

biomimicry<sup>sa</sup>  
imitate life's genius



imitate life's genius

# BIOMIMICRY

BERG RIVER

VISIT

18 FEBRUARY

2013



BERG RIVER VISIT:  
FRANSCHHOEK

biomimicry<sup>sa</sup>  
imitate life's genius



On Monday morning, 18 Feb 2013, a mixed group of stakeholders from various sectors of expertise met up on Burg Street, in the Cape Town CBD. Most had already met each other the day before, at a workshop entitled “Genius of Place”.

We climbed into two governmental vans, and proceeded towards the Council for Scientific and Industrial Research (CSIR) in Stellenbosch, to meet with the rest of those involved, bringing the group to just over 30 individuals.

BERG RIVER VISIT:  
OVERVIEW

| biomimicry<sup>sa</sup>  
imitate life's genius



The aim was to visit various sights throughout the Cape Winelands that affect the wellbeing of the Berg River system in one way or another. This river system is critical in it's serving of the economic, social and environmental infrastructure of the area, and this group is set to build relations amongst each other, in their quest to uncover the major problems in the polluting of the Berg River system.

The group of stakeholders includes governmental members from across the board, academics, students, municipal heads and members from BiomimicrySA.

BERG RIVER VISIT:  
OVERVIEW

This outing served to assist in identifying the source of the problems, so that the BiomimicrySA team can determine whether biomimicry solutions to these key challenges may be feasible.

The function of this site visit serves to gather information and insights on the water challenges of the Berg River.

The collaboration between BiomimicrySA and the Western Cape Government has ensued from the newly developed governmental initiative, “110% Green”.

As Jenny Cargill, advisor to the Premier responsible for the Green Economy, explains, “110% Green provides a platform for people to get involved in practical actions in ways that connect green and the economy. This year, we decided to roll out certain themes, and one of those themes is innovation. One of the other themes is the Green Economy working for the poor. This is why we’re here today, to source the problems of the Berg River, and to use biomimicry as our innovation towards a solution.”

BERG RIVER VISIT:  
OVERVIEW



Three primary issues have been identified as having the biggest impact on the health of the Berg River system:

1. The current wastewater treatment plants and how they operate.
2. Informal settlements and the difficulties in dealing with grey and black wastewater and solid waste that bypass or put further strain on the formal systems in place which would handle this waste.
3. Agriculture and the resultant eradication of indigenous vegetation along the river which would act as a buffer to naturally filter certain excess pollutants which seep into the river system through various channels.

BERG RIVER VISIT:  
OVERVIEW





BERG RIVER VISIT:  
FRANSCHHOEK

biomimicry<sup>sa</sup>  
imitate life's genius



Our first stopover was in Franschhoek.

We viewed the current wastewater treatment works, and listened to Brett Keyser, head of Water and Wastewater Treatment at Stellenbosch Municipality.

“I’m going to try and explain to you how new innovation can answer questions that we didn’t know two years ago.”

He explained how a new plant is being developed to cope with the demand of the increasing amount of waste in the Franschhoek valley.

BERG RIVER VISIT:  
FRANSCHHOEK

| biomimicry<sup>sa</sup>  
imitate life's genius



The infrastructure in place at the moment is incapable of dealing with the winter rainfall stormwater surges, which washes large amounts of untreated wastewater into the river system.

“The same happens in all informal settlements. The storm water system is connected to the sewer system, and the first [winter rainfall] flow goes into the sewer, and the more it rains, it’s diluted, and goes into the river.”

BERG RIVER VISIT:  
FRANSCHHOEK

| biomimicry<sup>sa</sup>  
imitate life's genius



BERG RIVER VISIT:  
LANGRUG

biomimicry<sup>sa</sup>  
imitate life's genius



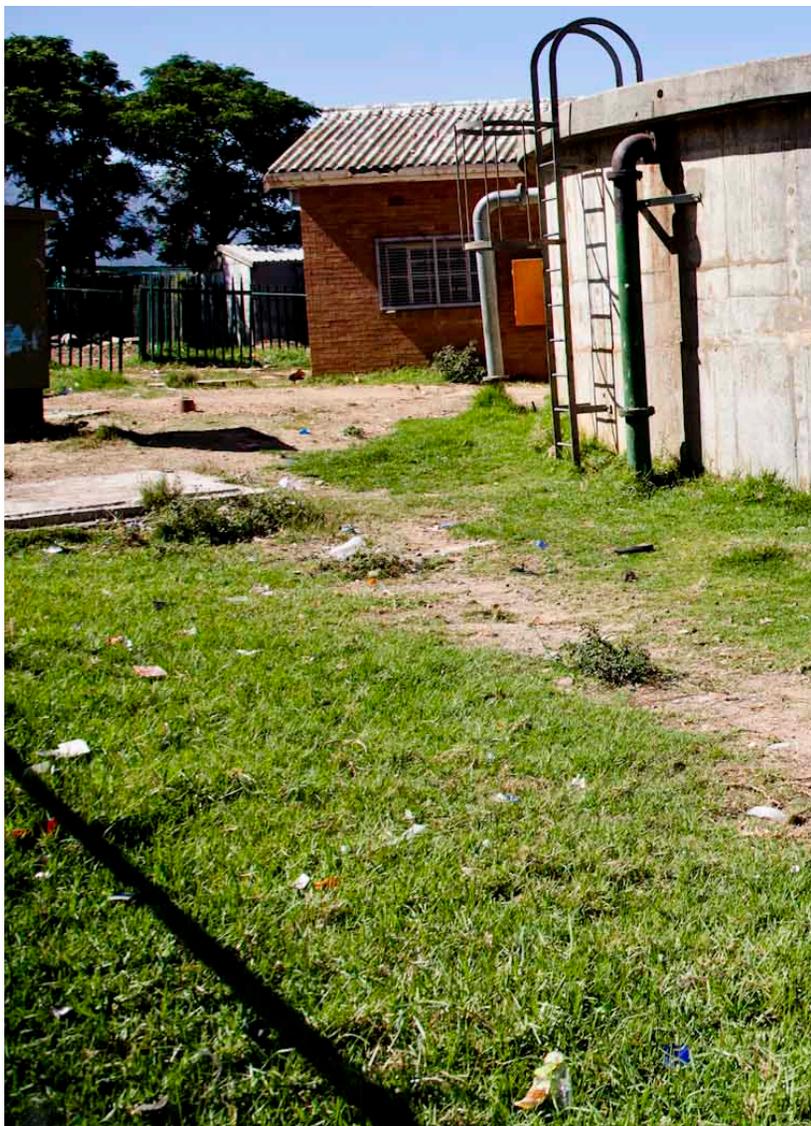
We then march up the road to visit Langrug informal settlement, to observe first hand the infrastructure of the waterworks in the township and the difficulties that surround it.

We are led by Dr Kevin Winter, lead researcher in Urban Water Management, from UCT. He guides us through the messy deposits of a pollution-infested stream, mottled with plastic and bottles, viscous, smelly and dark-grey in character.

Once again, waste gets put into these informal outlets, and lacks any type of treatment whatsoever, making them cesspools of disease and waste with very high levels of E. coli and bacteria.

BERG RIVER VISIT:  
LANGRUG

| **biomimicry**<sup>sa</sup>  
imitate life's genius



“It’s actually insane that we aren’t finding better ways to manage this water,” says Dr Winter. “This water could be used to irrigate this open field over here.”

This opens numerous options in the line of “Genius of Place”, where certain plant species can be introduced as biofilters to help absorb excess pollutants within this small stream, which eventually makes its way into the bigger river systems further down the valley.

BERG RIVER VISIT:  
LANGRUG

| biomimicry<sup>sa</sup>  
imitate life's genius



BERG RIVER VISIT:  
LANGRUG

biomimicry<sup>sa</sup>  
imitate life's genius



BERG RIVER VISIT:  
LANGRUG

biomimicry<sup>sa</sup>  
imitate life's genius



BERG RIVER VISIT:  
LANGRUG

biomimicry<sup>sa</sup>  
imitate life's genius



BERG RIVER VISIT:  
LANGRUG

biomimicry<sup>sa</sup>  
imitate life's genius



BERG RIVER VISIT:  
LANGRUG

biomimicry<sup>sa</sup>  
imitate life's genius



BERG RIVER VISIT:  
BERG RIVER dam

biomimicry<sup>sa</sup>  
imitate life's genius



We carry on with our tour, visiting the Berg River Dam, currently storing a significant amount of pristine water. There are issues with the ability of the dam to release water flows downstream during high rainfall seasons – thereby disrupting the regular natural pulses of flooding that the river system needs.

Farmers downstream are complaining about this too.

BERG RIVER VISIT:  
BERG RIVER dam

| **biomimicry**<sup>sa</sup>  
imitate life's genius



BERG RIVER VISIT:  
PAARL WASTE WATER

biomimicry<sup>sa</sup>  
imitate life's genius



The next visit was the Paarl wastewater treatment works, where we listened to Jimmy Knaggs, of the Drakenstein Municipality.

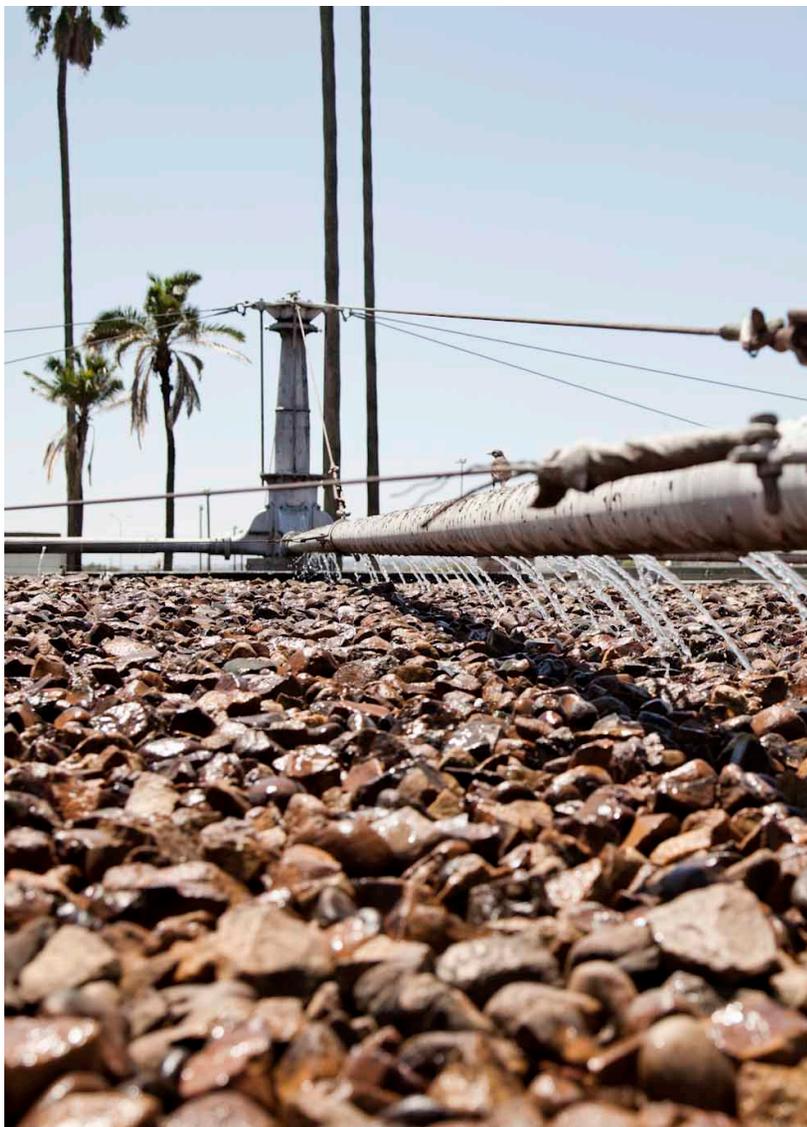
This has just been named the greenest municipality in the Western Cape.

Jimmy explains the difficulties in sustaining this successful model:

“The biggest problem that we have is where you have a formal dwelling, and then you have informal additions to that dwelling. In some cases the formal houses will let the informal residents use their facilities, and in some cases not.”

BERG RIVER VISIT:  
PAARL WASTE WATER  
WORKS

| **biomimicry**<sup>sa</sup>  
imitate life's genius



This results in the informal management of waste, which then flows into river systems and infiltrates the ground water.

“Because the services aren’t being used as they should, it’s having an impact of what gets into the storm water.”

The group discussed various options around educating and redesigning the formal settlements – but many problems with this were noted.

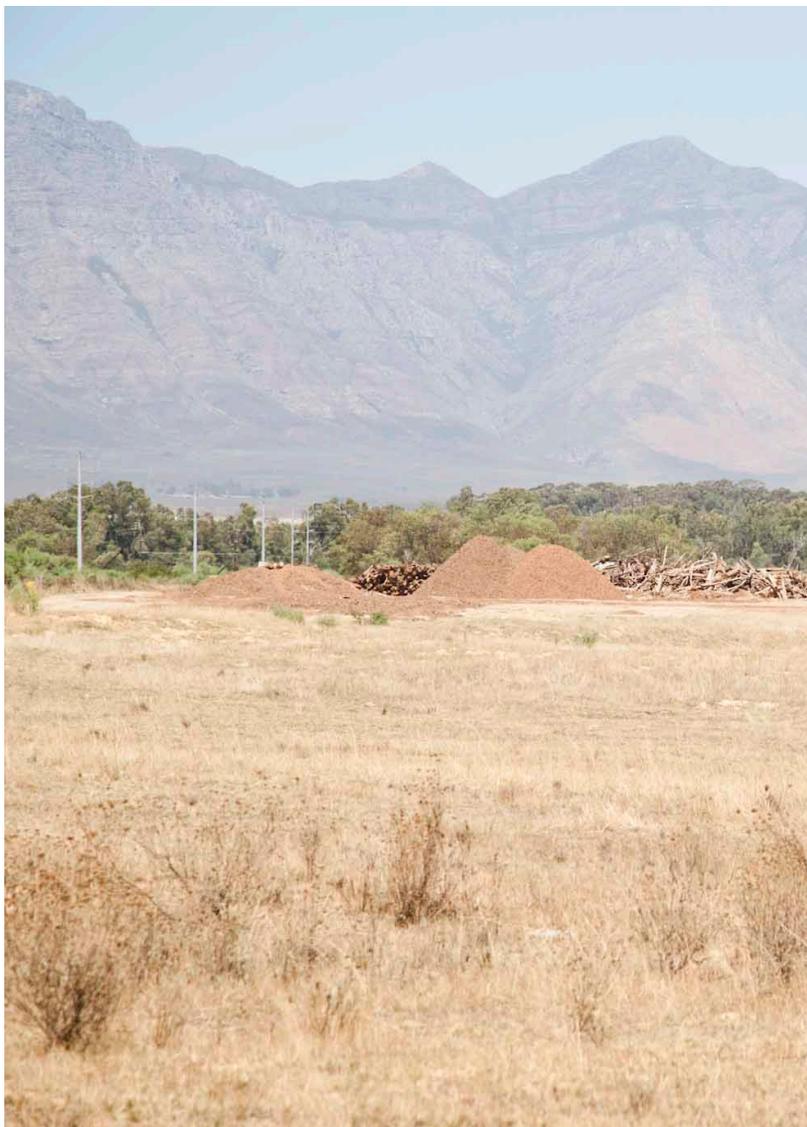
The formal engineered system cannot deal with the nature of the community it services.

BERG RIVER VISIT:  
PAARL WASTE WATER  
WORKS



BERG RIVER VISIT:  
BERG RIVER BANK,

biomimicry<sup>sa</sup>  
imitate life's genius



We finished our tour on the bank of the Berg River near Hermon, where it's surrounded by dense alien vegetation and farmlands.

We stand in the dry and dusty air as Francis Steyn, of the Department of Agriculture, and Programme Manager of Landcare, has implemented a pilot series of actions in clearing the alien vegetation.

At the cleared sight, Francis explains how the indigenous vegetation has been allowed to dominate again, and it naturally filters the water and keeps it clear for flowing during the seasonal rains. "Our biggest problem has been that whenever there's a bit of rain, the banks flood and damage pumps and agricultural land," he says.

BERG RIVER VISIT:  
BERG RIVER bank,  
hermon



“Now that we’ve taken the aliens out on this section, the animal life can flourish and the river can flow as it ought to.”

The natural riparian vegetation that acts as a buffer in terms of managing flood flows and some degree of pollution – can be restored but it takes a significant effort to remove the persistent alien vegetation.

The cost of this can be offset through innovative entrepreneurial opportunities around the use of the alien vegetation that is removed.

BERG RIVER VISIT:  
BERG RIVER bank,  
hermon

| biomimicry<sup>sa</sup>  
imitate life's genius



One option for this was demonstrated at the very last site visit – where a machine was being trialed for chipping large quantities of cut alien gum trees.

This could be used for a number of options including as a biomass source for fuel in boilers (to replace coal) and for biochar.

The entrepreneurs currently looking into this were also investigating other alternatives with the assistance of Francis Steyn's department where feasible.

BERG RIVER VISIT:  
BERG RIVER bank,  
hermon

| **biomimicry**<sup>sa</sup>  
imitate life's genius



BERG RIVER VISIT:  
BERG RIVER BANK,

biomimicry<sup>sa</sup>  
imitate life's genius



BERG RIVER VISIT:  
BERG RIVER BANK,

biomimicry<sup>sa</sup>  
imitate life's genius

# CONFERENCE ROOM KONFERENSIEKAMER



BERG RIVER VISIT:  
CONCLUSION

biomimicry<sup>sa</sup>  
imitate life's genius



The stakeholders then returned to Stellenbosch and Cape Town.

Lists of stakeholders who attended the workshop and the Berg River site visit would be provided to the BiomimicrySA team for further interviews and a refinement of the key findings from these initial two days.

The BiomimicrySA team aim to assess the feasibility of biomimicry to address the key findings from the initial stakeholder engagement and determine what research options exist for the “discovery stage” of the Genius of Place, where they will research locally relevant solutions from nature in order to deal with the problems identified.

BERG RIVER VISIT:  
CONCLUSION

[WWW.BIOMIMICRYSA.CO.ZA](http://WWW.BIOMIMICRYSA.CO.ZA)

FOR MORE INFO CONTACT:

MAZ ADAMSON :

E: MAZ @ BIOMIMICRYSA . CO . ZA

C: +27 82 923 7954

biomimicry<sup>sa</sup>  
imitate life's genius

biomimicry<sup>sa</sup>  
imitate life's genius