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South Africa – Pilot study report

Pilot waste removal and outreach study in Durban, South Africa - Quarry Road West and KwaShembe (Clermont)

The Commonwealth Litter Programme

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- Technical knowledge and inputs by the Asia Pacific Waste Consultants with respect to waste classification; and
- Consultation with the Iqhaza Lethu Project of the eThekweni Municipality's Human Settlements Department in selecting the study communities.



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Executive Summary

The Commonwealth Litter Programme (CLiP) is an initiative delivered by the Centre for Environment, Fisheries and Aquaculture Science (Cefas) and funded by the United Kingdom's Department for Environment, Food and Rural Affairs. The initiative supports developing countries across the Commonwealth in preventing plastics entering the ocean.

In 2019, CLiP contracted Green Corridors to carry out a pilot study considering sustainable community-based solutions and awareness to waste management in areas with non or insufficient municipal waste management. This project, based in the eThekwin region, was run in support of the Department of Environmental Affairs Source-to-Sea programme.

This community-based study focused on household waste reduction and litter removal in two informal settlements, Quarry Road West and KwaShembe, in Durban, South Africa. The selected sites are both located in the lower uMngeni River catchment within 15 kilometres on the river mouth and are identified as significant sources of marine plastic pollution due to inadequate waste management practices and systems in these communities. Collaborative networks and relationships were key features of the approach and methodology used.

Following the initial stakeholder engagement processes, waste classification surveys were conducted in each site, working in conjunction with Asia Pacific Waste Consultants (APWC). This was followed by culturally adapted education and awareness building processes and consultative exploration and planning of steps to improve waste management, conducted respectively by Green Corridors in the Quarry Road informal settlement, and by the Aller River Pilot Project in the KwaShembe informal settlement. Finally, data and findings from the study were presented in public events organised by Cefas in Gauteng Province in November 2019 and in Cape Town in December 2019.

A key finding was the importance and value within the densely constructed informal settlements context of having appropriate and accessible facilities for the temporary storage of domestic waste during the intervals between weekly municipal collections. Consultations with the communities highlighted the difficulties faced by residents of the very densely constructed and populated settlements in storing waste bags in their homesteads. This often leads to the community disposing their waste in the nearby river. Green Corridors with the members of the Quarry Road community came up with a solution to install temporary waste storage receptacles. Green Corridors installed four waste receptacles at agreed locations spread through the Quarry Road settlement. This was linked with steps towards effective sorting of waste at source, optimising the potential for sustainable local livelihoods enhancement through recycling, and towards the development of circular economic flows through effective beneficiation of waste materials.

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1 INTRODUCTION

CEFAS contracted Green Corridors to conduct a pilot study to organise and run a pilot waste removal and outreach within the geographic space of Durban in South Africa. This pilot study is part of the Commonwealth Litter Programme (CLiP).

The main objective of this study, in support of CLiP's broader objectives, was to carry out in situ community-based research in selected settlements, to inform the design and implementation of sustainable waste management solutions in key marine pollution source locations in South Africa.

An inception meeting via skype and telephonic linking took place on 29 July 2019. During the meeting, Green Corridors (the contractors) reiterated the fundamental principles guiding their approach to this assignment, which centred on strategic and practical collaboration, participatory engagement, education and social learning with communities, sound quality assured scientific data management and green economy growth through waste recycling and beneficiation.

The focus on KwaZulu-Natal (KZN) and eThekweni came out of consultations between Cefas and the South African national Department of Environment, Forestry and Fisheries (DEFF), formally the Department of Environmental Affairs (DEA). The large population in the province and particularly in eThekweni, as the metropolitan centre of KZN, and the large number of rivers on this eastern seaboard of the southern African sub-continent, make this area the focus of the department's Source-to-Sea Programme, and informed the selection of the sites in this pilot study. There are 16 river catchments within the eThekweni metro area alone. The extreme marine and harbour pollution experienced after the April 2019 floods in Durban emphasised the importance and urgency of this work. Refer to photos 1-4, below for pictures of the April flood.

The study aimed to investigate inadequate waste management that contributes to marine litter, most of which is plastic pollution. The study built an understanding of what waste is made up of, and how it is dealt with in areas lacking effective waste management, with the aim of setting up practical solutions, that would ideally become long term, self-funding, household waste removal or reduction programmes, in one or more unserved or poorly served areas in eThekweni.¹

Working in conjunction with APWC the study involved waste classification surveys in each site. Household waste was collected from ten households over a period of seven days in both settlements. After the seven days the waste bags were collected and taken to the Springfield Transfer Station where APWC classified and sampled this waste.²

Culturally adapted education and awareness building processes were linked with consultative exploration and planning of steps to improve waste management within the informal settlements. The study emphasised innovation and collaboration with municipal functions and communities.

¹ eThekweni is the name of the metropolitan local government of the City of Durban.

² For full results on the waste classification study please refer to APWC (Asia Pacific Waste Consultants), 2020. Waste classification report. The Commonwealth Litter Programme, South Africa.

Following the initial project planning phase, the following processes were undertaken:

- Rapid baseline assessment of the state of waste management systems in the identified community. This included mapping and drone photography showing waste in the environment in both study sites.
- A combined household waste classification, environmental and attitudinal survey, which included briefing of two survey fieldworker teams (led by APWC), household waste collection, and waste sampling and classification (led by APWC).
- An outreach programme was held to create awareness and educate youth on waste management, which included community focus group discussions, a combined community outreach and education event involving residents from both selected study communities, and community outreach, education and solution-oriented workshops carried out separately in the two study communities.
- Community-based waste management solutions were explored in both study communities.
- Four temporary waste units were installed in the Quarry Road settlement.
- Four young people wererecruited from the community and employed by Green Corridors as Social Facilitators in the Quarry Road community assisted with education, workshopping and implementation of solutions.
- Green Corridors presented preliminary data and findings of the study in two national level communication events in Ekurhuleni in November (The Plastic Colloquium) and in Cape Town in December 2019 (CLiP Innovation Conference: STEM the Tide of Plastic Waste).

2 OVERALL DESIGN, APPROACH AND METHODOLOGY

Green Corridors designed and managed the pilot study in consultation with the Cefas CLiP team, liaising particularly with the contract lead (Josie Russel), the project manager (Julia Baker), and the CLiP country lead (Fiona Preston-Whyte).

2.1 Collaboration and partnerships

The pilot study approach and methodology mobilised and utilised key partnerships at technical and community levels. The study capitalised on pre-existing collaborations between Green Corridors, the eThekweni Department of Human Settlements, in particular its Iqhaza Lethu project, and the Aller River Pilot Project.

The Iqhaza Lethu project is an initiative of eThekweni Human Settlements to explore ways of improving the quality of life of residents of informal settlements in the city, while their informality persists, which realistically in many instances, will extend beyond the short term.

The Aller River Pilot Project has, since 2016, developed innovative approaches, methods and tools for working with communities to improve the health of local natural waterways. Alongside natural ecosystem rehabilitation measures, the Aller Project has trained previously unemployed locally recruited township young people as eco-champs, whose role is to lead environmental education, awareness raising and behaviour change strategies in local communities.

Iqhaza Lethu and the Aller River Pilot Project helped to select the sites for the pilot study. At the technical level, the pilot study linked with the Cefas CLiP waste classification study in eThekweni, which was implemented by APWC. The waste classification study complemented and augmented the community-based pilot study. Green Corridors facilitated the access for APWC to the selected study communities, by introducing them to community structures (councillors, local committees and ‘war rooms’). APWC’s training of local community-based workers and residents in basic waste auditing provided baseline measures for impact assessment, and developed capacities locally in this regard.

2.2 Pilot study site selection

Two pilot sites were chosen by a process of consultation between Green Corridors, Iqhaza Lethu, the Aller Project and Cefas. Both sites are informal settlements located immediately alongside rivers/streams that discharge into the lower uMngeni catchment. Both of these sites are also among the eight informal settlements focused on in the current initial phase of the Iqhaza Lethu project. Importantly, in both sites, project partners had already secured access to operate in the respective communities through engaging with relevant local leaders, especially Ward Councillors, and community-based structures (local committees or “war rooms”).

2.2.1 Site 1: Quarry Road West Informal Settlement

The Quarry Road West Informal Settlement (QRWIS) straddles the lower Palmiet River about 0.5 kilometres upstream from this tributary confluence with the uMngeni River. Refer to Figure 1. This is the first substantial river or urban stream discharging into the uMngeni above the estuary on the southern side of the uMngeni, about five kilometres from the uMngeni river mouth. It is a noted source of major plastic pollution into the uMngeni estuary, beaches and marine environment.

The settlement has approximately 560 homesteads, which are extremely densely constructed². This makes it very difficult for the municipal waste collection service to access the area as there are no navigable roads in the settlement. Waste bags need to be placed at one collection point for the waste service to be able to collect the waste. The locals opt to discard their waste in the river as some live very far from the collection points. During the recent April 2019 floods, a number of homesteads built near the bank of the river were washed away, leaving some community members destitute. Refer to photo 1-4 below.



Photo 1: QRWIS Before the April 2019 floods



Photo 2: QRWIS Before the April 2019 floods
(Mhlengi Ndlovu, December 2018)



Photo 3: QRWIS After the April 2019 floods



Photo 4: QRWIS After the April 2019 floods
(Mhlengi Ndlovu, December 2018)

² Williams, D., Costa, M.M., Sutherland, C., Celliers, L., Scheffran, J., Vulnerability of informal settlements in the context of rapid urbanization and climate change, Environment and Urbanisation, Vol 31, pages 157 – 176.

Residents are partly attracted to this location by its proximity to work opportunities and the topography of the area. QRWIS lies on a floodplain, thus making it easier for people to settle and construct their homesteads. The area also lies near a very busy municipal road (M19), making it easy for locals to commute to and from work.

The QRWIS settlement has a history of major challenges around waste management. As an informal settlement, for many years there was no waste removal service, and large waste dumps grew alongside the river. Engagement by the municipality around 2015 on waste removal was initially rejected by the community, who sought work opportunities for residents in the waste management function. Many engagements have since taken place, leading to the current situation in which the community is partially serviced through the contracting of waste removal contractors by Durban Solid Waste (DSW). However, this service is not effective as locals are continuing to dispose of waste into the river. The reason for this service not having the desired effect is because not all areas of the settlement are accessible - due to congestion and lack of infrastructure. As the locals have to carry heavy bags to collection points, the river is utilised rather than the waiting for the provided service.

Green Corridors initiated waste management support in QRWIS under their education-based clean-up and recycling project, preceded by their Project Hlwekisa, in 2018. This project aims to empower the QRWIS to formally participate in the waste economy as recycling intermediaries and collectors, leading to reduced pollution and improved waste management systems, and reduced downstream and marine plastic pollution. The Iqhaza Lethu project also focuses on capacitating residents of informal settlements in improving their livelihoods, and improved waste management is considered as one of the immediate improvements that can be facilitated through this program. The Aller Project is implementing a pilot project on the safe disposal of disposable nappies in partnership with eThekweni's DSW and Water and Sanitation Units, and the national Department of the Environment, Forestry and Fisheries (DEFF), and has recently engaged with Green Corridors and Iqhaza Lethu to extend this piloting to the QRWIS settlement.

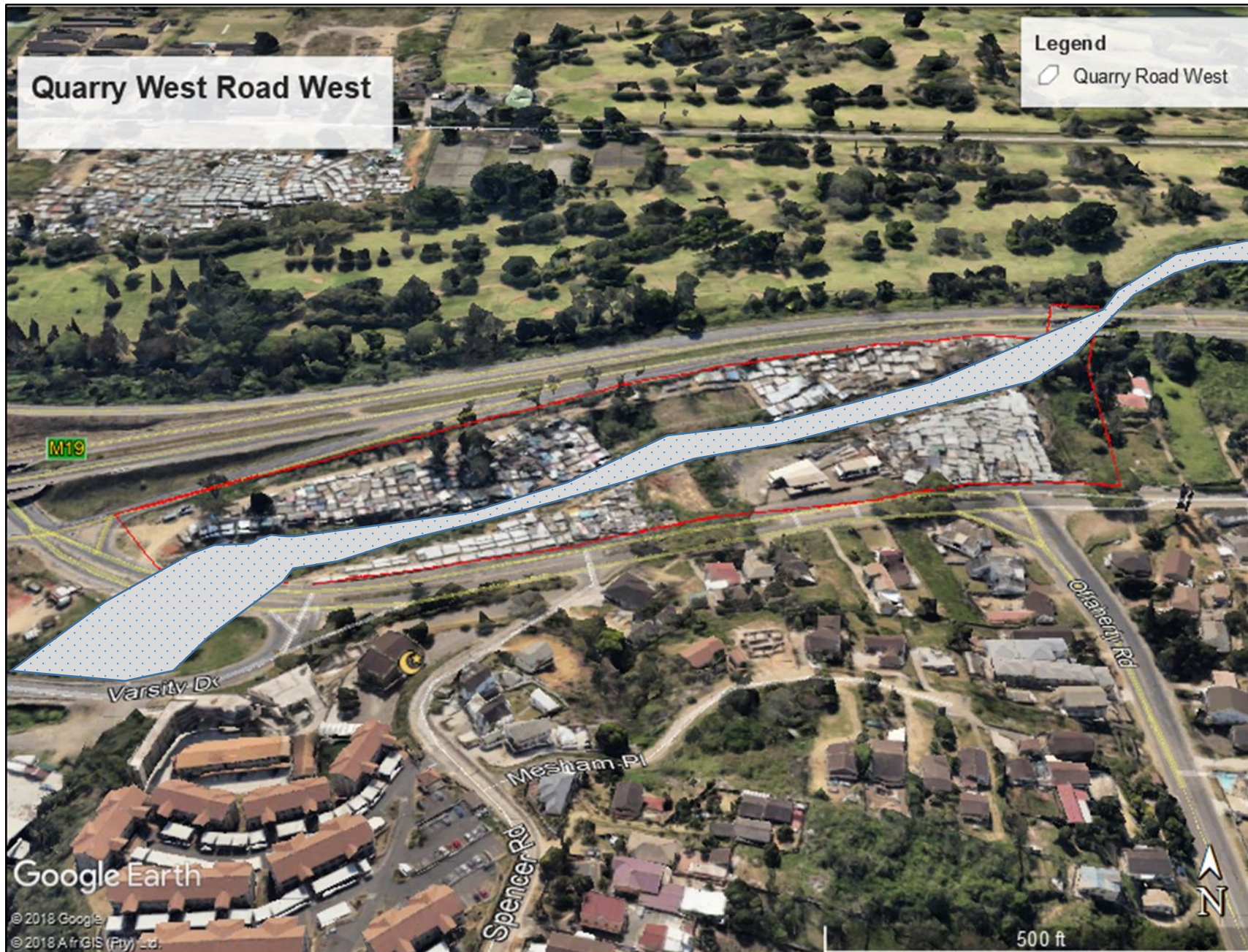


Figure 1: Quarry Road West, Durban (Google Maps)



Photo 5: Quarry Road West Informal Settlement Aerial photos

(Green Corridors, November 2019)

2.2.2 Site 2: KwaShembe Informal Settlement Clermont

The KwaShembe section of Clermont is located alongside the uMvuzane stream, which discharges into the uMngeni river about 12 kilometres from the uMngeni river mouth. KwaShembe has eight informal settlements alongside the uMvuzane stream. Refer to Figure 3 below. Iqhaza Lethu has engaged with the Ezimbileni section of KwaShembe.

The main attraction for the development of KwaShembe, as an informal settlement, is its locality. The area is located near Pinetown, which is rich in industry in Westmead.

The settlement has been planned with roads and basic water reticulation to standpipes, with electrification, and Community Ablution Blocks, and kerbside waste removal services.

However, Clermont is characterised by high tenancy rates, with large numbers of densely settled homesteads on properties that are often owned by absentee landlords. The determination of waste collection services is based on the number of tenants, whereas the actual population size is much greater, particularly in the eight densely settled informal settlements. Furthermore, the landscape is characterised by steep slopes dropping to the river.

These factors, exacerbated by poor monitoring of the municipally appointed contractors, result in an extremely ineffective waste management system. Residents routinely dispose of their waste in the stream and surrounding open spaces rather than take it to the road for collection. The area is infested with rats. Pigs and dogs burrow in the dumped waste. In times of heavy rainfalls increased volumes of waste enters the stream. This impacts on downstream settlements and the terrestrial and aquatic ecology and environment.



Photo 6: KwaShembe , Clermont Aerial Photos

(Green Corridors, November 2019)



2.3 Methodology, tools and resources

Green Corridors with the University of KwaZulu-Natal (UKZN) worked closely to develop baseline research methodology, along with the consultative collaboration with Cefas and APWC. Their input into the baseline study focused on the community profile and plastic pollution. Green Corridors led the design of the study and development of the survey methods and protocols. The contractor was in regular communication with the CLiP project team. Throughout, the contractor applied participatory consultative methodologies and tools in facilitating engagement and processes with the study communities.

Basic questionnaires.

Questionnaires were the first tool used to gather information from both settlements. The questionnaires were simplified to basic English for the communities to easily understand the questions. 30 households were interviewed but due to project deviations only ten surveys were used for analysis.

Workshops and Focus groups.

Community gatherings with the community members. This gave Green Corridors a platform to get views and opinions from the community. The people attending the workshops and focus groups were members that were interviewed during the questionnaire phase. Other community members who were interested were also invited to join the discussions.

Assessments and planning took place in the community workshops held in the two communities. Community outreach included workshops and a community event held for both communities. This included drama and dance presented by young people and involved collaboration with education officials from DSW and eThekweni's Department of Water and Sanitation.

Photographic evidence was collected and used for monitoring and study presentation purposes. The waste management solutions, which arose from the community consultation, included other levels of waste management such as:

- Empowerment of and support to informal collectors
- Strengthening Green Corridor's primary collection capacity to sell on to buy back centres and other recycling intermediaries; and
- Sorting and sending contaminated/ unrecyclable plastic to Green Corridor's conversion plant that will be producing and selling pavers made from heat-blended glass and normally non-recyclable plastic.

Findings and solutions were shared at the DEA's Plastic Colloquium in Ekurhuleni in November 2019 and at the CLiP Innovation Conference: STEM the tide of Plastic Waste in Cape Town in December 2019, in the form of both informal and formal presentations.

3 PILOT STUDY ACTIONS COMPLETED AND POTENTIAL SOLUTIONS

3.1 Action 1: Rapid household, environmental and attitudinal survey

Action one: a rapid household, environmental and attitudinal survey, was undertaken at both KwaShembe and Quarry Road. The field workers were briefed and trained by APWC and Green Corridors at the community sites. The field workers were sourced from the local community. The aim of was to conduct household surveys as part of a research study on plastics and marine litter pollution.

APWC was carrying a waste composition survey of households, as part of this, 30 randomly selected households were approached to allow APWC to take their weekly household waste bags. The first black plastic bags were distributed to 30 households around the Quarry Road West and KwaShembe Communities. These bags were used as receptacles for any available waste in the households before the start on the next day of the 7 days of monitored and measured waste collection.

The following morning, the field workers collected the bags distributed the previous day and these were discarded accordingly. The second black bags were distributed. The new bags were to be kept for duration of 7 days before collection. These bags were used as a sample for the classification of waste.

The field workers and Green Corridors were in continuous contact over the collection period. Some issues surfaced at Quarry Road over the collection period. A number of selected households wanted to discard the bags as they stated that the bags had a foul smell and maggots were starting to appear. In consultation with the APWC survey field worker, a solution was reached, in terms of which the first batch of measured bags were collected from the household halfway through the sampling period and new bags were distributed. The bags collected halfway were clearly marked with the household number and stored in a safe, designated area for the remainder of the collection period.

On the 7th day, the sample waste bags were collected from all sampled households. The bags were all clearly marked. The bags collected mid-way and the bags collected on the 7th day were all put together and clearly marked as per household number. Out of the 30 household bags, 20 were discarded and ten bags were used for the sampling and classification. The objective was to carry out 30 interviews, however this was disrupted by a crime incident at KwaShembe which lead to only ten bags being sampled. The classification was undertaken at the Waste Transfer Station in Springfield, Durban. The sampling and classification was undertaken by APWC. The surveys were undertaken at settlements where Green Corridors was already involved with in both sites. Green Corridors had already secured access to operate in the respective communities through engaging with relevant local leaders. Refer to Annex. 1 for a sample of the questionnaire.

Below are the findings of the household interviews conducted.

3.1.1 Quarry Road West household Interviews

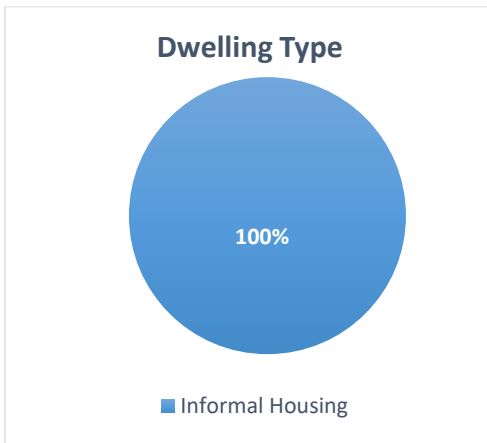


Figure 3: Dwelling Type

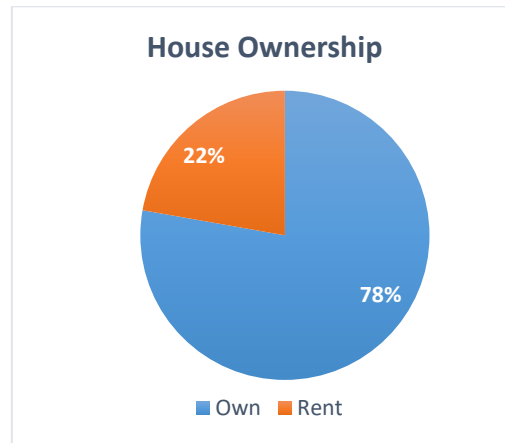


Figure 4: House Ownership

The settlement of Quarry Road West is made up of Informal housing (figure 3). 78% of the housing is owned by the occupants, 22% of the community is renting the homesteads (figure 4).

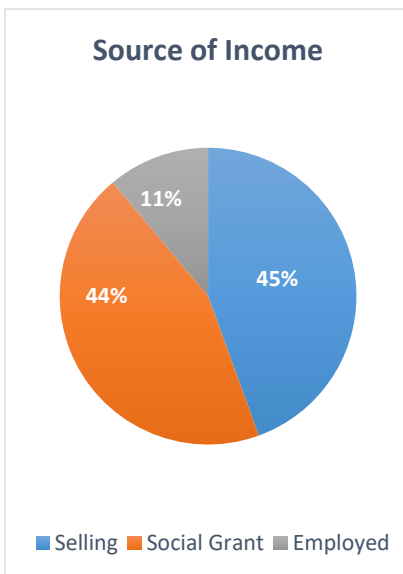


Figure 5: Source of Income

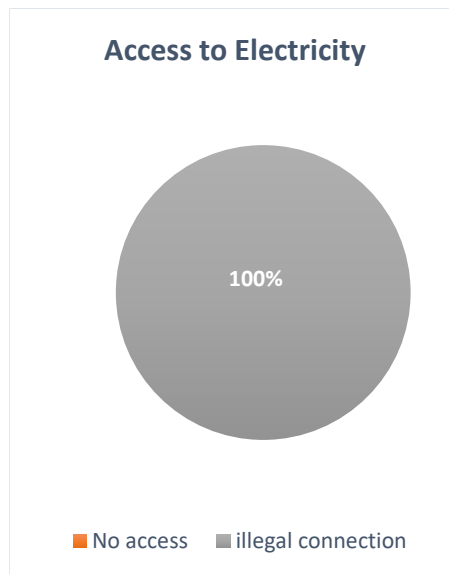


Figure 6: Access to Electricity

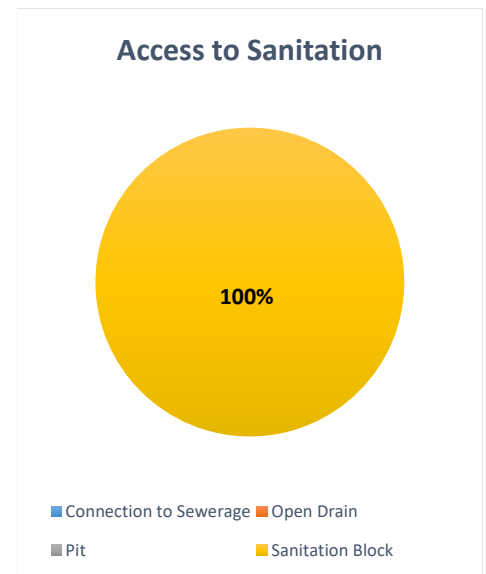


Figure 7: Access to Sanitation

Only 11% of the community is formally employed. 44% live on social grants provided by the government and 45% sell products to the public (figure 5). The entire QRWIS population has an illegal electricity connection (figure 6), this is typical of informal settlements. The settlement has sanitation blocks as a form of sewerage management (figure 7).

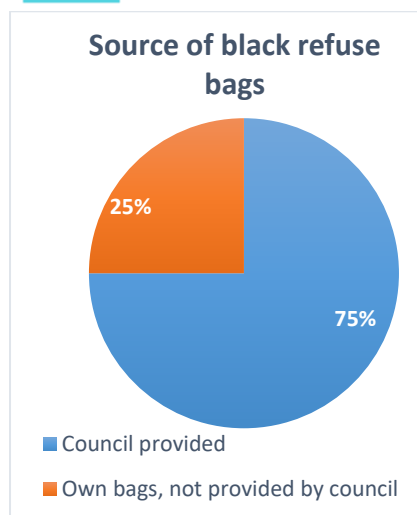


Figure 8: Source of Black Bags

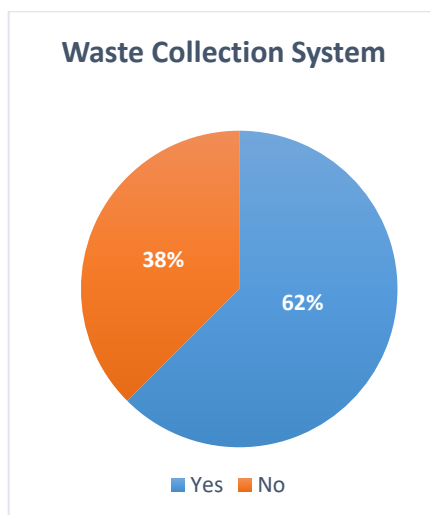


Figure 9: Waste collection system

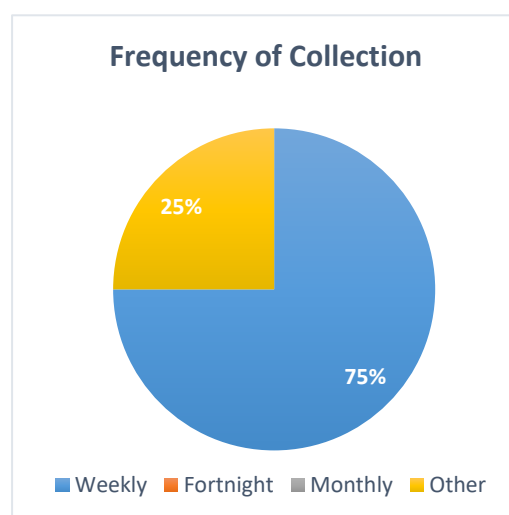


Figure 10: Frequency of collection

75% of the community stated that the council (DSW) provides refuse bags (figure 8). Only 62% stated that these bags are collected (figure 9). An area for temporary storage is an ideal solution for the storing of waste bags before the collection period.

A great number (75%) of the population of QRWIS stated that waste is collected every week by DSW (figure 10).

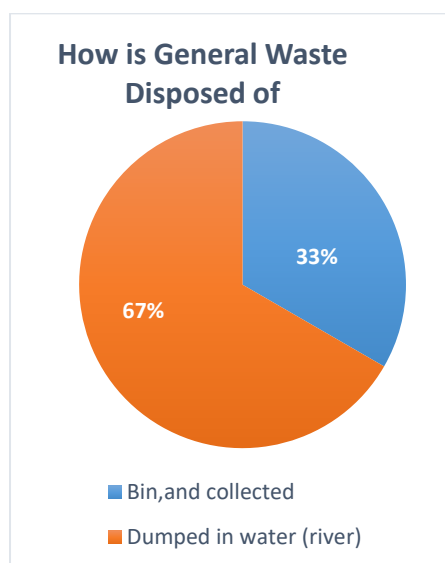


Figure 11: How is general waste disposed of

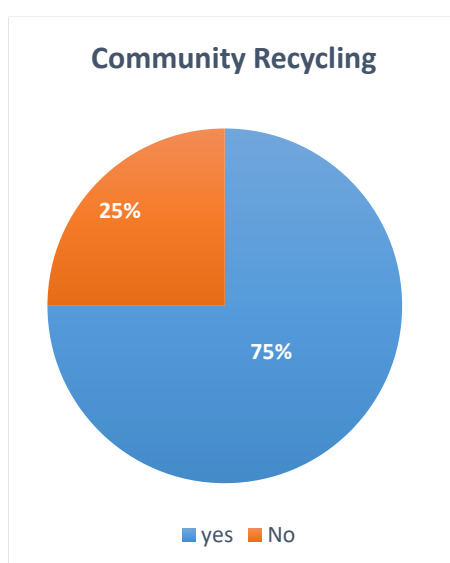


Figure 12: Community recycling

67% of the population stated that waste bags are dumped in the river (figure 11). This is very evident in QRWIS. The amount of waste that was found in the stream was very evident. However, with the installation of the storage receptacle (resulting from this pilot study) the locals have opted to take their waste to the temporary storage units placed in four sections of the settlement.

Recycling in Quarry Road seems to be another feasible option for improved waste management. A great number of local people know of available recyclers in the community (figure 12).

3.1.2 KwaShembe household Interviews

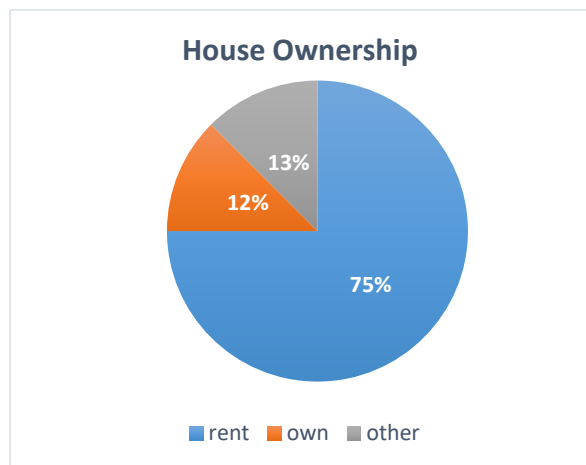


Figure 13: House ownership

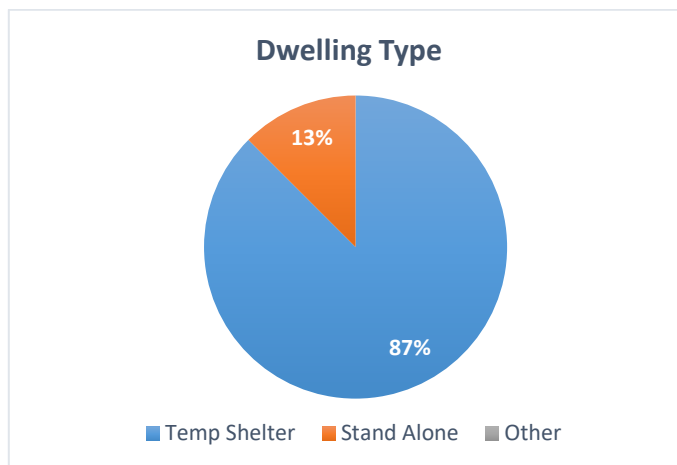


Figure 14: Dwelling type

75% of the population of KwaShembe lives in a rented property (figure 13). This was highlighted on section 2.2.2. The number of people in the community far exceeds the numbers provided for by waste management services. The types of dwellings dominant in KwaShembe are temporary shelters, 87% (figure 14). These shelters are normally rented out.

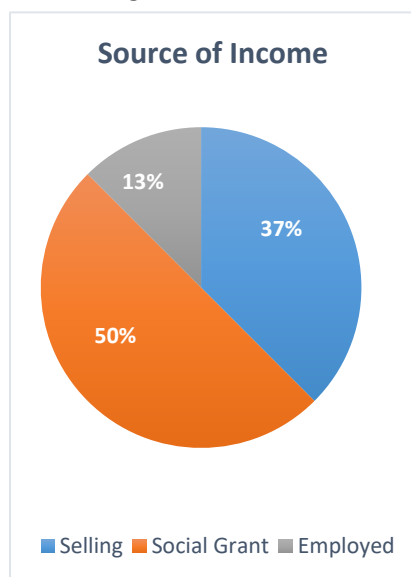


Figure 15: Source of income

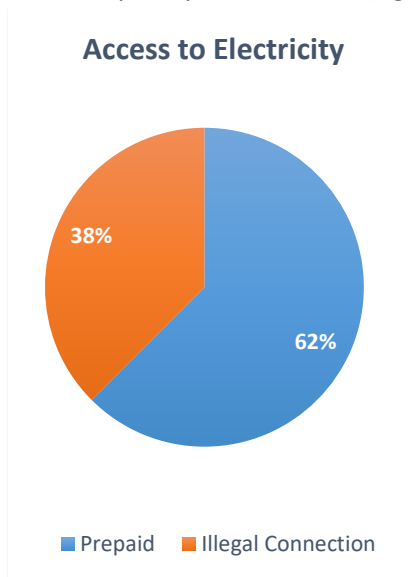


Figure 16: Access to electricity

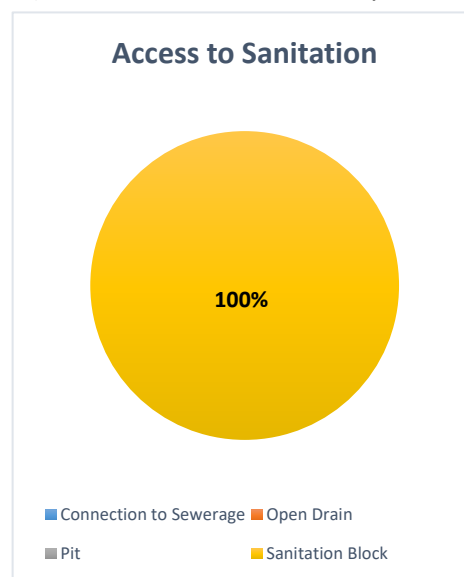


Figure 17: Access to sanitation

Majority (50%) of the KwaShembe community receives social grants from the government as a source of Income. This is typical of informal settlements. 37% of the population rely on informal trade for a living (figure 15). 62% use prepaid electricity and 38% is illegally connected (figure 16). Often fires in informal communities are caused by illegal connection of electricity. The entire population of KwaShembe is reliant on sanitation blocks (figure 17), these are located throughout the settlement.

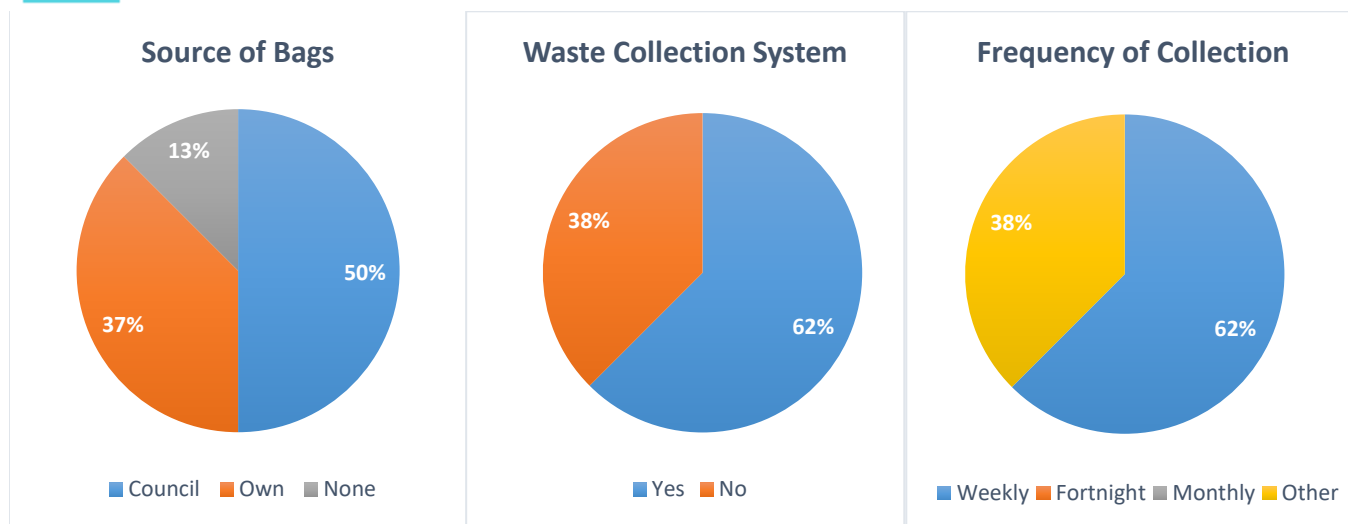


Figure 18: Source of Bags

Figure 19: Waste Collection System

Figure 20: Frequency of Collection

DSW provides 50% of the black refuse bags to KwaShembe. 37% purchase their own bags (figure 18). 62% of the population stated that there is a waste collection system in place. 38% stated that no waste collection service exists (figure 19). It could be that these people with no waste service live in the valley bottom where the DSW trucks do not have access.

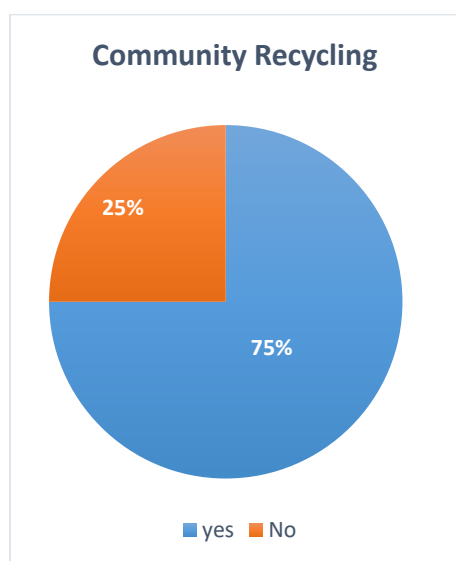


Figure 21: Community recycling

Recycling in KwaShembe seems to be another feasible option for improved waste management (figure 21). A great number of local people know of available recyclers in the community.

3.2 Action 2: Focus Group Discussions

The Quarry Road West focus group was held on Friday October 18 2019 at the Quarry Road Informal Settlement, ward 23. The seating was attended by 19 people. The KwaShembe focus group was carried out on the 27 September 2019 and was attended by ten people, three of the attendees sit on the local committee.

Focus group discussions were held at both Quarry Road West and KwaShembe. The discussions were facilitated by Ms. Thozeka Letuka, an experienced facilitator. The purpose of the focus group discussions was to investigate attitudes to and practices around waste management in general. The focusGroups served as a follow-up to the survey exercise

carried out in conjunction with APWC in both the communities. The Focus Group Discussion set the basis for a further planning session which included representatives of the community and other responsible stakeholders from DWS and eThekweni Waste and Sanitation (EWS) departments. The main purpose of the planning session was to co-design interventions in support of more effective waste management in the focus area, in a facilitated inclusive consultative process.



Photo 7: Quarry Road Focus Group



Photo 8: Quarry Road Focus Group
(Ayanda Mnyandu, September 2019)

The summary of the main issues that came out of the focus groups were;

- Lack of plastic bags from municipality (DSW)
- Plastic bags have to be collected from ward committee not everyone has access to bags
- Lack of storage space for recycling as settlement is too dense
- DSW does not collect from their households
- There is a general lack of awareness about waste, and how ordinary people can participate in the management thereof.

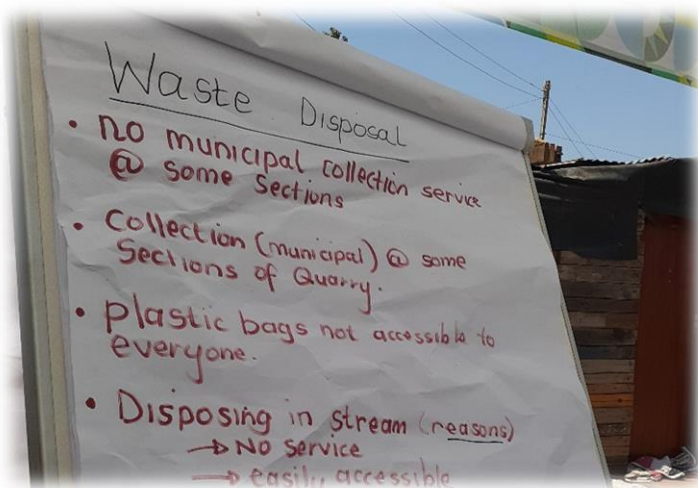


Photo 9: Main Issues identified from Focus Group

(Ayanda Mnyandu, September 2019)

From the discussions it can be concluded that most of the issues relating to waste management in informal settlements point to the lack of service from the municipality. Informal settlements are not serviced the same as other formal areas in the city. The people in these settlements are neglected and are not equipped with the necessary infrastructure for better waste management. A number of issues are attributed to the informal communities disposing of their waste in the streams and dumping waste illegally. Local departments also need to provide the necessary infrastructure to

informal communities. The war on plastic and marine litter will not be curbed if the municipality and departments service some areas and neglect others.

Possible solutions that were suggested at the focus groups;

- Installation of a temporary waste storage, to serve as a collection point accessible to the municipality
- Link recyclers or those interested in recycling with buy back centres
- DSW to collect at least twice a week in informal communities
- DWS contract locals with vans to help collect bags from community as vans are smaller than DWS trucks. This will help with the waste collection and create employment opportunities in the community
- DSW to provide plastics weekly to every household

3.3 Action 3: Improved waste management options: A multi-stakeholder conversation

A workshop was undertaken for both KwaShembe and Quarry Road communities. The workshop was held on the 25 November 2019. This workshop was held at a community hall located at KwaShembe and interested community members from Quarry Road were transported to the venue by Green Corridors. The workshop was attended by 39 people. The objective of the gathering was to bring relevant stakeholders together to consider practical, doable, affordable solutions that involved residents, organised civil society, local government and the private sector that could address the large waste management problem, especially in informal areas inhabited by non-ratepayers. The following stakeholders were invited:

- Local residents
- Departments of Durban Solid Waste, Water and Sanitation and Environmental Planning and Climate Protection – they are interested and affected local government departments with mandates directly related to water, sanitation and waste management. Representing this grouping were members of management (decision-making), operations (carrying out decisions), education (teaching communities). Landfill management was also included. All the invited departments attended the workshop.
- Conservation agencies from organised civil society – eThekweni Conservancies Forum and Kloof Conservancy uMngeni Estuary Conservancy (gave input into the trash narrative from the ocean's perspective)); Save Our Rivers ZA (for river and waterway protection).
- Private sector – an observer from an international absorbent hygiene product (AHP) manufacturer, Kimberly-Clarke, was present to represent the position and responsibility of manufacturers; Big Start (a local small business working in the environmental education space) and local recyclers and upcyclers to represent livelihoods opportunities related to waste management.



Photo 10: Improved Waste Management Workshop



(Ayanda Mnyandu, September 2019)

The following assumptions underpinned the design of the workshop proceedings:

- Waste management is a municipality-wide challenge.
- Waste management is an “us-problem” not a “them-problem”. This view is not widely shared by local government.
- Local communities must be part of the design and execution of solutions.
- Human settlements should be part of the conversation.
- Waste management in semi- and informal settlements is inadequate and a serious problem in situ and at the end of the catchment, i.e. the ocean.
- There is “gold” in trash and opportunities for localised separation at source, recycling and upcycling are obvious aspects of any solution to the challenge.
- Under the circumstances, waste management is difficult and will require a committed, collaborative and driven process.

Short presentations were made by a wide variety of key stakeholders as a means of “painting the picture” and describing the context within which the discussion needed to take place. Refer to Annex 2 for some of these presentations. This was followed by groups discussing the following three key questions.

A. What is the problem?

Define all the issues related to waste management in an area like KwaShembe

What is the waste?

Why does it lie around?

Who should help?

Who can help?

B. How would we like the area to look?

What is the vision of the community about how the environment could and should look?

C. How can we get from A to B, together?

What solutions can we come up for the challenges identified in A that can help achieve the vision of B?

The outcomes from the above questions are as follows;

What is the problem? (community feedback)

- Everyone litters.
- People lack education and have a belief that when they litter, they are creating employment opportunities. If they do not dump, or dispose their waste correctly, then some individual will lose their job since there will not be any more waste to pick up.
- People do not always put out the rubbish in the right place at the right time.
- Locals sometimes do not take out their waste bags on the day of collection, mostly because the collection point is too far from their home. These people end up dumping their bags in streams and illegal dumps.
- DSW does pick up, but not frequently enough.
- Informal settlements are overcrowded and very dense. The locals cannot keep waste bags for a period of 7 days (weekly collection), because of pests and foul smells. The locals therefore end up disposing of their waste anywhere. The communities have suggested that waste should be collected at least twice a week.
- The waste management solutions that exist do not match the nature of the area. The same solution for a suburb cannot be applied to a place where people live in informal settlements with no or little infrastructure.

- There is inadequate infrastructure for the handling of waste – collection and transportation.
- The situation in informal settlements makes waste management difficult for residents and for DSW.
- The access roads are not always navigable for DSW trucks.
- Sometimes there are no roads, so it is hard for pick up points to be established.
- The population of informal settlements and even formal poorer areas are very populated, so there are too many people making large amounts of rubbish.
- There are never enough bags for all the rubbish.
- There is a problematic mindset at the heart of the issues:
 - People do not see the informal settlements as their real homes, but rather as temporary arrangements, so they do not treat it as they would their actual homes.
 - Residents do not seem to care about all the rubbish.
 - People are not educated about waste and the dangers of it or even the value of it.
 - Residents do not know all the ways that waste can be useful – recycling as a livelihood, upcycling, etc.
 - There is very little understanding about the environment and the effect of waste on water, the ocean, the environment, health or climate change.
 - Residents do not understand how choked rivers and huge trash build-ups in rivers can lead to flooding and other factors that damage homes.

Possible solutions

Groups allocated responsibility to various role players in identifying what could be done to get from the current situation to the vision.

Local departments:

- The municipality must increase the frequency of collections.
- Contractor management systems must be improved. Contractors must be made accountable.
- The municipality must place effective bins along streets and other strategic places. These must be well-designed so that they do not cause health problems and are animal-proof.
- Enough refuse bags must be supplied to each household.
- Each area should have a site, or transfer station, where waste sorting takes place, with recycling structures for all waste.
- The municipality must provide training and start-up support to those interested in recycling.
- Schools must ensure that they are promoting environmental education by all means possible.

Residents

- Residents must take responsibility for their own waste.
- Residents must participate in area clean-ups regularly until there is a habit of keeping the area clean.
- Parents must lead by example in a positive way, teaching their children to be aware of the benefits of living in a clean, attractive safe neighbourhood.
- Residents must co-operate with DSW, EWS and contractors to keep the area clean.
- Community leadership must prioritise waste management and environmental justice.
- Intensify waste recycling.

Other stakeholders

- Manufacturers must reduce packaging and use biodegradable packaging.

- Manufacturers should take responsibility by actively supporting community-based waste management activities from recycling to education programmes to community greening.
- Private sector must be policed so that they do not dump into waterways.
- Private companies should contribute to community greening and cleaning initiatives.

3.4 Action 4: Community Outreach and Education event Thanda Ndawo Yakho Festival

The community outreach and education event was held on the 4 October 2019. The event was organised and run by the Aller River Pilot Project (ARPP) team and Green Corridors. The event took place at the KwaShembe Sports Grounds. The event was for both the KwaShembe and Quarry Road West communities.

The community outreach was well planned and executed by the ARPP and Green Corridors. The theme of the Outreach was “Thanda iNdawo Yakho” which translates to “Love your Area” in English. The event was well publicised in the KwaShembe area by ARPP and in Quarry Road West by Green Corridors. The event was well attended by approximately 150 people, from both KwaShembe and Quarry Road West. The event was well attended by young and older persons including school learners in their respective uniforms. A number of municipal entities also took part in the event namely, DSW, Community Participation and Water and Sanitation.



Figure 22: Poster of the Event for publicity

The Programme for Friday 04 October 2019	
1. Clean-up	09h00 to 10h00
2. Convene event	10h30
3. Prayer	10h35
4. Welcome by Cllr	10h40
5. Presentation on the project (TL)	10h55
6. Presentation by DSW	11h15
7. Presentation by EWS	11h25
8. Entertainment (2 x 10 mins)	11h35
9. QRW Presentation	12h00
10. Entertainment (3 x 10 mins)	12h30
11. Wrap & Vote of Thanks	13h00

Figure 23: Event programme

The event commenced with a community clean-up in which litter was removed from the adjacent stream and area around the KwaShembe Sports Ground. DSW supplied the refuse bags, gloves and rakes. Approximately 50 refuse bags were collected by DSW. After the clean-up, an educational event took place. Local crafts people participated in the event. Items of clothing and other crafts were made from waste materials. These were showcased at the community event. Five locally based dance groups were mobilised to support the event. They were apprised of the theme in advance and were delivered beautifully as each performance referenced the purpose of the event and the need to “love your area” by caring for it and managing waste.

The educational entertainment was interspersed by a talk by a representative of the local council. The ARPP Project Leader explained the purpose of the event. Mr. Prince Dlamini from DSW Community Education, had a talk about the importance of communities partnering with DSW in waste management. The DJ and MC both communicated the message of the event constantly and clearly.

An important activity that carried on throughout the day was a waste separation demonstration. Members of the ARPP Team demonstrated to the community members ways to separate their waste and identify which waste that is recyclable. The event was a successful and happy occasion.

3.5 Action 5: Additional community outreach and education events

Two additional items, namely a follow-up meeting with residents in the Beachway area of KwaShembe to discuss waste impacts on the environment, and the launch of an EcoCclub with children in the same area, aged 4 – 12 years of age. Approximately 30 children were part of the launch.

The events were preceded by discussions held with community leadership in the local “war room”, a collective of the ward councillor, ward committee members and other elected community representatives.

3.5.1 Awareness building and environmental education of children in KwaShembe

A central principle of the approach and methodology is encouraging behaviour change for sustainability. Working with children follows from this. If children become aware of how precious the environment is at an early age, then we have hope for the future. We also know that the adults of any community are more likely to listen to their own children than they are to listen to organisations from “the outside”. The aim is to develop young eco-champs, who will advocate change in their homes and educate their families about the importance of protecting the environment.

The ARPP had previously set up eco-clubs in the other Clermont schools, and extended this to a school in KwaShembe. With the children of the area having just started their long December school holidays, they were keen to join the Eco-Club. The parents of the children were also very excited and keen for their children to start participating in the Eco-Club. The Eco-Club will be involved in river clean-ups and other clean-ups in the area. The setting up of an Eco-Club is an additional item influenced by the CLiP Programme. Primarily the planned events were all focused towards adults and adults were the ones consulted in the community. It was then decided by Green Corridors and ARPP to come up with a programme involving children in the community. Children are the future of the community hence they also need to be consulted and be educated about the waste problems at hand and also be given an opportunity to possibly come up with solutions. Eco-Clubs are seen as one of the solutions to the waste and marine litter problem.

3.5.2 Adult awareness building and education

Following on from the successful enviro-cultural Thanda Ndawo Yakho community outreach and education event held in October, Green Corridors and ARPP have continued to engage with groups of residents from different parts of two study communities. The heavy rains in November provided a platform to engage with residents about how waterways become conduits of litter particularly plastic waste. It was shown to the communities how plastic and other wastes has choked the waterways.

This study has demonstrated the value and importance of consulting communities in fighting the issue of plastic waste pollution in water resources. It was noted that the people respond better to being consulted rather than being ‘recipients’ of solutions generated by ‘outside’ organisations. The communities were engaged via focus groups, door to door engagements and information sharing sessions.

3.6 Action 6: Installation of temporary Storage Waste Units

Based on consultations between Green Corridors staff and Quarry Road West residents, which also included the DSW Area Cleansing Officer, the need for temporary storage of domestic waste was identified as one of the solutions to the incorrect disposal of waste. QRWIS is very impacted by incorrect waste disposal. For years the people of QRWIS have relied on the adjacent river as a waste disposal site. DSW has recently started collecting waste bags from the site weekly, but still there is no significant change. This is due to the fact that QRWIS is very densely populated and has roads that are not navigable for the collection trucks. As a solution the municipality required that the community members drop their black bags at the entrance of the settlement, however a great percentage of the QRWIS population still opted to use the river for disposal, claiming that the collection point was too far and there is a lack of collection plastic bags.

It was then raised by both the QRWIS community members and Green Corridors that temporary storage receptacles were needed. The design options for temporary waste storage receptacles were discussed with the community, and four sites were identified, with one for each section of the community. This led to the construction by Green Corridors technical staff at the KwaMashu Waste Materials Beneficiation Centre (KMBC), and installation of the four waste receptacles at the identified sites within the QRWIS community. Four local unemployed caretakers were employed. The function of the caretakers were to collect the waste bags from each household biweekly and distribute plastic bags to the households. These caretakers ensure that the temporary storage area is clean and all waste is contained inside the storage facility until the DSW collection day. On the day of collection, the caretakers ensure that all waste is taken to a designated area, decided by DSW, where waste is collected. The design and materials used took into account the need to minimise the risk of theft of these receptacles, and curb animals from accessing the waste bags. The receptacles are also placed on a raised bunded surface to ensure there is no leachate contamination on the ground. This was seen as an interim step which should form part of an improved waste management system, which would include sorting of waste into recyclable and non-recyclable waste streams.



Photo 11: Temporary Storage Unit for Waste Bags

The installation of the receptacles has had an impact on the amount of waste dumped on the riverbanks. The amount of waste has decreased as the temporary storage method is now gaining popularity in the community. It is however unfortunate that with all the efforts to encourage better management of waste, DSW has not supplied bags to the community and waste bags are not collected on a weekly basis. The servicing of QRWIS by DSW is unreliable and not

consistent, all the efforts for a better waste management system at QRWIS will eventually go in vain if municipal departments do not keep to the agreement.

For Green Corridors, commercially non-recyclable plastics are used as feedstocks for beneficiation at the KMBC.

4 RESULTS

Continuous monitoring is still necessary in these areas. The pilot study was rolled out to a small minority of people in the communities. As a next step the study should look at expanding the study to the entire boundary of the settlements. From the consultations and engagements with the local community it was evident that the local communities are willing to work hand in hand with the municipality, and other organisations, for improved waste management solutions. However, municipal departments like DWS neglect these communities. The services provided to informal settlements are vastly inadequate. Informal communities are always blamed for the amount of plastic and waste entering the river system, but it is rather biased to blame only them, when the municipality is failing to provide items as simple as plastic bags. To fight the problem of waste and marine litter we, have to first acknowledge that informal communities are the way they are today because of marginalisation and being side lined and because of having to build their homesteads informally. The municipality should service ALL areas in a city because at the end of the day all the waste entering the river system does not only affect informal communities but affects 'the city', its rivers and oceans as a whole.

Some of the successes of the pilot study are;

- Decreased plastic bags entering the river.
- Temporary storage receptacles were constructed for the community. These are permanently placed for the benefit of the community.
- Employment of caretakers for better waste management and minimising waste entering rivers by collection biweekly.
- Mobilisation of community members and volunteers for improving waste management.
- Education and outreach assisted in advocating the issues of waste and marine litter.
- Waste sorting was demonstrated to some members of the community which will also help decrease the amount of plastics and waste entering the system.
- A movement of young children was initiated and launched to advocate change.
- Municipal departments were visible in the events.

These results are significant, taking into account the relatively short implementation time frame and geographic reach of the pilot study.

5 SUMMARY

The following outcomes are noted as the main value added and positive impacts of this study, made possible through Cefas/CLiP support.

The first is the increased knowledge and skills base in Green Corridors and the ARPP and in the KwaShembe and QRWIS informal settlements with regard to waste classification. This has increased awareness of waste and ‘where it goes’. It has also strengthened the potential for improved commercial recycling, and using waste materials as a resource, as part of efforts to move towards a circular economy and optimise the economic value realisable from identified waste streams.

Secondly, this study has strengthened Green Corridors methodological understanding and approach, in providing experience-based evidence. This is of particular value in densely constructed informal settlements, illustrating the importance of adequate accessible temporary domestic waste storage facilities. People living in extremely confined dwellings are understandably unlikely to retain odorous waste within their extremely confined dwellings for the duration of a week, in anticipation of the next waste collection service of the municipality. The study has highlighted the value and importance of appropriate and accessible temporary waste options. This is backed up by education and behaviour change drives in the respective communities, in averting the dumping of domestic waste in the environment and in nearby water courses as the default waste management behaviour in informal settlements.

This experience has strengthened Green Corridors approach and methodology for initiatives to improve waste management in informal settlements, through their focus on addressing the waste entering the environment at source. This complements Green Corridors focus on the interception of plastic waste transported by watercourses through the use of litter booms and other waste interception technologies.

Thirdly, this study has contributed to the strengthening of collaborative networks directed towards improved waste management in Durban’s informal settlements. This applies to relationships within civil society, as in the relationships between Green Corridors and the ARPP and the UKZN, and with key players within relevant departments in the eThekweni Municipality, as well as relationships with residents in the study communities.

As a committed learning organisation working in to improve waste management and minimising marine plastic pollution, these lessons learned will inform Green Corridors’ strategies and future work towards collaboratively based, sustainable solutions to waste management in informal settlements and the countering the scourge of marine plastic pollution.

Annex 1: Sample of the Questionnaire utilised

SA Collection Form - Display for printing

Auditor (your name)

Take a photo of the premises

Click here to upload file. (< 5MB)

Data Collection Date

yyyy-mm-dd

What currency are you using in this form?

- ☐ BZD
- ☐ US
- ☐ ZAR

Collect the GPS coordinates of the premises

latitude (x,y °)

longitude (x,y °)

altitude (m)

accuracy (m)

**Premises Identification**

Country

- ☒ South Africa
- ☐ Belize

Locality

Optional

- ☐ Cape Town
- ☒ Ethekwini

Specify other.

Location

Town/suburb/village

- ☐ Khayelitsha
- ☐ Kuils River
- ☐ Athlone
- ☐ Tamboerskloof
- ☐ Phillipi
- ☐ Rural
- ☐ Durbanville
- ☐ Other
- ☐ Camps Bay

Location Other

Premises Type

- ☐ Stand-alone house
- ☐ Multi unit dwelling
- ☐ Temporary shelter
- ☐ Gated community
- ☐ Other

Specify other.

Detailed premises location (e.g. suburb or street)

Premises ID

Contact Information

Name of house owner

Number of adults in household present more than 3 days per week

Number of adults in household present less than 3 days per week

Number of children in household under 2 years old

Number of children in household over 2 years old

House Ownership

- ☐ Own
- ☐ Rent - serviced
- ☐ Rent - backyard shack
- ☐ Living with a family member

Measure of Income

How many people in the household have an income?

» Income Details

Income details for person number 1

What sources of income does this person have?

Examples of income: teaching, selling food at the market, rent from tenants

How often does this person get paid?

- ☐ Paid every week depending on work
- ☐ Paid every two weeks depending on work
- ☐ Paid every month depending on work
- ☐ Steady annual salary
- ☐ Other

Specify other.

If they earn an unsteady income, how much does this person get paid when they get paid?

If they earn a steady annual salary, how much does this person get paid per year?

- ☐ <R800 (please specify)
- ☐ R801-1500
- ☐ R1501-3500
- ☐ R3501-6000
- ☐ R6001-10000
- ☐ R10001-20000
- ☐ R20001-40000
- ☐ R40001-70000
- ☐ R70001-120000
- ☐ R120000+ (please specify)

If their income is lower or higher than the options, what is their exact annual income?

..... 2

Income details for person number 2

What sources of income does this person have?

Examples of income: teaching, selling food at the market, rent from tenants

How often does this person get paid?

- ☐ Paid every week depending on work
- ☐ Paid every two weeks depending on work
- ☐ Paid every month depending on work
- ☐ Steady annual salary
- ☐ Other

Specify other.

If they earn an unsteady income, how much does this person get paid when they get paid?

If they earn a steady annual salary, how much does this person get paid per year?

- ☐ <R800 (please specify)
- ☐ R801-1500
- ☐ R1501-3500
- ☐ R3501-6000
- ☐ R6001-10000
- ☐ R10001-20000
- ☐ R20001-40000
- ☐ R40001-70000
- ☐ R70001-120000
- ☐ R120000+ (please specify)

If their income is lower or higher than the options, what is their exact annual income?

Income details for person number 3

What sources of income does this person have?

Examples of income: teaching, selling food at the market, rent from tenants

How often does this person get paid?

- ☐ Paid every week depending on work
- ☐ Paid every two weeks depending on work
- ☐ Paid every month depending on work
- ☐ Steady annual salary
- ☐ Other

Specify other.

If they earn an unsteady income, how much does this person get paid when they get paid?

If they earn a steady annual salary, how much does this person get paid per year?

- ☐ <R800 (please specify)
- ☐ R801-1500
- ☐ R1501-3500
- ☐ R3501-6000
- ☐ R6001-10000
- ☐ R10001-20000
- ☐ R20001-40000
- ☐ R40001-70000
- ☐ R70001-120000
- ☐ R120000+ (please specify)

If their income is lower or higher than the options, what is their exact annual income?

Nature of Waste Generated

* Access to Facilities

Do you have access to electricity?

- ☐ Yes, prepaid
- ☐ Yes, postpaid
- ☐ No access to electricity
- ☐ Generate own electricity
- ☐ Other

Specify other.

Do you have access to sanitation?

- ☐ Connection to sewage
- ☐ Open drain
- ☐ Sanitation block
- ☐ Pit - long drop
- ☐ Other

Specify other.

Do you have access to stormwater infrastructure?

- ☐ Yes
- ☐ No
- ☐ Other

Specify other.

What happens to water when it rains? Where does the water go?

» Most Commonly Consumed Food

What is the number 1 most commonly eaten food?

How the food is obtained

- ☐ Buy it from takeaway
- ☐ Buy from market/sidewalk
- ☐ Buy from Braai stand
- ☐ Buy at spazza shop
- ☐ Growth it themself (Produce)
- ☐ Buy at supermarket

Specify other.

How often the food is eaten

- ☐ Every day
- ☐ Most days
- ☐ Some days
- ☐ Other

Specify other.

What is the number 2 most commonly eaten food?

How the food is obtained ☐ Buy it from takeaway ☐ Buy from market/sidewalk ☐ Buy from Braai stand ☐ Buy at spazza shop ☐ Growth it themself (Produce) ☐ Buy at supermarket
Specify other.
How often the food is eaten ☐ Every day ☐ Most days ☐ Some days ☐ Other
Specify other.
What is the number 3 most commonly eaten food?
How the food is obtained ☐ Buy it from takeaway ☐ Buy from market/sidewalk ☐ Buy from Braai stand ☐ Buy at spazza shop ☐ Growth it themself (Produce) ☐ Buy at supermarket
Specify other.
How often the food is eaten ☐ Every day ☐ Most days ☐ Some days ☐ Other

3

Specify other.

How much do you spend on takeaway food per week?

How many soft drink cans are drunk each week?

How many water bottles are drunk each week?

What size water bottles do you usually buy?

How often are groceries bought?

- ☐ Every Week
- ☐ Every Fortnight
- ☐ Every Month
- ☐ Every Day
- ☐ Every 2 Days
- ☐ Twice a week
- ☐ Every year
- ☐ Other

Specify other.

How much on average is spent on groceries each time they're bought?

Waste Management

Do you have a bin or bag?

Select all that apply

- ☐ Bin for garbage
- ☐ Bag for garbage
- ☐ Clear bag for recycling
- ☐ Other

Specify other.

How do you manage rubbish at home?

- ☐ Line bins at home with bag then remove bag when full
- ☐ Have small bins around house that rubbish is thrown into
- ☐ Other

Specify other.

Describe the bin or bag size and type

Select all that apply

- ☐ Council provided black bags (provide number in "other" comment)
- ☐ Council provided blue and orange bags (provide number in "other" comment)
- ☐ Own bags, not provided by council

Bin size and bag type other:

How many black bags do you put out each week?

How many clear bags do you put out each week?

How many blue bags do you put out each week?

How many orange bags do you put out each week?

How full is your council provided 240L bin each week?

If more than one bin, put a number higher than 100%

How many other (non-council provided) bags do you put out each week?

How many bins does the premises have?

Describe the bin's size and material

eg is it a 240L plastic wheely bin or a 80L steel bin? etc.

Is there a collection system in place?

- ☐ Yes, partial - some household rubbish goes into council provided bags which I take to a collection point, and some household rubbish is discarded in other ways (e.g. dumping in water or on land, burning, burying)
- ☐ Yes, partial - I take council provided bags to a collection point. All household rubbish goes into these bags
- ☐ Yes - I place my bins/bags on the street each week
- ☐ No - I have no collection service and all my rubbish goes into a nearby dumpsite
- ☐ Other

Specify other.

*** Collection Information**

Has the interviewee received information about waste collection?

- ☐ Yes, from ward meetings
- ☐ Yes, through social media
- ☐ Yes, online (e.g. by googling)
- ☐ Yes, through NGOs
- ☐ Yes, through the council
- ☐ Yes, from neighbours
- ☐ No, I haven't been supplied with any information about waste collection apart from when to purchase the bag
- ☐ Yes, from the TV
- ☐ Yes, from my child's school
- ☐ Other

Specify other.

How often is waste picked up?

- ☐ Every Week
- ☐ Every Fortnight
- ☐ Every Month
- ☐ Every Day
- ☐ Every 2 Days
- ☐ Twice a week
- ☐ Every year
- ☐ Other

Specify other.

SA Collection Form - Display for printing

<https://ee.kobotoolbox.org/preview?form=https://...>

What is the level of waste when the collection comes?

- ☐ Bags/bins are mostly empty
- ☐ Some bags/bins are still not full
- ☐ All bags/bins are usually full
- ☐ Bags/bins are overflowing
- ☐ Other

Specify other.

Does the interviewee have access to/use social media?

- ☐ Yes
- ☐ No
- ☐ Other

Specify other.

How is green waste disposed of?

- ☐ In bin and bin collected
- ☐ Burn
- ☐ Dumped on land
- ☐ Dumped in water (river, lake, ocean)
- ☐ Bury
- ☐ In bags
- ☐ Taken to garden recycle centre
- ☐ Composted
- ☐ Flushed down the toilet
- ☐ Other

Specify other.

How is general waste disposed of?

- ☐ In bin and bin collected
- ☐ Burn
- ☐ Dumped on land
- ☐ Dumped in water (river, lake, ocean)
- ☐ Bury
- ☐ In bags
- ☐ Taken to garden recycle centre
- ☐ Composted
- ☐ Flushed down the toilet
- ☐ Other

Specify other.

.....

How is bulky waste disposed of?

- ☐ In bin and bin collected
- ☐ Burn
- ☐ Dumped on land
- ☐ Dumped in water (river, lake, ocean)
- ☐ Bury
- ☐ In bags
- ☐ Taken to garden recycle centre
- ☐ Composted
- ☐ Flushed down the toilet
- ☐ Other

Specify other.

.....

How are nappies disposed of?

- ☐ In bin and bin collected
- ☐ Burn
- ☐ Dumped on land
- ☐ Dumped in water (river, lake, ocean)
- ☐ Bury
- ☐ In bags
- ☐ Taken to garden recycle centre
- ☐ Composted
- ☐ Flushed down the toilet
- ☐ Other

Specify other.

What percentage of your waste is dumped or buried?

if you add up all types of waste (green, general, bulky, nappies), what percentage is dumped or buried? We just want a guess.

Appreciation of the Collection Service

Rating for waste collection service

1. Very Unsatisfied, 2. Somewhat Unsatisfied, 3. Neutral, 4. Somewhat Satisfied, 5. Satisfie

Reason for waste rating

Suggestions for improvement for waste collection

Community recycling

Does anyone currently collect recyclable material in your community?

- ☐ Yes, I keep my PET bottles, cans and glass bottles separate and take them to get some money
- ☐ Yes, I separate my recyclables and someone comes and collects them and pays me
- ☐ Yes, I separate my recyclables and someone comes and collects them without payment
- ☐ Someone goes through my bin/bag and collects recyclables
- ☐ No, no-one in my community collects recyclable material
- ☐ Other

Specify other.

What materials are collected?

If you are paid for recyclables, how is payment worked out?

- ☐ Per kilogram
- ☐ Per bottle
- ☐ Other

Specify other.

How much do you get paid for recyclable materials?

If no recyclables are currently being separated or collected, are you willing to separate waste into recyclables, organics, food waste etc. Why/Why not?

Willingness to Pay for the Service

How much would you be willing to pay for waste collection every month?

Do you support a prepaid rubbish bag? (informal settlements only)

Do you support an idea of introducing a prepaid rubbish bag for people to put their waste in? When you purchase a specific bag the price includes the price for the waste to be collected as well. This means if you produce less waste, you pay less.

- ☐ Yes
- ☐ No

How much would you be willing to pay for rubbish bag? (informal settlements only)

Assume that to dispose of rubbish you must buy a bag, how much would you be willing to pay for a single bag.

How much would you be willing to pay for an orange bag?

CDL and Recycling

Comments

Any extra comments

Annex 2: Improved waste management options presentations



OUR EARTH IS IN DANGER!

HOW CAN WE HELP?

BY MARK LIPTROT

Presentation 1

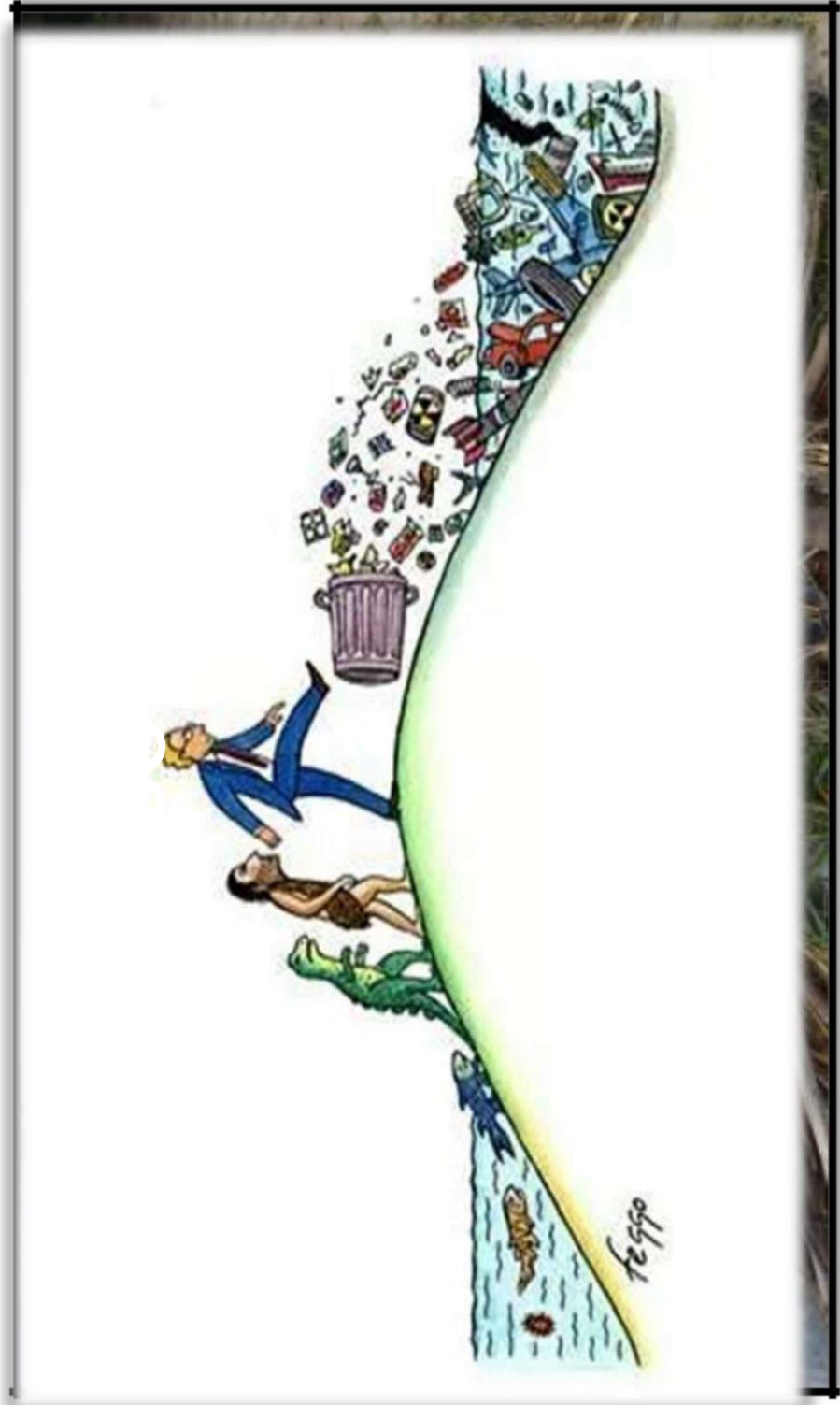


THE EARTH NEEDS SOME TLC...



MORAL: CONSERVE RESOURCES

**WE PRODUCE TOO MUCH WASTE
AND DON'T MANAGE IT CORRECTLY**



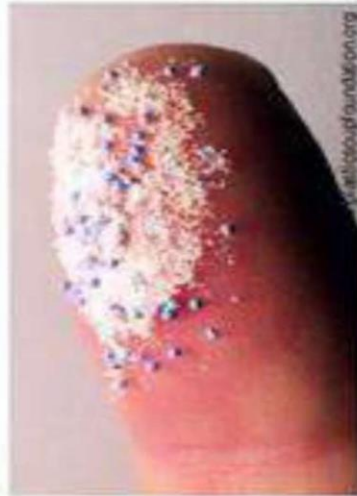




Pic by Zanele Zulu. Credit: Independent Media



IF WASTE GETS INTO WATER...





AND IF PACKAGING IS LEFT IN THE ENVIRONMENT...

- Glass Bottle = **1000 years**
- Cool Drink Bottle = **450 years**
- Aluminium Can = **80-200 years**
- Steel Can = **50 years**
- Plastic Container = **20-30 years**
- Plastic Bag = **10-20 years**





**SO WHAT CAN WE AS
INDIVIDUALS DO TOO
HELP THE SITUATION?**





STOP LITTERING!

RECYCLE

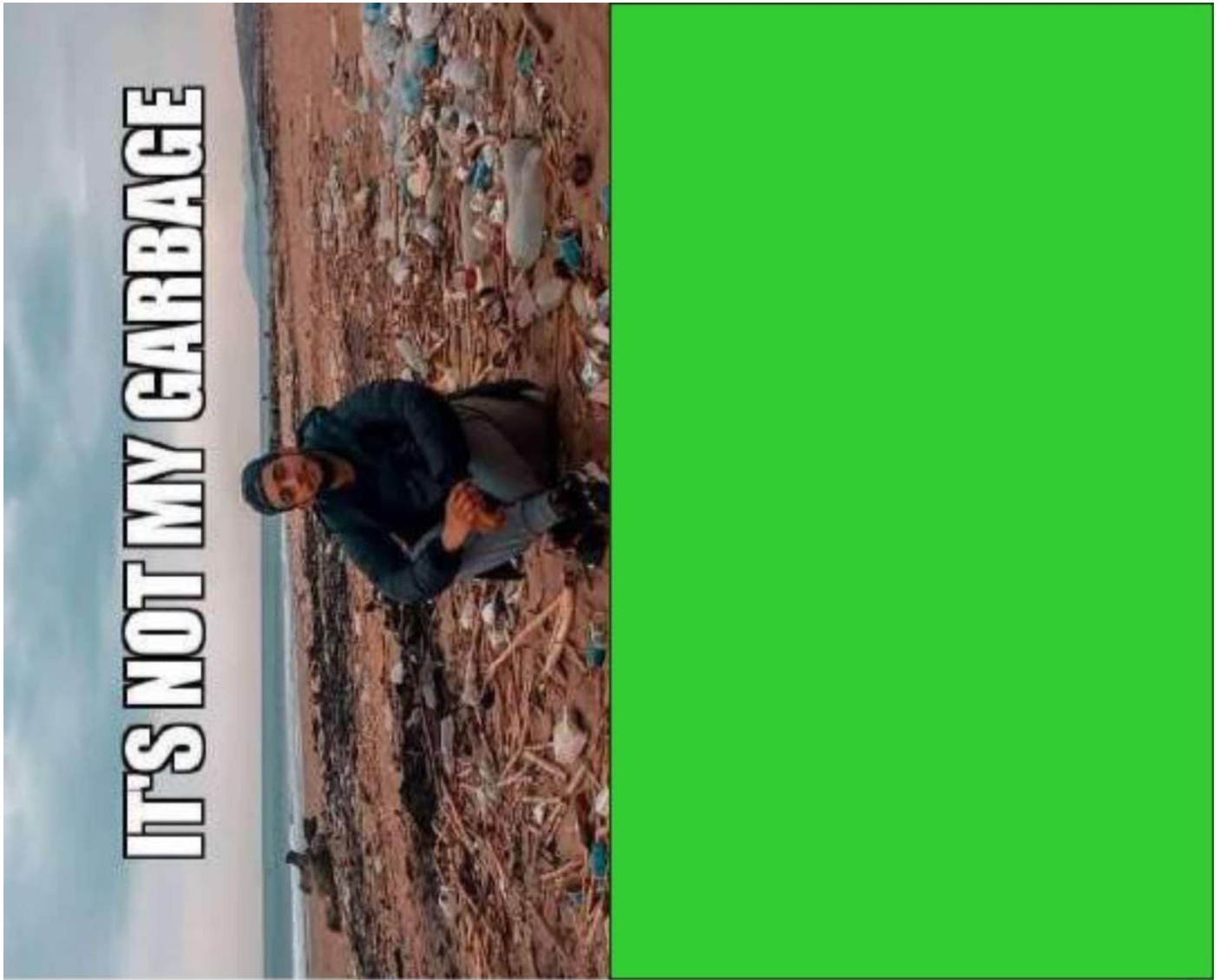
RE-USE (UPCYCLE)

REPAIR RATHERTH AN

REPLACE!

CHANGE THE WAY WE THINK!







RECYCLING RECYCLING





RECYCLING RECYCLING



- ***SAVES RAW MATERIALS / LANDFILLS***
- ***USES LESS ENERGY & WATER***

6 USES LESS NATURAL RESOURCES

REDUCES POLLUTION



CREATES EMPLOYMENT



CANS...



- 100% RECYCLABLE
- 66% RECOVERY RATE





GLASS...

- **100% RECYCLABLE**
- **286 000 TONNES COLLECTED PER YEAR**
- **40% RECOVERED FOR RECYCLING**



PAPER...



- 1 TONNE OF RECYCLED PAPER IS EQUIVALENT TO 17 TREES

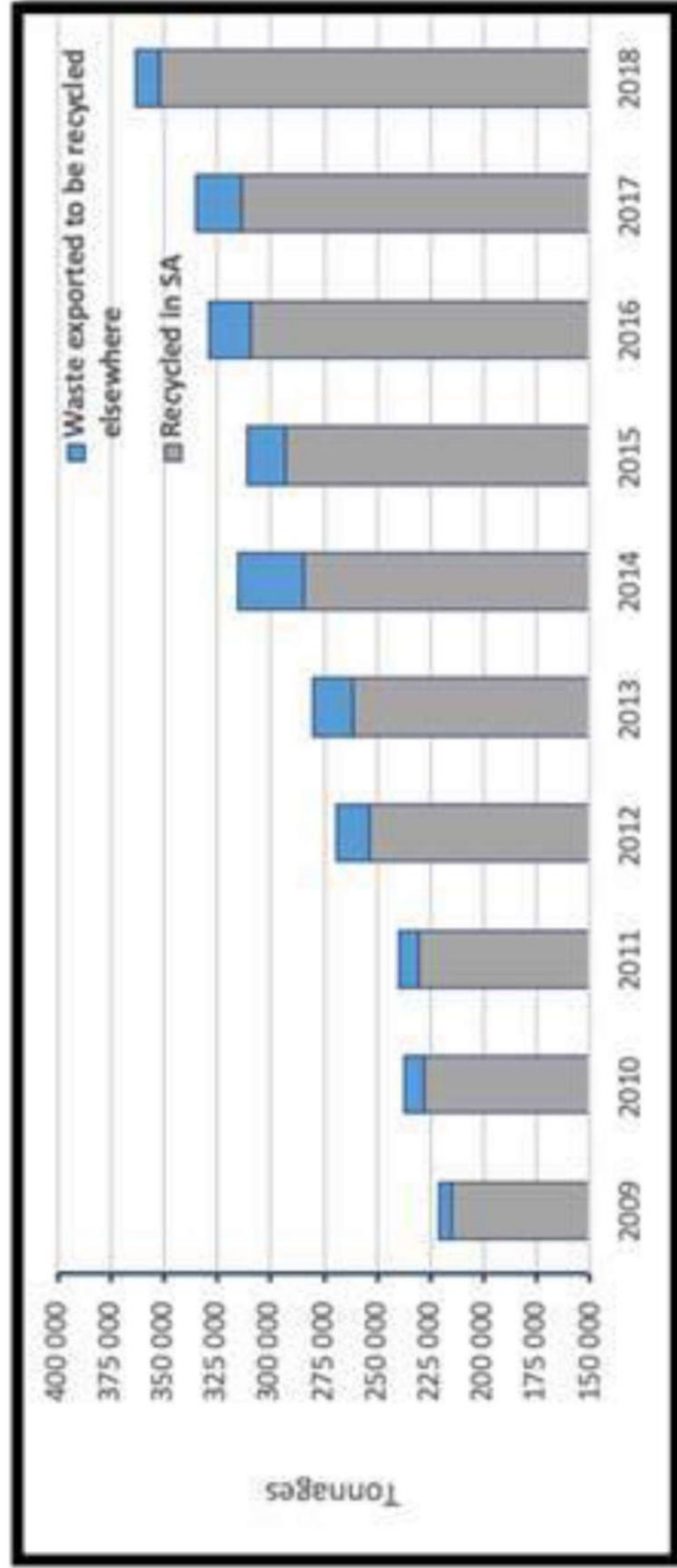


- **1 MILLION TONNES OF PAPER IS RECYCLED EACH YEAR**

PLASTICS in RSA...



- 519 000 TONNES/YEAR IS COLLECTED...
- OUT OF 1.1 MILLION TONNES OF PLASTIC PRODUCED (46% COLLECTION RATE)



Green Caridea



ARE WE COMMITTED TO RECYCLING & WASTE MANAGEMENT ?



NO, REALLY, ARE WE?





YEBO YES!

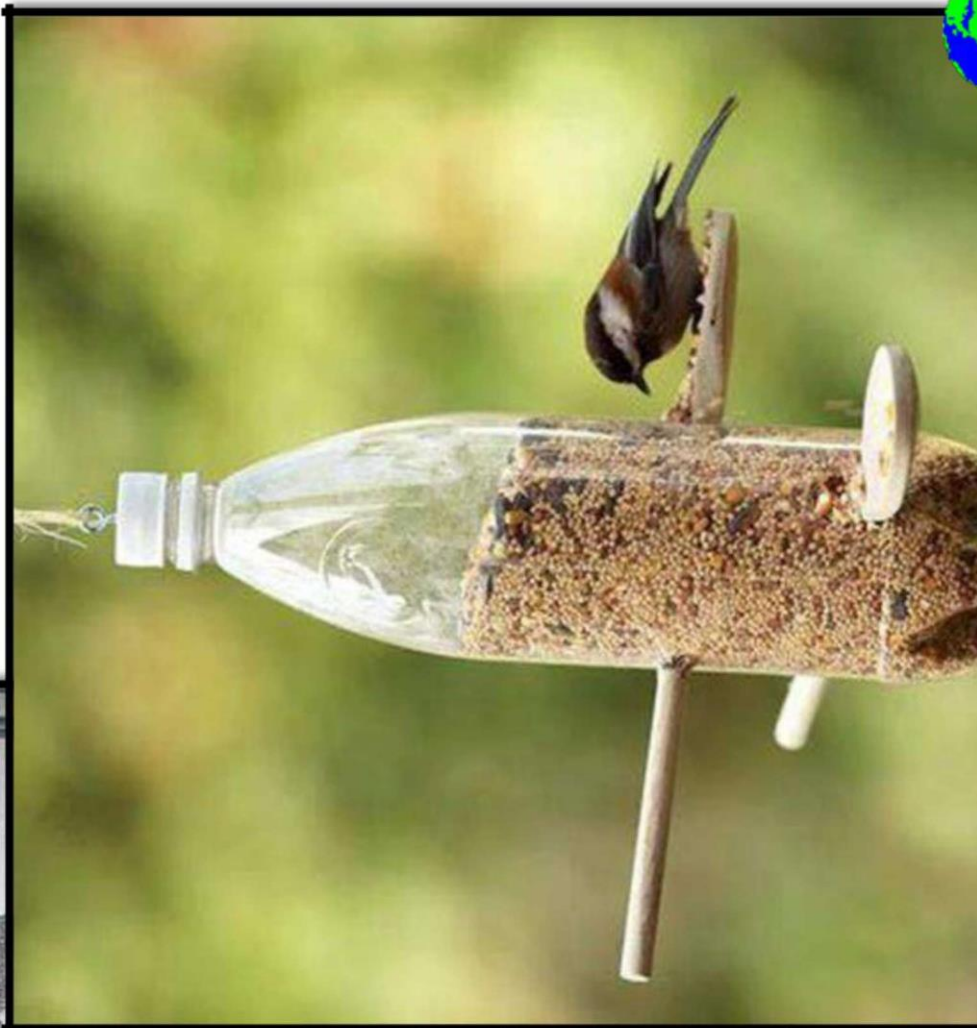


(courtesy of Umcebo Trust)

**SO YOU CAN
UPCYCLE THER THAN
RECYCLE...
---BY USING WASTE ITEMS
TO MANUFACTURE
NEW ONES WHICH CAN
BEAUTIFY YOUR HOME
OR BE SOLD TO GENERATE
INCOME...**



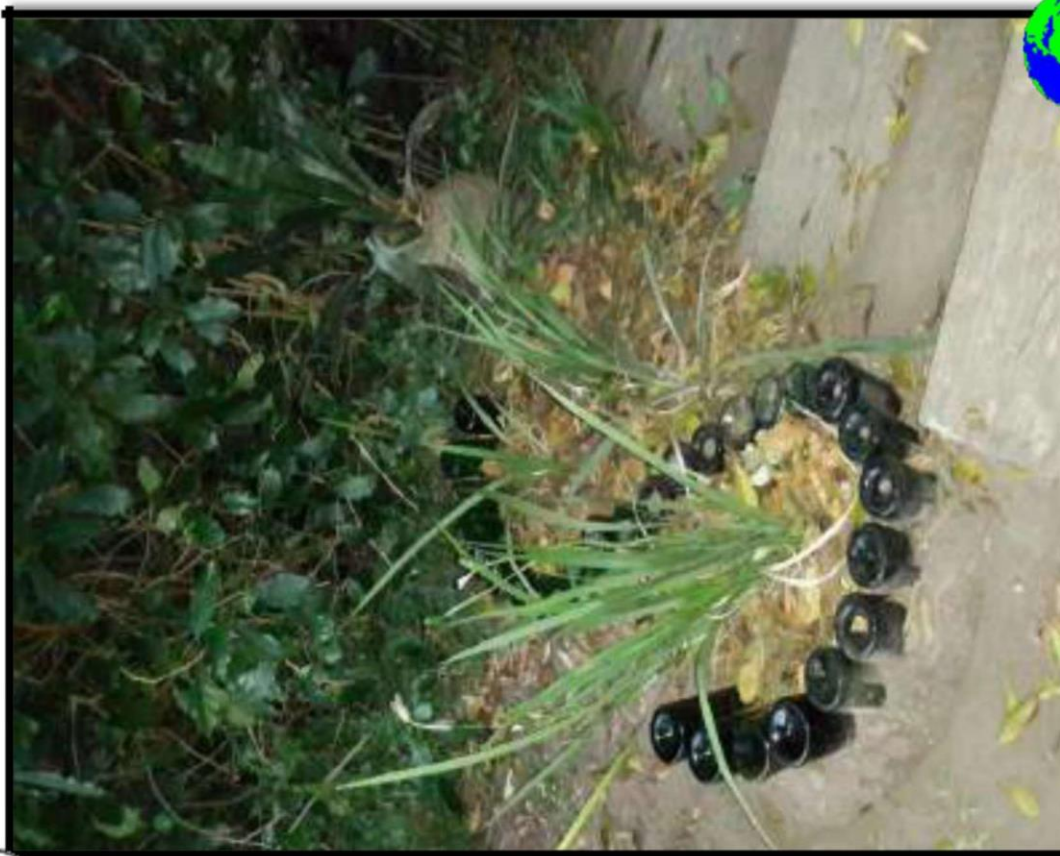
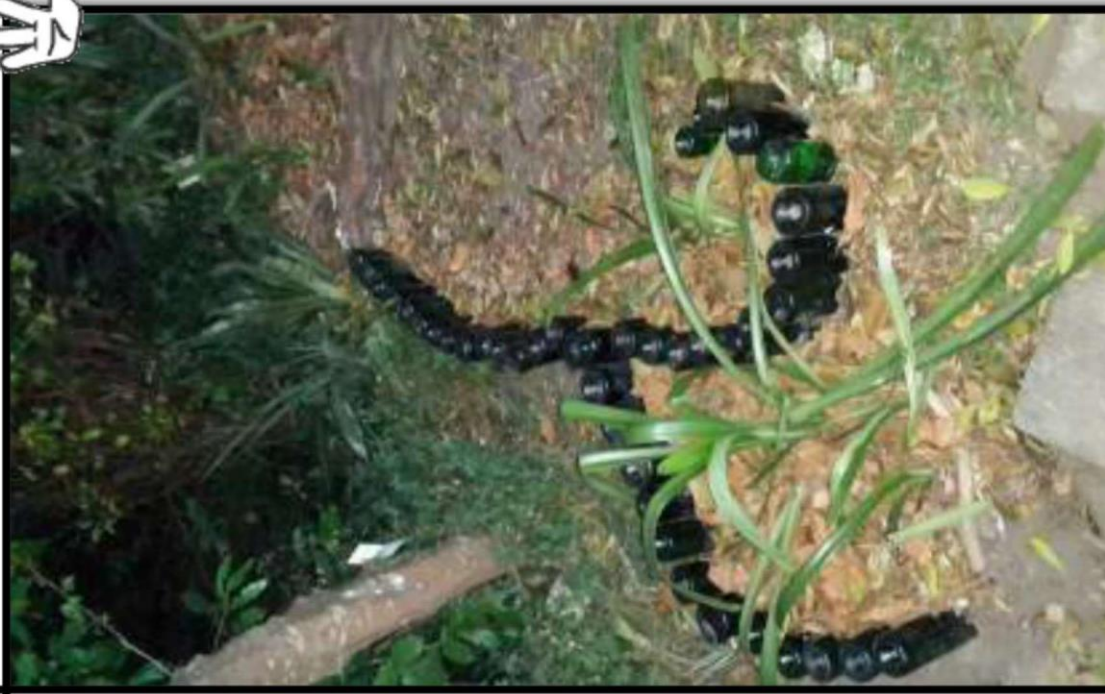
UPCYCLING – WHOOP WHOOPI!



UPCYCLING – WHOOP WHOOO!



UPCYCLING – WHOOP WHOOPI!



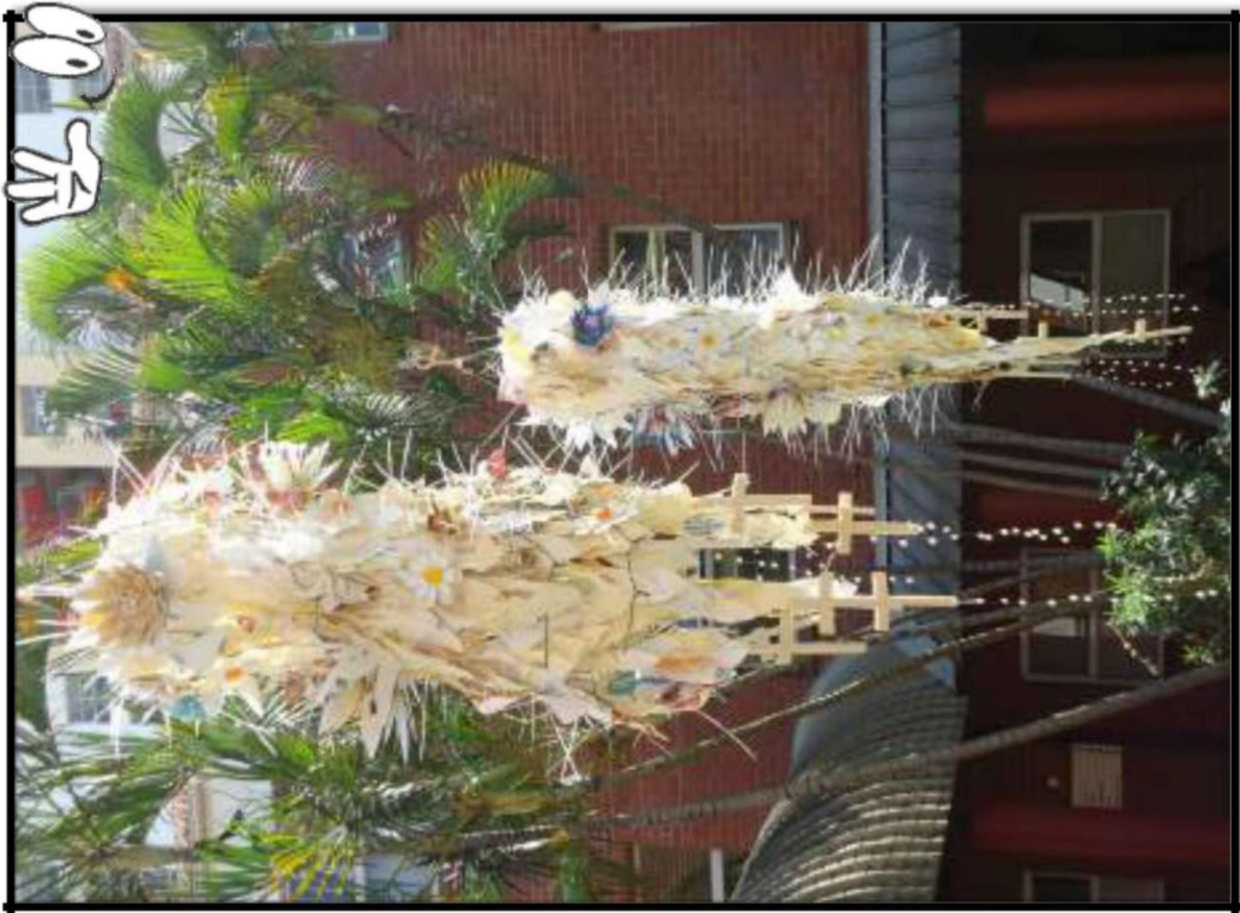
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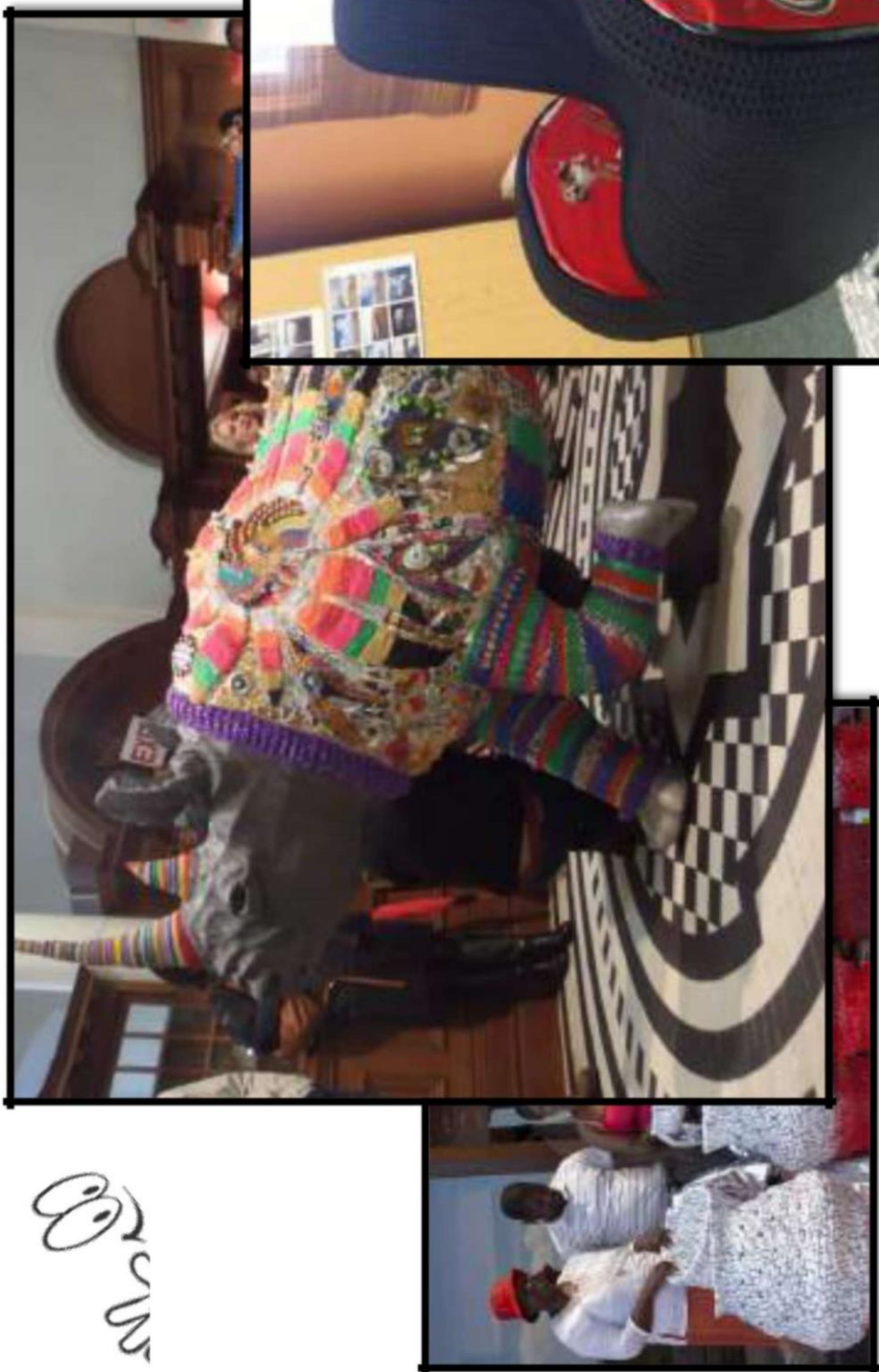
UPCYCLING – WHOOP WHOOPI!



UPCYCLING – WHOOP WHOOP!



UPCYCLING – WHOOP WHOOPI



UPCYCLING – WHOOP WHOOOP!





UPCYCLING – WHOOP WHOOPI



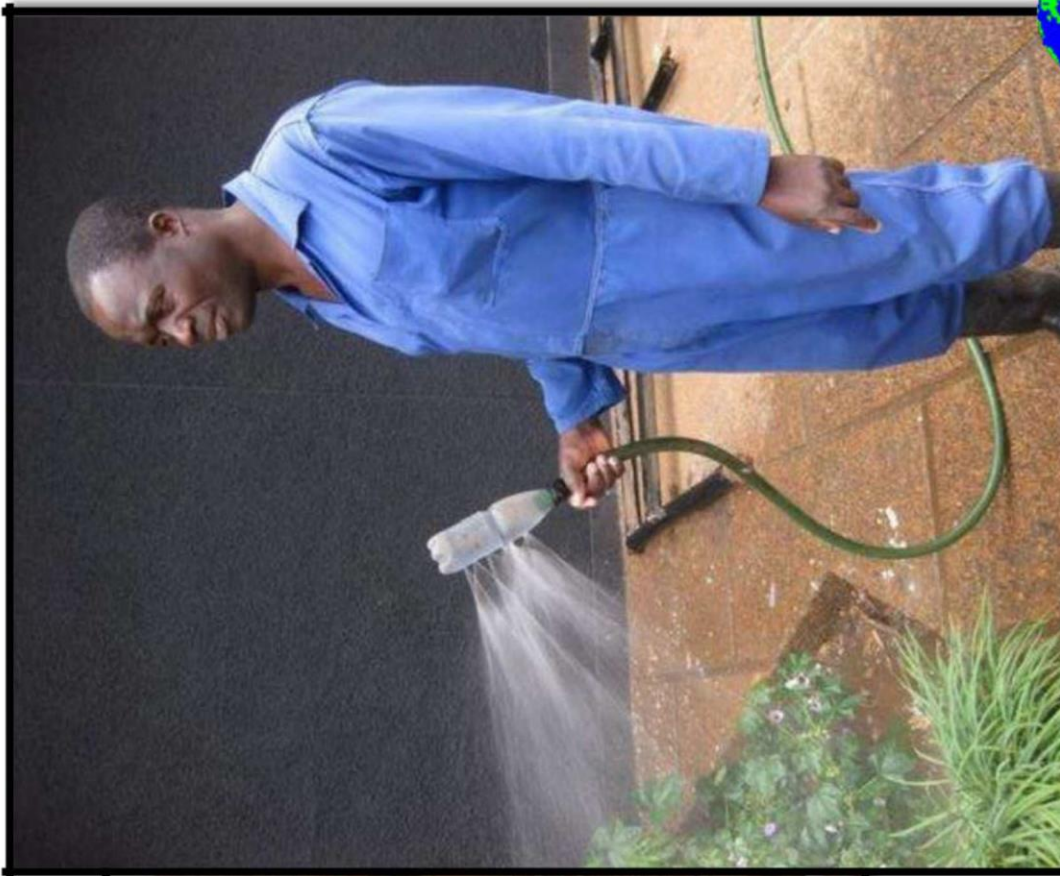


UPCYCLING – WHOOP WHOOP!



UPCYCLING – WHOOP

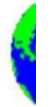
WHOOP!



UPCYCLING – WHOOP WHOOP!



Olivia



UPCYCLING – WHOOP WHOOPI









UPCYCLING – WHOOP WHOOPI

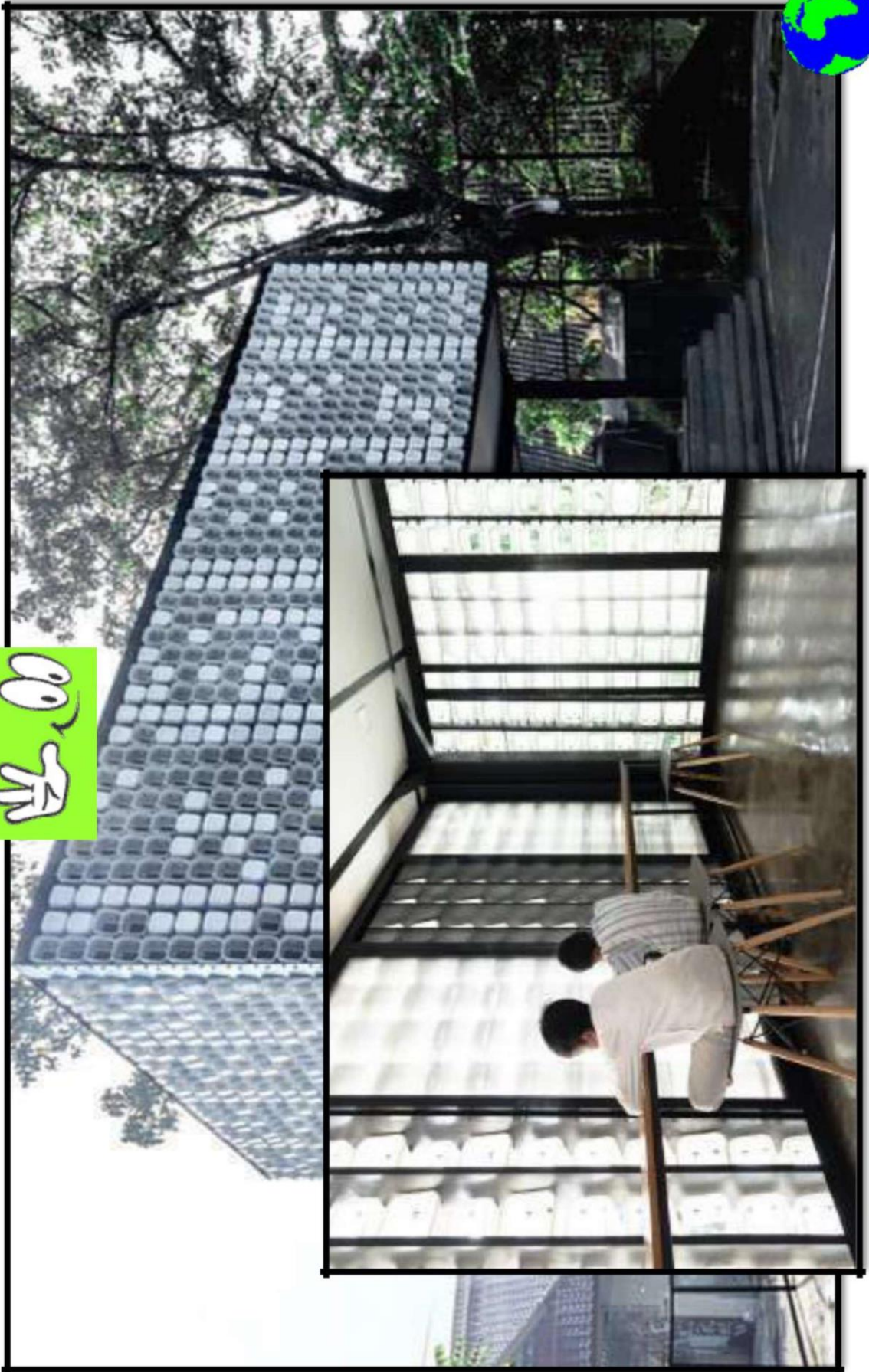


UPCYCLING – WHOOP





FACADE USING ICE CREAM TUBS...



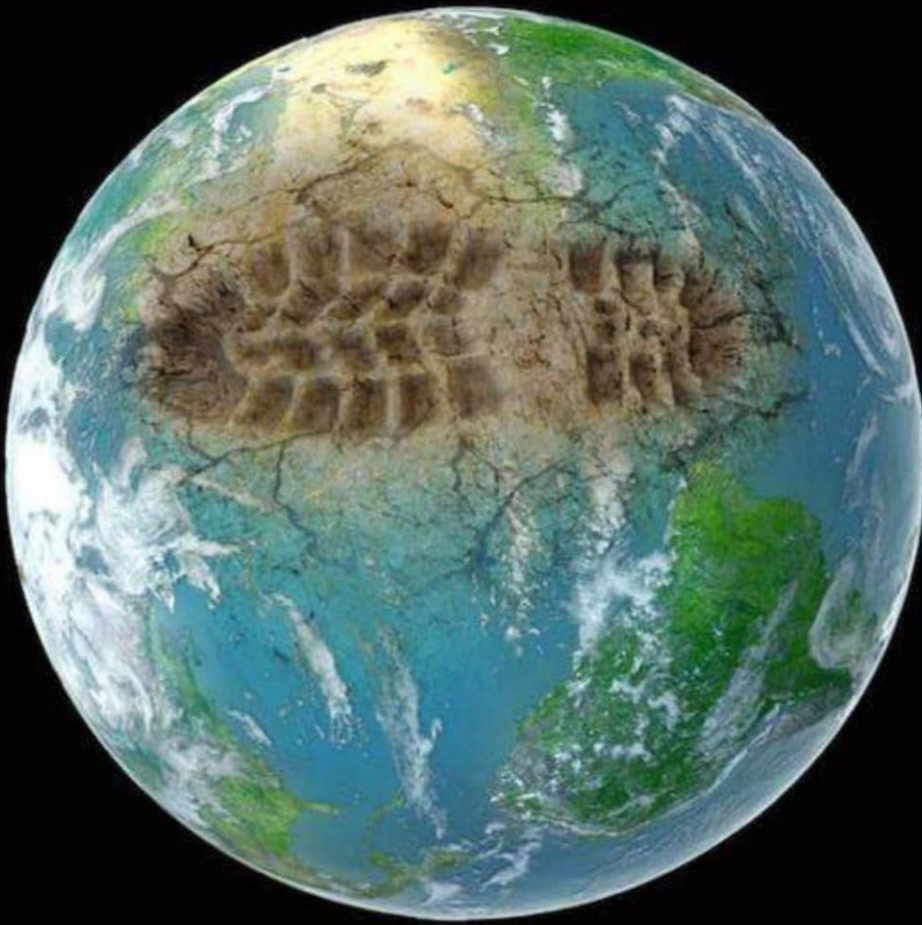


THERE IS ONLY ONE PLANET!





THERE IS ONLY ONE PLANET!



"THE AGE OF THE ANTHROPOCENE"

It is worth remembering the words of Edmund Burke, who lived 250 years ago, ago, who said:

“Nobody made a greater mistake than he who did nothing because he could do only a little” .

**In other words, EVERY
LITTLE BIT HELPS!**





THANK YOU

Make no small plans...

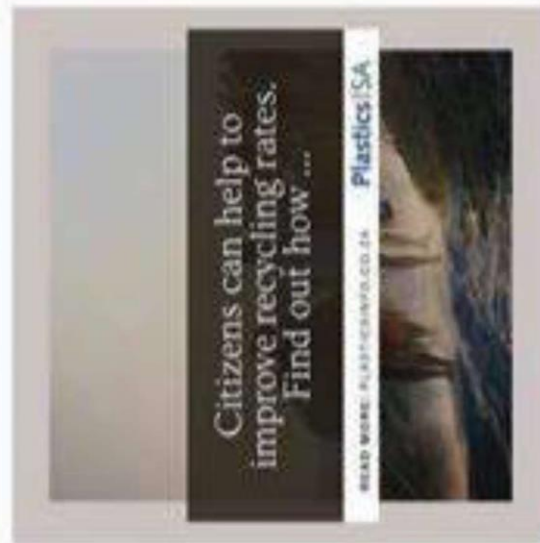
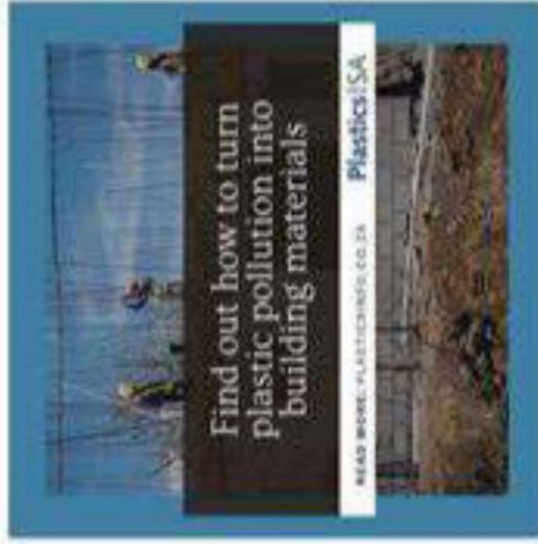
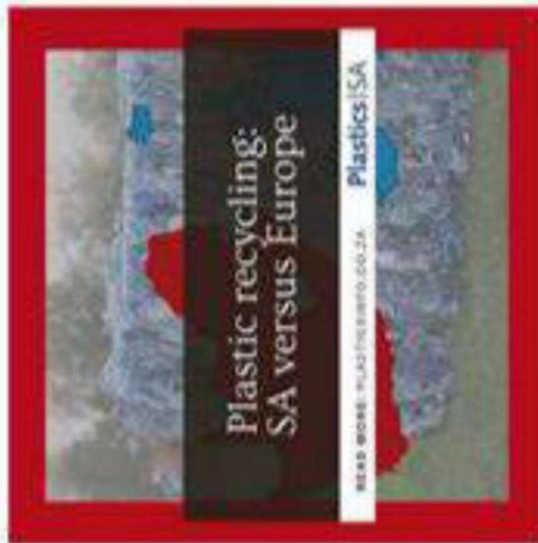




WAYS WE CAN HELP TO SAVE THE PLANET...



- Plastics|SA - www.plasticsinfo.co.za
- www.cleanup.co.za - Website to promote cleanups in SA
- www.recyclingday-sa.co.za - Website to promote plastics recycling
- www.recycling.co.za - National Recycling Forum
- www.mywaste - Find your nearest place to recycle (Google map)
- African Marine Waste Network - info@sst.org.za
- Ecobricks - <https://ecobrickexchange.org>





Presentation 2

Save Our Rivers ZA



Humble beginnings

- Began in January as a stakeholder engagement in the Dusi-Umgeni Catchment. Dusi sponsorship at risk.
- Last minute arrangements for the race
- Ran a 3 month pilot project at Umgeni mouth.
- Partnered with Durban Green Corridor
- Umgeni Estuary Conservancy.



Key findings

- Sewage - municipal infrastructure and management
- Solid waste - informal settlements and waste collection
- Industrial pollution - absolute failing of the bylaws to make any impact. Environmental investigators.

May to July 2019

Corporate funding

Small team

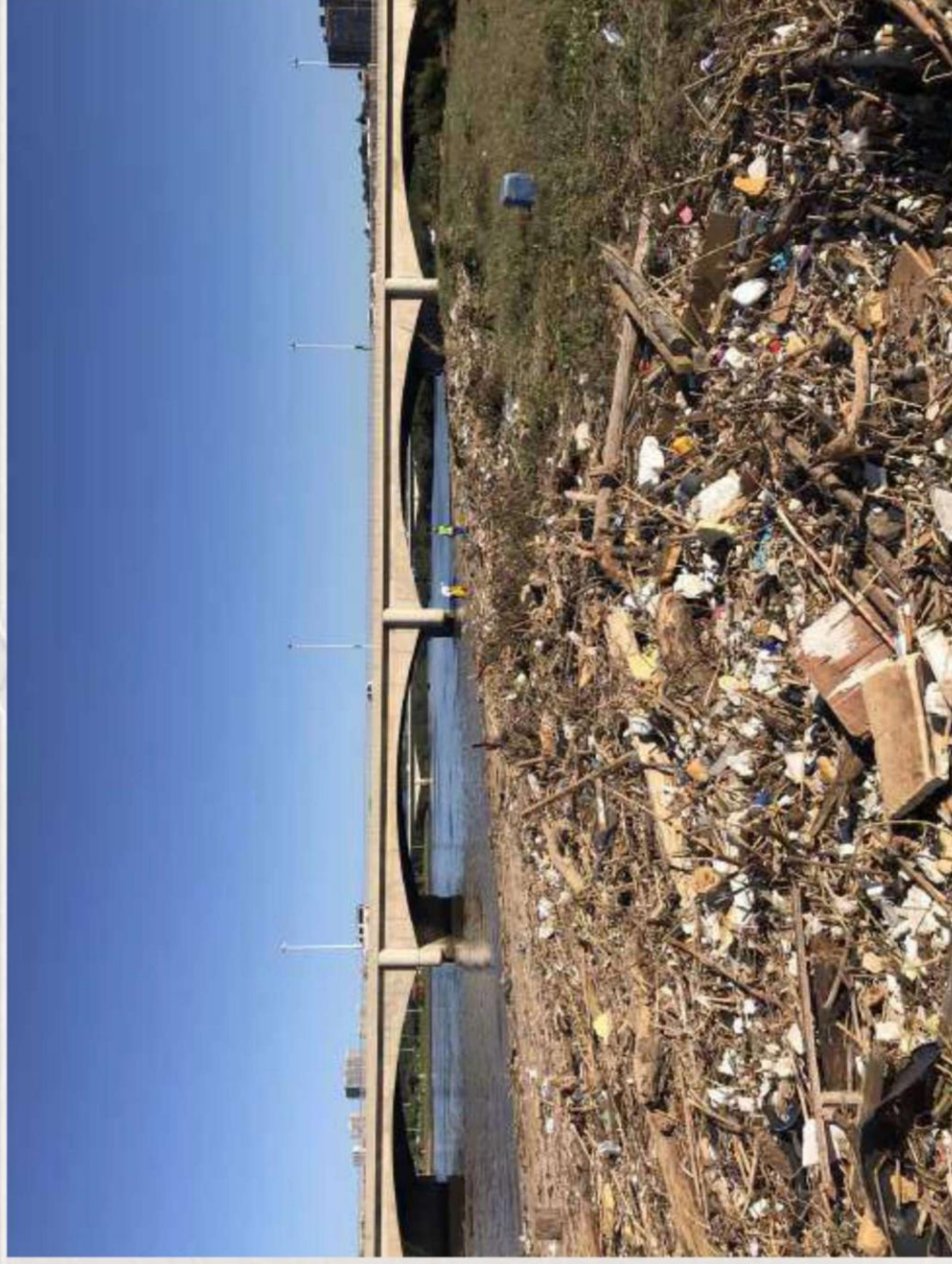
Hard working

Local - walk/ bike to work

3 days a week



First torrential floods this
year.



Plastic beaches, islands too



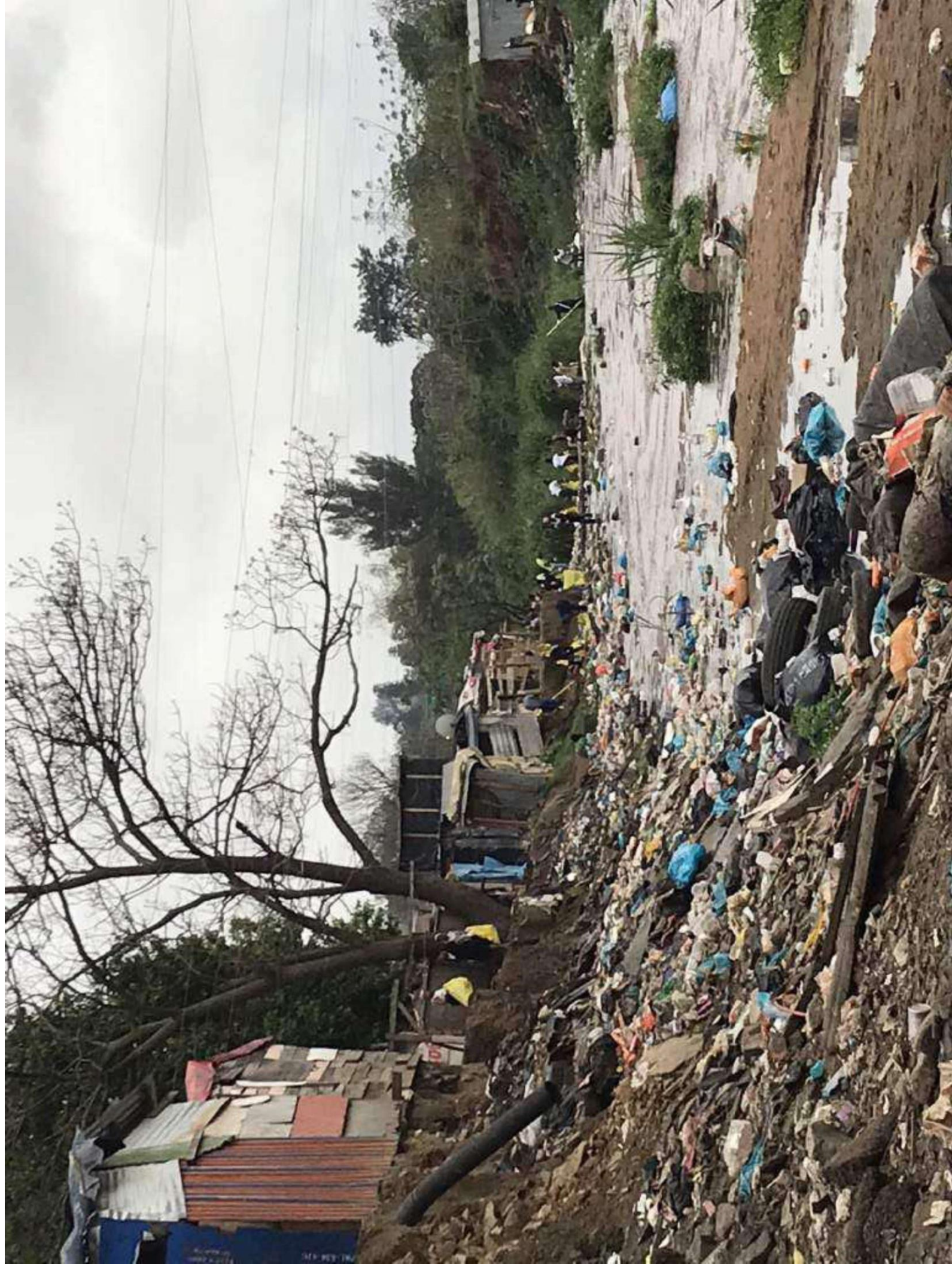
Collective efforts??

- Over 2000 bags of solid waste removed in total of 34 days worked.
- Not without its challenges
- Whose responsibility?
- Landfill vs recycling



Where does it come from?

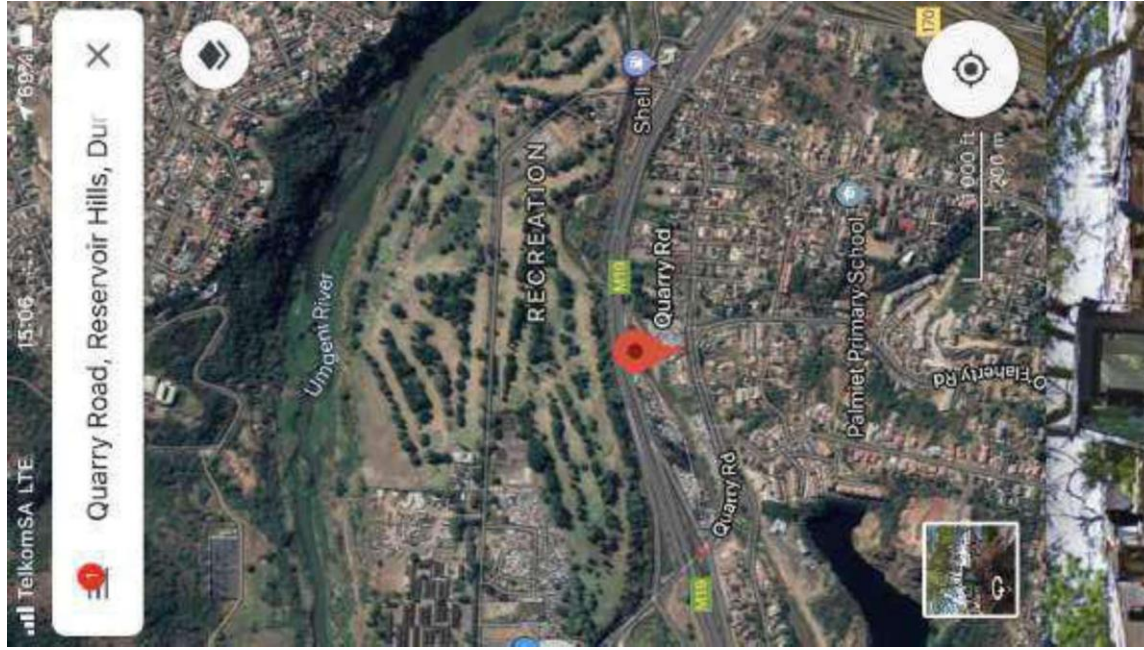
- *This is not littering.... this is a waste management disaster.*
- *Until such time as the waste has a value it remains worthless.*
- *Huge changes required within industry and this requires policy changes.*
- **Steps 1,2,3**



Location

Just
off
M19

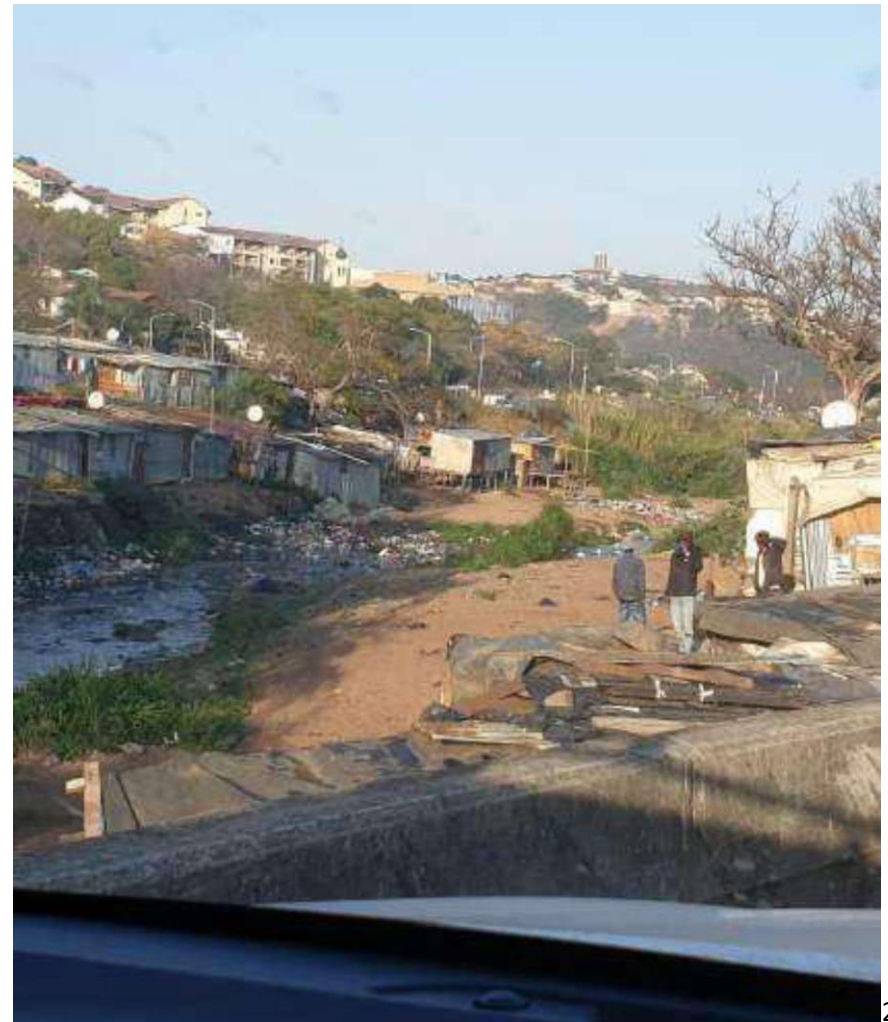


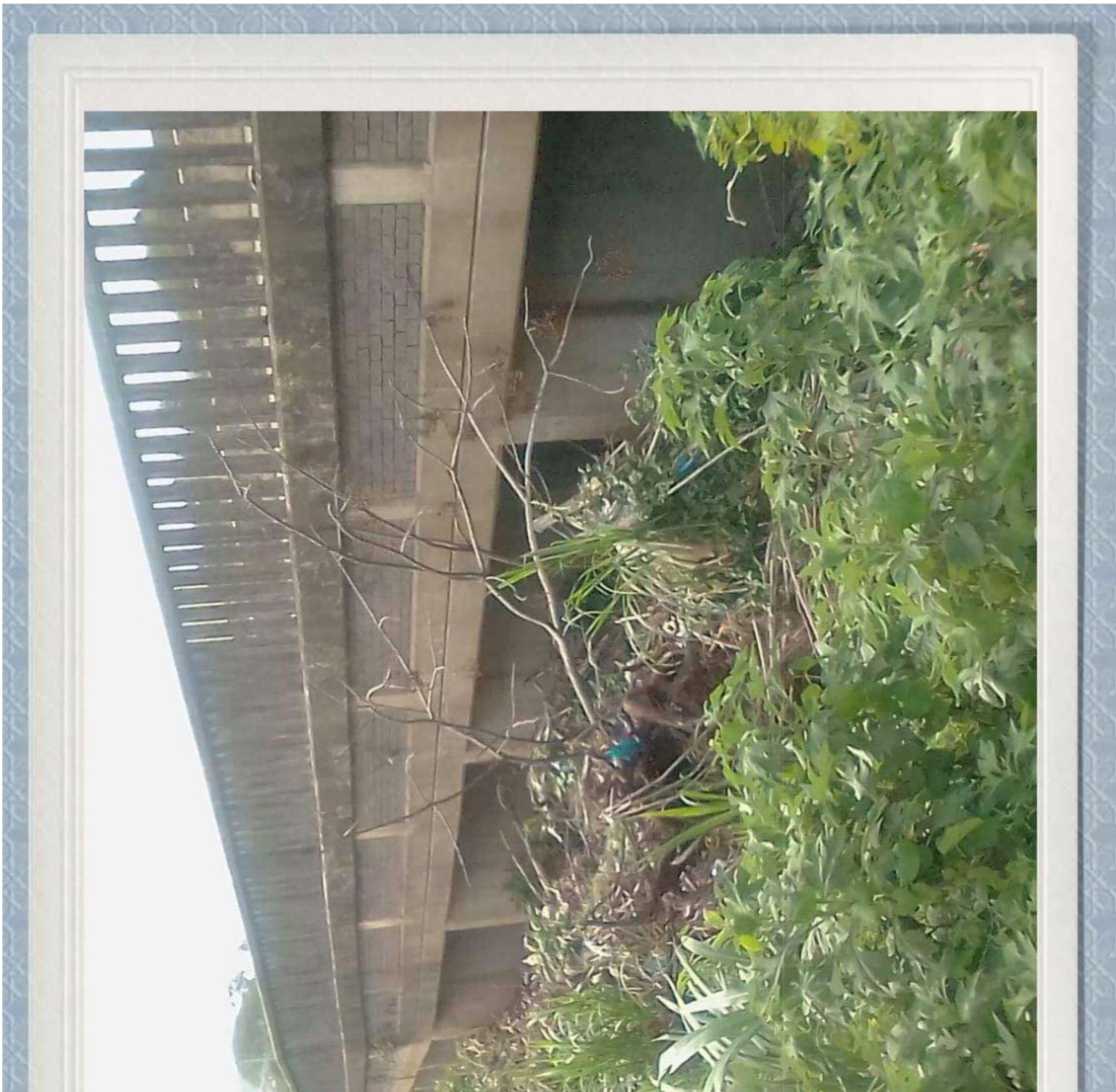


Current situation

6.1 Sprawling informal settlement

- Visible from M19, just past the Springfield N2 Intersection
- Not electrified
- Small container block ablutions
- No formal waste collection from DSW
- Another accident waiting to happen





Whose responsibility?

Everyone has a role to play.

*Until such time as
meaningful engagement - no
winners.*



Dedicated team continues

- *Project continues - now includes beach stretches*

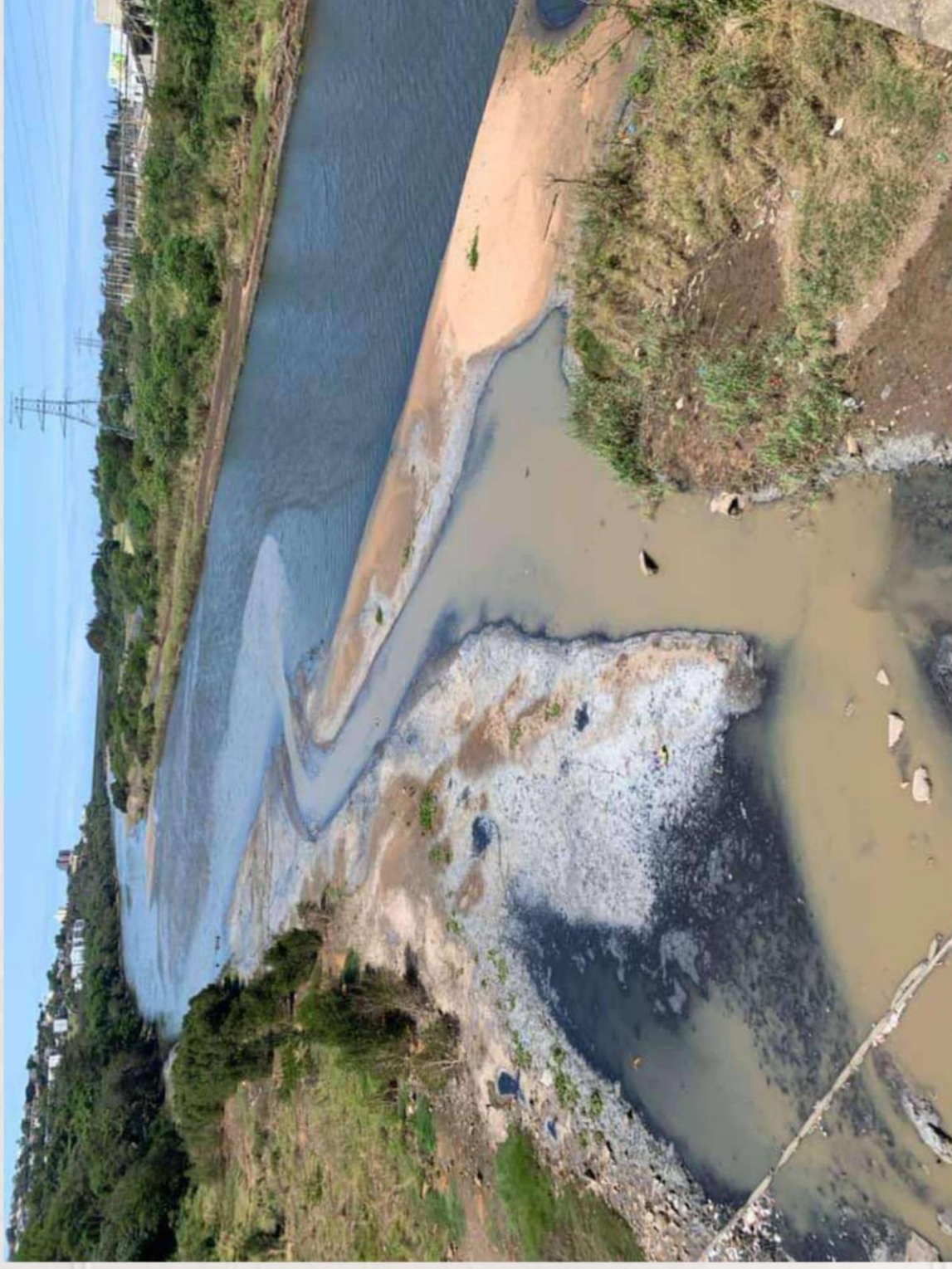


Until the next storm...





Or the next spill.....







Can't we all take care of it?

- *Our waste, our problem.*
- *No more excuses.*



South Africa needs comprehensive plan to tackle plastic waste – Creecy

22nd November 2019 BY: SIMONE LIEDTKE

WRITER



Photo by: Creamer Media's Dylan Slater
Environment, Forestry and Fisheries Minister Barbara Creecy



Centre for Environment
Fisheries & Aquaculture
Science



Green
Corridors

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The Centre for Environment, Fisheries and Aquaculture Science is the UK's leading and most diverse centre for applied marine and freshwater science.

We advise UK government and private sector customers on the environmental impact of their policies, programmes and activities through our scientific evidence and impartial expert advice.

Our environmental monitoring and assessment programmes are fundamental to the sustainable development of marine and freshwater industries.

Through the application of our science and technology, we play a major role in growing the marine and freshwater economy, creating jobs, and safeguarding public health and the health of our seas and aquatic resources

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We offer a range of multidisciplinary bespoke scientific programmes covering a range of sectors, both public and private. Our broad capability covers shelf sea dynamics, climate effects on the aquatic environment, ecosystems and food security. We are growing our business in overseas markets, with a particular emphasis on Kuwait and the Middle East.

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- industries across a range of sectors including offshore renewable energy, oil and gas emergency response, marine surveying, fishing and aquaculture.
- other scientists from research councils, universities and EU research programmes.
- NGOs interested in marine and freshwater.
- local communities and voluntary groups, active in protecting the coastal, marine and freshwater environments.

www.Cefas.co.uk



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