

Kuils River Social Audit ~ The Story of an Urban River



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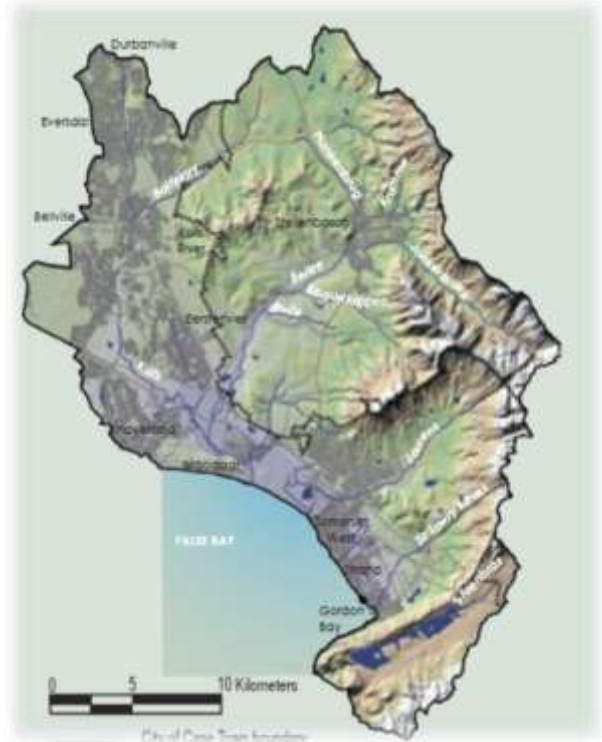
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1. Introduction

The Kuils River Catchment is home to a large section of the Western Cape population, as it flows from the Durbanville Hills through Bellville and Kuils River, past Delft and Belhar to the township communities of Mfuleni and Khayelitsha before it joins the ocean in False Bay near Macassar.

Along the way it experiences many different challenges and has indeed been modified to a large extent by urbanisation and industrialisation, with significant changes to the amounts of water flowing in the river and with high pollution levels. This has resulted in poor river health indicators and the potential for the spread of human diseases such as diarrhoea and skin irritations.



Recent efforts such as the development of the Khayelitsha Wetland Park, the Kuils River Catchment Management Forum and the City of Cape Town's proposed rezoning and development of the Khayelitsha Wetlands Park are highlighting the importance of rehabilitating the river for both ecosystem functioning and human health. This has been further emphasized by the people who live downstream, who want the river to be clean and healthy,

The heart of this study is to look at the relationship between the river and wetlands and the people downstream who use it and live alongside its banks. It is against this social backdrop that we investigated the key catchment issues - especially social and environmental issues with a focus on water-related issues such as pollution, flooding and conservation, and how this in turn affects the people who use the river. The study also aims to look at the overall Kuils River catchment from the Durbanville Hills to the estuary at Macassar, and to show downstream communities the upstream impacts on the river. It is through understanding the whole river that the downstream communities can influence decision makers to improve the quality of the water throughout the river system.

2. Photographic Portrait of the Kuils River from Source to Estuary



Kuils River Upper Section



Kuils River Middle Section



Kuils River Lower Section



3. Description of Research Methodology

The purpose of this project is to identify the people who are currently using the Kuils River and for what purposes and to explore more subtle attitudes towards, and uses of, the river and wetlands. The aim is to generate knowledge that can be used by the Environmental Monitoring Group (EMG) and the Kuils River Catchment Management Forum (CMF) in developing activities and future plans for the catchment. The project consisted of twelve days of research, field trips and writing up the results, and included the following activities:

- Preliminary online research
- A meeting with the EMG Water and Climate Change Team
- Participation in a Kuils River Catchment Management Forum Meeting
- Community Focus Group Meeting in Khayelitsha where the group were asked four questions pertaining to their vision for the Kuils River and what they would like to see happen, how they and others currently use the river, and who the users are and any issues negative and positive. Participants could also answer the questions in smaller discussion groups.
- Participation in the Kuils River Action Day to celebrate the International Day for Rivers, Water and Life where the preliminary findings of this study were shared through a photographic presentation (included in the information pack)
- Interviews with Key Stakeholders:
- Photographic trip along the river course

The emphasis of this approach has been to ascertain information and perspectives relating broadly to the Kuils River and more specifically to the Khayelitsha Community's vision, issues and concerns.

4. Community and Social Issues

The information in this section of the report comes largely from the focus group meeting that took place on 11 February, as well as the Kuils River Catchment Forum Meeting on 29 January 2014, the field trip with Thabang Ngcozela and Roy MacGregor on 12 March 2014, and discussions during the International Day of Action for Rivers held on 14 March 2014 at the Khayelitsha Wetland Park. See Annexes B and C for the notes from the focus group meeting and the participant list respectively.

One concern in terms of process is that the meetings appear to be dominated by people from the Makhaza area and not enough people from some of the areas where the problems occur.

During the meeting participants answered four key questions in both the plenary group and in small buzz groups. The four questions were:

- Who are the stakeholders and what are the uses of the wetlands and river?
- What are the positive issues?
- What are the negative issues?
- What is your vision for the river and wetlands?

In addition to answering these questions, community members raised a number of procedural issues.



4.1 Process issues:

There is a real sense that hopes and expectations have been raised and then people become disappointed when nothing happens, and therefore levels of frustration on many fronts are high. People say they have been patient up to now. Organisations working with the Khayelitsha communities need to be made more aware and more sensitive to community needs.

Participants of the focus group questioned the purpose of the focus group meeting and what would be the outcome for them as they felt there have been too many meetings with a variety of outsiders coming into the community with their own agendas and requests for information but not enough happening on the ground. Before the meeting started they question what tangible benefit would be the outcome and would the researchers actually help them clean their river.

A number of incidences were detailed to substantiate their disappointments. For instance, they mentioned the Cape Peninsula University of Technology (CPUT) River Health training programme where people were identified to be trained and then the training never took place. Secondly some members were included on an environmental management training programme but the promised certificates never arrived. Again during the focus group meeting discussions were held about the imminent Ministerial visit. This too was cancelled at short notice.

When the community has sent letters sent to key organisations such as CPUT and the Department of Water Affairs (DWA) the letters do not get answered, which upsets them further.

With respect to the CPUT projects – for a boat and for the market place - the community would like to be involved from the onset in the design phase, and not just to receive the end products.

Expectations have also been raised about receiving some form of remuneration for cleaning the river. After cleaning the river for a number of years they have given up cleaning. This issue of remuneration or some form of job creation was present throughout the discussions. There is a real need for job creation.

4.2 Uses and Users of the river and wetlands:

- Church groups use the river for rituals such as baptisms (includes the river and wetlands as well as the estuary).
- Fishermen are starting to use the river again with one man fishing regularly
- Youth are still cleaning the river and doing wetland tours
- There is a farmer farming cattle in the wetland area, and others use the wetlands for grazing
- Some people swim / bathe in the water
- People walk along the river
- People harvest medicinal plants for healing, flowers for selling and reeds for weaving and thatching. Examples of medicinal plants they want to harvest – a mint-like plant that is good for colds. They harvest it when the river is clean and make a tea out of it. They also cook the



Arum Lilly plant or sell the flowers e.g. in Adderley Street. They use the reeds to make grass mats.

- Youth are also starting a canoe club and using the wetlands for canoeing
- People are using the wetlands for sanitation - as a toilet facility
- Some people use the wetlands as a dumping ground for rubbish
- People take the sand for building purposes
- Some people have a food garden on the other side
- Visitors to the Khayelitsha Wetland Park and users of the gymnasium.
- Specific groups such as the people from St Johns Church and people from SST, the squatting area
- It looks like people use the river water for washing clothes as well.



Gymnasium

4.3 Negative issues:

There were a number of negative issues raised by community members. This section deals with what people reported and evidence seen on the field trip.



Sanitation - using the wetland as a toilet

Sanitation: Community members complained that the Church groups such as St Johns use the wetland as a sanitation facility and that when they are cleaning the river, they have to jump over faeces, which is both horrible and unhygienic. During the field trip we saw a clear path into the wetland, where people walk with toilet rolls, and down the path faeces everywhere.

Dumping: There is dumping in and along the river. This is particularly true for the other side of the river where it is not looked after. Some said that the wetland has been dirty, whereas it used to be clean. They do not want to see the wetland getting dirty and any of the fish dying.



Dumping

Sand-mining: People are mining sand along the river results in part of the bank of river being removed and this contributes towards flooding as it's the bank between the water and the houses that is being removed. It was clearly evident during the field trip.



Sand mining

Algae and bad odour: When the river is not cleaned, algae grow in the river and there is a bad smell that comes across the water to the houses. Youth highlighted that the smell in the river is not always nice and they say it is hard to live near and to smell the dirty smell when they are trying to eat.

Fishing: There were a number of negative issues with respect to fish and fishing. There have been times when they have seen dead fish but this seems to be more to do with low water quantity rather than quality. A second issue is that of species diversity - four years ago there was a bigger variety of fish, and now it is catfish and alien fish. They would like to have a bigger variety of fish species, especially edible fish.

Snakes: A negative issue associated with an unkempt river bank is that they find snakes along the river which makes people too scared to walk along the river. This issue got lots of agreement from other participants.

Quality of medicinal plants: With respect to medicinal plants, participants felt that if the river was maintained then medicinal plants could be used because they would be in the right condition. The implication here is that they are present but not of the right quality.

Gender safety: Women are scared to walk along as incidences of rape do happen.

4.4 Positive Issues:

People are **enjoying** the river now that it has been cleaned. Community members hope that it can be cleaned further and maintained properly.

Canoeing and tourism: Youth are excited about canoeing and attracting tourism. They want to see the wetland clean and to bring development to our community.



Reduced dumping: A positive comment was that since people have started cleaning the river, there are fewer events of people dumping. They think this is due to increased education and appreciation of the wetland.

4.5 Vision and Recommendations.

There was a call for engagement with other stakeholders (from the other side of the river) to stop their negative activities in order to reduce negative impacts on this side of the river.

In addition to the fish being healthy they would like to attract the “right fish” as at the moment it is mostly catfish, which a lot of people don’t eat (catfish is an invasive species in the Kuils River).

They emphasized the importance of river maintenance and water quality for healthy fish to attract tourists and to boost economic activity.

They would like to see more development and improvement of the wetlands:

- Kept clean and maintained
- Planting of trees in an orderly way
- Removal of pollution such as old tyres

If these actions happened the wetland would be more beautiful and would attract more people

There was an additional emphasis on the need for planting more trees to bring beauty to the area. The researcher subsequently wrote an email to Greenpop who have a process of planting trees with communities. See Annex D for Greenpop’s response and their directions on how to submit an application form for consideration. The community said they don’t want trees to be planted for them but for trees to be provided and they plant the trees themselves.

A number of people said they wanted the wetland to be beautiful and developed like the Rondevlei and Edith Stephens Wetland Parks. Participants were inspired by visits to the other wetlands. These field trips should be replicated for other community members, perhaps from the other side of the river.

A proposal was made that if the places close to the people could be fenced so that people don’t find it easy to dump in the river and wetlands. Fencing will also improve the security and beauty of the area.

People felt there is a need for someone to talk to the other stakeholders and the suggestion was made that Thabang Ngcozela could facilitate this.

They would like the walk-way to be maintained in order to prevent snakes. (The researcher believes that it might be useful to hold a snake identification and awareness workshop to help people differentiate between poisonous and non-poisonous snakes. For example, the Common Brown Water Snake is likely to be prevalent but is harmless and helps remove rodents. It is protected by law and it is illegal to kill them. See Annex E for details of Cape snakes and a potential course for identified community members to attend.)

They say that there are not yet tourists, only people involved with the City of Cape Town and when they have meetings and events, only then do people come to see the wetlands, the park and the river.

Spoke about starting a nursery and a food garden which forms part of the proposal to develop KWP.

The community are in support of the planned development of KWP. These include an entrance pavilion, a coffee shop and toilets and additions to the outdoor gymnasium more footpaths along the river and a bridge so people can cross. As well as the market place – bring veggies and crafts. All these will bring make it more attractive and bring more attractions.

There is an urgent need for adequate toilets and housing for the areas where this is missing. Education will not solve the problem. People will continue to use the wetlands for sanitation purposes if they have no other option. There is also a church in the squatting areas which does not have adequate facilities.

People also want the other side of the river to be cleaned because it has been neglected and for a footpath to be developed to the neglected area. The cleaning of the river is seen as a way of creating jobs and employment. There are a number of people already working on a full-time or contract basis for the Khayelitsha Wetland Park. More developments will result in more job opportunities

The youth are particularly keen to see a market by the wetlands as the “mamas can sell beads” and thereby attract tourists. There is a process of engagement with CPUT who is looking to develop mobile stalls as the area proposed is known to flood after heavy rains.



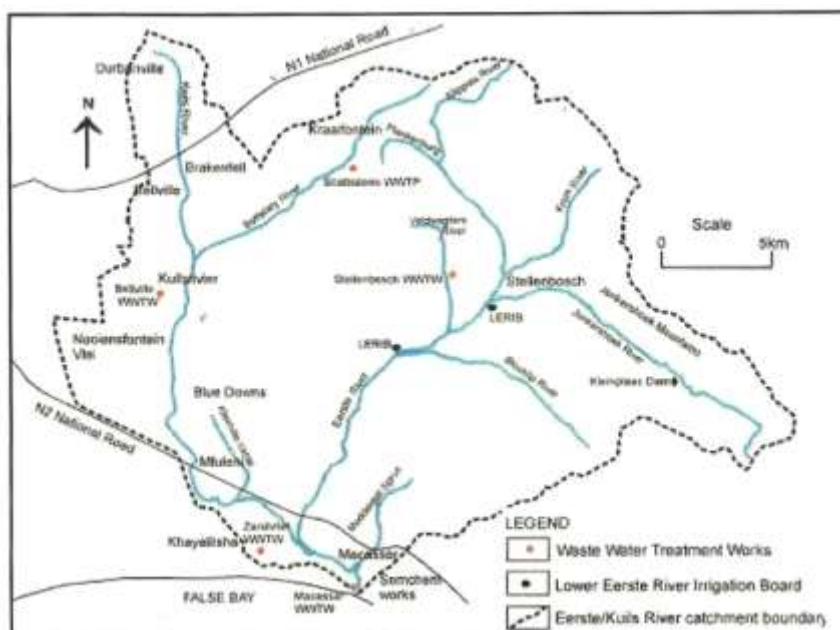
Fishing is seen as an important activity and there is some hope that things are improving as one man has started to fish again, and he appears to be successful.

5. The Kuils River Catchment

The Kuils River Catchment is found in the South-Western Cape. It falls within the greater Eerste-Kuils River Catchment which drains the eastern half of the Cape Metropolitan Authority Area and the Stellenbosch Municipality and then flows into False Bay. The Kuils River is approximately 30 km long to the point where it meets the Eerste River and drains an area of approximately 300km² (CSIR, 1982). The headwaters of the Kuils River are found in the Durbanville Hills and it travels southwards, alongside the R300 which is named the “Kuils River Road” through the Bellville industrial area and the town of Kuils River, past Belhar and Delft, through the Driftsands Nature Reserve, then alongside the N2 and through the townships of Mfuleni and Khayelitsha which it goes through and around with a system of water ways, and then past the Sandvliet Mosque to Macassar where it joins and becomes part of the Eerste River for a few hundred metres before it joins the Atlantic Ocean in False Bay.

In the lower section of the river, there are a multitude of wetlands, which are of value to the diversity of the surrounding Southern Cape fauna and flora, and to the Khayelitsha Community, especially at the Wetlands Park.

The name “Kuils” means “puddles” and comes from the early days when the river was not perennial but a series of wetlands. However, the river has since become perennial due to the discharge of large volumes of treated sewage water.



Map: Location and distribution of the stream network in the Kuils-Eerste River Catchment (Ayuk, 2008)

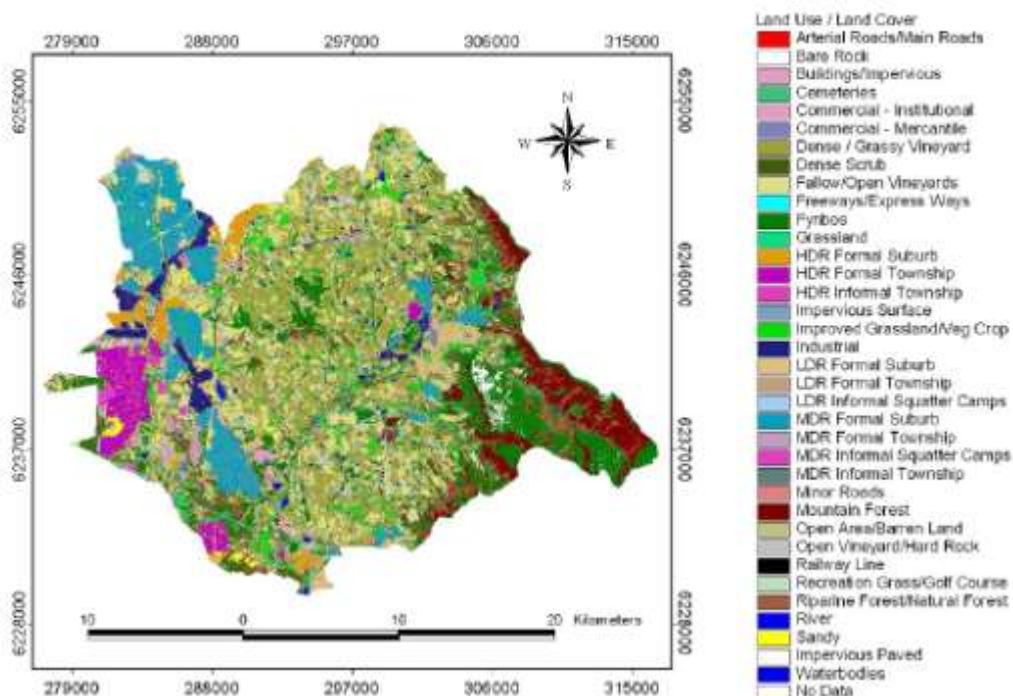
5.1 Land Use in the broader Catchment

There is a very valuable resource developed for the Kuils River and that is the Land Use / Land Cover Map developed by Masters Student, James Ayuk in 2008. This map contains 36 classes that can be used to assess non-point source pollution. It was developed through an integrated approach that involved the use of remotely sense data and GIS analysis.

The final map (see below) reflects the very complex land cover character of the catchment. It extends from urban and suburban settlement plus industrial and commercial activities in the Western Kuils River Catchment.

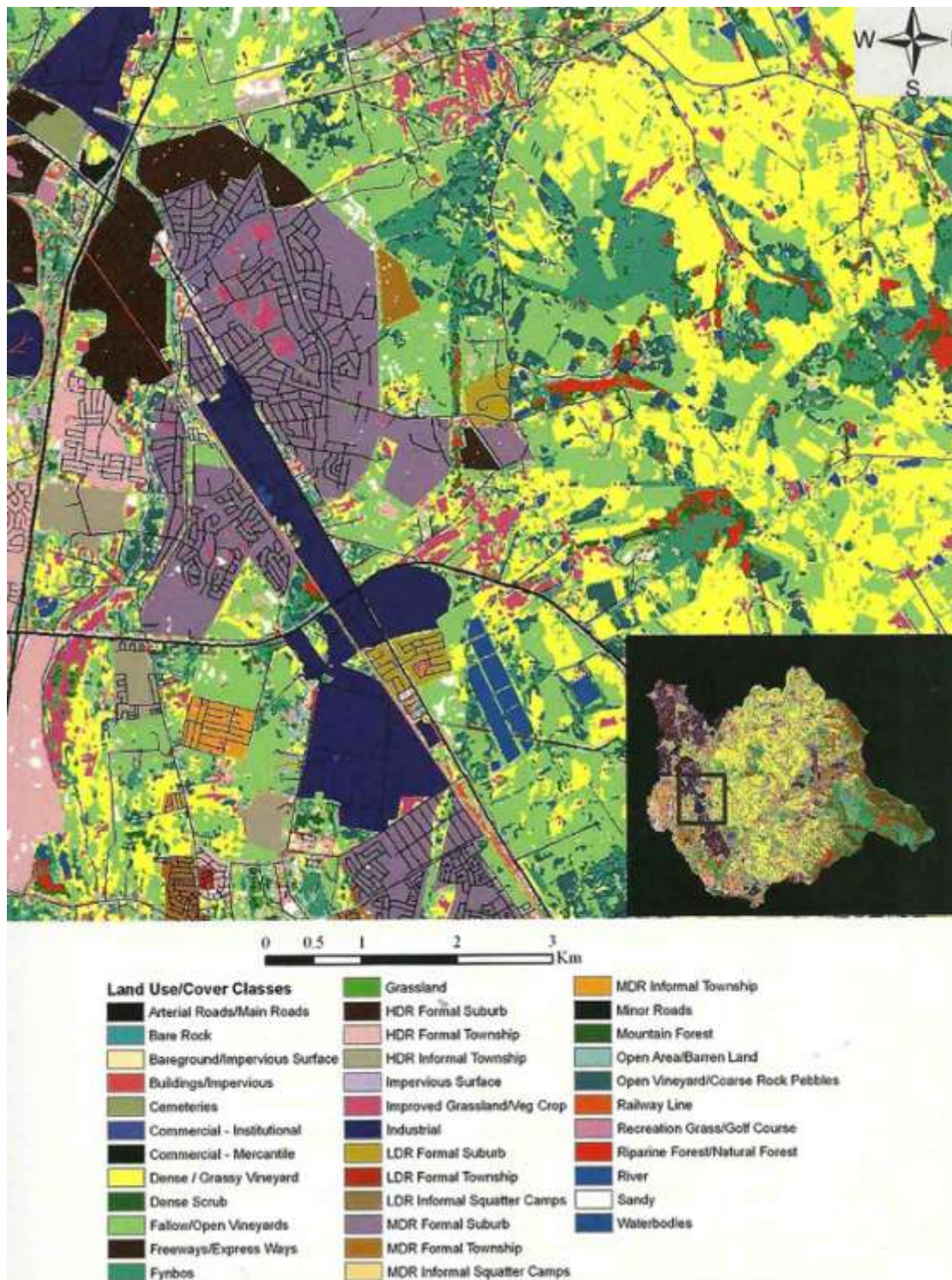
The 36 land use/covers identified in Ayuk's research were considered as the potential sources of surface runoff and non-point source pollution, and his research looked at the different land uses contribution towards surface pollution. Ayuk recommended that his findings should be used as a basis for the development of a sound catchment sustainability plan for the Kuils River Catchment. A high resolution copy of the map below has been obtained and can be printed for the Kuils River Catchment Management Forum for further analysis.

Land Use / Land Cover Map of Kuils-Eerste River Catchment



Map: Land Use / Land Cover Map of the Kuils-Eerste River Catchment (Ayuk, 2008)

This second map below shows how detailed the above map is and that the detail of sub-catchments are easily available. It is recommended that this map be printed at a large scale, and used for community education.



Map: Detailed view of land use map of the Kuils-Eerste River Map (Ayuk, 2008)

5.2 Detailed description of land uses through which the Kuils River flows:

The adjacent map produced by Ayuk gives a very detailed description of the land uses through which the Kuils River flows. The map has been edited to show the course of the Kuils River more clearly.

The river originates in a grassland area of the Durbanville Hills. It flows through a greenbelt through a formal suburb which is of medium density (brown). The vegetation is a mixture of what Ayuk describes as grassland (green) and improved grassland or veg crop (pink).

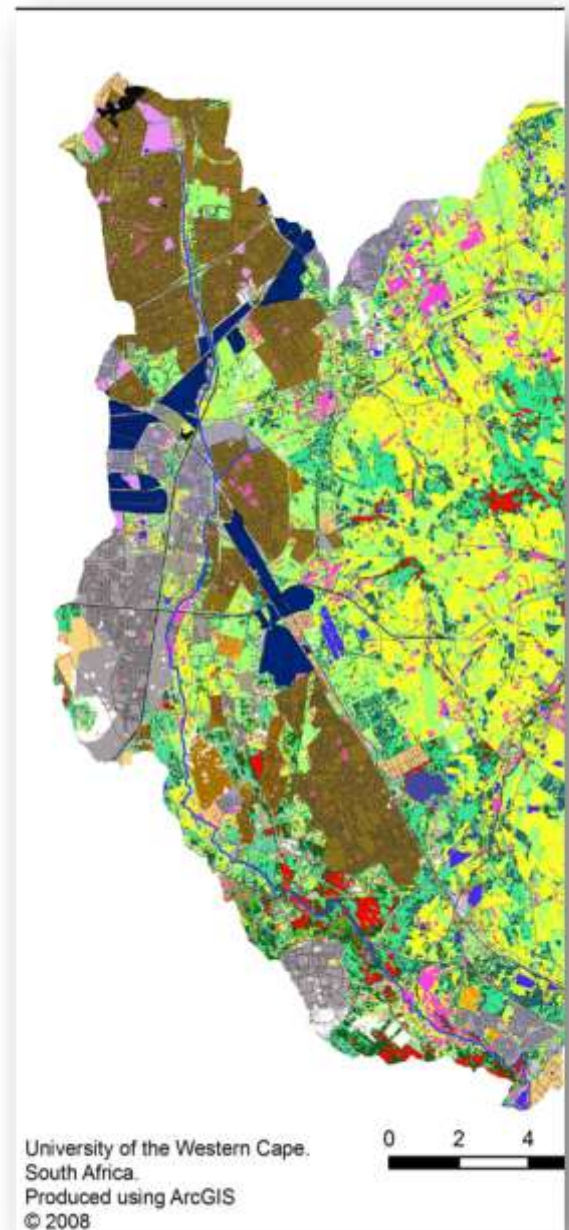
It crosses the N1 and carries on flowing south parallel to the R300 through formal suburbs (medium density). It then flows through an industrial area on both the west and the east (dark blue). Followed by industrial area on the west and grassland on the east with sections of dense grassy vineyard

It carries on flowing through formal residential areas with high density formal suburbs in a mauve colour on the west and medium density in brown on the east.

The next section of the river before it starts travelling east is mostly a form of grassland and other vegetation, and it flows through the Driftsands Nature Reserve and adjacent to Mfuleni, a formal township of medium density.

It meanders for about six kilometres through a mixed landscape of grassland, rock area and delineated riverine forest. It then skirts around and through the large high density formal township of Khayalitsha.

The last stretch of the river is through mostly dense scrub with some riverine forest and dense grassy vineyards and improved grassland. It is not clear from the map what grassy vineyards actually mean. Whilst there may be some agriculture it does not seem to be a significant land use. It is this section that it joins and becomes the Eerste River which then flows through coastal dunes into the ocean.



5.3 Condition of the Kuils River

The River Health Programme demarcated five different categories for river health – natural, good, fair, poor and unacceptable and has five river health indicators, namely Index of Habitat Integrity, Riparian Vegetation Index, Fish Index, South African Scoring System and Water Quality. What is distressing is that there are no natural or good categories identified for any of the river health indicators for any of the reaches of the Kuils River.

Instead the indicators for fish and water quality are poor or unacceptable for the entire river which indicates that the water is not suitable for aquatic ecosystem life. The South African Scoring System Indicator which is a good indicator of recent localised conditions indicates that the upper and lower reaches of the Kuils River are fair whilst the middle section is unacceptable. This indicates localised pollution sources.

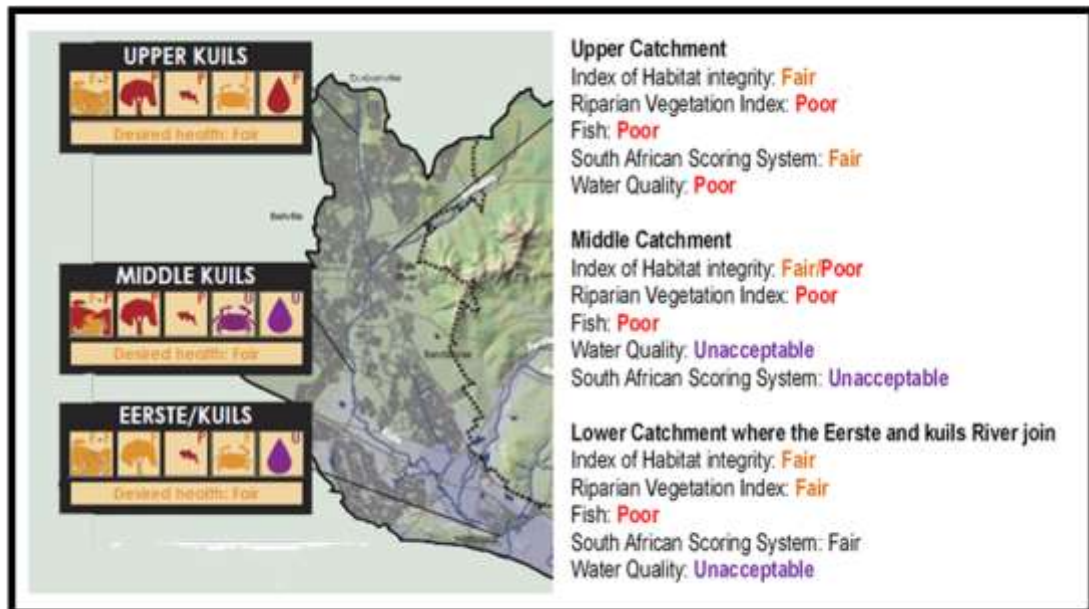


Figure State of the Kuils River (Adapted from River Health Programme 2005)

The riparian vegetation indicator is poor in the upper and middle section of the river which is canalised in parts and very urbanised, and fair in the lower section where it is more natural.

The River Health Report has stated that the desired health of the river condition for all three reaches of the Kuils River is “fair condition”.

5.3 Environmental Issues

This section deals with the broader environmental and social issues along the upper and middle sections of the river, which in turn impacts those living downstream. This information has largely come from research and interviews with key stakeholders, as well as from the River Health Programme and the Adopt-a-River Programme which both identified the major environmental issues in the Kuils River System:

Treated sewage water from Waste Water Treatment Works

As mentioned previously the Kuils River has become a perennial river because of the amount of water discharged from a number of Waste Water Treatment Works in the extended catchment. There are also other water sources that contribute to the increased flow. The table below details the discharge volumes from the Bellville (Kuils River), Scottsville (Bottelary River which is a tributary of the Kuils River) and the Zandvliet Waste Water Treatment Works.



Waste Water Treatment Works	River	Discharge Volumes (Million m ³)
Scottsdene	Bottelary	2
Bellville	Kuils	14.7
Zandvliet	Kuils	16.8
TOTAL	33.5	33.5

Table 1: Wastewater Treatment Works and their discharge volumes into the Kuils River System (Source Ayuk (2008) and River Health Programme (2005))

Due to urbanisation and population growth, the amount of treated or semi-treated wastewater has increased rapidly, and continues to do so. The flow figures in the table above is in million cubic metres, and the Bellville WWTW annual discharge is listed at 14.7 million cubic metres, which is equivalent to 40 million litres per day (Ml/d) which was the capacity in 2008. The current capacity is 55 Ml/d.

The Bellville Wastewater Treatment Works is a very old plant as it was built in the seventies and has been overloaded for some time, and this has resulted in poor quality water being discharged into the river system. It is currently undergoing major upgrading and extensions to accommodate the increase in demand and to improve the quality of effluent being discharged. The French company Veolia has been appointed to design and build the largest membrane bio-reactor (MBR) plant in the country which will add another 20 million litres of capacity per day to the current capacity 55 Ml/d. The new plant is being built completely separate to the existing plants so that there is no interruption of service. Once the new reactor is built, they will be able to refurbish each of the existing three reactors.

Staff from the City of Cape Town indicated that many of the problems associated with the water quality in the Kuils River will be vastly improved once the new plant is operational – estimated to be by August 2014. The upgrade has cost in the region of R300 million and is being undertaken by the French Company Veolia. After construction completion, the contract progresses into the commissioning phase, during which Veolia will be contractually responsible for several operational and maintenance tasks. Some of the new plant's effluent will be reused, internally in several processes, as well as externally by industrial consumers.

Spillages from blocked drains and culverts

However, it is important to note that whilst the water quality from the Bellville WWTW will improve, the river quality is affected by numerous sources and for different reasons. There are issues such as storm water and solid waste that is not related to the Bellville WWTW. There are also incidences where the sewage pump stations become blocked and spillages result. This can result in serious water quality problems, and poses a risk to human health from water borne diseases and illnesses such as diarrhoea, as well as respiratory ailments and skin irritations.

Flow modification and impact on seasonal wetlands

The discharge of treated wastewater has more than doubled the volume of water in the Kuils River and significantly altered the flow regime, and turned the river into a perennial river. This has resulted in the Eerste River estuary become progressively less saline and migrating westwards.

Many of the wetlands of the Cape Flats have been destroyed or highly modified. In particular, the small seasonal vleis that used to be extremely common on the Cape Flats and were probably characterised by unique zooplankton communities, have mostly disappeared, making them highly threatened systems. The threat to biodiversity posed by their destruction is also considerable. The seasonal pans of the Cape Flats are important habitat

and preferred breeding grounds for many frog species, as they are likely to contain fewer predators such as fish preying on eggs (Ewart-Smith and Radcliffe, 2002).

Urban and peri-urban development: Urban development in the Kuils River catchment has resulted in the canalisation of the Kuils River. Storm water runoff, wastewater discharge and litter from urban and peri-urban areas in the catchment have resulted in serious water quality problems which pose a risk to human health. A loss of pollution sensitive invertebrates and ecosystem functioning is evident.

Canalisation of the Kuils River: Approximately 10% of the Kuils River has been converted into canals. This has resulted in habitat loss. The canalisation has been caused in part by the rivers originally not being perennial but seasonal wetlands and urbanisation resulting in the need for extensive flood alleviation works. Canalisation has a major negative impact on the fauna and flora of a river system.



Alien Vegetation: A variety of alien aquatic weeds (water hyacinth, water lettuce, azolla, parrot's feather) have invaded many of Cape Town's rivers, including the Eerste/Kuils river system. The removal of riparian indigenous vegetation has led to invasion by alien plants (kikuyu, poplar, wattle). Alien plants cause a reduction in habitat integrity.



Invasive alien fish e.g. barbel, carp, tilapia are widespread in the lower reaches of nearly all of Cape Town's rivers and these species compete with the indigenous Cape galaxias and Cape kurper for food and habitat. This has reduced the numbers and distribution of indigenous fish. In particular, the invasive African Catfish has invaded the Kuils River and seems to be the main fish that people are catching. It escaped into the Eerste River system from the Jonkershoek Fish Hatchery. Anglers and farmers illegally translocated this

cattfish into many dams and river systems in the hope of “improved fishing” (Sheasby, Zandvlei Trust).

Bulldozing of river beds and banks for housing developments and removal of riparian vegetation

The following photograph is sourced from a PowerPoint presentation by Thembela Bushula of the Department of Water Affairs, and show where the river banks have been bulldozed and cleared of riparian vegetation. This makes them very vulnerable to erosion.



Photo: Thembela Bushula, DWA

Litter:

This is a major issue in different stretches of the catchment where litter is everywhere.



Photo: Municipal Workers clearing the channel of solid waste (Ayuk, 2008)

Flooding: After heavy rains, flooding occurs in the catchment. This is possibly due to storm water drains being blocks, and in Khayalitsha, because of sand mining of the river banks. Photo Source: WISA



Flooded road in Kullariver, Western Cape -

©www.wisa.co.za

5.4 Adopt-a-River Campaign Recommendations for the Kuils River

In her presentation to the participants of the International Day of Action for Rivers Celebration, Thembela Bushula from the Department of Water Affairs detailed the recommended management actions developed for the Kuils River System. These included:

- Clearing of alien vegetation with regular follow-ups
- Improve condition of riparian zones by creating buffer zones during developments
- Eradicate alien fish
- Limit development in riparian zone
- Manage water quality by upgrading aging WWTW
- Limit litter in the catchment
- Multi-stakeholder engagements, consisting of interested/affected parties are recommended in order to come up with solutions to the problems



Photo: Thembela Bushula presentation 14 March 2014

5.5. Cape Wetlands Forum Recommendations

The minutes of the Cape Wetlands Forum of August 2013 has a very good review of urban impacts on rivers and wetlands, the legislation covering rivers and wetlands, as well as a comprehensive stakeholder list. This has been attached as an annex – see Annex G. Their suggestions for the stages in drafting a management plan which might guide the Kuils River Catchment Forum are detailed below and this could be useful for the development of a participatory Kuils River Management Plan. The stakeholders involved in the Western Cape Wetlands Forum have been included in this report as Annex H as they may be useful contacts in the development of the Kuils River Catchment Management Forum.

Stages in drafting a management plan are:

- ➔ Start by examining the whole catchment
- ➔ Assess each river management unit and its history, identifying drivers of instability and disturbance

- ➔ Identify conservation priorities for each unit and of each riparian landowner (preferably working with a representative group), and set ecological and agricultural objectives for management and rehabilitation
- ➔ Develop an implementation and review programme using best practice guidelines for rehabilitation and maintenance in a proper cycle of adaptive management. This must allow space for experiment considering the complex problems resulting from a history of environmental dependency on water bodies.

6. Conclusions and Recommendations

Whilst the purpose of this project is to identify the people who are currently using the Kuils River and for what purposes and to explore more subtle attitudes towards, and uses of, the river and wetlands, a secondary purpose emerged of sharing with downstream communities the upstream life of the river.

6.1 Expansion of the Kuils River Catchment Forum

Everyone we have spoken to believes in more communication between stakeholders and the need to participate in the Kuils River Catchment Forum. A number of organisations and individuals have been identified as potentially playing a positive role in the Kuils River Catchment Forum, and these are included in Annex A.

6.2 Tree planting

Community members are very keen for additional trees to be planted along the river and it is recommended that they work with Greenpop and apply to plant 50 indigenous or fruit trees by filling in the online application process (see Annex D). The community members particularly specified that they would like to be involved in the planting themselves. They may anticipate payment and this needs to be clarified beforehand.

6.3 Field Trip to the Bellville Waste Water Treatment Works

In discussions with community members, people mentioned they would love to go on a field trip to the upper catchment and to visit the Bellville Waste Water Treatment Works. Mr Werner Rossle from the Bellville Wastewater Treatment Works / City of Cape Town indicated that they would be happy to host such a field trip as it would be good for stakeholders to have more information and to understand the complexity of the situation. He can be contacted as follows: Werner.rossle@capetown.gov.za and 021 487 2735 / 072 820 7673.

6.4. Increased Environmental Education and Awareness-Raising of Catchment Issues

Numerous times during the research project, requests for additional information and environmental education programmes were made. This is also corroborated by a call for more education that was made by the Khayelitsha community at the end of 2013.

It is recommended that a snake identification course be held for any community members who may be interested. See Annex E for further information on such a course. This is also an important safety issue as attempts to kill snakes causes more snake bites than any other activity.

6.5 Holding of a Community River Walk

It was not feasible to walk along the banks of the river during the research period. Some support was indicated to host a river walk for community members and visitors on one of the world environmental days. This could be developed within the ambit of the Kuils River Catchment Forum.

6.6 Continue to Celebrate the Kuils River and Wetlands

Hosting international action days such as on 14 March are very good for bringing stakeholders together and finding solutions to complex catchment issues.



6.7 Develop a Kuils River Resource Centre

There is a lot of existing information on the Kuils River that is located at the University of the Western Cape, the Department of Water Affairs and the City of Cape Town. A resource pack has been developed as part of this project – see Section 8 of this report. It would be very useful if members of the Kuils River Catchment Management Forum shared more information about the existing information they have, and that it can be kept somewhere more central. This could be electronically on the internet, or hard copies in a Resource Centre.

7. References

Ayuk, James Ayuk (2008). Modelling of Nonpoint Source Pollution in the Kuils River Catchment, Western Cape – South Africa Masters Thesis University of the Western Cape

(jaayuk@gmail.com; Office: +27 (0)21 959 9293; Cell: +27 (0)78 505 1233)

Bushula, Thembela 2014. Department of Water Affairs River Health Programme and Adopt a River Initiative. Presentation at the International Day of Action Event 14 March 2014. Khayalitsha.

CSIR. 1982. Estuaries of the Cape Report No. 16 Eerste (CSW 6)

Ewart-Smith, J and Ractliffe, G. 2002. Assessment of the Potential Impacts of the Proposed N1 N2 Winelands Toll Highway Project on Aquatic Ecosystems. Final Report.

Sheasby, Cassandra. The African Catfish. Zandvlei Trust

The River Health Programme (2005) Greater Cape Town Rivers 2005
[www.capetown.gov.za/en/CSRM/Documents/State_of_rivers_report_greater\(resized\).pdf](http://www.capetown.gov.za/en/CSRM/Documents/State_of_rivers_report_greater(resized).pdf)

Thomas, Abraham and Ayuk, James (2010), Land Use / Land Cover Mapping of the Kuils-Eerste River Catchment (Western Cape) Through an Integrated Approach Using Remote Sensing and GIS. In Application of satellite remote sensing to support water resources management in Africa: Results from the TIGER Initiative. IHP-VII No.85 (Technical Documents in Hydrology) UNESCO, Paris, 2010.

8. Resource Pack

The information pack consists of the publications and presentations detailed below. They have been made available on DropBox as well as copied onto an accompanying disc.

Ayuk, James Ayuk (2008) Land Use / Land Cover Map Kuils-Eerste River Catchment (Both jpg and pdf formats)

Bushula, Thembela 2014. Department of Water Affairs River Health Programme and Adopt a River Initiative. Presentation at the International Day of Action Event 14 March 2014. Khayalitsha.

Chingombe Thesis (2012) Effects of landcover

Greeff, L (2014) Kuils River Social Study. PowerPoint Presentation

River Health Programme (2005) Ecological State of Cape Town's Rivers Poster

River Health Programme (2005) State of the Rivers Report

UNESCO Application of satellite remote Sensing to Support Water Resources Management in Africa: Results from the Tiger Initiative

Web pages to explore are:

CapeNature: www.capenature.org.za

City of Cape Town: www.capetown.gov.za

Department of Environmental Affairs and Tourism: www.deat.gov.za

Department of Water Affairs and Forestry: www.dwaf.gov.za

South African National Parks: www.sanparks.org

Water Research Commission: www.wrc.org.za

Working for Water: www.dwaf.gov.za/wfw

River Health Programme: www.csir.co.za/rhp

Annex A: List of Key Stakeholders

EMG			
Jessica Wilson	EMG	0214482881	jessica@emg.org.za
Thabang Ngcozela	EMG	0214482881	thabang@emg.org.za
Thabo Lusithi	EMG	0214482881	thabo@emg.org.za
Taryn Pereira	EMG	0214482881	taryn@emg.org.za
Makhaza Wetland and Food Growers			
Bianca Waki	MWFG	0818096394	
Sandiso Nomsobo	MWFG	0799872447	
Nthabeleng Malefane		0736450928	Malefane@mtnblackberry.com
Phumla Vuso		0788380905	
Coalition for Environmental Justice (CEJ)			
Mpumelelo Mhlalisi			mpumi.mhlalisi@gmail.com
WWF			
Colvin Christine	WWF - SAFP		ccolvin@wwf.org.za
Other			
Eugene Cairncross			cairncrosse@gmail.com
Tony			Tony@envirochoice.org.za
DWA			
Thembela Bushula		021 941 6195/082 897 7370	bushulat@dwa.gov.za
Matoti Ayanda	DWA	021 9416118	MatotiA@dwa.gov.za
CPUT			
Jacqueline Norma Scheepers			ThamaeMC@cput.ac.za
City of Cape Town			
Shepherd Mdoda			Shepherd.Mdoda@capetown.gov.za
Nyaniso Mbashe	Cape Nature (CN)	021 9555940	nmbashe@capenature.co.za
Yzele Brockman	Cape Nature (CN)	021 9555940	ybrokman@capenature.co.za

Potential additional stakeholders

Mr Werner Rossle	Bellville Wastewater Treatment Works	021 487 2735 / 072 820 7673	Werner.rossle@capetown.gov.za
Franz Von Moltke	Head Catchment Planning East Department: Roads and Stormwater; Directorate: Transport for Cape Town; City of Cape Town	021 400 1341 072 315 3487	franz.vonmoltke@capetown.gov.za
Wayne Davids	Senior Professional Officer; Transport for Cape Town Catchment, Stormwater and River Management Branch City of Cape Town	021 400 3494 078 981 8517	wayne.davids@capetown.gov.za
Prof D Mazvimavi	Professor of Water & Environmental Science UWC	021 959 2871 072 945 7126	dmazvimavi@uwc.ac.za
Candice Haskins	Catchment Storm Water and River Management	021 400 1205	Candice.haskins@capetown.gov.za
Mr Mjikisile Vulindlu	Manager: Biological Sciences, (Scientific Services)		Mjikisile.vulindlu@capetown.gov.za
Mr Humbulani Munzhelele			Humbulani.Munzhelele@capetown.gov.za
Mark Rountree	Chair of Cape Wetlands Forum		Mark.rountree@iburst.co.za
Rupert Koopman	CapeNature		rupertkman@gmail.com

These email addresses have been recipients in various emails to do with the Kuils River and could be included in communication relating to the development of the CMF:

Ashaadia Kamalie;
babesbooi@gmail.com;
Battha Kabamba;
Bhele Xolelwa Gloria (BVL);
brettfortuin@iafrica.com;
bulana.nokuzola@gmail.com;
Bushula Sivuyile WataniSi;
Christa Janse Van Rensburg;
Daniel Fezeka Faith
Dean Jacobs;
Dipuo Ngcozela dipuoncozela@gmail.com;
Gail Bohle;
Hameda Deedat;
Johaar Rafieka (BVL);
keniamaria3000@gmail.com;
Kevin Musungu;
Kloppers Wilna (BVL);
luyanderonee@gmail.com;
Makubalo Precious Vuyiseka [MakubaloP@dwa.gov.za]
Matoti Ayanda MatotiA@dwa.gov.za
Morakane Charlotte Thamae;
Mpumelelo Mhlalisi; mpumiemhlalisi@gmail.com;
Musungu';
Nawaal Jones;
Nokuzola Bulana; nokuzola.bulana@gmail.com;
Patrick Dowling;
phindile@wessa.co.za;
Phumeza Ndywili
Sivuyile
Sivuyile WataniSi';
siviwe@tcoe.org.za;
Sonia Manyumwa';
Theresa Burns; BurnsT@cput.ac.za
yandxawe@gmail.com;
WataniSi;
yandxawe@gmail.com;
Zikhona Ngesi;
Zukiswa Nomwa;

Annex B: Notes from the Focus Group Meeting

Khayelitsha Wetland Park, 11 February 2014

Key Issues:

One of the key requests from the community is for people to come and help clean the river. They said that there have been a number of meetings but very little is happening on the ground. They are tired of meetings and people coming to meet with the community and then nothing happens.

We explained that the EMG project is looking at the whole catchment and that if we understand the pollution up stream more clearly, we can help ensure the downstream becomes cleaner.

Sanitation: Complaint that the Church groups such as St Johns use the wetland as a sanitation facility and that when they are cleaning the river, they have to jump over faeces which is both horrible and unhygienic.

Algae and bad odour: When the river is not cleaned, algae grow in the river and there is a bad smell that comes across the water to the houses.

Reduced dumping: A positive comment was that since people have started cleaning the river, there are fewer events of people dumping. They think this is due to increased education and appreciation of the wetland.

Church groups also use the river for Baptisms and if dumping does happen it poses a danger and needs to be remedied. This is particularly true for the other side of the river where it is not looked after.

Enjoyment of the river now that it has been cleaned and hopes that it can be cleaned further and maintained properly.

Call for engagement with other stakeholders (from the other side of the river) to stop their negative activities so not impacted negatively on this side of the river.

Wetland has been dirty. It used to be clean. People throwing stuff.

Youth are excited about canoeing and attracting tourism. They want to see the wetland clean and to bring development to our community. Smell is not nice and they say it is hard to live near and to smell the dirty smell when they are trying to eat.

Frustration with some processes: They mentioned the CPUT experience where Hameda Deedat was involved whereby they received River Health Training Programme. The process started in November 2012 and people were identified to be trained. The training however, never took place. Hameda has since left CPUT and even though they wrote letters to DWA and CPUT, neither institution responded. This resulted in them feeling very frustrated.

Second process was that of Environmental Management Training which they did complete. They were promised certification and they were expecting certificates in the post. These never arrived.

As a community they have been involved in river cleaning since 2011 and 2012, and were expecting some income from their cleaning activities which did not happen. Therefore, they are no longer actively cleaning the river.

Want a boat. CPUT promised to bring a boat. Apparently there is a boat that has been designed but due to concerns that the boat design might be stolen, the boat is not available yet. The community say they wanted to be part of the process from the onset, and to have helped design the boat themselves.

Hopes and expectations have been raised. Sense that levels of frustration on many fronts are high and that people have been patient up to now.

My two commitments

1. To produce the report with community voices
2. To show / share report within the month which happened on 14 March.

They mentioned at the meeting that the Minister and Regional Director was planning a meeting with them. This in turn was also cancelled.

How do people use the river and wetland?

Good fish in wetlands

Medicines to heal

Attract tourists

They do not want to see the wetland getting dirty of the fish dying

Would like to see more development and improvement of the wetlands – kept clean and maintained

Planting of trees in an orderly way

Removal of pollution such as old tyres

If these actions happened the wetland would be more beautiful and would attract more people

A number of people said they wanted the wetland to be beautiful like Rondevlei and Edith Stephens's wetland

If the river is properly maintained and water of a good quality then they will have healthy fish. Used to see dead fish when the water was low.
It would also attract tourists and boost economic activity

IN addition to the fish being healthy they would like to attract the “right fish” as at the moment it is mostly catfish.

If the river // wetland is cleaned and looked after then people won't be scared to walk along the river. The issue here is snakes which people are afraid of.

A proposal was made that if the places close to the people could be fenced so that people don't find it easy to dump in the river and wetlands

They referred to Shepherd's speech in 2011, where he spoke about different plants and animals – if the river was maintained then medicinal plants could be used because they would be in the right condition. The implication here is that they are present but not of the right quality.

Examples of medicinal plants they want to harvest – a mint-like plant that is good for colds. They use when the river is clean and make a tea out of it. They also cook the Arum Lilly plant or sell the flowers. They use the reeds to make grass mats.

They say that there are not yet tourists, only people involved with the City of Cape Town and when they have meetings and events, and then people come. People then come to see the wetlands, the park and the river.

Again mentioned the need for planting more trees to bring beauty to the area.

Spoke about starting a nursery and a food garden. (part of the proposal to develop KWP)

Plans entrance pavilion next to meat place and a coffee shop and toilets and build more of the outdoor gymnasium more footpaths along the river and a bridge so people can cross. Market place – bring veggies and crafts. All these will bring make it more attractive / bring more attractions.

Walk

Fish

Canoe

There is a farmer inside the wetland area – doing cattle farming and a good garden on the other side

Rituals such as baptism

Toilet

Youth are still cleaning and doing wetland tours

Some education has happened but as long as no adequate toilets and housing they will continue to experience problems. This is in the SST area as soon as formal housing is built the problem will stop. There is also a church in the squatting areas which does not have adequate facilities.

Women are scared to walk along as incidences of rape do happen.

Vision: Want to happen.

They would love to see it with the facilities that attract more people.

They once visited Rondevlei and were impressed by what they saw
Want development like the other wetlands

Also want the other side of the river to be cleaned because it has been neglected.

Want to have a walk of other areas which are still been d

See it as a resource / asset to create jobs.

People Working on a full time and contact basis as employment as part of the park.

More development more job opportunities

Youth: Like to see market by the wetlands

Lots of mamas doing beads – this will attract tourists

Started engaging with CPU

Fencing will also improve the security and beauty of the area

There is potential for a footpath to the neglected area

Fishing issue that four years ago there was a bigger variety of fish, and now it is catfish and alien fish. However, one man has started to fish again.

Stakeholders

People with livestock next to the river

Church group doing baptisms

People from St Johns

People from SST from the squatting area

Farmer inside the wetland

Mr Ngontweni Church

Youth canoe group

There is a need for someone to talk to the other stakeholders (Thabang)

Annex C: Participants in the Focus Group Meeting

Kuils River Catchment Workshop 11 February 2014

Name	Organisation	Contact telephone	Address
Sindiso Nomapho	Majababane Kithi's Kitchen	079 987 2447	44 942 Rosa Crescent Mthatha
Phumbe Kase	Makaza Food Garden	0758095045	43,187 Thanda Street
Cynthia Wano	Makaza Food Garden	0794820319	44 984 Rosa Crescent
Thabani Mhoxeti	EMG	0788030521	43 845 Golema St
Khumbeka Mthanda	Makaza food Garden	0717145552	43512 Tatu Avenue
Nomajane Maseleleli	Makaza food Garden	0783790110	43 244 Golema street
Nombikayi Sc. Bondi	Makaza food Garden	0781490935	43,1821 Golema St
Nosipho Menezzi	Makaza food Garden	0835371998	43667 Klango Street
Nokubo JACK	"	0785472488	44 424 Soc. Mthatha
Noncedile Mqwanje	"	079207063	44-473 Newedist
Solemzi Sedes	Khumbeka Mthanda	0795455347	45013
NRababe Nyika	"	0733941401	44861
Ba Madatyezi	Makaza food Garden	29997	29997
Nyilot Thabo	"	60081	60081
Sindi gona	Zwedde	04371188B	40,550 qinika

Annex D: Letter from Greenpop re Planting Trees

Thank you for your enquiry about Greenpop trees.

We would love to plant trees at your site, but first you will need to fill out our online application form. Please follow this link: <http://goo.gl/dXeDh> Please fill in one form for each site

When we receive your application form, if your site is suitable in terms of security, water access, maintenance staff and organisation, it will be recommended to our Planting Manager. Then our Planting Manager will organise a visit to your site to speak with you about tree types and placement.

Then we will decide on a good date for planting, and come to deliver a fun and educational tree planting day!

Let me know if you have any problems filling in the online application form.

Green Regards,

Pamela Mayaba
Beneficiary & Planting Administration Assistant
GREENPOP
pamela@greenpop.org

Call: 021 461 9265/ 0872300452
Fax no: 0872 115 7276
Skype: greenpoptrees
Website: www.greenpop.org

Annex E: Western Cape Snakes

<http://www.capesnakeconservation.com/>



To date there 42 recorded Western Cape snake species. Of these 42 Western Cape snakes, one – commonly known as the flowerpot snake - has been introduced and another is a rarely encountered, yet highly venomous, marine serpent commonly known as the yellow-bellied sea snake. Of these 42 species 18 are non-venomous, 14 are mildly venomous, four are considered dangerous and possess venom which has the potential to be life threatening while six are considered deadly or very dangerous.

The table below lists the known species recorded in the Western Cape alphabetically by genus.

<i>Amplorhinus multimaculatus</i>	Many-spotted snake
<i>Aspidelaps lubricus lubricus</i>	Coral snake
<i>Bitis arietans arietans</i>	Puff adder
<i>Bitis armata</i>	Southern adder
<i>Bitis atropos</i>	Berg adder
<i>Bitis caudalis</i>	Horned adder
<i>Bitis cornuta</i>	Many-horned adder
<i>Bitis rubida</i>	Red adder
<i>Bitis schneideri</i>	Namaqua dwarf adder
<i>Boaedon capensis</i>	Cape house snake
<i>Causus rhombeatus</i>	Common night adder
<i>Crotaphopeltis hotamboeia</i>	Herald snake
<i>Dasypeltis scabra</i>	Common egg eater
<i>Dipsina multimaculata</i>	Dwarf beaked snake
<i>Dispholidus typus typus</i>	Boomslang
<i>Duberria lutrix lutrix</i>	Common slug eater
<i>Hemachatus haemachatus</i>	Rinkhals
<i>Homoroselaps lacteus</i>	Spotted harlequin snake
<i>Lamprophis aurora</i>	Aurora house snake
<i>Lamprophis fiskii</i>	Fisk's house snake
<i>Lamprophis fuscus</i>	Yellow-bellied house snake
<i>Lamprophis guttatus</i>	Spotted house snake
<i>Leptotyphlops gracilior</i>	Slender thread snake
<i>Leptotyphlops nigricans</i>	Black thread snake
<i>Lycodonomorphus inornatus</i>	Olive snake
<i>Lycodonomorphus rufulus</i>	Common brown water snake
<i>Lycophidion capense capense</i>	Cape wolf snake
<i>Naja nigricincta woodi</i>	Black spitting cobra
<i>Naja nivea</i>	Cape cobra
<i>Pelamis platurus</i>	Yellow-bellied sea snake (Pelagic)
<i>Philothamnus hoplogaster</i>	Green water snake
<i>Philothamnus natalensis occidentalis</i>	Eastern green snake
<i>Prosymna sundevallii sundevallii</i>	Southern shovel-snout snake
<i>Psammophis crucifer</i>	Cross-marked grass snake

<i>Psammophis leightoni leightoni</i>	Cape sand snake
<i>Psammophis leightoni namibensis</i>	Namib sand snake
<i>Psammophis notostictus</i>	Karoo whip snake
<i>Psammophylax rhombeatus rhombeatus</i>	Rhombic skaapsteker
<i>Pseudaspis cana</i>	Mole snake
<i>Ramphotyphlops braminus</i>	Flowerpot snake (Exotic)
<i>Rhinotyphlops lalandei</i>	Delalande's blind snake
<i>Telescopus beetzii</i>	Namib tiger snake

Who is this Course For?

This course is intended for anyone over 18 who is interested in or may potentially come in contact with snakes.

Possible candidates (but not limited to) are:

- Farmers
- Farm Workers
- Land Managers & Staff
- Wildlife Managers & Staff
- Conservationists
- Anyone that may regularly come across snakes
- Snake Enthusiasts!

Course Fees & Content

The price for this **one day** comprehensive course (excluding travel and accommodation) is R 600 pp which includes a course manual and covers the following:

- Snake Awareness and Identification
- Snakebite First Aid
- Non-venomous snake handling
- Venomous snake handling ([boomslang](#), [Cape cobra](#), [puff adder](#))

On completion of both the practical snake handling and a written test successful attendees will be awarded with a certificate of c

If confronted with a snake remember these important points:

- Make sure someone knows where the snake is at all times and is watching it from a safe distance of at least 5 metres

- Keep pets and people away from the area (preferably indoors)
- NEVER attempt to kill a snake or allow anyone else to do so.
- Many (up to 95%) bite cases result from a person interfering in some way with the snake
- In most cases it is [against the law to kill a snake](#)
- If the snake is indoors close any windows and doors leading to the room
- Place a towel along the base of the door to prevent the snake escaping if possible

Once the area is sealed off and/or the snake is being carefully observed, call one of us immediately

- Grant Smith 084 328 1001 (South & CBD)
- Elroy Arendse 082 616 0090 (South, CBD, Kuilsriver)
- Luke Bax 072 364 6507 (Somerset West/ Gordon's Bay)
- Jaco Uys 084 645 8810 (Somerset West/ Gordon's Bay)

In terms of the nature conservation ordinance (Ordinance 19 of 1974) snakes are **wild animals** and nobody may hunt, kill, capture wild animals without special permission. In particular, a number of snakes are formally protected and killing any of them in the Western Cape is illegal. These include the African Water Snakes (Genus *Lycodon*), House Snakes (Genus *Lamprophis*), Wolf Snakes (Genus *Lycophidion*), File Snakes (Genus *Mehelya*), Slug-eaters (Genus *Duberria*), Egg-eaters (Genus *Dasypeltis*), Mole Snakes (Genus *Pseudaspis*), Green and Bush Snakes (Genus *Philothamnus*) and Shovel-snout Snakes (Genus *Prosymna*).

http://en.wikipedia.org/wiki/Common_brown_water_snake

The common brown water snake (*Lycodon* *rufulus*) is a species of nonvenomous, South African, colubrid snake. This gentle, harmless snake is by far the most common water snake in southern Africa. It can be found from Cape Town in the south, along the wet east coast of South Africa and inland as far as Gauteng, Lesotho, and Zimbabwe. Throughout its range, its natural habitat is water margins, where it shelters under leaves and logs. It emerges at night to hunt frogs and sometimes rodents. It lays up to 10 eggs at the end of summer.

See the following website for an information page on the Brown Water Snake http://www.biodiversityexplorer.org/reptiles/squamata/serpentes/colubridae/lycodomorphus_rufulus.htm

Annex F: Veolia Upgrade to the Bellville Wastewater Treatment Works

http://www.veoliawaterst.co.za/medias/news/2011-06-30.Bellville_WWTW_upgrade062011.htm

30-06-2011 - Cape Town, South Africa

Press Release: VEOLIA WATER SOLUTIONS & TECHNOLOGIES SOUTH AFRICA TO UPGRADE BELLVILLE WASTEWATER WORKS



An artist's impression of the planned new membrane bioreactor plant at the Bellville WWTW

Veolia Water Solutions & Technologies South Africa, a subsidiary of Veolia Water Solutions & Technologies, has been awarded a R187-million contract by the City of Cape Town's Department of Water & Sanitation, to upgrade and extend the treatment capacity at Bellville's wastewater treatment works (WWTW).

With this upgrade, the Bellville plant will feature the largest membrane bio-reactor (MBR) in the country to date; and its capacity will increase by 20 Ml/day, to 70 Ml/day (average dry weather flow - ADWF). The 20 Ml/day MBR will be separate from the existing activated sludge plant. Hence, during the construction period, the existing plant will not be impacted upon.

In addition, the design and build contract, including all mechanical and electrical works, will see Veolia Water Solutions & Technologies South Africa supply a new inlet works for the MBR plant, new biological reactors and six membrane trains. A new sludge dewatering facility will also be supplied, as well as an upgrade of the existing electrical and control systems infrastructure at the Bellville WWTW.

"The water produced has to meet strict quality requirements with regards to organic matter, viruses and bacteria removal, ammonia and suspended solids content. The submerged ultra-filtration membrane technology will increase capacity while producing excellent quality treated water, which will be reused as process water to industrial and commercial clients in the area," explains Abrie Wessels, Regional General Manager, Veolia Water Solutions & Technologies South Africa, Paarl.



A membrane bioreactor plant at an installation in Europe.

The raw wastewater to the new plant will pass through coarse screens for degritting, before passing through fine screens and undergoing anaerobic, anoxic and aerobic treatment before undergoing ultra filtration and dewatering of sludge. OTV France, another subsidiary of Veolia Water Solutions & Technologies, will be providing design and commissioning support.

The client was looking for a design and build company with suitable experience, local representation and commercial backbone to deliver on their commitments. Veolia Water Solutions & Technologies South Africa has clearly demonstrated

technical competence and a track record with turnkey project execution of this size during the tendering process, while being commercially competitive.

"With this capacity increase, the strain on the existing Bellville facility will reduce significantly and the effluent quality will improve. An added advantage will be the potential for the reuse of the effluent which will save the use of potable water.

Currently in the basic engineering design phase, the plant is due for commissioning in 2013. Veolia Water Solutions & Technologies South Africa will provide training and maintenance support for the first year of operation.

Veolia Water Solutions & Technologies South Africa is a Veolia Water Solutions & Technologies entity. Veolia Water Solutions & Technologies (VWS), subsidiary of Veolia Water, is a leading design & build company and a specialized provider of technological solutions in water treatment. With over 9,500 employees in 57 countries, Veolia Water Solutions & Technologies recorded revenue of €2.5 billion Euros in 2009.

Veolia Water, the water division of Veolia Environnement, is the world leader in water and wastewater services. Specialized in outsourcing services for municipal authorities, as well as industrial and service companies, Veolia Water provides water service to 95 million people and wastewater service to 66 million. With 95,789 employees in 66 countries, its 2009 revenue amounted to €12.5 billion.

www.veoliawaterst.com

For more information, please contact us:

Gunter Rencken

Managing Director

Veolia Water Solutions & Technologies South Africa (Pty) Ltd

Tel: +27 11 663 3600

Fax: +27 11 608 4772

E-mail: info.southafrica@veoliawater.com

Annex G: River maintenance plan: more than meets the eye?

Charl de Villiers of Charl de Villiers Environmental Consulting

From the Minutes of the Quarterly Forum Meeting of the Western Cape Wetlands Forum Meeting 21 August 2013

Charl thanked his collaborators in producing the paper, among them Liz Day (freshwater ecologist), Hans King (hydrologist engineer), Mark Rountree, and Donovan Kotze. Charl worked exclusively in the platteland on the management practices that farmers employed in dealing with increasingly unpredictable river systems. Most important in dealing with water was the scale at which to understand and address problems: too often this was at a micro-level. River maintenance on farms was a component of agricultural landscape management, of ecosystem management. Farmers were the primary custodians of biological resources and diversity.

The upper foothill reaches of rivers were usually pristine but the floodplain riparian vegetation in deep soils generally had been replaced by extensive cultivation. Western Cape cultivation had constraints of limited rainfall and shallow soils, with only 19% of the land being potentially arable. 51% of valley bottoms and 41% of floodplain wetlands had been heavily modified in previous centuries. In November 2008 the flood damage cost to Cape Wineland farms totalled R980m.

Smaller floods with shorter return periods seemed to result in disproportionately greater flood damage. Farmers' management interventions included getting rid of floodwater as quickly as possible by bulldozing channels, and protecting land against erosion and clearing reeds and sandbanks. These impacted on the river by loss of wetlands' retentive capacity so that sediments were mobilised out of control and floodplain capacity was lost. Hardening of catchments, encroachment of invasive alien plants and cultivation on areas of riparian vegetation also occurred. Channel constriction increased flow velocities which increased sediment transport. When the flow slowed down, sediment islands were created which deflected the river into the bank and increased its erosion, recurring in a vicious cycle.

Direct impacts on the riverine environment included:

- reduced in-stream habitat diversity
- reduced faunal diversity
- impaired ecological processes and relationships
- changes in dominant fish species
- loss of ecosystem resilience

Secondary impacts could be:

- drying out of riverine vegetation
- separation of primary and secondary channels and their separation from the floodplain
- isolation and degradation of water bodies and channels

Regulatory implications follow from NEMA EIA regulations on construction, expansion, excavation and deposition; National Water Act use licences and authorisations; Conservation of Agricultural Resources Act control measures; and the National Heritage Resources Act.

Activity 18 of the EIA regulations states that infilling, depositing, excavation, in-filling or moving more than 5 m³ of material next to a water course require a basic assessment to get environmental authorisation for the activity. But if a management plan geared towards maintenance activities is approved or the area is behind the development setback line, this requirement falls away. Maintenance may be defined as keeping something in good condition. This is sufficiently general to be applied to ameliorating most river conditions. No single agency can carry out river maintenance – it has to be a collective effort. Legitimate maintenance objectives would be farming priorities, hydrology and environmental flows, erosion and sedimentation, and biodiversity. Environmental assessment and management must include factors shaping flow regimes, river morphology and biodiversity. They must comprehend drivers of change and disturbance and likely changes resulting from river maintenance. Problems must be tackled at the right scale, not micro-managed.

Stages in drafting a management plan are:

- Start by examining the whole catchment
- Assess each river management unit and its history, identifying drivers of instability and disturbance
- Identify conservation priorities for each unit and of each riparian landowner (preferably working with a representative group), and set ecological and agricultural objectives for management and rehabilitation
- Develop an implementation and review programme using best practice guidelines for rehabilitation and maintenance in a proper cycle of adaptive management.

This must allow space for experiment considering the complex problems resulting from a history of environmental dependency on water bodies.

Farmers will protect their interests regardless of whether there is a law. Regulation will have to make way for a more objectives-led approach to the management of agricultural practices. The affordability of expertise on the platteland coupled with a uniform protocol for assessment and monitoring would improve river management and maintenance practices.

Annex H: Stakeholders involved in the Western Cape Wetlands Forum

(Incomplete)

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