

landscape SA

September/October 2010 No. 37

R30-00



Irrigation Edition



An aerial view of the proposed Crossways development showing the surrounding landscape, Van Staden's river gorge, the N2 towards Port Elizabeth, the town of Thornhill in the distance, irrigated pastures for cattle, constructed dam, treatment wetland system and a range of rural to urban residential and commercial units that will be developed on the site.

CROSSWAYS FARM VILLAGE

Dr Chris Mulder, founder and director of CMAI (Chris Mulder Associates Inc), is the pioneer of the concept of farm living which combines residential development with agricultural activity in a rural environment. This article presents his project design and planning, which have been approved by the Eastern Cape's Department of Economic Affairs, Environment and Tourism.

The concept of Crossways is that of a typical village of yesteryear set in a modern idiom. It promotes the idea of productive farm villages, also called

agri-estates, and is an important step forward in preserving South Africa's diminishing agricultural land, as well as creating work in impoverished rural areas.

Agriculture, claims Mulder, is the new golf because golf course developments are no longer economically or ecologically viable. Researchers have found that 83% of the people who live on golf estates don't even play golf but prefer to live on these estates for other reasons, including those associated with lifestyle. It makes little sense then to invest in expensive, irrigated and unproductive lawns for golf courses when the same land could be used as a productive farm, while still creating the same desirable lifestyle for home owners.

The concept behind the Crossways Farm Village is that of New Ruralism which aims to provide compact walkable, mixed-use



Dam wall crossing

A constructed dam will be used for irrigation purposes, with water that has been recycled through the treatment wetland system. Edge treatment of the dam wall will vary from harder stone edges to soft vegetated zones. Cattle farming is an integral part of the development and cows will be seen herding from camp to camp along a network of cow paths.



Castle

The castle houses will be located within the compact village core. Inspiration for the design is taken from the local vernacular of Eastern Cape farmsteads and the envisioned architectural character will draw on traditional farm building archetypes, reinterpreting the local vernacular to incorporate elements of a modern rural lifestyle. The castle units will be designed to ameliorate the micro-climate of the urban core by providing planting, walls, screens and internal courtyards.



Crossways & Sunnyvale Existing Site Aerial
Existing site aerial showing the context of the development

communities within an agrarian setting. It has evolved from the need to revive rural communities and curb urbanisation while providing food security for future generations.

Crossways is situated in the Eastern Cape, a 20 minute drive along the N2, east of Port Elizabeth. It is adjacent to the rural town of Thornhill and the Van Staden's Wild Flower Nature Reserve, bordered by the Apple Express railway line on the north and the old national road, the R102, on the south. It is currently an existing functional dairy farm.

The total size of the development is approximately 560ha and it will consist of approximately 733 residential units. Of this 560ha, 25% will consist of irrigated agriculture, 25% will be developed into a mixed-use community and 50% will form part of a rehabilitated nature reserve, serving as an addition to the adjacent Van Staden's River.

Valuable agricultural soil will not be lost as a result of the development and productivity of the existing farm will be doubled. The amount of irrigated pasture will be expanded from 65ha to 180.6 ha of workable agricultural land. The income generated from the development will be used to finance a state of the art dairy farm and produce from the dairy farm will be available to the homeowners and surrounding communities, thus reducing the facility's carbon footprint. Profits generated by the dairy farm will be distributed equally between the home owners, farm managers and farm workers.

Landscape design philosophy

The landscape of Crossways will be composed of a dynamic and vital system of green infrastructure which will nurture conditions for life and community. This will include parks, streets and trails offering the opportunity for social interaction, recreation, education, and play. Veld management and agriculture will supply materials for habitation and produce to the local population. Ecological corridors will accommodate the passage of plants and animals via indigenous habitat, recreational routes, roads and cow paths. Wetland systems and sustainable storm water management techniques will cycle and remediate water and the microclimate will be ameliorated by the considered placement of vegetation and built elements.

The vision will be realised through a sensitive evolution of the existing landscape and will consist of context-appropriate and bio-diverse nature reserves, agricultural lands and refined civic and private places. The site will form a strategic link in the creation of an ocean to mountain biodiversity corridor anchored on the Van Staden's River. This will be ensured through the progressive rehabilitation of alien infested areas and the creation of a nature reserve in the Van Staden's gorge.

The landscape is integral to the unique lifestyle which will be offered at Crossways. Interaction with the landscape, whether actively or passively, will be an essential part of life as a member of this community. Home owners must contribute to their community by considering and understanding the wider implications of the activities which they undertake on their private erven.



Farmstead precinct

The farmstead building will be based on the traditional forms and structures of sheltered farmyards found throughout the Eastern Cape, providing a unique interpretation of a modern, rural lifestyle. The nature of the building is characterised by simple, barn-like forms, usable courtyards and generous outside living spaces.

Core requirements of the development in terms of the landscape vision

Riparian zones and natural areas must be preserved and restored and restoration must include only indigenous plants appropriate to the prevailing vegetation type. Where feasible and appropriate, endemic or locally indigenous species will be used to create low water use and low maintenance planting schemes. Planting of invasive alien vegetation will be strictly prohibited and invasive alien species present on site must be eradicated on an on-going basis.

The agricultural landscape of Crossways will protect and enhance the existing rural character and agriculture is to be practiced for the purpose of local food security throughout the farm village, from agricultural pastures to rooftops and window sills in the village centre. The scale of agriculture is to transition from rural to urban land use.

The design and treatment of communal spaces will demonstrate a unique Crossways character with human settlement employing context-appropriate techniques to integrate into the rural environment. The landscape of human settlement is to respond to the site and be site specific, and outdoor spaces must demonstrate liveability and an agreeable microclimate.

Communal spaces will be designed with the safety of end users in mind - pedestrian circulation should be straightforward and the street environment should be comfortable. Water must be respected.

Environmental issues

The location of residential nodes and functions was based on an analysis of the site's soil types, slopes, vegetation, accessibility and orientation. This was done in order to ensure that environmentally sensitive areas were not compromised.

The natural vegetation on site consists of Albany Coastal Belt, Kouga Sandstone Fynbos and Kouga Grassy Sandstone Fynbos. The area has mostly been transformed by agriculture and the riparian areas have been invaded by Black Wattle and Bluegum species which will be removed; the areas will be rehabilitated in order to safeguard water and enable ecological links to be created between Crossways and the Van Staden's Wild Flower Reserve which is located on the eastern boundary of the site.

Crossways will have its own internal municipality that will be responsible for the environmental management and maintenance of the development which will have its own sewage treatment facility on site to treat and recycle the black water produced by the development.

The water will initially be treated by a RBC contractor facility. It will then flow through a series of sub-surface and surface flow wetlands designed with indigenous species to cleanse the water and bring it above the allowable standard for treated water. In the final construction phase of the development, the three hectare constructed wetland will be able to treat 560 kl of water per day. It will create habitat for a variety of organisms and wildlife as well as being a social, recreational and educational amenity for residents and visitors. Once the water has been cleansed, it will flow into a storage dam and be re-used for irrigation on site.



Development alternative

The development alternative that was submitted for the ROD. Although not the most recent version of the plan, it indicates the layout and various facilities and functions as described in the key.

Waste removal on site will follow an enforced three-bag recycling system, ensuring that the carbon footprint of the development is reduced and providing income through re-using recycled products and reducing landfill space. Fruit and vegetable operations will provide food to the development and this will further reduce its carbon footprint whilst ensuring food security.

Sustainable drainage systems that are designed to slow the flow of water and delay its entry into a river system, preferably allowing infiltration into the soil after a storm event, will be employed. Stormwater treatment will become a design feature and the traditional systems of concrete canalisation that cause erosion and damage in downstream catchments will be avoided.

Where feasible the following methods will be employed:

- swales, soak-aways and infiltration trenches – vegetated channels collecting and slowing the flow of stormwater, allowing it to soak back into the ground;
- infiltration basins – an otherwise dry basin where a volume of stormwater can be retained and percolate into the soil;
- detention basins – an otherwise dry basin where a volume of water can, in the short term, be detained prior to release into stormwater drains preventing inundation of the wider system;
- retention ponds – a permanently wet area which has vegetated margins and is fed by stormwater. The vegetation can have some water purification benefits;
- wetlands – a system of relatively shallow water and marshy areas almost entirely covered with aquatic vegetation. The vegetation serves the function of purification, removing contaminants and nutrients from the water;
- filter strips – a vegetated strip between a runoff source and the water course to which it drains. The vegetation slows the flow of the water and traps any sediment it is transporting; and
- conventional stormwater management techniques will also be employed, such as open drainage channels.

Social issues

The project will have numerous positive spin-offs for rural development and the surrounding local communities. Through written agreements and various community meetings with the village of Thornhill, this community will become one of the main beneficiaries of the project. It will provide economic stimulation, job creation, equity and ownership to previously disadvantaged communities and will supply the surrounding community with training, education, the expansion of existing agricultural industry and dairy farming. At the same time it will provide a stimulus for rural development.

The farm will be owned and operated by a company in which shares will be held equally between the home owners association, farm management and the workers. Projections made by Urban-Econ show that once the development is complete, in addition to the farming operations,



Station precinct

The Apple Train railway line runs from Port Elizabeth to Loerie and passes by the Crossways development. With the revitalisation of the train system, a vibrant market square will be created at the existing Sunnyside station, selling local farm produce and other products.

it will provide 2 583 permanent jobs. A further 11 860 temporary job opportunities will be provided during the eight years it takes to complete the development.

The nature of detailed designs will be labour intensive and will make use of the harvested invasive species (Bluegums and Black Wattle) and natural sandstone found in the area. Members of the surrounding community will be employed to construct these detailed elements such as lighting fixtures, benches, bollards, litter bins and street lights. This will provide skills development and training. The dairy farm will incorporate a state of the art teaching and training facility that will educate workers on the farm and members of the surrounding communities about modern dairy farming techniques.

The available residential options for sale will include low-income options for first-time buyers to luxury residential options, making the development more accessible.

Furthermore, the project will improve food security for the development and surrounding communities by growing crops and vegetables on site.

Hard and soft landscaping

The use of permeable vs. impermeable surfaces will be regulated on individual homeowner's properties in order to reduce runoff into the surrounding catchment and increase natural water infiltration into the ground.

Plant species which are invasive or noxious to humans and/or cattle will be prohibited and planting will be selected in order to maximise biodiversity and ensure a variety of plant heights and strata. Groundcovers, grasses, restios, shrubs and trees will be used and locally indigenous and low water use planting will be encouraged. A suggested planting list will incorporate locally indigenous species that occur naturally within the three vegetation zones on site (Albany Coastal Belt, Kouga Grassy Sandstone Fynbos and Kouga Sandstone Fynbos). The typical planting in more ecologically sensitive areas, such as along the kloof edge, will be more strictly regulated in order to ensure maximum biodiversity within the surrounding nature reserve.

All turf areas under HOA jurisdiction to be either kweek/couch grass (*Cynodon dactylon*) or buffalo grass (*Stenotaphrum secundatum*). The unnecessary use of large lawn areas will be discouraged.

The only exotic plants permitted will be in the specific areas of urban agriculture. These species will be selected from a suggested planting list compiled from regionally sensitive and accepted species. Irrigation methods and fertilisation will be compatible with agricultural practice and will be reviewed with reference to specialist reports. **iso**

The construction commencement date is November 2010 and expected completion is November 2017. Information and visuals supplied by Chris Mulder & Associates Inc.