



# MSU PROJECT

An Evaluation of the  
"Msunduzi DUCT Pollution  
Monitoring, Maintenance  
and Community Education  
Project"



# 2018

Jim Taylor &  
Caroline Cenerizio

# RESEARCH TEAM

**Jim Taylor (Dr.):** Evaluation team convener. Jim is a UKZN Research Fellow with 35 year's experience in enabling evaluation research. He supported the mobilizing of ideas and concepts so that participants could co-engage through deliberative, depth enquiry, processes. Along with Caroline, and the research team, Jim assisted in the compiling and editing of the final evaluation report.

Phone: 0027-8245580976      Email: jimtaylor835@gmail.com

**Rob O'Donoghue (Prof.):** Rob assisted the project team with the design of research processes. His insights on data collection and interpretation as well as realistic perspectives and appreciative enquiry orientations were most valuable.

Phone: 0027-832121670      Email: r.odonoghue@ru.ac.za

**Portia Vilakazi:** Portia has well developed technical and practical skills that include setting-up, designing and implementing practical solutions. She has focused on collecting authentic stories of change for this evaluation process.

Phone: 0027-0847202630      Email: portiavilakazi@gmail.com

**Fundiswa Cele:** Fundiswa is passionate about the well being of the natural environment and natural resources. She has helped collect authentic stories of change for this evaluation process.

Phone: 0027-08844339870      Email: mavico.fc@gmail.com

**Brett Pennefather:** Brett worked on the videography and photography aspects of the project evaluation. He is especially interested in thoughtful orientations to video work where authentic stories of change can be represented and co-engaged with.

Phone: 0027-660043613      Email:brettpennefather@gmail.com

**Caroline Cenerizio:** Caroline assisted with the editing, formatting, writing and design of this report. She has experience working with appreciative research and wider communications theory and practice.

Phone: 0027-714931325      Email: ccenerizio@gmail.com

**Thembelihle Precious Ndlela:** With experience in environmental management, Lihle played a key role in this evaluation by helping to gather authentic stories of change.

Phone: 0027-0659070037      Email: lihle2445@gmail.com

# TABLE OF CONTENTS

04	Executive Summary
05	The Issue
06	The Project
11	The Research Methodology
15	What the Teams Have Done
21	Appreciating and Valuing: A Partnership Approach
23	Stories of Change
29	Key Principles Supporting Change
31	Acknowledgements
32	References

# EXECUTIVE SUMMARY

## EXECUTIVE SUMMARY

Service delivery challenges are reaching crisis proportions in many parts of South Africa. These are especially focused on urban townships. Without the reliable provision of clean water, sanitation that works and effective waste management, a decent quality of life is simply not possible. Many people ask what form of democracy do we have when streets are cluttered with waste, sewage is often spilling close to homes and streams and rivers become open sewers.

As a nation that prides itself in civil society partnerships, and where government often states that it cannot solve issues alone, a partnership approach to service delivery is an exciting option. The Msunduzi Local Municipality Duzi uMngeni Conservation Trust partnership for sanitation and community education is a gleam of light in these challenging times. Working with teams of previously unemployed people, the project has developed skills, opened access to sewer lines, treated alien invasive plants, assisted in waste management, reported on issues using a phone based App and a Google Geo-positioning system, and generally helped educate hundreds of local community members.

The United Nations Sustainable Development Goals (SDG's), which have been approved and are currently being implemented in South Africa, were used as a guiding evaluative framework to the evaluation. The structure they provide also helped link policy to the MSU Project as well as to the National Development Plan (NDP) and the Integrated Development Plans (IDP's).

This evaluation was approved by the project steering committee and set out to probe the project context and outcomes more deeply. This work included an appreciative and deliberative process centred on 'Stories of Change' using a realist orientation supported by depth deliberation processes. Questions such as how is the project working? What challenges does it face? and how can the positive actions be scaled-up elsewhere, developed as the focal questions that the evaluation addressed. Of most significance was the development of authentic 'Stories of Change' from political leaders (including Councilors), municipal employees, local business people, community members and project team members. The 'Stories of Change' reflect a rich depth of community engagement and some quite remarkable success stories are revealed. These usually occurred very much against the odds. They also show how many people have developed a sense of pride and purpose through the project and how this working together has strengthened a commitment for the 'common-good' in the townships where the project has been operating.

The evaluation also documents the manner in which phone Apps were used to establish data and record it on the Google 'cloud' for all to engage with including local authorities who used the geo-plotting points to monitor and address serious pollution issues. This data complements the stories of change and helps provide precise numerical, geo-linked evidence. To assist in sharing the insights and effects of the project, as well as to enable wider upscaling of the useful concepts, a YouTube video has also been made about the processes.

The MSU Project undoubtedly helped meet the DUCT Mandate of healthy rivers healthy people. The success of the project was evident wherever the research teams did their investigation. Whether this included senior local government officials, community members or local councilors all spoke in glowing terms about what has been achieved. The Msunduzi Local Municipality is to be complimented for initiating and co-managing the project. Projects like these can rescue the democratisation vision of the nation.



**THE DUCT TEAM AT A  
WORKSHOP TO DISCUSS  
THE EVALUATION**

# THE ISSUE



## The Issue

The supply and management of water and sanitation, waste and electricity are often hugely problematic and this is notably the case in the Msunduzi region. In an effort to address such issues, with a focus on sanitation including sewer line maintenance and education, Msunduzi entered into a civil society partnership with DUCT who are the implementers of the project.

There is no perfect way to run and manage a project. All projects can be improved on and better understood. This evaluation, which focused on the MSU Project\* in the greater Pietermaritzburg region, was requested by the project steering committee on the 14th of June 2018. The evaluation was motivated by concerns to understand how the project was working and how it could be improved.

## The Project had the following key purposes:

1. To clear sewer lines and eradicate alien invasive plants
2. To monitor the sewer lines and report spillages
3. To expose/reveal long abandoned/neglected manholes that have been unsighted for many a year due to inaccessibility caused by plantation overgrowth.
4. To educate communities, and schools, about waste, water and sanitation.

\* Although the full title of the project is the "Msunduzi DUCT River Sewer Line Discharge And General River Pollution Monitoring and Maintenance" the project participants and community members often simplified the title to the "MSU Project."

# THE PROJECT



## The Project

### **DUCT as Watchdog, Project Implementer and Civil Society Partner with Municipalities as well as with Business and Industry**

DUCT was founded in 2006 by a number of people, many of whom were Duzi canoeists, who became seriously concerned about the state of the uMsunduzi and uMngeni Rivers. Initially members played a watch-dog role alerting the authorities, and other interested stakeholders, to the poor state of the rivers. Indeed, not only DUCT members, but local communities, government authorities as well as members of business and industry were all becoming aware that the rivers pose a serious health risk to communities living close to them. Not only this, but the enormous amount of solid waste and nutrient loading building up in the rivers is posing a threat to all who live downstream. The economy and future quality of life of many KZN residents is severely threatened by the poor state of our rivers.

In 2011 a successful proposal to the Lotteries Fund elicited considerable funding to clean up the rivers. River Care teams were established, each with a bakkie, a driver and team leader and 10 previously unemployed people who were supplied with equipment which included axes, hand-saws, choppers, chain-saws, herbicides etc. Such teams could be deployed wherever they were needed and for a period they operated from Midmar Dam all the way to the mouth of the uMngeni River at Blue Lagoon in Durban. Although the river was transformed for the better, it was just a start in the long process of rehabilitation. All engaged in the rehabilitation work learnt that not only does one have to keep up this sort of river rehabilitation work but that the wider engagement of communities in meaningful education for sustainable development processes is vital.



***"The uMsunduzi River has become Pietermaritzburg's informal waste water works" - Duncan Hay***

## The Goal of the MSU Project

The goal of the project is essentially to reduce sewage/water leakages and surcharges, as well as solid waste and other forms of pollution that are entering the uMsunduzi River system. The goal is to comply with national environmental requirements, and to contribute towards improved community and river health.

The project had four main aims, the first was to fully expose the manholes so that they can be monitored on an ongoing basis. Many of these manholes have been neglected, due to lack of access through the overgrowth of shrubs and bushes in and around them. The second was to monitor all unattended sewer surcharges that directly affect and contaminate the uMsunduzi and uMngeni river catchments. The fact is that many of these surcharges have been spilling over into the river system for many years, causing a marked rise in faecal pollution. The third aim was the implementation of an active monitoring of sewage pollution to improve the management of sewers under municipal jurisdiction. Sewer monitors regularly patrol the main bulk lines to look for spills and report on sewage infrastructure. The longer term goal of this work is thus a more functional sewer line system. The final goal of the project is to educate communities, including schools, about waste, water and sanitation.

There are currently 8 sewer monitors undertaking 10 km radius sewer route inspections on foot and bicycles. 3 teams, comprising a supervisor and 10 team members have been opening access to several kilometers of sewer lines since September 2015, with a total of 213,3 km being cleared and revealed. Priority areas are defined by Umgeni Water and Msunduzi Municipal water test results.

The project has had an enormous effect on all associated with it. The following quote from Jabulani Dladla (Sobantu Sewer Monitor) demonstrates the remarkable commitment people have to the project:

*"Izinto zizonakala ngokuma komsebenzi wethu, kubalulekile ukuthi umsebenzi wokuhlola izitamkoko uqhubeke ngingawuqhuba mina lowo musebenzi ngingawuqhuba"* (The current situation will get worse with a halt in operations most especially the monitoring and reporting, I am willing to continue this work without pay).



**A MEMBER OF THE  
DUCT SEWER  
MONITORING TEAM  
CLEARING THE AREA  
AROUND A LEAKING  
MANHOLE**

## Integrated Water Resources Management in South Africa: The Policy Context of the MSU Project

The vision for an integrated approach to water resource management was clearly laid out in the 1997 Water Policy and the 1998 National Water Act. South Africa was the envy of many countries with its forward thinking and best practice legal framework. Nearly two decades on, implementation of the vision has proved to be very challenging, despite earnest attempts by the Department of Water and Sanitation (DWS) to provide the enabling environment to do so. However, the legal framework is still best practice and provides the structure on which to build good water stewardship.

The National Water Resources Strategy 2013 (NWRS2) provides a framework for the regulation of water resources in South Africa. The Strategy focuses on equitable and sustainable access and use of water by all, whilst ensuring that the water resources are protected.

More recently, the National Water Quality Management Policy and Strategy was drafted (2017). This set of documents takes a new turn in the approach to water resources management in South Africa. This emerging policy recognises that a joint approach between government departments, the private sector and civil society forms the basis of tackling the water quality challenges facing the country:

*“Historically, water quality management has been the mandate of the Department of Water and Sanitation alone, and yet there are many government departments whose mandates impact profoundly on water quality, most critically, the Departments of Environmental Affairs, Mineral Resources, Agriculture, Co-operative Government and Traditional Affairs, Health, National Treasury, Trade and Industry, their provincial counterparts where relevant, and municipalities. A joint approach between these government departments, private sector and civil society forms the basis of tackling the water quality challenges facing the country”.*

The National Water Quality Management Policy (NWQMP) aims to take an integrated approach to the management of water quality, enabling government to work with civil society and the private sector to bring the improvement needed.

Following the development of the NWQMP, was the development of a Strategy that looked at the short term implementation priorities for 2017-2022. This NWQM Strategy repeatedly highlights the complex nature of water quality management, and calls for a “systems-based, adaptive management approach”, with the need for “relevant stakeholders from government, civil society and the private sector to develop a common vision for water quality management, and to develop joint approaches to solving the complex problems facing the catchment” (DWS, 2017 page 19).

### The Planning Context

The National Development Plan (NDP) is South Africa’s long term development plan. It expresses the challenges faced across society and focuses the priorities for development. The NDP is further expanded at a provincial, and then district level through Provincial and District Growth and Development Plans. The NDP was developed before the Sustainable Development Goals (SDGs), so is not explicitly aligned with them. However, by implementing the NDP, and its regional and local counterparts, the SDGs can also be achieved.

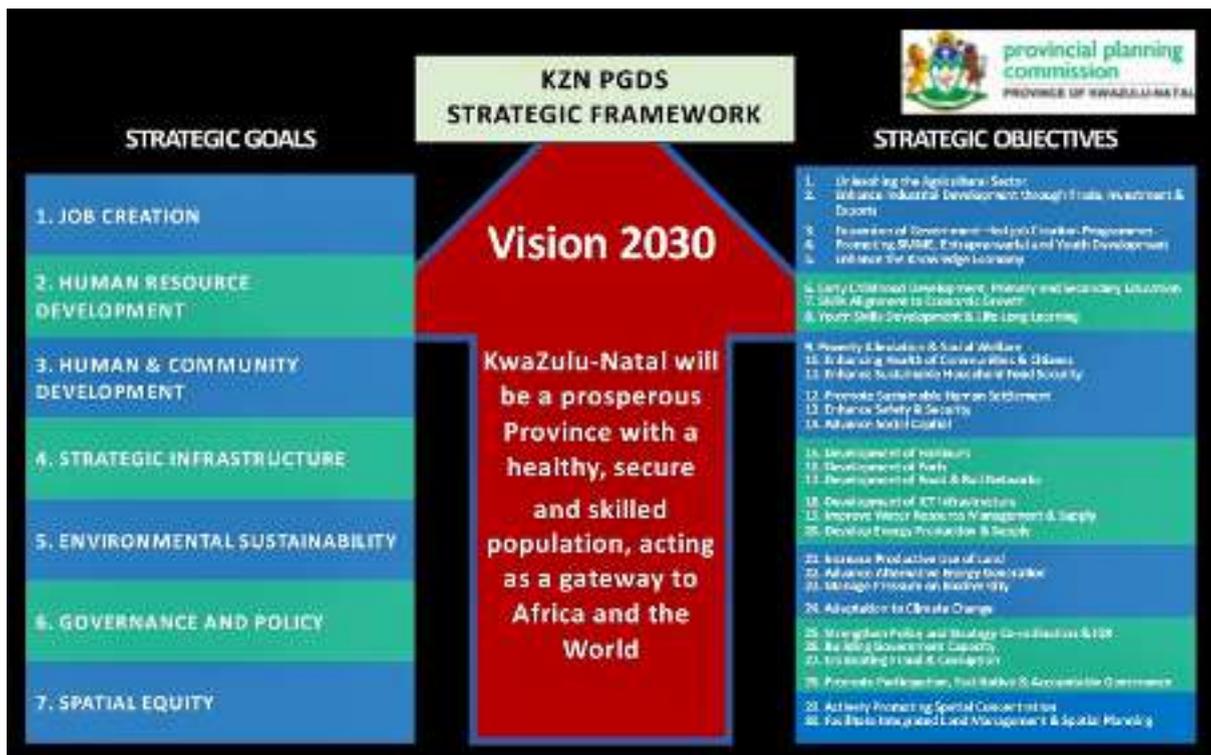
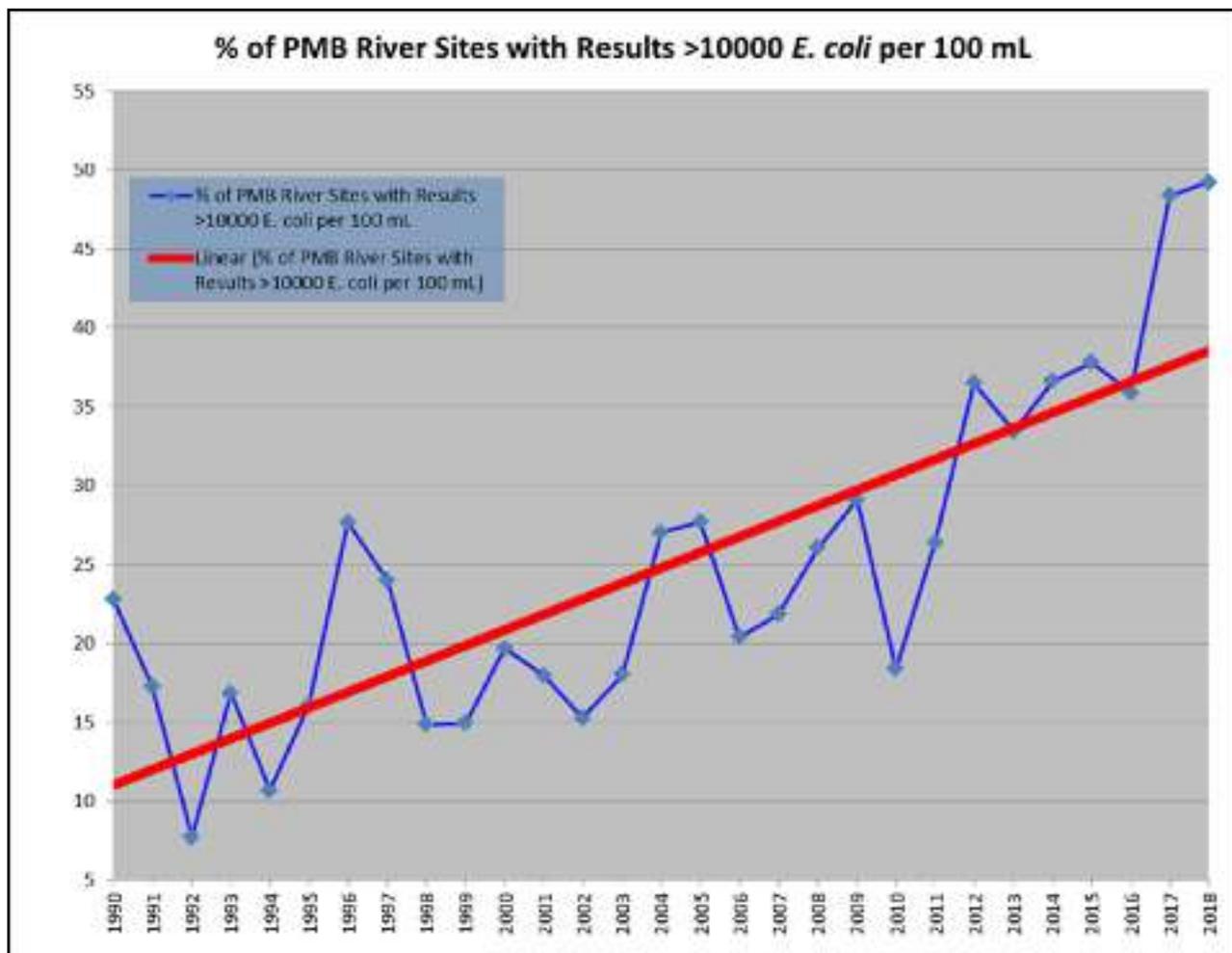


Figure 1: the KZN Provincial Growth and Development Strategy (PGDS)

The overall mission of the Msunduzi Vision 2030 is “to ensure that the Municipality functions effectively and in a sustainable manner in order to deliver services of excellence to the community”. A key mechanism for them to fulfill this is through their Integrated Development Plan (IDP), which is a mandatory planning document through which all projects are executed. The Msunduzi 2017 - 2022 IDP has thus been aligned to the National, Provincial District Development Plans.



Umgeni Water samples 18 points in the Msunduzi River and its tributaries weekly and analyses these for *E. coli*, among other determinants. *E. coli* is used as an indicator of faecal contamination (i.e. shows the presence of sewage). The graph of this data shows the average percentage of the points that exceed 10 000 *E. coli* 100ml (which means significantly polluted). The situation appears to have significantly deteriorated during the three years the MSU Project has been implemented. Without the project, however, there is no doubt that the situation would have been far worse. Through the work of the DUCT Monitors and clearing teams many kilometers of sewer lines have been made accessible, 687 spillages have been repaired and the teams have located many 'hidden' issues for Msunduzi's maintenance teams to address. Not only this, but the project has also educated hundreds of community members about waste, water and sanitation issues and many are now consciously helping to prevent further spillages, stop solid waste dumping and engage with the municipality to jointly solve problems.

### Project Successes

Although the *E. coli* graph for the region continues to look bad (*E. coli* counts in the water continue to increase) Sanele Vilakazi, a DUCT Pollution Control Officer, noted how the project has achieved many successes such as:

1. Identifying hot-pot problem areas
2. Improving response times
3. Discovering new leaks and surcharges
4. Creating considerable awareness and developing a greater understanding of issues
5. Assisting the Msunduzi Municipal Water and Sanitation Dept. with the collection, management and analysis of information regarding the location and status of the sewer line system
6. Providing an educational programme to change behaviours amongst the public related to sewage blockages as well as other forms of river pollution (solid waste, industrial pollution) and securing community support for the monitoring and reporting of leaking, blocked and surcharging sewer systems as well as illegal solid waste disposal.
7. Formulating and maintaining a sewer line, pollution and water leak monitoring system aligned with the Msunduzi Municipal Water and Sanitation Division to provide timely reporting and facilitate rapid responses to water leakages, sewage line leakages, blockages and surcharges.

## Project Outcomes

The project was started on 1 September 2015. As reported below, the primary task of clearing and monitoring major sewer lines has made good progress.

938 manholes were reported as either:

1. Blocked (702)
2. Without a cover (217)
3. Leaking (19)
4. Fixed (687)

Other outcomes include the:

1. Continued vigilance in sewage monitoring thus preventing the further degradation of rivers in once neglected areas
2. Development of a respectful and cooperative relationship with plumbers
3. Overall reduction and control of alien plant infestation around the municipal sewers lines
4. Regular patrol of the main bulk sewer lines to look for spills
5. 26 schools within the sewerage spill and blockage "hot spot" priority areas reached 330 learners
6. 212,3 km of sewer line route (4 meters wide) was opened and maintained over a 3 year period. This has brought about improved response times to reported incidents.
7. Sector sewer line routes have been inspected and monitored on a daily basis
8. Catchment/sector scouting of problem areas identified in a weekly test and supported by the use of mobile 'phone monitoring tools (incident based)
9. Door-to-door community education initiatives
10. The attendance and participation at community information and report-back meetings.

## Unintended Outcomes

The MSU Project brought many departments together to engage with how water and sanitation functions. These include the call center, electricity, environment management, information communication and technology (ICT), roads and storm water, marketing and communications as well as Batho Pele (working with excellence and service delivery). Other unintended yet helpful outcomes are outlined below:

1. Meaningful, co-engaged learning through the education component of the project contributed to reduced littering and dumping in the project areas
2. New sewers were discovered that water and sanitation were not aware of
3. The clearing and treating of aliens contributed enhanced biodiversity where the project was operating
4. The project achieved unexpected social benefits. It also employed local people who learnt a lot about waste, water and sanitation
5. The project contributed to enhanced quality of life for the communities neighboring the areas of operation
6. As noted by an Msunduzi official: the education role DUCT Plays in the community is greatly appreciated. This goes beyond awareness raising and enables local actions for sustainability
7. As a flexible and responsive organization, the DUCT teams were able to complement the roles of the local municipality



***"Umgeni Water supplies about 400 million cubic meters of water annually from the uMgeni system to about 6 million people. However, wastage of this processed potable water is unacceptably high. Wastage can take a number of forms: direct leaks from pipes or unbilled authorized consumption or illegal consumption and metering inaccuracies. For Msunduzi the total wastage is as high as 45% with leaks accounting for about 20%." - Duncan Hay***

# THE RESEARCH METHODOLOGY



**"It's always the right time to do the right thing" (Nelson Mandela)**

## **The Research Methodology**

The more we worked with the teams and communities who are engaging with the MSU Project the more we realised the importance of the work for the future health and well-being of the communities of Pietermaritzburg and even Durban, much further downstream. From critical realist research methodologies we have learnt to apply co-engaged depth deliberation. Here we seek to go 'beneath the skin' of the normal, the conventional and the common ways people often speak to each other, or interview each other, or complete endless self-perpetuating questionnaires. Depth deliberation achieves more meaning. Deliberation reminds one of the importance of being deliberate and purposeful in our efforts (as we aim for the common-good and avoid the 'anything goes' participatory rhetoric), it reminds us of weighing up alternatives thoughtfully and finally, it has the connotation of freedom or liberation, as we liberate ourselves and un-learn former conventional wisdoms that are not doing much good for ourselves or our communities.

We also found that the Sustainable Development Goals (SDG's) offered a useful lens and framework for the evaluation. The SDG's integrate development and sustainability to provide a useful platform, and mobilising process, to rethink and reconstruct the way we live and work on the Earth. Through such processes we can work towards minimizing the erosion of our life support systems and risks to ecological infrastructure. The use of the SDG's as an orientating framework was particularly evident in the videos we produced to share the evaluation findings and which we used to complement this report and share the insights more widely.

Cooperrider and Srivastva (1987) suggest that inquiry into the social potential of a system in society should begin with appreciation, should be collaborative, should be provocative, and should be applicable. Following interaction with the project client, Msunduzi Municipality, Steering Committee Members and the Project Team an evaluation rationale was developed that drew on an appreciative enquiry methodology.

## **Purpose of the Evaluation**

The evaluation commenced with a process to clarify the key purpose of the study including the questions that the research process sought to answer. It was made clear that the purpose of the evaluation needs to be realistic and should be understood and verified through appropriate tools and processes.

1. How has the project proceeded over the past three years? One could describe this as the project journey.
  - a. *Evidence from all 'Stories of Change' as well as the manner in which the project has matured and developed all point towards a healthy and constructive project development process. Responsive project management as well as adaptive management processes, implemented by DUCT, and guided by the Steering Committee, reflect effective project development.*
2. Have the intended results/desired outcomes been achieved?
  - a. *Again data gathered by the project team, and reflected throughout this report and most notably in the 'Stories of Change', suggest that not only have the desired outcomes been met but in many cases these have been exceeded.*
3. Evaluation research to identify what has been learnt.
  - a. *A key learning feature of the project has been the value of community education processes complementing infrastructure development. The complementary processes of education and infrastructure development, together, are integral to the success of the project.*
4. The project leaders also wished to find out how satisfied their clients, the Msunduzi Municipality, were with the MSU Project?
  - a. *Discussions with a number of key individuals emphasise how satisfied the Municipality is with the project. Here the opinion is often expressed that the project exceeded expectations.*
5. How may the evaluation guide future phases of the project or the further upscaling of similar work elsewhere?
  - a. *This evaluation report concludes with a number of principles which should be considered and applied should future projects of this nature be carried out. These principles are outlines on page 29 and should be used in the upscaling of projects of this nature.*



**Sustainable  
Development  
Goals (SDGs)**  
also known as Global  
Goals, of the 2030  
Agenda for Sustainable  
Development

As the evaluation processes proceeded the research team was amazed how many of the SDG's were being addressed through the project. SDG 1 for example, *No Poverty*, was very evident in the township contexts that the MSU project has worked. In the *Stories of Change* (this report pages 23 – 28) food gardens benefitting from the project are mentioned. *Zero Hunger* (SDG 2) and *Good Health and Well-Being* (SDG 3) are also addressed through the project work. *Quality Education* (SDG 4) was a key focus area of the *Education and Awareness* raising programme of the project while *Clean Water and Sanitation* (SDG 6) was the focal emphasis of the project as a whole. *Decent Work and Economic Growth* (SDG 8) was certainly a contributing factor and in one story of change a local businessman, Nhlanhla Thabethe, even described how his business, *Tower's Neverland*, had become more profitable through support and activities of the MSU project! In terms of *Infrastructure* (SDG 9) the project has worked closely with Msunduzi Municipality to strengthen and solve infrastructure issues. Finally, *Sustainable Cities* (SDG 11), *Life below water* (SDG14) *Life on Land* (SDG 15) and *Partnerships for the Goals* (SDG 17) were all addressed through the project. This means that progress was made towards 11 of the 17 SDG's through the MSU Project.

### Evaluation Methodology

The data and insights for this evaluation report were narrative recording and deliberation that developed through a collaborative process of attending steering committee meetings, engaging with key project members and influential partners, meetings with the project management team, site visits, meetings with community members to distil key shaping and influencing factors as well as making recommendations for the wider scaling of such programmes. A key purpose of the evaluation was to find out how DUCT could continue to provide and strengthen their support for service delivery within the uMsunduzi and uMngeni catchments as a realist process of deliberative review.

A key purpose of the evaluation was to seek to understand the successes, failures and strengths of the MSU Project. Pawson and Tilley argue that in order to be useful to decision makers, evaluations need to identify 'what works, for whom in, which contexts and how' rather than merely 'does it work?' In order to answer that bigger question, realistic evaluation aims to identify the underlying generative mechanisms that explain 'how' the outcomes are caused and the influence of context. The research processes and close engagement with project implementers and partners further emphasized an appreciative enquiry orientation to the research.

Realist philosophy considers that an intervention (e.g. clearing sewer lines and making them accessible to the authorities) works (or does not work) because actors (such as project staff) make particular decisions in response to the intervention (refer Ward, 2016). The 'reasoning' of the participants in response to the resources or opportunities such as alien clearing, the application of herbicides, the restoration of ecological infrastructure as well as the data management offered through GEO-ODK (Geo Plotting - Object Driven Knowledge) mechanisms with links to GoogleEarth representations, provided by the intervention, is what enables the outcomes. This is by no means predetermined and thus highlights the importance of the extended question "What works, for whom, in what respects, to what extent, in what contexts, and how?" (Pawson & Tilley, 1997).

The identifying of an 'underlying mechanism' refers to the social or psychological drivers that constitute and influence the reasoning that can come to inform participants. Thus, for example, the social driver of personal/ community improvement through sewer line interventions, work-place-based learning and recognition, emerge as mechanisms through the literature review, interviews and field-work undertaken as part of this evaluation. Other mechanisms or drivers included the importance of having influence and the importance of being able to find, generate and use information.

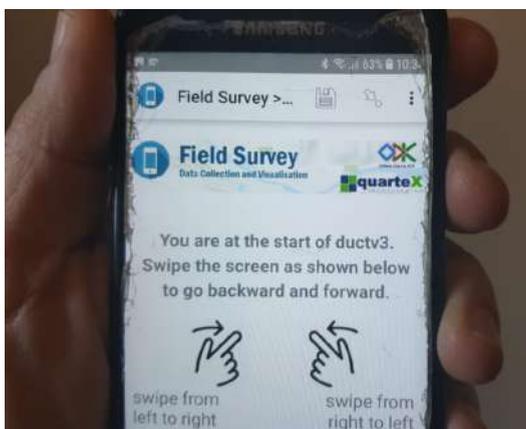
It must be noted that the mechanisms (e.g. personal and community learning) may or may not bring about particular outcomes based on the enabling and inhibiting factors within a particular context. It is thus important to identify these enabling and inhibiting factors and to consider them as part of the context in order to understand 'what works, for whom in which contexts and how'.

In this evaluation the appreciative enquiry orientation followed the following steps:

1. What have we done?
2. What have we learnt?
3. What happened?

The approach of building on the positive, rather than focusing on what was missing, seemed particularly appropriate to the context of this review where so much had already been achieved against substantial odds. In addition, it was important to acknowledge the volunteer nature of much of this work and the personal passion that has driven the many different contributions made by a variety of role players. It was with these objectives in mind that the appreciative enquiry approach was selected to inform and shape this review.

It must also be noted, however, that the philosophical underpinnings on which appreciative enquiry rests, namely social constructivism, do have limitations in terms of approach for this study. In particular, the relationship between the ability of the groups to construct their own realities both in terms of what they consider the strengths of their practices to be, and the possibilities for creating alternative futures, can be overstated in social constructivist approaches such as this.



**THE FIELD SURVEY MOBILE APP  
USED TO REPORT LEAKING  
SEWERS**



**TWO DUCT SEWER MONITOR TEAM  
MEMBERS REPORTING A LEAKING  
SEWER**

Roy Bhaskar\* through his Transformational Model of Social Activity (TMSA) develops a stratified and nuanced approach to the relationship between agency and the structures within which this agency plays out. According to Bhaskar, society is both the ever present condition and the continually reproduced outcome of human activity. Thus, for example, the historical character of social processes and structures may not easily be recognised. Similarly, an outcome of social action will always be liable to unintended consequences or unacknowledged conditions which may limit the participants' understanding of their social world. These limitations require that a review such as this seeks to illuminate possible opportunities and constraints within the social structures that may have implications for the ability of participants to transform their situation and bring about desired change.

The data from which the review is developed included both the 'living data' generated through the GEO-ODK data management mechanisms, supported by mobile phone Apps and recorded in the Google 'cloud'. These data are reflected in the various maps of this report and range in impression from serious ongoing spillages to those that have been repaired. Collecting 'Stories of Change' was a further key research approach that was employed by the team. Authentic stories of change from community members, leaders in society (including Councillors and Msunduzi Officials) and MSU Project team members offer rich and often deep insights into how the project worked and the meaning it created in peoples' lives. The 'Stories of Change' provide useful illustrative data on what the project is achieving. Such stories can illuminate what impact the project is having and what can be scaled-up or adopted and adapted in other areas.

In order to deepen the dialogue and discussion related to the issues a series of video clips were also developed. These were useful to play back to participants so as to verify issues or deepen questions about the issues. The video of the project will also be used to share the insights from the project and is an innovative way of deepening evaluation meanings by complementing narrative text with a different medium. In pursuing the video perspectives of the project the videographer, Brett Pennefather, who also assisted with collecting key photographs, found that a deeper and more meaningful dialogue was possible when people were commenting on photographs of issues rather than when these were being showed as videos. Videos tend to portray an apparent reality that does not appear as open to interpretation as photographs do. The depth enquiry the evaluation team was seeking was thus strengthened more by the photos, even when these were on cell phones, then when they were reviewing or looking at video clips on the same phones.

The 'Stories of Change' thus became the primary data on which this review is based. To achieve rigor and objectivity in the way in which the review is developed an inter-subjective objectivity approach was taken. Recognising that key insights are usually biased in the telling a triangulation methodology was used where the opinions of other key people were used to establish a more balanced impression.

This report outlines the mechanisms, interventions and enabling/ constraining factors that are evident or need to be considered in the future development of the project or other projects such as this. This entire study provides insights both into how the different components of the project were identified and how they have been used within the work of the project team and related role players.

The following mechanisms were identified as being key to the successful generation of empirical and narrative data that informed the project:

1. Calm, thoughtful and clear leadership
2. The ability to work vertically with a diversity of role players
3. Personal and community capacity development. Important in the capacity development has been the use of citizen science tools ranging from phone apps to the Stream Assessment Scoring System ([www.minisass.org](http://www.minisass.org)).
4. Accessing, generating and using information
5. Ownership and recognition

## CONDUCTING A STORY OF CHANGE INTERVIEW



\* For a useful overview of the work of Bhaskar see Bhaskar, R. & Scott, D. (2015). *A Theory of Education*. Springer International Publishing, New York, NY.

# WHAT THE TEAMS HAVE DONE

## SOBANTU

Sobantu is a township located to the east of the Pietermaritzburg city centre. It stretches along the northern bank of the Duzi River. There are about 8,155 people living here and there is a mixture of middle income, low income and informal housing. 89 manholes have been monitored in this area of which 14 have been spilling continuously for the whole project period. 71km of sewer lines and manholes have been cleared in Sobantu and its surrounding areas.



**OUTLINE  
MAP OF  
SOBANTU**

## SOBANTU WITH SEWER NETWORKS AND RIVERS





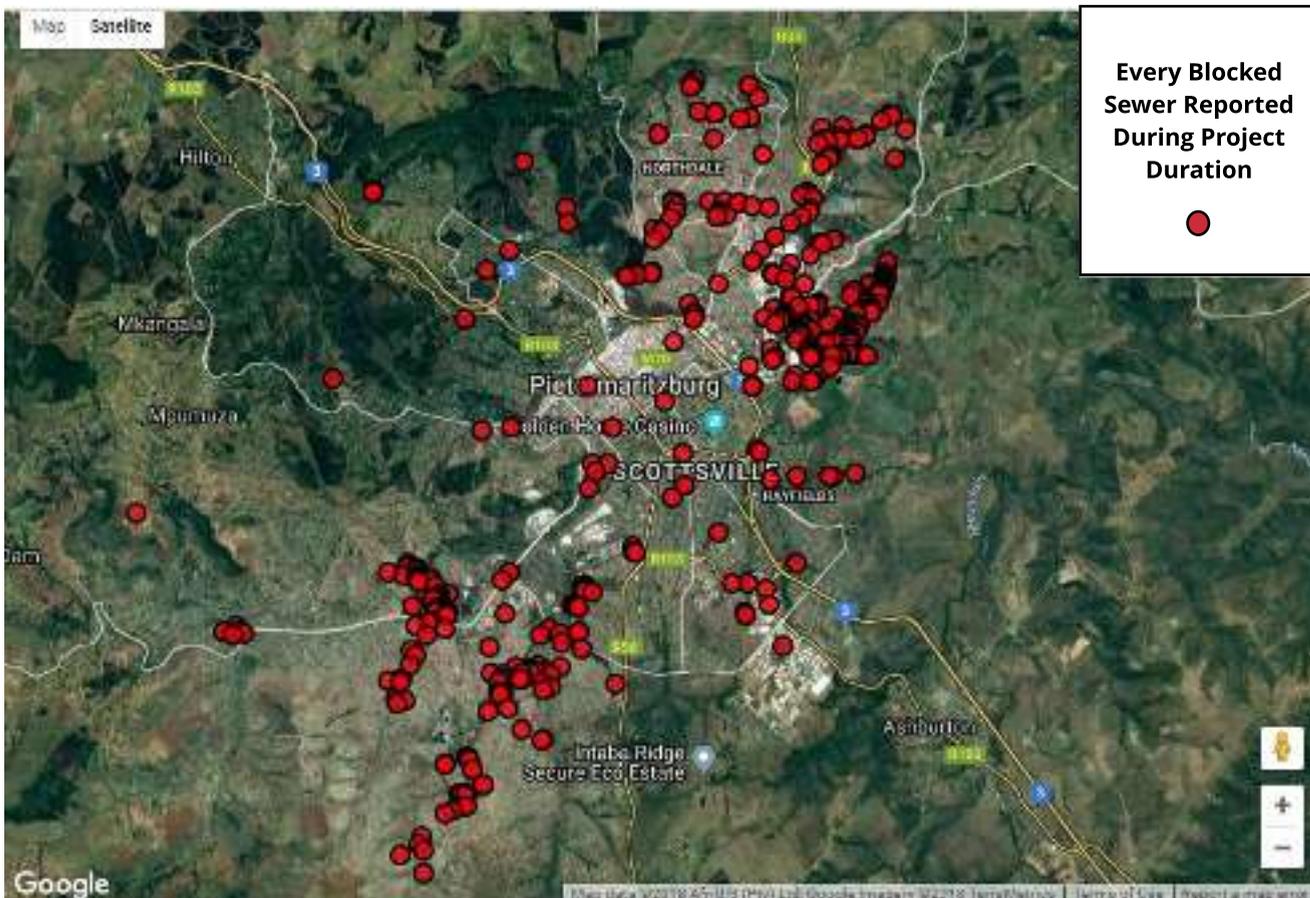
# ASHDOWN

Ashdown is a township located to the south-west of Pietermaritzburg city centre. It stretches along the Duzi River covering an area of 3.03 km<sup>2</sup>. There are approximated 13 500 people living here and there is a mixture of middle income, low income and informal housing. Over 150 manholes have been monitored in this area of which 6 have been spilling continuously for the whole project period. 63km of access to sewer lines and manholes have been cleared in Ashdown and its surrounding areas.

## ASHDOWN SEWER LINE NETWORK



## BELOW: IMAGE OF ALL 3 LOCATIONS



## EDUCATION & AWARENESS RAISING THROUGH THE MSU PROJECT

Education and awareness raising was a key component of the MSU Project. This facet of the project focused directly on schools, and included teachers and learners. As the project work developed the notion of 'schools in community' began to strengthen as people began to realise how connected the different facets of township life were. The places where children learn, for example, are places where waste, water and sanitation are crucial, just as they are at the peoples' homes. The topics the children covered in their lessons with the DUCT staff, led by Wendy Ngcobo, also began to resonate more widely with their parents, the municipal officials and other adults in their communities.

The developing understanding led to situations where people were much more able to discuss complex water and sanitation issues in a thoughtful way and with more appropriate language. This deepening understanding may be described as expansive learning. Vygotsky (1978) describes expansive learning as learning that is more congruent with the reality around us and where people are more able to discuss and contemplate the sanitation issues and risks they face, as well as who is responsible and who may be able to help! As one reads through the various stories of change (pages 23 to 28) one sees how meaningful the learning is becoming and how much more thoughtful people are about the realities of water and sanitation challenges.

Networking was a further enabling feature of the MSU Project. It was encouraging, for example, how key members of the Msunduzi Municipality's departments including Environmental Officers in the Environmental Health Services Unit, Environmental Management Unit and KPCA (Keep Pietermaritzburg Clean Association) developed a greater understanding of each others roles. Liaison with the Msunduzi Waste Management Department to assist in removing collected bags from clean-ups was also a benefit to both the project, participating schools and communities as well as the Municipality. By encouraging a wider network of education practitioners to work synergistically on raising education and awareness around waste, sanitation, water quality and pollution issues takes time but a good foundation has been laid for further collaborative work.

Through the project over 400 learners and many teachers were directly involved. 26 schools participated and many formed Eco-Clubs which strengthened and reinforced the learning. Excursions were also conducted and participants learnt a lot at the Waste Water Treatment Works and the Water Treatment Plant in Howick. Such excursions helped learners and teachers to take on research opportunities and encouraged them to develop lesson plans and educational games that had previously not been possible.

The project also benefited the many volunteers who assist DUCT and support the Eco-Club work. These volunteers are mostly past learners that have participated in DUCT Eco-Clubs and are now post-matric. Such young people were given opportunities they would not normally have been exposed to through assisting at camps and with day-long excursions. Activities included assembly presentations, clean-up activities, art campaigns, recycling and waste management.



**STUDENTS  
ENGAGING IN A  
WATER STUDY**



**STUDENTS  
PARTICIPATING IN A  
SANITATION THEORY  
SESSION**

Specific benefits to learners participating in the programme included new knowledge about good sanitation practices, what to put down the toilet and what not to, understanding the effects of poor sanitation practice, (for example blocked sewer manholes), and the resultant negative impact on water quality in rivers and streams. Through being in the programme, participating schools became eager to monitor their own toilet facilities independently and this raised awareness and confidence which led to many of them joining the Department of Health's 'Health Promoting School' programme.

DUCT's education team programme conducted ongoing evaluation processes. These included the use of evaluation sheets so that the project could better respond to the teacher's needs and perceptions. Very positive results were received from teachers and learners who participated in the evaluation survey. Some of the more deserving learners were able to attend the weekend leadership camps held at Camp Minoah in October 2017. Innovations, such as in-line filters and mini-screening plants were tried out and these could be used to provide future solutions to the problem of solid waste in the sewer system. Ideas such as this emanate from an immersion in project and systemic problems, and this kind of forward thinking on the part of the Education Team can also be seen as a benefit derived from the implementation of this project. In this regard education needs to go hand in hand with a pragmatic approach to managing the realities of human actions and attitudes.

The project also enabled the DUCT Education Team as a whole to undertake sanitation education at two key annual events that take place within a collaborative *Happy Earth Environmental Education and Sustainability Forum*. 1700 learners from schools from all over Pietermaritzburg attended the *Happy Earth Festival* in April 2018 at the KZN Botanical Gardens where the MSU Project was represented at two DUCT education stands. The one stand focused on water quality through experiential learning and miniSASS (The Stream Assessment Scoring System) at the local Dorpspruit stream. The other stand explored the Sanitation Education game that teaches the principles of good sanitation practice.

The project also developed a 'Sanitation Display' at the Witness Garden Show in September 2017 where the exhibit won a Gold Award. 18,000 members of the public visited the show over a four day period, with many of them visiting the Happy Earth Hall, where the DUCT exhibit was featured. This means that through innovative ways of utilizing the Eco-Club programme to promote sanitation education and better waste management practice, the project was able to reach a wider range of Msunduzi citizens, both young and adult, from all 11 sub-catchments as represented within the MSU Project. A further benefit that the MSU Project brings to these events is the wide collaboration of participating organizations who are encouraged to find links within their own programmes so as to improve learning opportunities around education towards better sanitation, waste management and water quality practices.

In a further effort to research and better understand the effects of the project, informal research included door-to-door fieldwork at 80 homes in conjunction with the Enviro-Champs in Ashdown and Imbali, two known pollution 'hot spots.' The potential for developing a programmatic and therefore ongoing approach to the waste, water and sanitation education in township areas would certainly be a positive contribution to the health and well-being of all citizens of the uMsunduzi Local Municipality.



**STUDENTS PARTICIPATING  
IN A COMMUNITY CLEAN-UP  
CAMPAIGN**



**STUDENTS PLAYING AN  
INNOVATIVE GAME TO  
ENCOURAGE PROPER WASTE  
DISPOSAL**

## Questions that Guided the Education Program

### 1. How was the DUCT MSU Education program implemented?

Learners adopted a portion of the area that had been reported as a sewer blockage and illegal dumping site also known as a “hot spot.” The DUCT education team helped the learners organize the Community Clean-Up campaigns through war rooms\* and how to log in sewer spillages and blockage incidents on the DUCT field survey and WhatsApp group.

### 2. In your opinion, was the program being implemented correctly? (If Y/N then why?)

The education team was able to encourage people to go beyond the predetermined boundaries because they learnt of the significant value that the program was adding via schools, door-to-door visits, war rooms and councillor meetings. The program could only focus on schools within the boundaries, however. The implementation of the program proved to be effective and it is encouraging that it attracted such a large audience.

### 3. Were the participants (school children) reached as intended?

Having a good working relationship with educators (coordinators) from all the 26 schools ensured that DUCT could mobilize students thus assisting in reaching the intended participants. With the assistance of coordinators (appointed by the Principal) 15 – 20 learners were selected as required from the 26 schools within the sewerage spill and blockages “hot spot” priority areas. A total number of 330 learners participated in this process.

### 4. How satisfied are the school children and teachers with your work?

Both the educators and students showed interest during all our interactions and were hands on whenever work outside of the class was to be done. Most of the educators expressed how the program has helped formulate their schools mandate on waste management. Eco-clubs have enabled a platform for other relationships to be formed with organizations through events such as *Happy Earth*, garden show and river fun run. Thus not only benefiting the students but the educators as well.

### 5. What has been done in an innovative way regarding the education Programme?

Working with students demands that whatever you are teaching them should be presented in an interesting way, therefore the education team has created a number of educational games that the children are able to learn and have fun with. The team found that students concentrate and interact more with these games. An example of one of these games is one called the “sewer monitoring game” where the team encourage the participants to change their approach to what goes in the toilet by giving them different objects that usually block a sewer. A toilet seat, an open manhole and a bin are placed in the middle whilst the participants stand around in pairs in a circle, one behind the other. An instructor calls out a number between 1 & 2 where number ones would be those standing in front, they all then run in a clockwise direction back to the starting point. As they do this they pick up one of the solid waste items and place it where they feel it should be discarded.

### 6. How well did the program work?

During the period of the project the education team witnessed a change in the students perceptions. Students would tell us about their own experiences at home, how they are managing with changing their own lifestyle choices and whether they are welcomed to do so within their households. This program has afforded a chance to be able to reach more people and to go deeper than just awareness raising.

### 7. Did the program produce or contribute to the intended outcomes?

One of the major objectives of the MSU Project is to educate and create awareness of the sewer system. The education program has played an important role in this by making sure the people know what should not be done but most importantly why. This means that most of the work done has some form of demonstration. Achieving this meant taking trips to places such as the waste water treatment plant where the students could see where solid waste that goes down their drain ends up. They also learn how doing the wrong thing not only takes up more resources but money as well, thus directly influencing change in how they choose to act. Some of these trips include leadership camps where learners are further informed about how proper management of the environment is an important aspect of life. Through such activities they also learn about career options. The education program has been successful in influencing change in how participants act towards making sewer systems less prone to solid waste. There is a dire need to influence a greater number to change in the same way that the education program has enabled capacity building with 330 participants.

# APPRECIATING AND VALUING: A PARTNERSHIP APPROACH



*Bicycles are an ideal mode of transport for accessing sewer lines cleared by the DUCT teams*

**DUCT has always been an organization that seeks to work with people rather than on or against them.**

In times when government often states that it cannot solve issues alone, civil society organizations like DUCT certainly have huge potential to support and complement service delivery challenges. The Msunduzi Local Municipality DUCT partnership for sanitation and community education holds much hope in this regard. Working with teams of previously unemployed people, the project has developed skills, opened access to sewer lines, removed alien invasive plants, assisted in waste management and generally helped educate hundreds of local community members. A current area of weakness is the lack of business and industry support but where this can be realised a much more powerful programme will evolve. As mentioned by Mike Greatwood, Msunduzi Municipality: Water Services Authority Manager, local government cannot address all the water and sanitation related challenges alone. Local government is also seldom able to adequately reimburse civil society partners and project implementers. But where such costs can be supplemented by local business and industry a true win – win situation can be developed. An excellent example of this was how DUCT worked with Msunduzi as well as with the KZN Canoe Union and business and industry to prepare for the World Marathon Championships at Camps Drift in 2017. Despite many challenges a world class event took place and many attest to how everyone pulled together in presenting the championships. Going forward, DUCT could make more effort to develop wider partnerships and develop a greater contribution from business and industry.

While it is important that DUCT maintain a watchdog role, it is through thoughtfully working together, for the greater good, that the organization can become a supportive, building force for the future. Rather than playing an adversarial role, that has the risk of polarising all involved, DUCT really can work through partnerships to effectively improve the health of the environment and the people that live in the region. After all, everyone lives downstream!

Grant Fryer (Msunduzi Pollution Control Officer) has noted the value of the project in immeasurable ways. He has pointed out that Msunduzi would be in deep trouble if they were to lose the project. The city simply does not have the people-power and resources to find the blockages and clear access to them.

“In an emergency we can phone DUCT and, with their management flexibility they can deploy teams to emergency areas. This happened in the case of the Town Bush Valley spillage, for example.”

Fryer continued to point out that some blockages are easier to repair than others. “The Msunduzi sewer systems are certainly challenged and, as DUCT discovers and opens access to more spilling sewers, so the pressure on Msunduzi repair teams mounts!”

Challenges are even evident in more affluent suburbs like Hayfields for example , and sewers in Adams Road as well as at the “infamous” Grix Road, near the Baynespruit, where a sewer, built over the rivers is constructed, cannot work optimally and regularly blocks and spills sewage into the river. Many of these challenges require costly infrastructure improvements which take time.

Fryer continues to note that Msunduzi greatly appreciates the relationship with DUCT. Without the project the situation would be much worse. He feels that leadership is crucial and staff need to have a passion for the work and understand the bigger picture. “There is little doubt that partnership projects such as the one between Msunduzi and DUCT could be of enormous value to other municipalities. The scaling up of the project to other municipalities is thus a priority where water, sanitation and service delivery issues are a challenge.

Steve Terry is a scientist with Umgeni Water. He has served on the MSU Project steering committee and has a well developed understanding of the project and how it is working. He speaks of the project as a **“shining success that achieved a wider scope than expected.”** At a recent steering committee meeting it was explained that water and sanitation work is of little value if people “aren’t worked well with!” Meaningful co-engaged work with communities, fellow-workers and local government is important for the broader objectives of longer term sustainability.

At a workshop with project teams on the 12th of June 2018 a number of meaningful quotes resonated with a deeper human enquiry. Sanele Vilakazi is the MSU Project leader. He states that people should look further and become more critical. He also reports an incident where local people even agreed to disconnect their electrical connections, temporarily, to enable a problem sewer to be repaired. A project monitor noted how “working like this has become part of our lives. It’s not just what we are paid to do! From an education and schools point of view more and more learners are now reporting leaking sewers and other water and sanitation problems. One of the municipal workers noted that DUCT as an NGO has flexibility, whereas the municipality has to work within government processes, which are often cumbersome. A further telling comment at the project workshop was the notion that ‘education is what’s left when exams are forgotten.’ One of the project workers pointed out that when schools outside his area of influence asked for help he took it as a sign that the project was working well.

Sanele noted that although the project is now ending some monitors were very concerned that the momentum of the project work not be lost. They had even offered to work as volunteers with no pay provided just air-time could be provided. The point was made by the monitors and project workers that if the project ended without follow-up the results could be catastrophic for the river, the catchment and the people downstream.



*Camps Drift Fun Run. Well cared for rivers are ideal for recreation purposes. In the picture one can see many young people enjoying the fun run at Camps Drift. In 2017 Pietermaritzburg hosted the world marathon championships at the same venue. The event was a resounding success with canoeists attending from 40 different countries. Prior to the event DUCT staff and volunteers collected over 18,000 bags of litter from the area and the immediate tributaries of the uMsunduzi river.*

# STORIES OF CHANGE

Many people have interacted with the project over the last three years. It is evident that the environment around them has changed and their quality of life has been enhanced. The following people have volunteered to share their stories of change to help us probe and understand the project better.

## IT'S SINK OR SWIM FOR SLANGSPRUIT RESIDENTS



I am Nkosinathi Dlamini, a sewer monitor from Imbali. I started working at DUCT as a field worker and moved on to being a monitor. What I do is travel to the locations on the bike which is provided by DUCT, and identify problematic sewers. I then contact the appropriate entities that work towards fixing these problems, these entities vary from call centres to municipality officials. Being part of the DUCT team has taught me more about the environment but most importantly how and why it should be kept clean.

I appreciate the training I have received because it has allowed me to influence change, sharing my knowledge with the public and not only monitor sewers, but any other form of waste that threatens the quality of water. In the time I have worked on this project, I have had challenges with getting the sewers fixed on time. However, out of all the issues that have been brought to my attention, the Slangspruit Primary School septic tank has been the most difficult to reach a solution for. Out of all the people I have contacted (the school's principal and the

municipality) none of them accept the responsibility for fixing or working towards fixing it. Since no one was coming forth to help fix the tank, the neighbours came together to fence it because of everything that had fallen into it. This septic tank is the most dangerous I have seen, not only for the students that frequent the area or the residents, but also their livestock. There had been an incident where a truck was offloading soil but fell into the tank. Additionally, goats and cows have drowned and some have never been found. When it rains, the tank floods into the homes of residents and has channelled itself into Slangspruit which directly affects the levels of *E. coli*.



As a resident and the first point of contact about such issues, I feel extremely powerless as I have done all that I can but still the issue is nowhere close to being sorted. Leaving such issues not resolved is disheartening, but I would like to extend my deepest gratitude for being given the opportunity to be a part of such an impactful project.

## PROUD OF THESE BOYS



My Name is Thandeka Msomi and I reside at Imbali unit 13. I am very familiar with the DUCT Team (MSU) and I have a very good relationship with them. These boys respect their line of work and you can tell by the way they quickly attend to a leaking sewer if it has not been reported.

Other companies would come and try to fix a leaking sewer but fail because after two hours it would start to leak again. Ever since the DUCT team intervened, there has been a mass improvement. I would phone them and report about a leaking sewer, after a few hours one of the DUCT members would come, take a picture and assure us that it will be fixed in no time. It has now been two weeks that it has stopped leaking. Before the team became involved it would leak for days with no one attending to it. I really see a change.

My words of wisdom to them would be; I personally want to see them grow, maybe one day even start their own company similar to DUCT and employ the youth because what they're doing is really good. They should continue respecting the work they do and us as a community like they are doing now. Last but not least I would like to thank them on behalf of the community and myself. May God bless them.

## LITTER IS BEING DUMPED BY MY HOME!



My name is Thuleleni Mthembu from Peace valley 2 (known as Ashdown section 4). I used to reside in the central Ashdown location and was unfortunately evicted from my house after my husband passed away. I was then given this site by the Councillor.

I was fortunate to meet the DUCT MSU team because they have been helping us a lot with the clearing of the area and the reporting of faulty sewers. Where I am currently living, there is a problem of leaking sewers. I normally report them to the municipal office but most of the time they are never attended to.

I have a vegetable garden and all the liquid material from the faulty sewers gets washed away and the dirty deposits get left in my garden. Because of this I never get to reap my vegetables, all of my hard work and money spent always goes in vain, I really don't know what to do anymore.

The rubbish truck does not come to our area and as a result most of the community members dump their litter just below my house. I have to go there and burn it all because I really don't like dirt. Whenever I try to reason with them and tell them about the repercussions of their actions, I always end up being the bad person and that has resulted in me being on bad terms with most of the community. The smell from these sewers is unbearable, the deposits attract mosquitoes and rats. The conditions here are too daunting.

Sometimes we get lucky and the municipality guys decide to come around. They attempt to fix these sewers but just after two days they begin to leak again. It is too much to bear, with the help of the DUCT team we by all means try to get these fixed but our efforts always go in vain.

We don't even have proper roads here so the access is minimal. My family and I have even started looking for a new place to live because the conditions here are not suitable for humans. Whenever I bring these issues to the Councillor, I am sometimes even told to move out of the area.



## WATER IS LIFE, NOW LIVE!



My name is Phakamani Carol Dlamini and I am a senior project supervisor with DUCT. I started working with DUCT in 2010, minimising solid waste and alien plant eradication on riparian zones. I was able to be a part of the MSU Project as a senior supervisor.

My role is to ensure that all the teams on the field are equipped to do their work efficiently and safely, making sure that all their needs are met. I clarify any issues they may have and I make sure that the teams understand what needs to be done and how (if necessary).

Part of our work is to speak to the community and make sure that they understand our role within their community, which has been a difficult task because some would confuse our role with that of the municipality.

Being a part of DUCT has done so much for me, it has changed the way I look at waste and infrastructure and has pushed me to influence more people to change the way they live. I want to help them understand why in everything we do in our households, we have to keep in mind that our ultimate goal is to keep our water clean, understanding that water is life.

I also believe that the work we do has a great impact on the community, the team and the environment. We have observed a decrease in waste and this could be attributed to the change of perceptions, though we acknowledge that there are still more people to reach out to.

## BEING RID OF ALIENS FOR PROFIT



My name is Nhlanhla Thabethe and I am the owner of Tower's Neverland shop in Ashdown. I have been fortunate enough to benefit from the work done by the DUCT clearing team. The area behind my shop was bushy and I was concerned about the level of security I had in the area. These worries contributed negatively to the safety of not only my business but my clientele. The DUCT team helped clear the area, this process also afforded me a chance to learn about the plants that they were removing. I can now identify alien plants and I know that they take up more water, especially in this area because it's located next to a river (uMbucwane).

Clearing the area behind my shop gave my business an opportunity to grow because many people frequent this area, which is positive for my business. People come to buy at the shop, some come to relax and end up buying something. I realized it had potential to be a great recreational area when people started asking me if I would let them host events here.

I witnessed a significant decrease in waste because people are more conscious of the aesthetics of this area. People are no longer fearful of criminals who would hide out in the bushes, which is great for my business too.

It's incredible how clearing the area behind my shop has changed people's perceptions. I really think the team has done an amazing job, at least for me and my business. I hope they get an opportunity to be able to do the same and more for other people.



## A CHASM IN AUTHORITY



My name is Mfanuthule Thembinkosi Majola, I work for The uMsunduzi Municipality under the sanitation foreman. Our duty is to unblock sewers and report missing sewer lids and pipes with defects. I work closely with both the clearing and monitoring team from DUCT. The teams contact me directly about leaking sewers so that we are then able fix them.

The community contacts the call centre (for work orders) who report to the head office who then contact me to do the job. You find that even though people have reported defects the work is delayed because we, the people who fix sewers, are not aware of the issue. There is a big gap even within our municipality due to differing departments, thus delaying work, which leads to not meeting objectives.

The clearing and reporting team has played a huge role in making sure we know and are able to fix the sewers by ensuring they are accessible. Though we do face issues with accessibility such as steep slopes and off-read sewers, that is beyond what the team can assist with. We are often unable to drive the vehicles that do the work to these areas as we have to open roads, but since we have to hire a

Tractor-Loader-Backhoe (TLB), this process is delayed further.

Some issues we report to plumbers and bricklayers as they are not in our mandate, but they don't fix them or they are too busy which delays the process. This creates a problem because we end up doing the same thing to the same sewers. It takes longer to fix sewers that are reported later in the day because those on standby don't attend to them and we only get to them the following morning.

The way I see it, the municipality needs to hire organizations such as DUCT who are actually able to do the work, to fix these issues and be paid for them because those who are supposed to do the work are not doing it. The municipality needs support in reaching their objectives because evidently they can't reach them independently. DUCT must continue with the great work they are doing, it doesn't go unnoticed. We work very well with their teams, I would be really disappointed to hear they are not continuing because their work outcome is one hundred percent.

## TAUGHT TO TEACH



My name is Tebogo Diholo and I reside in KwaPata. I am a member of Phakamani KZN Youth Project and I met the DUCT Education Team during an event we hosted which was centred on recycling and artistry. My personal interest is on saving and keeping our water clean. I've always been troubled by the amount of litter found in and around our rivers, which has been prone to dumping for the longest time.

Such quantities of waste found around our rivers is astounding to me because the municipality collects waste weekly. I did some research about the causes and I found out that because our households have many people, collecting solid waste once a week wasn't enough for the total waste generated in the area. People would then resort to forming dump sites close to rivers.

I started looking into how waste can be managed properly and came up with the Clean-Up campaign that we hosted within ward 16 commemorating youth day. DUCT was amongst the stakeholders invited and 28 students arrived that morning for the clean-up session

which was one aspect of our campaign.

Even though our schedules haven't allowed us to work together more with the team from DUCT, I was able to meet people that I have now formed alliances with in the field of environmental work. One of my visions is the wide distribution of knowledge and resources that make proper waste management possible in our communities.

I have witnessed how impactful the work done by the field team is within our community, but I think more door-to-door still needs to be done. This allows us to follow up and still be able to visit a greater number of people in our communities. I also hope to do more work with DUCT going forward.



## CHANGE IN OUR COMMUNITY



My name is Sibusiso Ximba from Thembalihle. I am a member of the Community Protection Forum (CPF). I met the DUCT MSU team through Mr. Jabulani Dladla who is a fellow community member that works for the Sobantu team. We have had multiple leaking sewers around our area and the members of the community would report them to me. I usually reported them to the municipality office however, help would come about very slowly, if it came at all. Before meeting the team, I would have people blaming me for these leakages not getting fixed, not knowing that I always played my role. Airtime was also a limiting factor because I sometimes did not have it, so there would be times when I could not report the leakages. Our area literally smelt and looked like a dumpsite due to the leakages. I would also get reports of burst water meters where in some cases the leaking water would flow into the houses of some residents, and because most of these houses are built from mud, in some cases the foundation would even perish.

However, after knowing and working with the MSU team, change came about in our community. The municipality repaired the leakages faster and was able to access it better. The meter problem perished. Whenever a report came, I would contact Mr Dladla and his team would see to it before the end of the day.

I am grateful that I had the opportunity to work with such an amazing team, they are dedicated to what they do and they always come through for us. Their role is very vital and I wish that we can continue to have such an amazing working relationship with them as it is because of them that so much environmental and hygiene change is present in our community.

## LEARNING THROUGH WORKING

My name is Jabulani Dladla. I work as a monitor under the Sobantu team. We work in various areas including Sobantu, Tamboville, Northdale to name a few. We monitor sewers, clear the areas that they occupy to make them accessible and visible and we remove invasive alien plants as well.

Whenever we encounter or have a community member alert us about a faulty sewer, we immediately report it to the municipality office and have them try to fix whatever it is that might be wrong with that particular sewer. The community members have told us that the municipality attends to these sewers faster if we have contacted them first compared to when a regular community member contacts them.

Being involved in this project has exposed me to a number of things that I had no knowledge of before. To me at first, it was just a job that would assist in making ends meet, but it became more than that, it has helped and groomed me as a person. I am now knowledgeable about the aquatic life and its importance, the fact that a dirty river does not only affect the area that it flows through, but it also affects downstream dams as well and the recreational activities of the water, like canoeing. I am very proud to be a member of a team that not only brings about change to this sad phenomenon of unhealthy rivers, but brings smiles to the faces of my fellow community members after we have reported a leaking sewer and made it accessible in order to repair. Where we remove the alien vegetation, people have been able to build homes to live in.

I feel that a number of community awareness campaigns need to be conducted to educate and encourage the communities about the importance of saving and managing water efficiently. Apart from the inadequate infrastructure that is causing these leakages, people are also throwing the wrong things in their toilets, resulting in the sewer problems that we always encounter. We unfortunately recently found a fetus in one of the leaking sewers.

I am grateful for the opportunity that DUCT has given us, we learnt so much. We underwent a number of trainings that were beneficial to our daily lives. We also got the opportunity to visit a water treatment plant in Howick where we saw how water is treated before it reaches our taps, and most importantly how expensive the whole procedure costs. This is why it evokes unpleasant feelings in me when I see people mismanaging water.



## IT'S HARD WORK BUT IT MUST GET DONE



My Name Is Gcina Mguni and I work for DUCT under a project called MSU in Imbali. Our line of work is to remove alien plants along the Slang Spruit river and clear around the sewers so it is visible whether they are leaking or not.

Some of the challenges we face are coming across snakes and steep areas with big rocks which makes our work very hard, especially to the ladies. This is because the ladies would fall so we as men would have to take over, but at the end of the day we must complete the job regardless the challenges we face during working hours.

What I have learnt since I started at the MSU project:

To work as a team, to respect one another and the community, to be very vigilant as to what you put or throw inside the river because it will affect you in the near future and finally I am more informed as to why we have to take care of the environment.

Even when I am not in my uniform, I get very upset when I see someone throwing litter into the river. Sometimes I will shout at that person but then again I understand because most of them are not informed about the impact of their actions, which proves that there is still a lot that needs to be accomplished.

I am grateful to have been given a chance to work here at DUCT (MSU). I know what alien plants are and their impact. I would like to believe that we have impacted the community in many different ways. When we are working, they come to us and ask what are we doing and why, so we then explain it to them.

## PLEASE DO SOMETHING, WE ARE GOING TO DIE

My name is Nkululeko Makhathini and I am a sewer monitor from Ashdown.



I have been reporting this sewer since the beginning of this project in November 2015 and it has not been fixed to this day. When we speak to the people who are responsible for fixing it (Cam Jet) the reason they give is that they cannot reach it because their pipes are too short to thrust out. This leaves them no choice but to leave it be until they can hire a TLB.

Our relationship with the municipality is not so good. There is one lady who is very rude towards us whenever we call with issues regarding this sewer. Sometimes she even refuses to give me a reference number. Others have been nice to us, not all of them are the same. My wish is that they could fix it because it's causing a lot of damage to our environment e.g. air pollution and water pollution.

Not only that, there is

this old granny who lives next to it and she is not too pleased about this whole situation.

I am familiar with the DUCT team, since last year Nkululeko would come around my house and ask "Gogo these people haven't fixed it yet?". I am tired of living under these conditions. It is making me and my family sick. Please do something. We are going to die.

I have learned a lot since I started working for the MSU project and I am grateful for everything that DUCT has done for us in terms of skill development. The community is very much appreciative of our work and they thank us for everything because they say before us it was mess.



# KEY PRINCIPLES SUPPORTING CHANGE

It has been noted how important a sense of ownership is for the project, how the project is seeking to overcome neglect, the awareness that is occurring and how citizens in the focal township areas are learning about water and sanitation issues. Importantly many people are now seeking to see something done about them rather than being passive and disinterested. The notion of joining communities with wise actions for change has often been expressed. The project also aims to work from reporting to action.



*"My words of wisdom to them (DUCT sewer monitors) would be; I personally want to see them grow, maybe even start their own business similar to DUCT and employ the youth because what they are doing is really good." - Thandeka Msomi, Resident of Imbali*

## Enabling Principles for Supporting Meaningful Learning

The following principles were developed from dialogue with the MSU Project members and wider community participants. Here they are contextualised in collaboration with principles developed by Heila Lotz-Sisitka (Taylor and Venter, 2017) and the Southern African Development Community. The principles draw on international literature, as well as the experience of grounded learning programmes in the Msunduzi area of the project. Capacity building before during and after MSU Project activities is certainly a key reason for the successes reported. Whether people are working as labourers clearing access to sewer lines, monitoring issues in the townships or educating community members or teachers and learners in the focal areas the following principles are proving helpful:

Effective learning and social change approaches should:

1. Be relevant and appropriate to the situation and context of the DUCT team-members and local community members. It is less helpful if the learning experiences are not connected to the work-place realities that the teams are dealing with in the various townships.
2. Learning experiences that seek to mobilise, wherever possible, the prior knowledge or understanding that the participants have is more likely to be effective than learning that is disconnected from the life-world of the participants. When participants have described their understanding of a situation (i.e. mobilised their prior knowledge) it can then be engaged with, and, where appropriate, challenged so that unhelpful ideas and perceptions can be reviewed, un-learnt or re-learnt to support an enabling 'learning for change' environment.
3. Learning where participants are engaged in task or practice-based activities are usually more meaningful and helpful than those that are predominantly theoretical or conducted in a class-room learning context alone. Participants who undertook 'learning' tasks, sometimes referred to as "change projects" that were related to their local context tended to learn and engage more in helpful issues.
4. Where possible the Msunduzi DUCT project sought to build on existing strengths and opportunities rather than emphasizing other, 'from the outside', ideas or project concepts.
5. Through the project participants experienced a form of 'blended learning' where learning-together experiences were followed by experiences in the field and then further learning-together examples. Team leaders sought to establish an appropriate mix of 'work and learn together' (at a workshop or training session) and then 'work and learn away' (in the community or work-place).
6. The project applied a strong Action Learning approach (after O'Donoghue; UNEP, Taylor and Venter, 2017). Rich dialogue opportunities (discussion by, with and amongst participants), practical field-work experiences, reporting on experiences and sharing ideas as well as 'action taking' related to the learning, such as work in clearing and treating alien plants, were all present through the project life-cycle. The appropriate interlinking of such processes strengthened the learning a great deal.
7. Through the project the project leaders shared and taught people about the 'tools of science' or 'learning tools' that participants could try out and learn to use with confidence. One example of these was the cell phone based App that helps people record events and challenges in the community. This tool was particularly helpful because it provided geographical location points, for following up on reports, and offered a clear structure for a community interview or reporting event. Further examples of tools include simple water quality monitoring kits (e.g. miniSASS, the Clarity Tube and Velocity Plank) that can provide meaningful experiences that enable people to investigate and deal with a water quality issues.

8. The final principle stated here is possibly the most difficult to explain and yet is probably the most powerful. We live in a world where challenges or discontinuities are all around us. The degradation of our rivers and streams through litter, nutrient loading, solid waste dumping or the infestation of aliens are examples of these. The fact that the rivers and streams are becoming more and more polluted may only be evident to a few people who have studied the rivers or who are aware how much they have changed over time. Such people may remember their childhood times when they could drink from the rivers. Sometimes the people who are aware of the issues are part of the scientific or environmental movements. Learning processes that enable such challenges or discontinuities to become apparent to a wider circle of people are very significant and are valuable for the wider learning opportunities they make possible. When dawning realisations, from within the participants frame of reference, become apparent they are more effective than externally derived and communicated messages.

The above principles are reflected here since they help inform meaningful capacity building and the professionalism that is evident in the Msunduzi DUCT MSU Project. The above principles can also be applied as an evaluative lens when planning or evaluating future projects so as to make sure they are as effective as possible.

## Concluding Comments and Recommendations

DUCT has always been an organization that seeks to work with people rather than against them. In times when government often states that it cannot solve issues alone, civil society organizations like DUCT certainly have huge potential to support and complement service delivery challenges. The Msunduzi Local Municipality DUCT partnership for sanitation and community education holds much hope in this regard. Working with teams of previously unemployed people the project has developed skills, opened access to sewer lines, treated alien invasive plants, assisted in waste management and generally helped educate hundreds of local community members. A current area of weakness is the lack of business and industry support but where this can be realised a much more powerful programme will evolve. Local government is also seldom able to adequately reimburse civil society partners and project implementers, but where such costs can be supplemented by local business and industry a meaningful, reciprocal programme could evolve.

Many evaluation projects conclude their findings with a list of recommendations for the client, project and team members. With this project, the style of working with everyone was a little different. As we co-engaged with people around the way they were managing the project and supporting it different and sometimes better ways of doing things became apparent to the participants concerned. The recommendations were thus self evident to all concerned and have been articulated in other parts of this report. Despite this there is no one way to run a community development project of this scope and magnitude. One can always do things better. There is for example a need for DUCT and Msunduzi Municipality to work better together when communicating with the public. Furthermore DUCT needs to ensure that the work they do is adequately reimbursed otherwise the economic sustainability of this dynamic NGO will be at risk. Furthermore Msunduzi needs to be able to respond quicker to issues and risks related to waste, water and sanitation.

## The Msunduzi DUCT MSU Project has certainly achieved a great deal. Some key features that stand out include:

1. The leadership of the project that developed much respect, not only with the team members but also with Msunduzi officials as well as with local communities.
2. Such has been the developing morale and importance of the project to all concerned that a number of field-workers have committed to continuing the monitoring processes even after they are no longer paid to do the work.
3. It has become clearly apparent that the work is for the greater good of all the communities in Pietermaritzburg. The project also benefits all who live downstream including those living all the way to Durban.
4. Despite the successes of the project there is a need for DUCT and Msunduzi to work better together in informing and communicating with the general public.
5. It is clear that the Msunduzi DUCT MSU Project is offering an excellent service - this work must be maintained and strengthened going forward.

As we engaged more and more deeply with people related to the MSU Project it became increasingly apparent how committed people are to the better management of waste, water and sanitation. The realisation that someone always lives downstream is increasingly apparent. Seeking to live and act in ways that benefit our neighbors is a hallmark of much of the work of the MSU Project. After all healthy rivers mean healthy people.

# ACKNOWLEDGEMENTS

An appreciative enquiry methodology is by its very nature participatory. In this regard we are grateful for the considerable input provided by everyone involved and most notably by local community members. We are also grateful to the MSU Project Steering Committee (please see table below), staff of the Msunduzi Municipality, DUCT management and staff, members of local communities, and the MSU Project team members.

In addition to the above organizations, the following individuals really went the extra mile to contribute to this report and to help us understand the dynamics of the project.

Phakamani Carol Dlamini, Gordon Borain, Sanele Vilakazi, Siyabonga Manqele, Mike Greatwood, Grant Fryer, Faye Brownell, Gill Graaf, Slindile Radebe, Hlengiwe Nxele, Lethu Mahlaba, Noma Ntshangase, Zakhele Mdunge, Sithembiso Sangweni, Londa Nxumalo, Nkosinathi Dlamini, Thandeka Msomi, Thuleleni Mthembu, Nhlanhla Thabethe, Mfanuthule Thembinkosi Majola, Tebogo Diholo, Sibusiso Ximba, Jabulani Dladla, Gcina Mguni, Nkululeko Makhathini, Liz Taylor, Rob O'Donoghue, Brett Pennefather, Portia Vilakazi, Fundiswa Cele and Themblihle Precious Ndlela.

## **MSU Project Steering Committee**

Esmeralda Ramburran, Rod Bulman, Steve Terry, Sithembiso D. Mncwabe, Mokoena Nonkululeko, Dhamendra Ragoonandan, Brenden Sivparsad, Santham Chetty and Vishal Singh

As the authors of this report, we would like to thank all the above as well as everyone else who volunteered their time, expertise and inspiration for a better way of managing waste, water and sanitation in the townships of the Msunduzi Municipality.

Grateful thanks from Jim and Caroline



From left to right: Jim, Portia, Fundiswa, Caroline, Thembelihle and Brett

# REFERENCES

- Bhaskar, R. & Scott, D. (2015). *A Theory of Education*. Springer International Publishing, New York, NY.
- Cooperrider, D. & Sekerka, L. (2003). Toward a theory of positive organizational change. In K. Cameron (Ed) *Organizational Scholarship: Foundations of a New Discipline* (pp. 225-240). San Francisco, CA, Berrett-Koehler.
- Cooperrider, D. & Srivastva, S. (1987) Appreciative inquiry in organisational life. In R.W. Woodman & W.A. Passmore (Eds.) *Research in organisational change and development, Vol. 1* (pp. 129-169). Stamford, CT: JAI Press.
- Govender, J. (2016) *An assessment of the water quality of the Baynespruit river and its linkages to the health of the Sobantu community*. Submitted in fulfilment of the requirements for the degree of MSc in Hydrology, Centre for Water Resources Research, School of Agricultural, Earth and Environmental Sciences. University of KwaZulu-Natal, Pietermaritzburg.
- Greenhalgh, T., Humphrey, J., Hughes, J., MacFarlane, F., Butler, C. & Pawson, R. (2009). *How do you modernise a health service? A realist evaluation of whole-scale transformation in London*. *The Milbank Quarterly*, 78(2), 391-416.
- Hay, D. (2017) *Our Water Our Future: Securing the water resources of the uMngeni River Basin*. Lloyd's Register Foundation, London.
- Pawson, R., & Tilley, N. (1997). *Realistic Evaluation*. London: Sage.
- Taylor, J. and Venter, V. (2017) Towards a Sustainable Future: Action Learning and Change Practices. In *African Wildlife & Environment*, Vol: 64; pp 37-40. WESSA, Bryanston.
- Ward, M. (2016) *Review of the Enviro-Champs in mPophomeni*. DUCT, Pietermaritzburg.