusted at the beginning of the process so as to determine the correct cycle lengths. Unlike other walls where water is captured and recirculated, here only the exact amount required is provided and only one pump is run, as opposed to two if water was being recycled. Since the water is not being recycled, there is no chance of contamination. A drip basin has been sunk into the floor to catch and discharge water should a leak arise in the irrigation line.

Hard landscaping

A circular jogging path was installed by Pink Geranium Nursery around

the garden, the centre of which is a wetland covered with reeds. (It was originally a storm water attenuation pond that became a wetland over time). The wetland creates good scale and a “wildness” to the garden, according to Fisk. Prior to intervention by the hotel, the wetland was slowly degrading, with litter and rubble being dumped into it. However with rehabilitation and landscaping, it now contains numerous types of indigenous vegetation and the hotel’s gardeners have been using the fertile soil of the restored wetland to grow organic vegetables and herbs.

Use is made of a vertical aquaponic system and Tilapia (edible fish) are found in the water tanks at the base of the system. They feed on the algae growing in the tanks and the nutrients of their waste, once broken down by a biofilter, feeds the plants. They are also occasionally given fish food. Plants are harvested and regrown constantly, and the aquaponic system allows for sustainable food production. It also significantly saves water compared to traditional planting methods, as there is very little evaporation.

A wooden bridge traverses the southern corner of the garden and an outside gym area with equipment is tucked away underneath the *Syzygium* forest.

Eco swimming pool

The eco pool was designed and installed by Dr Jerome Davis of Eco Pools & Aqua-Design, who provided the following information.

The pool is situated at the back of the hotel, on what was, he says, “a sodden dumpsite”. This was cleaned up and a healthy wetland established. “The pool and wetland now communicate with each other visually”, he states.



Outdoor gym area under a forest of Water Berry trees

In order to keep the water clean, it is circulated between the SwimZone and the EcoZone with a low wattage submersible pump. As the water moves through the gravel bed and root zone, the plants, microbes and animals in the ecosystem draw nutrients out of the water, and it thus becomes too low in nutrients to support algae, thereby keeping the water clean. At the start of the project, a sample of the water used to fill and top up the pool was tested and based on the results of this analysis, specific mineral gravels were chosen for the EcoZone filtration beds that would balance the water chemistry. This means optimal conditions for microbial life and a greater capacity for nutrient absorption. Special high performance bacterial filters were also installed to reduce nutrient levels further.

A variety of mostly indigenous wetland plants were chosen for their ability to thrive in permanently wet conditions, as well as being best suited to the water chemistry. Some species were chosen as pioneers, growing quickly initially and filling the space. Others were selected to be slow growing so that as the nutrient status of the water matured, the slower growing plants assumed dominance, as would occur in a naturally evolving wetland. Taller species were planted at the outer edges of the EcoZone and smaller species towards the middle, mimicking what would occur in nature.

Plants include a variety of aquatic mints, *restios*, *juncus*, *cyperus*, *cotulas* and other water loving herbaceous flowering plants, arum lilies, water lilies, waterblommetjies, Louisiana iris and a variety of submerged aquatic plants (oxygenators). The system is also home to bullrushes and reeds whose seeds blow into the EcoZone from the adjacent wetland.



Wetland jogging trail

A deck was constructed using a pine base and covered with Balau planking. There is a service hatch in the decking to access the pumps.

Rooftop garden

Above the reception area, a vegetative roof garden has been planted with indigenous and non-invasive material. This feature not only impacts on the biodiversity of the area but is also energy efficient; it acts as a thermal barrier, cooling the reception below and reducing the need to use air conditioning. This lightens the building's energy load.

The roof garden was installed by Bettina Haug of Euflorea Landscaping, who used 40m³ of topsoil and a special compost for the *Leucadendron* varieties planted on the roof. Topsoil was brought up to the roof with a finger pole crane which had to stand 10 metres away from the building because of the basement garage below. All plants were brought up by hand over a scaffolding and the entire project took eight days to complete.

Haug says the microclimate of the rooftop was very variable due to wind, deep shade and sometimes permanent sun. She used clivias, arum lilies, proteas, fynbos, vygies and *Aloe thraskii* as focal plants. Drip irrigation was installed and to protect the waterproofing, a zipcore dorkin sheet and biddim was used, with gravel for drainage.

Irrigation

Freeflow Irrigation installed a drip system for the project and rain water is harvested, filtered and stored in the basement. Roof water is also

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Stone and wood sculpture in the hotel's garden



The aquaponic landscape system allows for sustainable food production

harvested and filtered through a high tech Wisy filter before being stored in the basement with the sub-terranean water.

Sustainability

André Harms of Ecolution Consulting was involved with all the sustainability aspects of the project and says his brief was to ensure that the hotel would be Africa's greenest, at the same time showcasing that luxury and sustainability are not mutually exclusive.

The impact of the accommodation and conferences are carbon neutral, meaning that scope 1 and 2 emissions (for which the hotel is directly responsible) are offset via a certified, audited and trackable carbon offsetting scheme with a project in Zimbabwe called Kariba REDD+.

Harms says that energy resources received the largest number of interventions during the hotel's design and construction stages, some of the highlights being the following:

- careful passive design strategies to minimise heating and cooling loads while allowing maximum natural light into the spaces. These include insulation, shading, double glazing and spectrally selective glass;
- re-generative drive elevators;
- hyper-efficient ground source, heat pump based heating, cooling and hot water system;
- efficient and intelligent lighting;
- intelligent BMS for monitoring, alerting and control;
- photo voltaic solar panels for renewable energy, of which a portion, on the northern façade, is carefully placed and angled to provide shading to the bedroom windows below;
- three vertical axis wind turbines at the main entrance; and
- power generating gym equipment.

The grey water recycling system collects water from showers and baths and biologically processes it to produce colourless and odourless water for toilet flushing. Rain water and subsoil drainage water is collected in a 40 000 litre stainless steel tank and used for the drip irrigation system, car washing and rinsing of hardscapes. Bathroom fittings and fixtures are low flow and aerated, toilets are dual flush and low flow, and urinals are waterless.

In terms of procurement, waste management and recycling, the principles of an Operational Material Management Plan are implemented on an ongoing basis to design waste out of the hotel rather than dealing with it at the 'end-of-pipe'. This has less of an environmental impact than merely buying and then recycling or composting. These practices are in place and

Drip irrigation on the rooftop garden



View of the hotel from the rehabilitated wetland



The roof garden is planted with indigenous and non-invasive plants. It acts as a thermal barrier and cools the reception area below, reducing the need for air conditioning.

carefully monitored and currently the hotel diverts more than 90% of its waste from landfill. Re-use or up-cycling initiatives also reduce waste further.

During construction, waste was separated and diverted where possible, through re-use and recycling. Clean building rubble was used in gabion walls or backfill and used construction material such as wooden formwork or metal was donated. The principle of dematerialisation was applied during construction to achieve the same outcome with less materials. This saw the installation of thousands of void formers in the concrete floor slabs and resulted in 1279 tons of concrete being avoided, while making the building's structure 34% lighter.

The hotel received a six star Green Star SA (GSSA) Certification for existing building performance and operation, the highest rating possible. Certification for design and construction was from the United States Green Building Council and is called Leadership in Energy and Environmental Design (LEED). The hotel achieved a Platinum LEED certification, also the highest available from this internationally recognized certification scheme. For the operational phase, over and above the 6 star GSSA certification, the hotel also achieved a LEED Platinum certification for Existing Buildings Operations and Maintenance in 2015, about 18 months after the design and construction certification. **iso**

Information supplied by Pink Geranium Nursery, Ecolution Consulting and the Hotel Verde website. Photos supplied by the Hotel Verde Marketing Department.

THATEGO HOLDINGS COMPANY PROFILE

Dorcas and Thabo Malefetse, founders of Thatego Holdings



An incubation programme developed by Property Point unlocks opportunities for SME's operating in South Africa's property sector. Property Point is a Growthpoint Properties initiative, and the programme provides entrepreneurs with mentorship, training and development support to expand small businesses into fully sustainable companies.

Thabo and Dorcas Malefetse are the owners of Thatego Holdings, a landscaping company based in Johannesburg. It was founded in 2000, undertaking landscaping for private homes. In April 2016 the husband and wife team received a runner-up award for best performing business within the incubation programme. The monetary prize they received will be re-invested in the business to purchase equipment for sportsfield maintenance, an area into which the company wishes to expand.

Background

Thabo is the director and founder of the business, but started his career in the pharmaceutical industry, obtaining a B.Pharm degree from the University of the North. He also studied marketing through Unisa and holds a B.Comm degree with marketing as his major. His "green" interests started out as a hobby, eventually developing into his full time career when he completed a six month course with landscaper Jo-Anne Hilliar at Lifestyle Garden Centre. The course comprised landscape design, layout and maintenance, as well as a practical component and business aspects.

Thabo is the CEO and is on the operational side, running sites on a daily basis and interacting with the site supervisors. "I like to get involved with my hands", he says.

Dorcas is MD of the company and says she wears "about ten hats", including finance, marketing, some training and client liaison. She obtained a B.Comm Financial Accounting from Unisa as well as a National Diploma in Landscape Technology from TUT. She too did the Jo-Anne Hilliar landscaping course and completed basic landscaping, design and business practice subjects.

Both claim that they "know their own strengths" and bring these to the running of the business.

Company mission and vision

Since its inception, the company's ethos has been to provide its clients with a high level of service, expertise and dedication. All work undertaken has its own individuality and exclusivity, and the final product is unique in its execution. The company is committed to improving the quality of life of local communities, poverty alleviation, skills transfer and using resources efficiently to ensure profitability to all stakeholders.

Thatego Holdings strives to become a customer-orientated, dynamic player in the field of landscaping and maintenance services. It is a business with motivated people and competent systems in place, ensuring that customers receive the best possible service at competitive rates. The company's vision is to grow and expand to other provinces.

Projects undertaken

Initially, Thatego Holdings (the name means "beauty" in Tswana) undertook private residential work, later expanding into corporate landscaping. Their first commercial project was the Don Suite Hotel in Rosebank, and this was followed by work for the entire Don Group. The company had a working relationship with Real Landscapes (as it was then) on some of their projects and worked with them on the following to gain more experience: Westpoint in Sandton, Ruimsig Golf Estate, and Dorothy Nyembe Park in Soweto. As a result of the experience gained from these, Thatego undertook work for Joburg City Parks, Joburg Water, Wits University Media Centre, Johannesburg College of Education, the Council for Geoscience, Tyrus Construction (landscaping a few of their complexes including Ealington in Sunninghill), Cotton Wood in Fourways, Cedar View and Cedar Wood complexes in Fourways. In Soweto projects completed include Jabulani Hall, Jabulani Civic Centre Mandela Sisulu Clinic and Uncle Tom's Hall.

The company's business offering includes the following: landscape design, installation and layout; corporate, domestic and industrial park maintenance; hard landscaping – gabions, water features, pathways, kerbing and paving; themed and seasonal gardens; interior plantscapes; water wise irrigation installation and maintenance; water harvesting; nutrition and vertical gardens; and borehole repairs.

Staff

The current staff complement comprises 36 people, six of which are



Valley House in Saxonwold



Maintenance at IDC



Brick planters under construction at the School for Cerebral Palsy Learners



Staff of Thatego Landscapes



Bongani Maswanganyi heads up the company's Pretoria branch

women. Many started working for Thatego Holdings without any relevant training, but this is provided in-house by Dorcas and Thabo at their premises in City Deep, as well as at their branches in Rustenburg and Nelspruit. Two staff members, James Setaka and Bongani Maswanganyi, displayed good leadership qualities and Setaka was promoted to running the Rustenburg branch office. He also became a machine operator and site supervisor. Maswanganyi, through hard work and dedication, also became a site supervisor and is now the area supervisor for Pretoria sites.

Thabo says it is important that he and Dorcas recognise their staff members' potential and provide the appropriate opportunities. He himself has passed on his knowledge, both theoretical and practical, to staff members. New people are coached in basic landscaping skills such as soil care, tree planting, care of tools and equipment as well as recycling and water conservation issues.



Thabo and Dorcas Malefetsa (second and third from left) receiving their award for best performing business in the incubation programme of Property Point, a Growthpoint Properties initiative.

Future plans

The couple plans to open offices in Durban, Port Elizabeth and Cape Town, and are also looking to expand further afield to the UK and Denmark once the local operations are self-sufficient and running profitably. They both say the Property Point incubation programme was very beneficial and gave them feedback on better business practices, also showing them the way forward and how to do things differently to obtain better results. "The selection criteria for the programme were stringent, with Property Point wanting to know our company history and goals to determine if we were the right candidates for the programme. The business coaching was very valuable," they say.

Another plan for the future is to focus on nutritional gardens, waterless gardens and urban agriculture. They have already constructed brick planter boxes for this purpose at the Pretoria School for Cerebral Palsy Learners.

Despite all the forward planning, the couple says they nevertheless have an "exit strategy" and that their children will eventually take over the running of the company. "Being in business as a family bonds us," they conclude. **lsa**

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Overview of the museum site

NATIONAL ENGLISH LITERARY MUSEUM

Project Team

Client: National Department of Public Works, Port Elizabeth

Architect: Intsika Architects

Landscape Architects: Red Landscape Architects

Sustainable Building Consultants: Solid Green

Landscape Contractor: Countryline Horticulture/Bloomingdales (JV)

The main function of the National English Literary Museum (NELM) in Grahamstown, Eastern Cape, is to collect and conserve creative writing by Southern African authors in the genres of novels, plays, short stories, essays, poetry, theatre, memoirs, diaries, TV and film scripts and autobiographies. Material is collected in the format of books, study guides, theses,



Front entrance planting

literary manuscripts, press clippings and audio visual material. The NELM also ensures that the material is readily accessible, both locally and abroad.

The museum is situated on the outskirts of a built-up residential area, on a previously vacant greenfield site. It was designed with green building principles in mind and has obtained a five star Green Star Rating from the GBCSA (Green Building Council of South Africa) for its environmentally responsible and resource efficient features.

Landscape design, management and bio-diversity

Landscape architect Francois van Rooyen of Red Landscape Architects says his brief was to develop a five star rated 'green' landscape for the museum, which is visited by schools and tourists. His design philosophy celebrates four of the biomes found in Grahamstown and he has used a plant palette specifically suitable for the terrain.

Planting patterns have an organic appearance and materials were chosen with the idea in mind that the landscape is a living and evolving organism. Van Rooyen states: "When one aims to recreate nature (which took millions of years to establish) in a relatively short



Karoo biome meets grassland; a clear distinction has been created using the different planting palettes and mulch types



Landscaping plan



Euphorbia polygona, rescued from the N2 road construction between Grahamstown and Peddie. It is a feature in the Karoo biome.



Landscaping on the roof garden



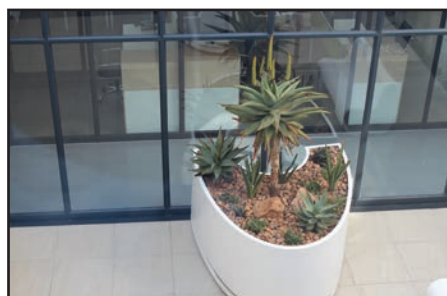
Roof garden planting comprising *Crassula*, *Salvia*, bulbs, Black-Eyed Susan and various grasses planted to mimic the natural growth of the four biomes that surround Grahamstown



A gabion wall was constructed to compensate for the gradient of the site. As opposed to a brick wall, it is more natural in appearance and therefore more complementary to the planting.



Large aloes and boulders were used to create focal points and give instant height to the planting



Courtyard pots planted with Aloes, *Sanseveria*, *Gasteria* and *Gazanias* to reflect the outdoor landscape



Pathways allow for pedestrian interaction with the biomes. Here the Karoo biome can be clearly seen.

space of time, it is necessary to plant in bulk and plant a variety of appropriate species. Over time, the landscape will then select the species most suited and adapted to the specific environment and micro climate."

The four biomes created are Karoo, Fynbos, Valley Bushveld/Albany Thicket and sub-escarpment Savanna Grassland. Each of these are found in this region and van Rooyen says that from the extensive planting list, the theme was to have different layers in the landscape comprising trees, shrubs, groundcovers, creepers and bulbs. The selection aimed to include all year flowering material and plugs that could be cultivated from seed, cuttings or sprigs in the later maintenance phase, thus creating an ongoing on-site nursery for the project.

A 1500m² roof garden forms part of the landscape, with a planting theme that complements the rest of the site, just without the trees. The roof garden was created to hide the building from the nearby residential area and a 700mm soil depth was specified due to the extreme water restrictions in place. No irrigation is to take place after site establishment and the 700mm stipulated will allow for some water retention in the dry months. After a one year growth period, irrigation will be removed from site, although van Rooyen says he has requested a turf valve system for use in extremely hot conditions.

Due to a late instruction to install a fence, the irrigation, which had already been installed, had to be re-modelled.

The green roof maximises the environmental quality of the building and xeriscaping has been implemented as a deliberate and environmentally conscious decision.

Lesley Lynch, on behalf of Countryline Horticulture, says the initial placement of soil on the roof proved to be a challenge, as did obtaining the right consistency throughout to allow for adequate permeability. Also, the area behind the site had not been backfilled and the height to the roof was considerable. As the area's rainy season had begun, the subsoil had a very high clay and silt content, which made it impossible to move any vehicles on site due to the muddy conditions. This took two days to dry out, which hampered initial progress, particularly with the placement of soil on the roof.

In the designing stages of the project, a topsoil management plan was developed to guide the contractor to separate impacted soil and protect it from degradation, erosion or from being inadvertently mixed with fill or waste. After construction, the protected topsoil was spread over impacted areas to a minimum depth of 200mm and maximum 600mm. At least 75% of all protected topsoil remains on site.

Landscape installation

This was undertaken as a joint venture by Countryline Horticulture and Bloomingdales, appointed to install soil placement, planting, stepping stones, mulches to demarcate the different biomes, pots, garden benches and irrigation – the latter being temporary for the initial establishment of



The roof garden was created to represent the four biomes. It has established well and attracts insects and birdlife.

the landscape. It is a RainBird automated system and the water source is municipal.

All plants sourced and used for the project had to be grown within a specified radius, which proved challenging considering the plant palette.

Lynch explains that since Grahamstown lies at an intersection of four different climatic zones, its weather is unpredictable and all four seasons can be experienced in a day. This variable climate supports a widely diverse flora (excluding that of a desert) and all the major vegetation types are found within a 150km radius of the town. For each biome, a different planting palette was used.

Biome 1, Cape fynbos, grows in a 100-200 km belt, stretching from the west coast to the south east coast. With Vanrhynsdorp as its north-western limit, the fynbos tails off near Grahamstown. This is the smallest biome represented, covering an area of 522 m² on site. South Africa's conservation of fynbos is critical to the survival of this botanical "treasure", and vegetation includes proteas, ericas and restios. To make the biome clearly visible, a coarse red bark mulch was used, and the following were some of the species planted: *Eriocephalus africanus*, *Rhus incise*, *Erica*, *Chrysanthemoides*, *Felicia*, *Diospyros scabrida*, *Othonna*, *Geranium*, *Helichrysum*, *Arctotis*, *Euphorbia mauritanicum*, *Orbea*, *Watsonia*, *Nerine*, *Oxalis*, *Aristea*, *Protea* spp.

The Albany/Subtropical thicket (biome 2) grows in the well-drained soils of the Great Fish River, Sundays and Gamtoos river valleys of the Eastern Cape. This is the largest biome on site, covering an area of 3065 m² and the thickets contain many endemic plants, particularly various *Euphorbia* species. Within the Grahamstown area one finds *Portulacaria afra*, *Crassula ovata*, *Pappea capensis*, *Aloes* and *Schotia afra*, and the following were planted to denote this biome: *Harpephyllum caffrum*, *Eckebergia capensis*, *Podocarpus falcatus*, *Dodonaea*, *Buddleja*, *Putterlickia pyracantha*, *Rhus undulata*, *Chrysanthemoides*, *Carissa*, *Plumbago*, *Tecoma*, *Salvia*, *Chrysocoma*, *Selago*, *Felicia*, *Aloe ferox*, *A. striata*, *A. thraski*, *Portulacaria*, *Scadoxus*, *Haemanthus*, *Tulbaghia*, *Babiana*, *Plectranthus*, *Pelargonium*, *Agapanthus*, *Selago*. Grasses included *Themeda*, *Panicum* and *Digitaria*. A local, light brown woodchip was used to demarcate this biome.

The sub-Savanna grassland, biome 3, is one of the largest in southern Africa and the third largest in the Grahamstown area, covering an area of 2170 m² on the site. It is characterised by a grassy ground layer and a distinct upper layer of woody plants. Most of the Savanna vegetation types are used for cattle and game grazing, hence the vast number of game farms and parks in the area. Some of the species planted to recreate this biome were: *Acacia karoo*, *Protea subvestita*, *Gazania krebsiana*, *Felicia muricata*, *Sutera cultivars*, *Asparagus virgatus*, *Polygala virgata*, *Aloe maculata*, *A. striatula*, *Myrsine Africana*, *Leonotus leonuris*, *Eucomis autumnalis*, *Haemanthus humilis*, *Scilla natalensis*, *Bulbine narcissifolius*, *Kniphofia uvaria*, *Boophane distiche*, *Encephalartos frederici-guillolmi*, *Scabiosa columbaria*, *Thunbergia capensis*, *Aristea cognata*, *Lobelia erinus* var. *bellidiformis*, *Chrysocoma tenuifolia*. Grasses include *Themeda triandra*, *Eragrostis capensis*, *E. curvula*, *Digitaria diagonalis*, *Aristida junciformis*, *Cynodon dactylon*, *Cymbopogon marginatus*. A dark brown bark chip was used as mulch to demarcate this area.

Biome 4, the Karoo/sub-desert biome, is notable for the world's richest flora of succulent plants and harbours about one third of the world's approximately 10 000 species. The region is extremely rich in geophytes, with about 630 species. It is represented as the second largest biome on the site, covering 2260m². The following material was planted: *Acacia karoo*, *Diosyros lycioides*, *Ehretia rigida*, *Buddleja salvifolia*, *Grewia occidentalis*, *Artemesia*

afra, *Felicia filifolia*, *F. muricata*, *Gazania krebsiana*, *Pachypodium succulentum*, *Aloe aristata*, *Euphorbia mauritanica*, *Crassula* spp., *Cotyledon* spp., *Gasteria*, *Portulacaria afra*, *Bulbine abyssinica*, *Babiana hypogaeal*, *Trotonia karoica*, *Ammocharis coranica*, *Moraea polystachya*. The mulch used is an orange rock/gravel, sourced from the local karoo biome area around Grahamstown.

Lynch says that sourcing the plant material required proved challenging as there are few local nurseries and plants normally grown do not comprise what was specified in the planting palette. She had to arrange for the nurseries to grow what was required about 18 months before the installation.

A further challenge was that due to the size of *Podocarpus* trees, a crane jack had to be hired to install them. Since there was a long distance to span, the crane jack was not adequate and a trolley jack was used instead. Gumpoles were used to lower the trees into the holes.


Local labour was mainly used, allowing for skills development training to be done in the community. There are now three people maintaining the site, one of which has been trained in irrigation installation by one of Countryline's senior irrigation installers. As a result of the training, he is now able to maintain and rectify any damages encountered.

Sustainability : Energy and Environmental Strategy

Energy strategies have been implemented to reduce the overall consumption of the building and the behaviour of occupants and users of the building are critical to reducing its energy consumption. The following are some of the numerous initiatives taken to improve the energy and environmental quality of the building:

- an electronic building management system actively controls the effectiveness of building services. It is integrated into the building to monitor and report on energy and water consumption;
- the building consists of mechanically air conditioned and naturally ventilated spaces to achieve air quality requirements;
- high frequency ballasts are installed in all occupied spaces to avoid flickering associated with fluorescent lighting. Provision has been made for individual spaces to be separately controlled, making it easier to light only occupied areas and thus saving on energy;
- the building has been designed to allow for 60% of the occupied area to have uninterrupted views of the external environment, which in turn improves the building and daylight quality;
- sustainability initiatives are implemented and displayed as learning resources for visitors and users of the building. This educates them about potable water savings, energy use, greenhouse gas emissions and green roof efficiency;
- water strategies have been implemented to reduce the use of potable water through efficient design of building systems and the accurate monitoring of water consumption. This is monitored by water meters provided for all major water uses and an automated mechanism can detect leaks, ensuring that water is not wasted;
- a waste recycling storage area has been established to encourage recycling of resources used within the building to reduce waste going to landfill. Cardboard, paper, glass, plastic and metals are recycled and waste is monitored to accurately record what is taken off the premises. **iso**

Information and photos supplied by Red Landscape Architects, Solid Green and Lesley Lynch on behalf of Countryline Horticulture



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Best time of application is Spring, but Multicote™ may be used all year round. Adjust the application rate according to the plant's sensitivity. Contact a qualified agronomist for advice.

General Application Guidelines:

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Landscaping – Flowerbeds: Apply 30 to 60 g per m². Be sure to spread evenly before turning it into the bed, or cover with a suitable mulch or compost.

Landscaping – Trees: Apply 300 g (small tree <2 meters) up to 1kg per tree (large tree >6m). Divide the dosage per tree into four portions and apply into slots, 5 to 10 cm deep, radiating around the tree, within the wet zone.

Nurseries – Potted Trees and perennial shrubs: Apply 3 to 8 g per litre of growing medium. Mix the required dosage into the growing medium prior to filling the pots, or dose each pot individually.

Nurseries – Annuals and sensitive plants: Make your own blend of the following:
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Apply the blend @ 5 grams per litre of growing medium, as above.

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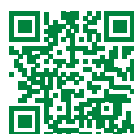
- Efficient uptake due to synergy between nitrate and potassium
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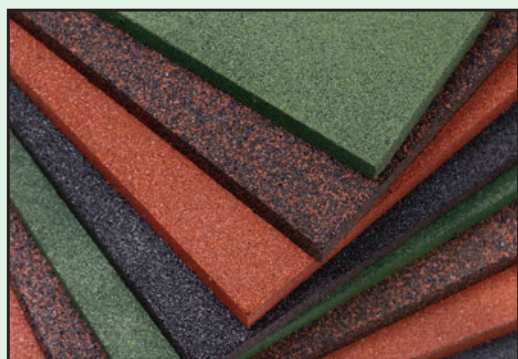
Rubber tyres can be transformed after their initial use and carpet manufacturer Van Dyck aims to implement the blue ocean strategy business approach to launch an innovative paving brick and paving product. PFE International has developed the paving commodity, an investment that recycles truck tyres into rubber crumb, as a new product segment. The group recently commissioned new machines to produce various different paving bricks, tiles and innovative interlocking paving mats, and is in the process of applying for Green Tag certification. This assures that every product has been tested and certified under one of the organisation's two leading scientific certification programmes.

Rubber crumb is recycled rubber produced from automotive and truck scrap tyres. During recycling, steel and tyre cord (fluff) are removed, leaving tyre rubber with a granular consistency.

The company aims to capture architects and designers seeking to add a Green Star rating to their buildings, a benchmark for green buildings in terms of design, construction and management.

As South Africa's oldest carpet manufacturer, Van Dyck Carpets offers a combination of tufted, needle punch, woven carpets and artificial grass as well as manufacturing a range of acoustic underlays made from recycled rubber crumb from used truck tyres.

Envirobuild, KZN's first manufacturer of eco-friendly rubber flooring, will specialise in the sales and distribution of the new brick and paver product manufactured at Van Dyck Carpets. The company is a joint venture between Envirobuild and PFE International.



For further information contact Dr M Zarrebini on 031 913 3800

New rubber flooring

CAPE TOWN FLOWER SHOW

Designer Leon Kluge will participate at the Cape Town Flower Show (27-30 October), where his garden is being sponsored by the South African Mint. He has included a theme of Origami to reflect their participation, with water sculptures based on Typha reeds that grow in ponds and streams around Cape Town. These will be made out of SA Mint coins. One of the main attractions of the design will focus on the new colour coins to be launched by the SA Mint at the show; new sterling silver coins will depict the Hermanus cliff Gladiolus and the blue Disa. The ponds around the coin bulrush will include a wishing well theme to create a sense of intrigue.

The show offers landscapers the opportunity to explore their creativity and brings together planting trends and designs for outdoor living. It unites notions of sanctuary and sustainability, and celebrates food, culture and community.

Kluge has earned gold medals at the Chelsea International Flower Show, the Singapore International Garden Show, and the Singapore Garden Festival. He achieved special recognition at the Chaumont Garden and Land Art Show in France.

For further information visit www.capetownflowershow.co.za

OCTOBER RELEASES FROM BALLSTRAATHOF

The following are a few new releases from BallStraathof for October:

Leucanthemum superbum 'Goldfinch' is the first yellow flowering Shasta daisy. It has semi-double blooms and is the product of years of breeding for yellow flowers, which start as bright lemon yellow and gradually mature to ivory white. They are carried on strong stems and last well in the vase. Plants grow in full sun or partial shade, in normal soil. They flower in summer, attract butterflies and can be planted in borders or large containers. Divide plants every two to three years in spring to retain their vigour.

L. 'Snowbound' and 'Victorian Secret' are two new compact Shasta daisies. The former have a neat growth with masses of single white daisies and the latter grow knee high, have ruffled white blooms and tolerate extreme heat. Both grow in full sun or partial shade, in normal soil, flowering in summer and attracting butterflies. Divide plants every two to three years in spring to retain vigour, and plant in borders or large containers.

Agastache 'Kudos' is a compact, drought-tolerant perennial, also known as Liquorice mint or Hyssop, with flower spikes in shades of coral, orange, yellow, red and lilac. Plants branch from the base, are resistant to downy mildew, attract pollinators and are tolerant of cold, wet winter soil. Plant in full sun, in well drained soil. They flower from spring to autumn and need very little care once established. Ideal for a sunny border or driveway, combined with *Kniphofia* and *Sedum*.

Monarda didyma (bee balm or bergamot) is one of the best perennials for attracting bees, yet is not widely planted. Work by breeders has produced 'Balmy', which is considerably shorter than traditional cultivars. The striking flower colours are lilac, purple, rose and pink. They flower from early summer and grow in full sun to partial shade in moist soil. Plants have mildew-resistant and fragrant foliage. Reduce clump size in spring.

Tiarella hybrid 'American Trails' is a spreading groundcover with colourful leaves in different shapes and attractive flowers. Being low growers, their trailing habit suits hanging baskets and containers. Plants grow in full sun and partial shade, are hardy and drought tolerant. They spread by rooting which allows the plant to take up more moisture. Colours and patterns change according to the season and light levels. They can be used as a replacement for ivy and are less invasive.

Patio tomato 'Napoli' is a Roma container tomato that bears fruit within 30 days of transplanting. Plants are compact and bear masses of bright red, pear shaped fruit with a tangy flavor. They need support in containers because of the heavy load of fruit, and must be watered regularly, even daily in very hot weather. Feed once a month with a liquid fertiliser. Excellent disease resistance should result in a good harvest.

For further information contact BallStraathof on 011 794 231



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JUST TREES WINS BUSINESS AWARD

Carl Pretorius, owner of Just Trees, is the recent recipient of the 2016 Medium Business Entrepreneur of the Year award. He attributes the win to the business being an extension of himself and his values, which include vision, courage, fun and compassion for people and the environment.

After becoming involved in South Africa's Foreign Trade Organisation, Pretorius began his first business, an export company that equipped hospitals around Africa with a full range of medical equipment, medical instruments and hospital furniture. He sold this in 1999 and purchased the farm that now houses his nursery, using a portion of the proceeds from the business sale. The remaining proceeds were invested into his next entrepreneurial undertaking, an internet lottery system. This however did not succeed and Pretorius moved to his farm, planting olive trees with a view to producing olive oil. The trees started attracting interest from landscape architects and he saw an opportunity to pursue his passion for the environment.

Putting into place his plan for a large scale tree nursery, the first three years did not show results but today, with over 150 000 trees, Just Trees is the supplier of choice to landscape architects and certain export markets. On the 42 ha farm, about 58 tree species are sold in a variety of container sizes.

Pretorius attributes the success of Just Trees to his team's combined strengths, and believes that socially and environmentally sustainable business practices are what sets his company apart from other nurseries. "We ensure that a superior quality of trees is readily available and that they are well maintained at all times." The trees are watered and fed using sustainable methods and the nursery became a carbon-neutral certified company in 2010. Green building practices used ensure that water and pesticide use is substantially reduced.



Carl Pretorius, owner of Just Trees. Photo by Alistair Cotton.

Tree donation is an important pillar of the business and having initially committed to donating one tree for every 20 that are sold, Just Trees has to date donated in excess of 30 000 trees over the years.

Pretorius says that the award has confirmed his entrepreneurial path and being acknowledged for his achievements has given the business credibility as a platform through which he can spread the message of environmentally sustainable business practices.

The competition is sponsored by Sanlam and BUSINESS/ PARTNERS.

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Above and below: Landscaping around the horticulture centre



UNISA SCIENCE CAMPUS HORTICULTURE CENTRE UPDATE

In January 2013, Landscape SA featured an article on the new horticultural centre at UNISA's Science Campus in Gauteng. The centre is a research and training facility, providing students an opportunity to acquire practical skills (WIL – Work Integrated Learning) and experience for their degrees and diplomas.

This article provides an update on the current status of the facility, as provided by its manager, Pierre Adriaanse, who is presently completing

his Ph.D in Environmental Management, researching greenhouse energy management in particular. He supervises Nomvula Khupe (admin assistant), Gordon Magaseng and Beetroot Maimela (maintenance assistants doing their horticultural diplomas), and Rabelani Munyai, herbarium technician and a Ph.D registered candidate for 2017. The CAES (College of Agriculture and Environmental Sciences) laboratories and horticulture centre are managed by Dr. Stephen Meddows-Taylor.

Adriaanse says that the horticulture centre at the science campus is “a tree planted for the next generation of horticulturists.” He acknowledges his predecessor Prof. Jimmy Hendrick, as well as Prof. Willie Nel, for their contributions to making this possible.



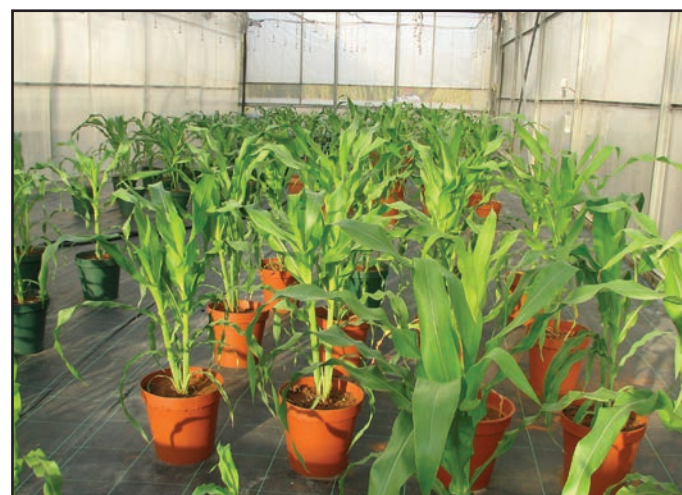
Plants collected are dried, mounted on acid free paper and identified in the herbarium



Rabelani Munyai with the wooden plant drying press. She runs the herbarium.



Hydroponic system in the greenhouse



A mielie project in Zone 3 of the greenhouse. They are watered by means of an overhead misting system

Nursery

The nursery is used by horticultural students for practical plant propagation training and during practical sessions, cuttings are collected from around the campus, propagated and replanted on site. In collaboration with the herbarium, plant identification forms part of the training. Adriaanse says that in order to help students become growers, they need to touch, smell, feel and work with plants, instead of only reading about them. He says the centre is also a place where students and the industry meet and where regular workshops with green industry associations such as IPPS and SAFGA are held to improve relationships between students and possible employers.

The Unisa Horticultural Centre has entered into a Memorandum of Understanding (MoU) with different suppliers in the green industry to supply various items for the training centre, assisting the students to learn about the practical side of plant growing and providing hands-on experience.

Adriaanse has been active in the green industry for the past 20 years, in areas including landscaping, maintenance, cut flower production, cutting production, pot plants and fruit farming. "In the past as a grower, my end product included cut flowers or cuttings but now my end product is students for the green industry and I am happy to share my knowledge," he states.

Herbarium

The herbarium at the campus' Ceres Building is a disease and contamination-free room, (a precaution against insect attack) and is managed by Rabelani Munyai, who explained that the herbarium is the building where plant specimens are housed. These specimens are used for scientific study and research, which includes facilitating plant identification. The herbarium aims to appraise and ensure the safekeeping and preservation of plant specimens in support of UNISA's tuition, research and community engagement responsibilities and activities.

Munyai states that the herbarium will preserve historical records of changes in vegetation over time at selected research sites such as Telperion Nature Reserve, Loskop Dam and Mountain Zebra Park. In some cases, environmental scientists will make use of such data to track changes in climate and human impact within the research sites.

Munyai facilitates plant identification using either ornamental or medicinal plants, and this involves the whole plant or parts thereof such as the flowers, leaves or fruit. For the botany module, she introduces students to different concepts such as what a herbarium is, how specimens are collected, practical field work processes, pressing and drying, preservation, plant identification, disinfection, mounting and storage in cabinets for future use.

Currently, the herbarium is serving PMS module first and third year undergraduate students, as well as postgraduate students doing their practicals.

Greenhouse

The greenhouse is divided into seven zones, three of which have natural ventilation (opening roof and side vents) and four are force-ventilated (wet wall and fan system). Plants in the greenhouse are irrigated using borehole water which is stored in tanks adjacent to it. Municipal water is also available but is only used as a back-up.

A new project of rainwater harvesting from the greenhouse roofs will add an environmentally-friendly source of water. Adriaanse believes a greenhouse should be self-sustaining and aims to add a solar system on the roof of the potting shed. The UNISA horticulture centre stock plants are produced and grown from seed and cuttings and can be used for planting on the campus, selling to staff or as part of community outreach programmes.



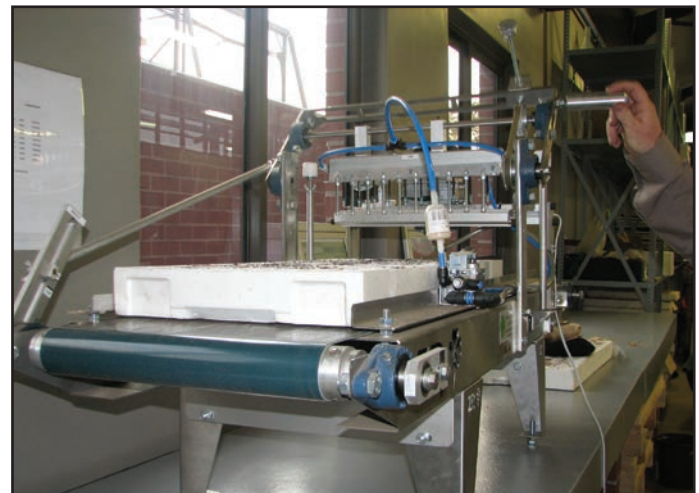
Water harvesting tanks



The equipment is owned by UNISA and students are given practical demonstrations to explain safe usage



The potting machine fills 3000 pots per hour with growing medium but planting is done manually



Seed sowing machine in the potting shed

Potting shed and workshop

This is the area used for the training of different skills on various types of equipment. It contains the following:

- a potting machine that fills 1000 to 3000 pots per hour with growing medium (the actual plant placement is done manually);
- a seed sowing machine which sows 100 trays per hour;
- germination cabinets for seeds;
- a display board showing the different shapes and sizes of plant trays; and
- various types of growing mediums such as bark, coir and peat.

The workshop houses drying ovens for plant sterilisation and preservation, tractors for student training (TLBs, loaders and back actors), and hand tools. Safety is a major concern to everyone at the horticultural centre and all staff members are well trained to ensure that safety regulations are followed.

Examples of research projects underway

Adriaanse supplied Landscape SA with the information below, pertaining to usage of the horticulture centre by various departments for undertaking practical research. The persons involved are either staff members or students of the College of Agriculture and Environmental Sciences (CAES).

Prof. Mary Masafu of Agriculture and Animal Health undertook work for her project Indigenous Medicinal Plants, using the net shading facility.

Mr. Ambani Mudau of the Department of Life and Consumer Science undertook work for his project Production Strategies and Postharvest Protocol for Quality of *Spinacia oleracea*, using the Zone 4 greenhouse.

Prof Mudau of Agriculture and Animal Health undertook work on bush tea observation.

Miss Noluyolo Nogemane, also of Agriculture and Animal Health, undertook work on Propagation and Quality Assessments for the Introduction of *Greyia radlkoferi* into Commercialisation.

Mr Taboga Mathiba of Agriculture and Animal Health undertook work on the Use of *Bacillus subtilis* as a Potato Plant Growth Enhancer and Antagonist of *Pectobacterium carotovorum* subsp. *Brasiliensis*.

Mr Ubani Onyedikachi of Environmental Sciences undertook work on the development of an active bacterial formulation for degradation of complex crude oil wastes.

Mr. Mivuyo Mbovane of Environmental Sciences undertook work on the secondary metabolite responses of *Alternaria alternata*, *Fusarium oxysporium* and *Sclerotinia sclerotiorum* to exposure to Acetaldehyde and 2E hexenal.

In addition, various laboratory practicals took place in the potting shed, amounting to a total of 210 hours of usage time between 25 February and 2 April 2016. In total, 66 students were involved in this work from the Agriculture and Animal Health Department.

Feedback

Adriaanse says that regular feedback from students is positive and that they are proud to be part of the UNISA experience. Lecturer Henrietta Samuels says that both students and staff are very appreciative of the excellent facilities provided for practical work. Industry feedback from a wide range of stakeholders has also been positive, with emphasis on UNISA's student training and achievements. **isa**



The rose garden at Sammy Marks House. After restoration, Ludwigs Roses grafted the original roses in order to preserve the garden's heritage

HISTORICAL GARDENS

According to landscape technologist Wicus Herbst, historical gardens in South Africa mainly fall into the late Victorian or early Edwardian period, although there is very little information on this subject. In order to confirm his assumptions, and in particular that the period mentioned is specifically focused on the late Victorian/ early Edwardian period of South

African history (1880 -1921), examples he studied included Sammy Marks House, Paul Kruger Museum, Jansen House and Melrose House. These are known to typify this era.

Herbst has undertaken extensive research into the gardens of historical homesteads typical of the above-mentioned period, and says that mostly they are a combination of “old Afrikaner and English styles” often depicting



Recent photos of the Sammy Marks garden showing the trellis at the croquet court area near the main entrance of the house, built before renovations started. Marks wanted to be a leader in grandeur and style.



Metal hoops and clay rope style borders were popular at the time





Sammy Marks House was built in 1885. This is a recent photo from about five years ago, taken from the western side of the house.

Reconstructed rose garden trellis at Sammy Marks House. Photo courtesy of the National Cultural Historical Museum of SA.

Below: Trellis detail at the rose garden's main entrance, Sammy Marks House



Above and below right: Jansen House in Pretoria with its restored rose garden. The clay rope-style border has been restored to resemble the original.



the lifestyle of the respective owners and the scale of their wealth.

Sammy Marks House, for example, displayed the businessman's wealth and upper class lifestyle, with butlers on call 24 hours a day, an abundance of gardeners and approximately 12 house staff. There were numerous full time gardeners employed to tend the home's extensive and geometrically laid out gardens, tennis courts, croquet lawns, bowling greens, staff quarters and cleanliness of the stables and cow sheds.

The gardens incorporated Italian-styled ornaments, garden furniture and elaborate fountains, all imported from Europe. The family entertained lavishly and the garden was created to accommodate this. Marks' wife Bertha was very fond of roses and in 1906, a formal rose garden was laid out for her, to her specifications. Roses were ordered from England, according to horticultural society booklets and catalogues available at the time. Banksia rose creepers, especially 'Wedding Garland' in yellow and white, were also planted around the house, as were creepers of *Clematis* in various colours, to creep up the balustrades and supporting beams. These not only gave colour, fragrance and shade for the house, but also assisted in cooling the verandahs. Pot plants and garden pots from the Kirkness quarry were situated at every main entrance of the house.

At *Melrose House*, vast expanses of grass were planted for entertainment as the family was, like the Marks family, also very affluent and held large parties on the manicured lawns. All pathways were lined with pots which were planted up with pelargoniums, pink at the far ends of the house and white at the entrances; this was applicable to all "high class" individuals. The house itself is late Victorian/ early Edwardian and the garden was therefore very formal, elaborate, and had gaming areas such as tennis courts, croquet greens, rose garden areas, cut flower areas, back-of-house and intermediate areas.

Photos depicting homes of this era, such as those found of the garden at Paul Kruger House, as well as paintings of the house, indicated a few large trees, shrubs and creepers. Those identified were Beefwood (*Casuarina cunninghamiana*), Eucalyptus and Privet trees.

Herbst says the only known study on historical gardens in South Africa that he is aware of is that of rose gardens, including a full study of the Sammy Marks rose garden and restoration thereof, which determined the layout and types of roses used in the late Victorian/ early Edwardian era. These also applied to the Jansen House garden in Pretoria. The reason behind this study, as identified by the curator of the National Cultural Historical Museum of South Africa (NCHM), is that there is a need to identify the layout and plants used in the abovementioned eras to enable them to be restored to their former glory, and to permit an understanding of their particular purpose.

During the course of his research which took approximately five years, Herbst visited various African countries (including Mozambique, Angola, Ghana, Zambia, Zimbabwe, Namibia, Togo, Uganda and Benin) in order to fully understand and be able to interpret the late Victorian/ early Edwardian period. He says that one of the biggest challenges was that there was no complete study on any of the above-mentioned periods or remarkable homesteads. The only information available was to be found in books (autobiographies and biographies) such as *Africa House* by Christina Lamb, *The Flame Trees of Thika* by Elspeth Huxley, *Under my Skin* by Doris Lessing, *Out of Africa* by Karen Blixen, *The Challenge of Africa* by Wangari Maathai (Nobel Peace Prize Winner), *The Lost Trails of the Transvaal* by T.V. Bulpin and *An African Love Story* by Dame Daphne Sheldrick. Personal albums of families, interviews with family members and family friends still alive also helped and provided much needed insight.

Material available included some photos, scattered information gathered



African/endemic image showing the difference between European and Afrikaans interpretations and the importance of the locals' needs for a garden, as compared to the tendency for European interpretations of the time

over the years and interviews with curators of various museums. Travels of stories, tales of generations of families or of the countries and its expats, photo albums of Sammy Marks, expats in the above mentioned countries were gathered. Of the few photos available, most were not in good condition due to the available technology at the time. However, plant resemblance, true to form and colour, remain the same through the eras. Many of the photos did not even depict the gardens unless there were people displayed in them; gardens and the games played in them were not the "in thing" to photograph in those days.

The main objective of the investigation of *Jansen House* was to analyse and compare how South Africans interpreted the original late Victorian/early Edwardian era gardens through plant identification, correlating these and their relative associated links such as same plant species, colour, plant type, position, preferences of the home owner, personal layouts according to the land lords etc.

Says Herbst: "*Jansen House* in particular is a precious gem which, due to the passion and involvement of government and the private sector (Department of Basic Education, Drake and Scull, and myself), has been beautifully restored. All parties involved have dedicated themselves to the maintenance of the building and its history. In conjunction with the Heritage Society of Tshwane (established in 1959), we keep up to date with the latest research as it is discovered or evolves."

Features of historical gardens

The following features and plants were typically found in historical gardens of the era. They have manifested in the current 'watered down' and more symbolic interpretations that they resemble today:

- a maze, usually planted up with *Casuarina* or conifers (pruned to a specific height as determined by either the grounds manager, gardener or "lady of the house");
- two different types of edgings, namely a clay rope style or metal hoop borders. These were used in cut flower gardens, rose gardens, around lawn edges, pathways or flower beds surrounding the house;
- pergolas or trellises, either square or round, with decorative detail in a curled metal pattern or flat bar. Finishing touches were diamond mesh inserts dating back to 1915.
- ornamental bird baths;
- pots at the main entrance, on either side of the staircase leading to the front door were made of Kirkness terracotta pots;
- other pots made of sun-baked clay, old tins or plastic cup-like containers (any previously used item) were planted up with a variety of ferns, flowering garden plants, ornamental plants (foliar/ flower) or whatever was of interest to the resident owner. These were placed on the verandah surrounding cane furniture;
- a foot scrubber at the first step of the verandah stairway to scrub off the clay accumulated on shoes during a garden walk or from the pathway;
- herb and vegetable gardens at the back of the house;
- pathways made from clay or soil found on the property. These were

constructed in three layers of five centimeters each, rolled to the required hardness and re-compacted after each rainstorm (or dew) before the lady of the house took her morning walk;

- commonly used plants were pelargoniums, date palms, red cordylines in pots and green ones in the garden, roses in shades of yellow, pink, burgundy, white, orange and red, Agapanthus, Limonium, Bachelors Buttons, Kniphofia, Arum Lillies, Hydrangeas, Gladioli, Crocosmia and Gerbera;
- water features were always formal fountains, and mostly used only in the most affluent owners gardens during this period. Since electricity was not available to every household (Sammy Marks' house was the first in Pretoria to have it), any water feature operated by means of gravity.

Herbst notes that when restoring a historical garden it is important to ensure that plants, containers, pots and other items are replaced exactly as they were previously, in the same position as initially found. In this way the integrity of the original garden is maintained and the character of the house is re-emphasised.

"One has to have a passion for this type of work as it is time-consuming and so much research is required. Traditional aspects need to be kept alive, represented and acknowledged to ensure integrity. However one also has to allow for the fact that restored historical gardens will nevertheless always be stylised representations of the originals. One should also remember that the reason behind historical gardens was that their owners "fell in love with a time of total elegance, a rose, a waltz and a garden..."

About the author

Wicus Herbst is a landscape technologist with a BTech degree from TUT. After completing his studies in 2004, he worked in Ghana for a short time and was responsible for the design and implementation of the gardens for the Minister of Foreign Affairs in Accra and Kumasi. In 2005 he worked in the United Arab Emirates, undertaking work for the Minister of Environmental Affairs, the Crown Prince and ruler of the UAE. In addition, he undertook the re-design and implementation of the gardens at the Sea Palace of the Crown Prince, as well as the design of the (then) new Rotana Al Aka beach resort in Fujairah. He has also been involved in community vegetable garden design and implementation in the north of Uganda.



Wicus Herbst

In South Africa he has been involved in projects such as the Ni Hau Temple in Bronkhorstspuit and is presently managing his own business, Bob & Sequel, whilst still designing and project managing several gardens in the Lowveld and Gauteng, and undertaking landscape technology, agriculture and community upliftment projects.

Within rural communities, he is also involved in internship programmes and mentoring of individuals. He has also initiated projects for community development using individuals to create and build SMMEs with the goal of addressing successful business development, from basic skills to business owner expertise in rural communities. One of the flagship projects he is currently working on is the development and management of a community coffee nursery and farming in the Lowveld; this will assist in upliftment, skills transfer and community development in the greater Bushbuck Ridge region.

In landscape design, Herbst most recently completed a representation of the historic 1900 garden of Jansen House in Pretoria, for which he received a SALLI gold award. For many years he has undertaken intensive research of historic gardens, studying the late Victorian/early Edwardian interpretation of South African gardens. **lsa**

Information and photos supplied courtesy of Wicus Herbst 076 432 0320 and National Cultural Historical Museums of South Africa.

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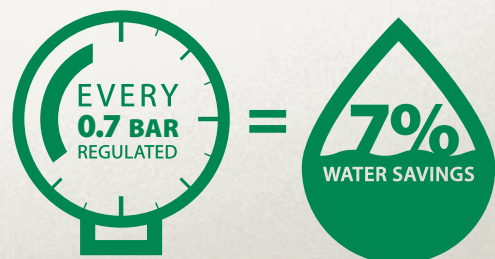


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"Contractors are looking for rotors that provide durability, value and convenience," says Dustin Lacey, Rain Bird's senior product manager for rotors. "They have a vested interest in reducing installation costs and maintenance. They want to win more bids and increase revenue while offering their customers top performance and efficiency."

While contractors may want rotors that are convenient to install and maintain, their customers are asking for products that use less water while still keeping their lawns healthy and attractive. Record-breaking droughts, rising water prices and watering restrictions have made the public far more aware of water's growing scarcity as a natural resource.

"Our 5000 Series Rotors have been designed with features that benefit both contractors and customers alike," Lacey says. "There's a rotor for every application – for low pressure and steep slopes, in high wind areas, with non-potable water, even areas where vandalism could be a problem. And, because Rain Bird offers a five-year trade warranty on these rotors, everyone enjoys greater peace of mind."

Time-saving features

In irrigation contracting, as in any business, time is money. A mainstay of both residential and commercial irrigation systems, Rain Bird's 5000 Series rotors offer contractors numerous features that can help them get more done in less time.

A slip-clutch feature on 5000 Series models makes it possible for contractors to use their fingers to adjust the left edge of the rotor's stream to line up with the landscape being watered – no tools necessary. Self-flushing ports are another time-saving feature. The riser stem pops up and retracts, and a small burst of water clears the arc adjustment slot or debris.

"Without this feature, dirt builds up and virtually 'bakes' into the arc adjustment slot," Lacey says. "This results in a rotor that must be replaced because it cannot be adjusted."

Wiper seal design also plays a significant role in a rotor's ease of maintenance. The wiper seal is typically a soft plastic material that interacts with the riser stem, keeping debris from entering the rotor and sealing it off as the stem pops up.

"Choosing a rotor that has an inferior or poorly designed wiper seal can have a tremendous impact on a contractor's bottom line," Lacey adds. "That's why our 5000 Series rotors have a pressure-activated, triple-blade, multifunction wiper seal. This design protects the rotor's internal mechanisms from debris and assures positive pop-up and retraction. Any debris that makes its way inside the wiper seal will be flushed out the next time the zone operates. It's a great feature that really reduces time spent on rotor maintenance."

Contractors often spend a lot of time adjusting rotor arcs, walking back

and forth to the controller to shut off the system. Rain Bird's 5000 Plus Series rotors feature a flow shut-off device that makes it possible to turn the rotor on and off at the head using a flat blade screwdriver while the system is still in operation.

"Maintenance is easier, allowing you to flush zones and install nozzles without going back to the valve or controller," Lacey explains. "You can also troubleshoot for leaks by turning off all heads on a zone."

Water-saving technology

Perhaps the most important advancement in rotor water efficiency over the past decade is pressure regulation. Rotors operate most efficiently at a water pressure of 3.1 bar; however, the water pressure at many homes and businesses often exceeds that level, rising to 5.5 or even 5.8 bar. As pressure increases, so does an irrigation system's flow rate. Water is often emitted as mist or fog, causing it to drift away rather than land on its intended target. The resulting symptoms include wasted water, higher water bills and damaged system components. But this big problem has a simple solution that's completely new to South Africa: Rain Bird's 5000 Series PRS rotors with Flow Optimizer Technology.

"Our 5000 Series PRS rotors are the industry's only rotors with in-stem pressure regulation," Lacey says. "Because they ensure water is being emitted at 3.1 bar, they can help save thousands of litres of water. In fact, for every 0.7 bar regulated, you use seven percent less water. And, contractors benefit too, since a system with pressure regulation requires fewer valves and less line, reducing their input and labour costs."

Caused by changes in elevation on an irrigation site, low head drainage is another water-wasting problem. Gravity forces water in the lateral line to drain out of the lowest head of the zone. Rain Bird's 5000 Series SAM rotors with Seal-A-Matic check valve prevent low head drainage, holding back up to 2.13 metres of elevation pressure and sealing water in the lateral line.

"The SAM check valve prevents water from draining from the low heads where not only is it wasted, but can also become a hazard on pedestrian walkways or cause damaging erosion," Lacey adds. "It also keeps puddles from developing that can kill grass and other desirable vegetation."

Finally, any discussion about Rain Bird rotors isn't complete without mentioning our patented Rain Curtain technology. Available on the 5000 Series and all Rain Bird rotors, this technology produces superior watering coverage across a rotor's entire radius. Patent-pending micro ramps ensure gentle, effective close-in watering that eliminates the potential for dry spots around the rotor. Larger water droplets minimise misting and airborne evaporation.

Features you need, benefits you can see

With Rain Bird's 5000 Series rotors, contractors get the convenient, time-saving features they need while their customers enjoy unmatched water efficiency and performance for a more beautiful landscape.

"Our 5000 Series rotors are an important component of a well-designed irrigation system," Lacey adds. "Rain Bird will continue to lead the way in rotor innovation, with stronger materials, greater durability and optimum distribution uniformity. It's about offering the industry's highest-quality rotors that lead the way in both convenience and efficiency."

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LANDSCAPE PLANT WATER USE IN SOUTH AFRICA

Leslie Hoy, Manager of Rand Water's Environmental Management Services, is currently undertaking his PhD through UNISA and is investigating the production of a model to predict landscape water use in South Africa.

The dire water situation in the country impacts heavily on landscapes and the points below provide some background and rationale for Hoy's study:

- South Africa is a water-stressed country because there is less than 1 700m³/person/yr of water available. It will reduce by the year 2025 to less than 1 000m³/person/yr of water. Water scarcity can broadly be understood as the lack of access to adequate quantities of water for human and environmental uses;
- the average rainfall for South Africa is only 497 mm per annum, where 65 % of the country receives less than 500 mm per annum and 21% of the country receives less than 200 mm per annum;
- over the past ten years, water consumption by the domestic sector has increased from 22% to 27% of total water resources ;
- below average annual rainfall is more commonly recorded than above average total annual rainfall. Drastic and prolonged droughts periodically afflict South Africa and these often end in severe floods;
- over most of South Africa, the annual potential evaporation ranges from 1 100 mm to more than 3 000 mm.
- when droughts occur, all natural and manmade environments suffer to one degree or another. Aesthetically, functionally and financially, we cannot allow our landscapes to die or degrade;
- ornamental or utility landscapes are most often irrigated when there is insufficient rainfall to support them. This application of water in most



cases is undertaken to compensate for the landscape's requirement of water as a result of a lack of rainfall.

The challenge is that amenity landscapes are measured against an unquantifiable yield, whereas agriculture is measure with a specific yield (e.g a yield of 50 tons per acre). The former are measured by how well they meet the expectations of the end user or person paying for the installation and maintenance.

There are many simple water footprint and water use calculators that can assist both home owners and landscapers. Current research points to two good international and one local example:

- 1 California - Landscape Coefficient Method and WUCOLS (Water Use Classification of Landscape Species)
- 2 Australia - Green Star Potable Water Calculator Guide
- 3 South Africa - Green Building Council of South Africa's Green Star rating system.

The purpose of the research project is to investigate and produce:

- a South African *Water Use Classification of Landscape Plant Species*. This will classify plants into high, medium, low and very low water use plants for the country; and
- a green industry centered *Landscape Water Use Model for South Africa*.

These two tools would then aim to measure water use in the landscape (domestic water use) and then ultimately lead to a decrease in water through plant species choice and other site landscape factors.

Hoy says the big question we all should consider is "how much water does your landscape actually require and how much do you apply?" Around the world there are numerous examples of water use calculators. Some are aimed at the agricultural sector whilst others are suited to the domestic landscape sector.

What can landscapers do in times of drought?

The availability of water in South Africa is becoming a challenge especially now when drought conditions are being experienced across the country. As a semi-arid country with erratic rainfall pattern it is of utmost importance to consider efficient water practices within our landscapes.

Recent dry conditions across the country can have a detrimental effect on the landscape and these prolonged periods can negatively affect some plants especially those that are sensitive to harsh climatic conditions. Limited water supply to landscapes means that landscaper's need to develop water wise strategies that will inform success of their business as well as customers.

By using water wisely in the landscape, an attractive garden can still be maintained. Let's all be Water Wise.

WHAT CAN LANDSCAPERS DO?

- Reassess your existing landscape to ensure appropriate zoning of plants to accommodate the current situation
- Consider hydrozoning your landscape into 1 drop, 2 drop and 3 drop zones according to their water requirements.
- 3 drop plants that require lot of water can be transplanted into pots to minimise watering volumes and control water volumes.
- Make your low water usage area the largest part of your landscape.
- Ensure that all your beds are mulched to reduce evaporation rate by up to 70%.
- When planting new beds add wetting agents to preserve moisture into the soil.
- Avoid watering between 6 in the morning and 6 in the afternoon as per the Minister's statement.



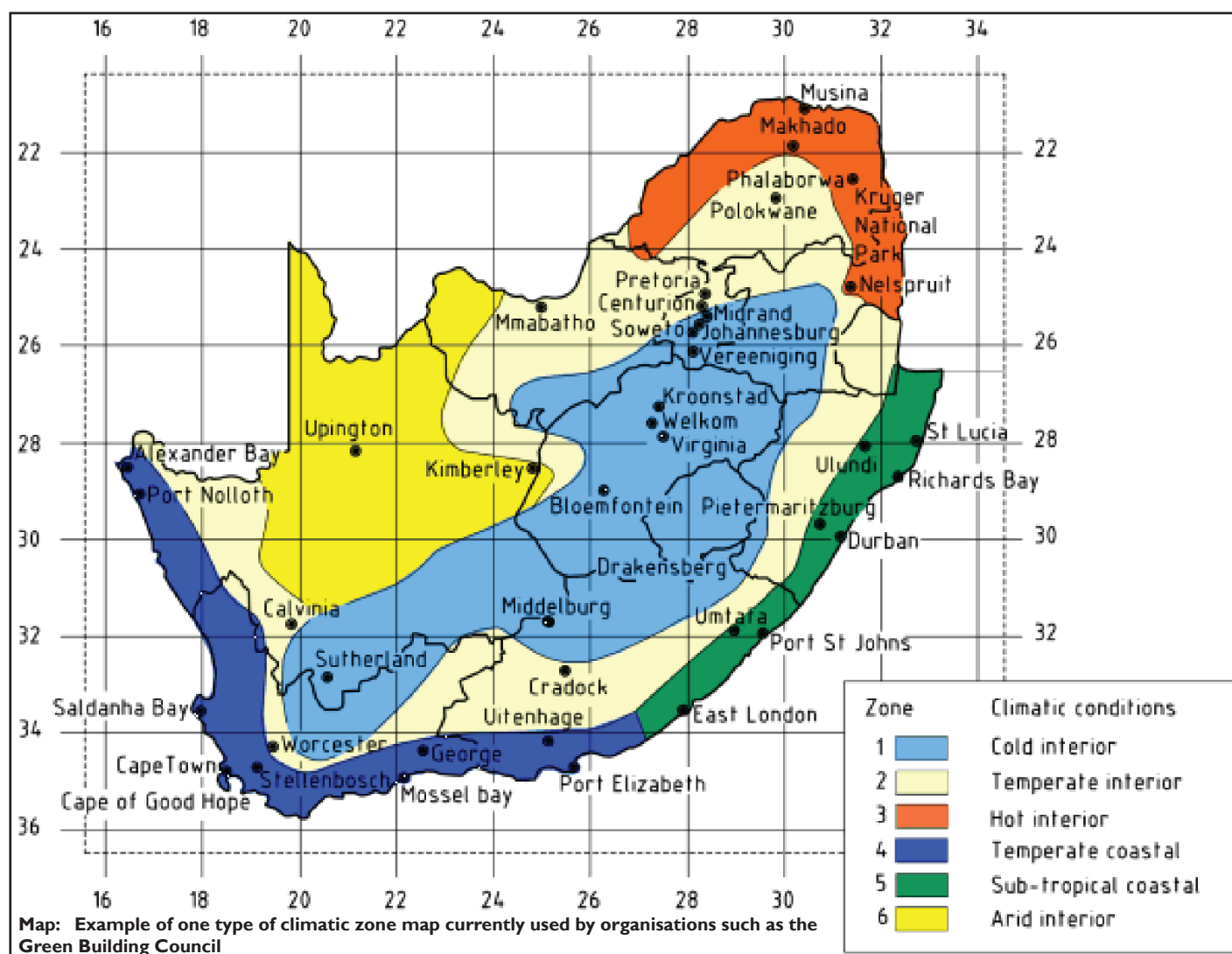
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WUCOLS USA (Water Use Classification of Landscape Species) is one of the best examples to date allowing for on site assessment:

Step 1: Calculate the Landscape Coefficient (KL)

KL formula: $KL = ks \times kd \times kmc$

ks - (species factor; namely which plants are high, medium, low and very low water use;

kd - (the density factor of the plants/planting);

kmc - (microclimate of the area and all aspects that will impact this microclimate);

Step 2: Calculate the Landscape Evapo-transpiration (ETL)

ETL formula: $ETL = KL \times ETo$ (KL = landscape coefficient, ETo = reference evapotranspiration);

KL = _____ (calculated in Step 1);

ETo = _____ This is a pre-determined value that is used as a standard per area.

Step 3: Calculate the Total Water to Apply (TWA)

TWA formula: $TWA = \frac{ETL}{IE}$ (ETL = landscape evapo-transpiration, calculated in Step 2;

IE = irrigation efficiency - measured, estimated, or set.

$TWA = \frac{ETL}{IE}$

IE

= _____ inches/month/plant bed.

Green Star Potable Water Calculator Guide (Australia)

This has grid points for the entire country with rainfall and Eto figures already pre-set. The model itself is:

Step 1: Irrigation requirement (mm) = plant water demand (mm) - rainfall available for plants (mm) application efficiency of the irrigation system (%)

Where:

- plant water demand (mm) = monthly point potential evapo-transpiration (mm) x highest crop coefficient x density factor (Kd) x microclimate factor (Kmc). Crop coefficient is understood to be similar to species factor.
- rainfall available for plants (mm) = monthly rainfall (mm) x application efficiency of rainfall (%) x (100% - percentage of zone undercover)

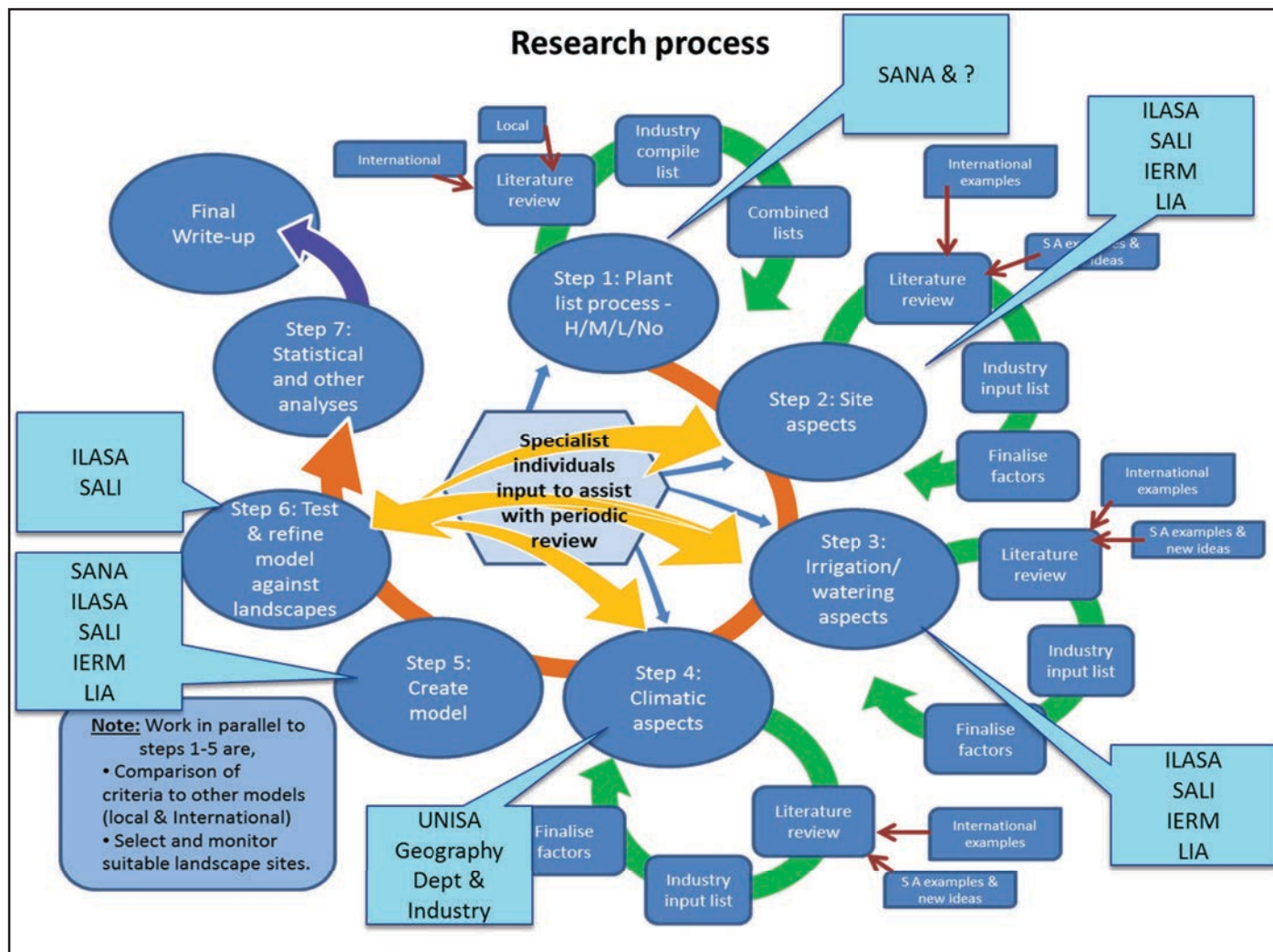
Step 2: The irrigation requirements for each month are then added together to calculate the total annual irrigation requirement (mm).

Step 3: The annual irrigation requirement, in mm, is then multiplied by the area of the zone, in m², to calculate the zone's annual irrigation requirement in litres.

Green Star South Africa

The Green Building Council of South Africa has produced a Potable Water Calculator Guide, with several overlaps to the Australian Green Star calculator. The following aspects are considered:

- the site's position in South Africa;
- six possible zones (xeriscape, low, medium low, medium, medium high and high);
- the irrigation schedules are pre-set within the system and assume that watering is reduced during the rainy season;
- there are 10 watering options, namely sprinkler days, sprinkler nights, spray days, spray nights, microspray days, microspray nights, drip bare soil, drip under mulch, subsurface drip and hand watering;
- microclimate offers three options, namely exposed, no shade during the day, normal, protected full shade no direct sun;
- irrigation system controls are considered;
- the climate map used by Green Star SA, although seen as a climatic



Proposed study process and main organisations involved at each stage

zone map, is based on energy efficiency measures as part of the SANS 204:2011 (SANS 2011).

Some shortcomings were identified with the currently available systems. The two international examples are not South African based, although have some possible factors for inclusion. The industry was not involved with the “formulation” of the South African model but it is felt that possible factors such as soil type, slope, mulching, soil ameliorants, specific plant list for SA, specific SA hydrozones, irrigation requirements and irrigation efficiency, amongst others, should be considered for inclusion.

The proposed model should:

- be simple to use;
- be Excel based;
- be dichotomous, multiple choice or importance ranking answers;
- work on plan as well as in the landscape;
- calculate individual areas of a landscape as well as an entire landscape;
- be adaptable for use throughout South Africa;
- consider a variety of situations and landscapes; and
- possibly be app-based at a later stage.

For the research project, the definition used to determine the water requirements of plant hydrozones was taken from Rand Water’s water wise concept, namely:

- no water use plants (no water use zone): these plants survive on less than 300 mm rainfall once established;
- low water needs plants (one drop zone): these plants are native to regions that receive annual rainfall of between 300-500 mm. Once established they do not need water, except during very hot dry spells. If they show signs of distress during the winter months, they should be watered every 6-8 weeks. Succulents will not need any extra water;
- medium water needs plants (two drop zone): these plants are native

to regions that receive between 500-750 mm rainfall a year. Once established they do not need water, except during very hot dry spells. If they show signs of distress during hot, dry times, they require watering. They need to be watered once a month in winter;

- high water needs plants (three drop zone): these plants are native to regions that receive over 900 mm of annual rainfall. They generally need watering once a week, and twice or three times a week during very hot, dry spells.

The proposed way forward with the model is for workshops to be held in several cities around the country in order to obtain industry input. A second round of workshops will then be held to fine-tune and agree on model factors as well as definitions and values for each factor. Once the model has been agreed to, it will be tested on landscapes and landscape plants. Variations, anomalies and values within the model will be noted and adjusted where required.

What is needed from the Green Industry to make this a successful South African based model is firstly support for the research project, as well as volunteers who will participate in workshops and help to compile plant lists. Secondly, site landscape designs where details are known about the sites and will allow for testing of the model on “paper”. Thirdly, sites that can be used to test the model, preferably ones where some zoning has been undertaken.

In addition, sites where water meters have been installed separately for landscape and building will assist, as well as permission to measure water use and install smart meters. The sites should be easily accessible and there should be availability of (and access to) background data, perhaps from contract specifications. **Isa**

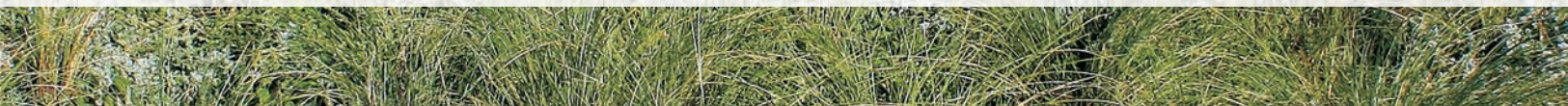
Further information may be obtained from Leslie Hoy on 011 724 9350 or 082 389 0302.

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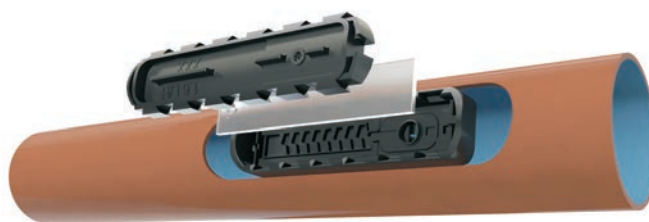


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WATER RESTRICTIONS

The City of Johannesburg is required by the Department of Water and Sanitation to reduce its water usage by 15% with immediate effect. Level 2 water use restrictions have been in place in Johannesburg since November 2015 and the City is now introducing a mandatory water restriction tariff on domestic users with effect from September 2016.

This has become necessary as the water levels in the integrated Vaal River System have dropped below the threshold level of 60% - the Vaal Dam itself is at 35%. This is due to the ongoing drought and unseasonal heat, triggering mandatory drought mitigation measures on water usage. In the Government Gazette of 12 August 2016, the Director General of the department of water and Sanitation, under delegated authority in terms of item 6 (1) of Schedule 3 of the National water Act, limited the taking of water from the Integrated Vaal River System by 15% on urban water use and 20% on irrigation water use, with immediate effect.

On 24 August, Johannesburg Water was notified by Rand Water (its bulk supplier), that it would be reducing supply by 15% with effect from 6 September 2016. This will be achieved by governing the flow of water through the bulk supply meters to Johannesburg Water. It will be managed in a dynamic manner as the supply areas have different sensitivity characteristics and a straight 15% across all meters will cause outages in some areas.

Existing restrictions

Level 2 water use restrictions, in place since November 2015, state that all consumers are compelled to: ● not water or irrigate their gardens between 06h00 and 18h00; ● only use hand held hosepipes, buckets or watering cans outside these hours - (this is an additional requirement) ; ● not fill their swimming pools with municipal water; and ● not use hosepipes to wash cars, clean paved areas or driveways.

If borehole water is being used, this must be clearly indicated. The JMPD have been requested to police the situation to ensure compliance. Non-compliance can be reported by phoning 011 758 9650, all hours.

It must be stated that over 40% of water used in Gauteng is for gardening purposes; if householders comply with the above restrictions, the 15% reduction target will be easily achieved. However if this does not take place, the Johannesburg water system will face the risk of outages and this has a further knock-on effect because outages allow air into the system, causing hammer and an increased likelihood of bursts. Residents are requested to take this seriously.

Water restriction tariffs effective now

When the tariffs were approved by the City for the period 2016/17, water restrictions were to be implemented only if necessary. However this is now compulsory and the tariffs will apply with immediate effect until the drought is over. The restriction tariffs are imposed in the following stepped manner:

- 10% extra on consumption between 20 000 and 30 000 litres/month;
- 20 % on consumption between 30 000 and 40 000 litres/month;
- 30 % on consumption above 40 000 litres/month.

This is illustrated in the table below, with 1 kilolitre equalling 1000 litres.

Kilolitres per connection per month	Normal Tariff (R/kl)	Level 2- Water Restrictions Tariff		
		% Increase	R' Increase	(R/kl)
0-6	Free	0%	R 0.00	Free
> 6-10	R 7.14	0%	R 0.00	R 7.14
>10-15	R 12.07	0%	R 0.00	R 12.07
>15-20	R 17.65	0%	R 0.00	R 17.65
>20-30	R 24.03	10%	R 2.40	R 26.43
>30-40	R 25.81	20%	R 5.16	R 30.97
>40	R 32.27	30%	R 9.68	R 41.95

Containing leakages

Johannesburg Water has ongoing programmes to manage water usage and leakages. These are as follows: ● active leakage detection and repair teams and water network pressure modulation by 793 pressure reducing valves at strategic locations in the system, saving 29.6 billion litres per annum; ● the replacement of 900km of water reticulation pipes which have the most bursts over a four year period. This started in the 2013/14 financial year and is ahead of schedule; ● the installation of low flush water cisterns in Soweto; and ● wherever possible, the use of boreholes as an alternative source of water for non-potable purposes. The Borehole Water Association of South Africa has advised that they have experienced a 15-20% increase in the demand for boreholes since the campaign in February 2016.

Weather prognosis

Indications are that Gauteng is in for a dry early spring, but that there are prospects for good rains from late November/early December. Should this happen and the Vaal system is able to recover, the restrictions will be lifted.

The above statement was issued by Councillor Anthony Still, MMC for Environment and Infrastructure Services. For further information phone 011 587 4309 or contact Johannesburg Water on 011 688 1577/6672.

CAPETOWN SITUATION

As the rainy season draws to a close, dam levels in Cape Town remain low and the City has called on residents to implement water-saving measures at home. At the same time it is working to optimise Cape Town's supply system and reduce wastage through leaks.

The City of Cape Town is considering the implementation of more rigorous water restrictions and other water-saving and optimisation measures due to the current low dam levels and a requirement for a 20% curtailment in water use imposed by the National Department of Water and Sanitation. Dam levels are currently almost 15% lower than for the same period last year, requiring water resources to be managed in a careful and prudent manner.

During drought cycles such as the one being experienced, water restrictions and other measures are necessary to ensure that water use does not exceed available supply from the dams providing the city and broader region with water. Residents have a collective responsibility to use water sparingly and ensure that dams are not drawn down to very low levels over the coming summer period. While this may cause a certain amount of inconvenience and cost burden to residents and businesses, it is important that a longer term view is taken in case the drought extends into the next winter rainfall period.

The City will continue to optimise abstraction of water from the various dams in consultation with the National Department and surrounding municipalities. This may entail periodic adjustment to the bulk water distribution system, which could lead to intermittent water clarity issues or changes in taste. Should Cape Town experience unusually hot and windy conditions during summer, this may promote algal growth in the dams, which could also give rise to an earthy taste and smell to the water. Activated carbon is used at the water treatment plants to remove most of the smell and taste, and all water will remain safe to drink.

Distribution system pressures will also be lowered to reduce leakage from municipal and private water systems and this will mean that water may flow more slowly from taps and fittings. It is likely that increased controls around designated times for watering gardens will also be implemented. However any further restrictions will be deliberated by Council before this occurs. **Isa**

This information was issued by the Media Office, City of Cape Town. For further details visit www.capetown.gov.za/en/Water/Pages/Water-restrictions.aspx

WASTE MANAGEMENT TRAINING

The Institute of Waste Management of Southern Africa, IWMSA, is a multi-disciplinary, non-profit organisation committed to supporting professional waste management practices. It comprises a body of professionals in various fields who offer their expertise on a voluntary basis in order to educate, promote and further the science and practice of waste management.

Since its inception 40 years ago, the main objective of the organisation has been to promote and work towards clean, healthy environments. With its support, individuals and businesses are armed with the necessary information and skills to ensure that the industry is aligned with national and international trends in waste management. The institute continuously strives towards the protection of natural resources, while also promoting the value of waste as a resource.

A further development in the waste management arena is the introduction of a new waste management supplier website – allwastesolutions.co.za. This platform enables organisations and individuals to register their waste management products and services, and interested parties who require a particular service can locate organisations on the online platform, which is endorsed by the IWMSA.

Training

This is the one of institute's core functions and most important portfolio, offering accredited and IWMSA-recognised courses. The non-profit training courses include hazardous waste training, legislation training, waste management training and accredited training.

The institute recently re-developed its training programme and launched a new curriculum in September 2015. Professor Suzan Oelofse, former President of the IWMSA, says the training programme was re-developed to be more current and more specific to South Africa's waste landscape. It is also up-to date with regard to the National Environmental Management Waste Act (NEMWA). She says the training will benefit anyone involved with waste by providing them with a more integrated understanding of all aspects of waste management.

The new training programme, conducted by experienced facilitators, provides attendees with current information and encourages critical thinking and healthy debate. It is comprehensive and made up of several modules which can also be offered individually for those who wish to learn only about specific aspects of waste management. The modules are:

- Introduction to Integrated Waste Management;
- Legal Requirements;
- Waste Management Planning;
- Responsible Handling of Waste throughout the Material Cycle;



Training provided by the IWMSA

- Different Approaches towards the Rendering of Waste Management Services; and
- Beneficiation Opportunities.

The new course material was developed by Prof. Oelofse, Suzanne Karcher, Kobus de Meyer, Sue Benningfield, Belinda Berry and Nomakhwezi Nota, and reviewed by Linda Godfrey, Principal Researcher at the CSIR. Oelofse believes that it will make a positive impact on the country's waste management landscape as the more people are educated, trained and informed, the more likely they are to engage in more environmentally acceptable and appropriate waste management practices. If the waste management practices are consistent, there will be a huge impact on the environment as well as on South Africans who are adversely affected by poor waste management.

In June 2015, the Institute launched the NQF Level 4 accredited waste management training course as part of their training portfolio. The inaugural training course was attended by 15 delegates and according to Oelofse, the majority of these were returning attendees, which means that they have already obtained the NQF Level 1 to 3 training certificates.

South Africa's waste industry is constantly undergoing changes, making it essential for waste management professionals to be equipped with the necessary skills and tools. With the NQF Level 4 course, individuals will obtain the required technical skills and knowledge to promote professional competence and to perform more challenging supervisory roles in an effective way. Once completed, the training course will equip attendees to:

- review information and identify environmental problems and opportunities for improvement;
- uncover solutions to these problems and issues in the workplace;
- develop and implement plans of action for improvements;
- become skilled in evaluating the impact of improvements implemented;
- demonstrate an in-depth understanding of environmental management principles and practices;
- broaden their knowledge and skills set for the handling and disposing of waste in an environmentally sustainable manner;
- increase their core competencies in pioneering innovative waste management solutions, which will in turn provide a sustainable waste management platform to all industry role players.

This new addition to the institute's training programme emphasises the responsibility that it accepts towards making a significant contribution to effective waste management. The programme is tailored towards improving the overall delivery of South African waste management services and transforming it into a world class industry. The training programmes are hands-on and promote interaction.

The NQF Level 4 accredited training course supports the institute's main objective to positively influence more people in the industry, as well as to develop quality waste management specialists.

WASTECON 2016

This conference takes place from 17 to 21 October 2016 at Emperor's Palace in Johannesburg. Its aim is to educate its members, the private sector and government on proper waste management practices. This year's theme, The Changing Face of Waste Management, will highlight recent waste management policies and legislative changes in South Africa. Some of the speakers include:

- Torben Kristiansen, Vice President of Waste and Contaminated Sites in Denmark, who will shed light on European advances in waste management and its relevance for South Africa;
- Bertie Lourens, MD of WastePlan, who will conduct the plenary address on the economic future of employees in the waste

management industry;

- Sarah O'Connell, GreenCape's programme manager for Western Cape Industrial Symbiosis, who will unpack the role of industrial symbiosis in South Africa.

This year's conference will have three main parallel sessions that will cover recycling streams, waste management and alternatives to landfilling. It will also offer an e-waste workshop, a landfill capping and rehabilitation workshop and a special workshop hosted by the Department of Environmental Affairs on industry waste management plans.

Other topics to be covered are:

- the future of employees in the waste industry;
- closing the loop of product life cycles by implementing greater recycling and re-usable waste initiatives;
- the role of waste in the circular economy, cleaner production and industrial re-use waste programmes;
- the risks of health care waste;
- the potential for new recycling industries from under-utilised waste streams;
- the integration of waste management plans;
- legislation and waste-to-energy
- innovative waste collection and transport systems; and
- innovations in leachate treatment.

Legislation compliance

Changes in legislation underscore the need to divert waste away from landfill sites, opening the door for new waste solutions. Waste-to-energy technology is currently receiving attention as an alternative to landfill and will be a definite talking point of the conference, which will also shed light on the environmental and economic viability of this technology.

The IWMSA encourages organisations to comply with legislation and updates to the National Waste Management Act. The implementation of environmentally conscious waste management operation is required

Keynote speaker
Torben Kristiansen



from all organisations dealing with waste, including municipalities. Prof Oelofse says that the waste landscape is changing and moving towards a 'green industry' that complies with waste legislation and regulations. Jonathan Shamrock, chairman of WasteCon 2016, says all parties need to comply with and abide by the ethics of the industry.

Networking

The conference will provide exhibitors with an opportunity to showcase their brands, products and services to the public, educational and governmental delegates. Networking opportunities amongst industry role players will provide an opportunity to discuss the latest industry developments in South Africa and from abroad. **isa**

Information provided by Reputation Matters on behalf of the Institute of Waste Management of South Africa. For further details visit www.iwmsa.co.za. For further conference enquiries visit www.wastecon.co.za

A photograph of a modern outdoor patio area. The patio is paved with large, light-colored rectangular stone tiles. There are several wooden slatted benches arranged around the patio. In the background, there is a low wall with a small waterfall feature. The area is surrounded by lush greenery and trees. The SmartStone logo is visible in the top right corner, and the text 'WORLD LEADERS IN CAST STONE SINCE 1980' is below it. At the bottom, there is a call to action: 'Create attractive designs with eye-catching patterns using modular sizes, textures, borders and colours' followed by 'Design with SMARTSTONE' and the contact information '0861 762 781 (Nationwide) www.smartstone.co.za'.

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