

Tweed Kenya Mentoring Program
Safe Water 5
Final Report by Robert Hanby
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1.0 Project Background

Siaya County is located in Western Kenya, approximately 400 km from Nairobi, and less than 40 km from the Ugandan border. The capital of the County is Siaya even though the largest town is Bondo.

The total area of the County is approximately 2,496km². Siaya has been split up into six new districts. Under the new constitution, the role of the districts are still unclear as much of the administrative authority is being transferred to the county.

The population in 2009 was 842,304 (337 people / km²) of which it is estimated that 80% live in poverty.

By comparison Tweed Shire Council has an area of 1,321km² and a population of approximately 85,000 (64 people / km²).

Water for the home in rural areas is carried by the women and children in 20 litre containers, sourced from several dams spaced out along the valley floor. The walking distance from dam to dam can be up to

six kilometres. However the greatest problem is water born disease as drinking water is taken from the dam untreated.

The Tweed Kenya Mentoring Program (TKMP) was initiated and formally adopted by Council in 2004. Originating from a chance meeting between Olita Ogonjo from Kenya and Mike Rayner, Council's then Director of Engineering, five Safe Water Projects have been undertaken. Commencing in 2007,

Safe Water 1, Gona Dam Sky Hydrant Kiosk,

Safe Water 2, Tinga Dam Sky Hydrant Kiosk,

Safe Water 3, Ochillo Dam Sky Hydrant Kiosk,

Safe Water 4, Gona Dam De-silting and filter upgrade,

Safe Water 5, Manyasi Dam Sky Hydrant installation and Kubar Primary School amenities block.

Throughout the wet season, the community sources water from dams closest to their homes or lower areas holding water. As these dry out in the dry season people are forced to walk much longer distances to other dams having greater capacity.



KENYA, located on the east coast of Africa.

2.0 Project Development

2.1 Scope of Works

Upon application for TKMP support from the Manyasi Community, Manyasi Dam was selected as one of the key projects for Safe Water 5.

Safe Water 5 was officially launched on Wednesday 28 November 2012. The delivery date for the project was originally planned for March 2013 subject to the outcomes of the Presidential Elections. The previous election had resulted in considerable unrest throughout the country. Due to unrest leading up to this date, the project was postponed to May 2013.

The theme adopted for Safe Water 5 was - *Sanitation and Hygiene Solutions*. This evolved from the work done as a secondary initiative within Safe Water 4 where the need to create community awareness of disease transmission (treatment, sanitation and hygiene) and catchment management was identified.

Following the completion of Safe Water 4, Larry James from Skyjuice Foundation offered to donate to the Tweed Kenya Mentoring Program up to six Sky Hydrant Kiosk installations.

On the ground constraints in providing ongoing maintenance, community management support and too large a footprint on the ground with limited transport available, three installations have been accepted at this stage.



SkyHydrant Filters at Gona Dam, similar to those proposed for Manyasi Dam

Safe Water 5 now comprised of two primary tasks:

- Erect a new amenities building at Kubar Primary School: and
- The installation of one of the three donated Sky Hydrant Kiosks at Manyasi Dam

TKMP also received a donation of three inline pre treatment filters from Triangle Waterquip. The installation of these at former Safe Water projects to improve the performance of Sky Hydrant filters were subsequently incorporated into the project as secondary activities.

2.2 Kubar Primary School.

The Kubar Primary School provides education for up to 250 students in an area of extreme poverty. TKMP volunteers have undertaken works at the school during past visits with the provision of concrete floors in the class room and installation of rainwater tanks.

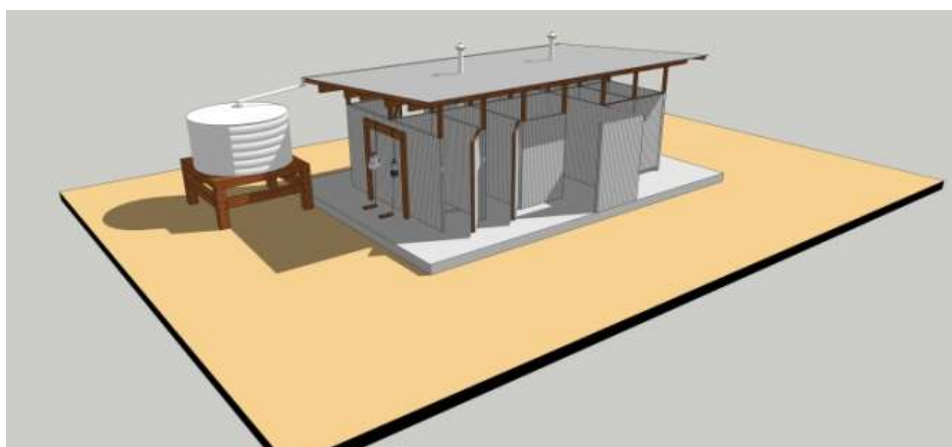
The toilet facilities for students and teachers had deteriorated to an unserviceable level and revealed signs of pit collapse at the doorway entries.

Several design options for the construction of the amenities building for Kubar Primary School were developed and forwarded to Mr Opondo Mango, the TKMP Coordinator in Siaya for consultation with the school committee.



Existing Toilet block at Kubar Primary School

The replacement amenities block was designed to create six cubicles, two of which were designed for people with disabilities. The building also incorporated a separate boys urinal directing fluid to a separate absorption trench to reduce the load on the effluent pit.



Artist impression of proposed building presented for comment

A number of variations were requested allowing final design and construction plans and estimates for the works to be developed.

The TKMP Coordinator submitted estimates based on locally sourced materials totalling approximately KSH 520,000 (AU \$6,500)

The TKMP working group approved the estimate as submitted and requested an initial transfer of funds from the International River Foundation to Kenya to allow for the excavation of the pit prior to the arrival of the TKMP volunteer, Bob Hanby.

2.3 Manyasi Dam

As tabled earlier, the Manyasi community sought TKMP support for the installation of a Sky Hydrant Kiosk at Manyasi Dam.

The dam provides water to the immediate local community of 6000 people during the wet season. This grows to more than 10,000 people during the dry season as smaller dams in the valley dry up and people are forced to walk greater distances for water. This same dam provides a source of water to approximately 2700 head of livestock.

The word is spreading throughout the county of the benefits of safe water reducing the incidents of water borne

diseases such as cholera, dysentery and typhoid.

The provision of a water filtration kiosk is seen as a way of improving their daily lives as there is limited access to hospitals or medication.



Children fishing for dinner at Manyasi Dam



Cattle access water at the same location at the Manyasi villagers

Using the donation from the Sky Juice Foundation of a Sky Hydrant Kiosk, minimal funds were required from TKMP to undertake the installation.

TKMP Coordinator, Opondo Mango hosted several meetings with the Manyasi community to negotiate site selection, works in kind for site preparation / kiosk erection, the ongoing management and self sustaining operation of the facility. The other primary controlling factor was that the installation was to be located so as to benefit the whole community

and not be located on private land.

Whilst the proposed kiosk installation is generally complete and ready for operation upon erection, some additional costs are applicable.

The TKMP Coordinator submitted an estimate for fittings, rainwater tanks, water pump, concrete and provision of skilled labour totalling KSH 288,000 (AU \$3600).

2.4 Kenya Health

As with Safe Water 4, this year's activities were partnered with Kenya Health. This partnering allowed for an introduction and access to other areas of need within the community which add value to the TKMP Safe Water programs.

Kenya Health is an organisation founded by Lyle Burgoyne, a registered nurse and midwife, from Murwillumbah NSW. It is dedicated to the provision of health care to women and young children in Kenya but they treat anyone who presents at the free clinics. In Kenya, no matter how poor a person or family is there is no free medical care and, because of this, many people miss out on all medical care and surgery including access to drugs or medications. The aim of Kenya Health is to provide medicine, medical treatment and education to help these people achieve better health. Kenya Health provides at least 20 free medical clinics per year and treats between 300 and 400 people per clinic.

Two free clinics were organised on behalf of Kenya Health, one within the Manyasi community, the second, to return to the village of Obambo-Kadenge and follow up on the previous years Jiggers program.

Unfortunately, due to the poor road conditions during the wet season, several days were lost in travel to other localities and these clinics were



My wife (second left) and Kenya Health Volunteers present the dresses to Mission in Action Orphanage founder Mary Budilica (centre)

cancelled. However Lyle Burgoyne has requested that he be contacted when TKMP's next Safe Water project is programmed so that he may coordinate his visit to the area.

Juliemae Hanby, my wife, also volunteered with Kenya Health. Her mother had forged a close relationship with the base of Kenya Health, the Mission in Action Orphanage located in Nakuru. Juliemae transported almost 200 dresses her mother had sewn for the children at the orphanage, a pleasure she had undertaken for many years.

3.0 Project Delivery

3.1 Kisumu

I arrived at Nairobi the capital of Kenya on 28 April 2013. Customs officers questioned the contents of the pre filter boxes and even though I explained that water treatment equipment was exempt, the officer was confident that taxes needed to be paid. Ultimately a fee of US\$20 was paid allowing me to meet my connecting flight to Kisumu.

Exiting Kisumu airport, there was no mistaking Opondo's, big smiling face.

It was close to dark and too late to travel to Siaya. We caught a taxi to our hotel, discussing planned meetings and our time frame over dinner.

The following morning we met with our TKMP outreach worker, Sylvester Owino. Sylvester was to become my guide and translator throughout my visit.

We set off on the two hour drive west to Siaya and immediately got down to business with a visit to the local hardware to purchase materials for the Kubar Primary School amenities block.

3.2 Siaya

My first night was spent in the town of Siaya, a guest of TKMP Coordinator Opondo Mango. The following night I was introduced to my village hosts, the Onyango family.



The family room in one of the mud huts



The extended family all live in close proximity

The people live humbly, building homes out of bamboo and mud, roofs are generally straw but many try to provide a tin roof over the main sleeping hut.



The village road from Siaya to Manyasi Dam is generally accessible only by foot during the wet season.

Travel around the county during the wet season is generally by foot. The roads can get so slippery that even the pillion passengers on bikes have to get off and walk. This was a bonus during my time in Kenya, losing 6kg in weight.

3.3 Consultation

3.3.1 Community Consultation

Tuesday 30 April was to be a long day of meetings with Community representatives and government officials.

The first of the day was with members from the Manyasi Community, The Kubar Primary School Committee, Tinga Dam Community Representative and Obambo-Kadenge Village Representative.

I gave an overview of the projects and works TKMP hoped to achieve within the program and sought any feedback on variation or support.



Community representatives whom attended consultation workshops

Each provided positive input and highlighted their grateful thanks for TKMP's ongoing support for the various communities.

3.3.2 District Water

Next we set of on mass to meet with Mr Odura Adala, the District Water Engineer with the District Water Office. TKMP's work in the Siaya area does not go unnoticed and in many ways does require the approval of some authorities whom manage various services and resources. Engineer Adala has been a long time supporter of TKMP and up until the recent elections maintained the momentum of our programs moving with minimal government involvement. However the change in constitution and the contractual arrangement for Engineer Adala may require compliance with legislation administered by National Environmental Management Authority (NEMA).

He confirmed that up until this time he had assessed the work of TKMP as minor and exempt from approvals required by NEMA. Engineer Adala advised that approvals were costly and time consuming. These factors may prove to be restrictive to projects undertaken by TKMP

He encouraged us to also liaise with the Governor of Siaya County to also seek his support for future TKMP endeavours.

In the meantime he shall maintain a closer presence with TKMP to justify the cooperation of both parties and the benefit to the community.

Feedback provided for the ongoing works included;

1. The Water Office would undertake random inspections of each SkyHydrant installation
2. Information they will review with the inspections include records of:
 - How many people are in the community
 - How many people use the installation
 - How many people can afford to pay for treated water
 - How many people visit on a daily basis
 - How many people visit monthly
 - Volume of water taken from the dam
 - Number of Cattle in the service area.

3 Probity issues in regard to



District Water Engineer, Odura Adala and TKMP volunteer, Robert Hanby

- Use of local materials
 - Imported materials
 - Local labour
 - Materials sourced from Kisumu or Nakuru
 - Transport requirements
 - Local preference.
- 4 Any work that will involve the prohibition of cattle from the dams must be presented to him for approval and coordination of an alternative water source.

Engineer Adala then thanked TKMP and the Community representatives for their efforts which supported the broader community and his role in improving the source and quality of water in the county.

3.3.3 Local Government

We then travelled to the Municipal Offices of Siaya to have discussion with County Representative, James Obiero Otare. The role of the County Representative prior to the new constitution was known as "The Mayor".

Mr Otare provided positive feedback on the work undertaken by TKMP. He described our work as being positive and encourages TKMP and the community to continue working together towards providing safe water for all members of the community.

The Manyasi representatives sought Council support and funding for the manual labour of clearing a



County Representative, James Otare with TKMP Coordinator, Opondo Mango

variety of water weeds impacting on the dam and clearing of the upstream inlet to the dam. He referred us onto the Assistant Administrator with his support.

Mr Otare then thanked TKMP for its works and encouraged us to maintain our presence in his district.

3.3.4 Siaya County Governor

Our meeting with the Governor of Siaya had been scheduled for the afternoon of Monday 20 May.



We arrived at the government offices in Siaya, the Governor, Mr Cornel Rasanga was expecting us and had us brought directly into his meeting room.

I began by providing an overview of the structure and history of TKMP, our achievements and the current program being undertaken at Kubar Primary School and Manyasi Dam.

TKMP Volunteer Robert Hanby and Siaya County Governor, Mr Cornel Rasanga

The purpose of our visit was to make him aware of our presence and seek his support following the recent elections and redistribution of authority in the County.

Mr Rasanga confirmed his support for the contribution of TKMP within his community. He explained the frustrations he was facing in attempting to improve all facets of local infrastructure. He was grateful for the work of TKMP whom were spending the equivalent of 25% of his water budget in the community.

Mr Rasanga promised to support TKMP with any future issues in getting materials through customs at the wharfs of Mombassa, seeking support to remove fees associated with any approvals required from NEMA and coordinating activities to compliment both his work and that of TKMP.

He raised points similar to that of Water Engineer Adala in addition to programs he was attempting to implement, including:

- Dam de-silting program, something that we may coordinate Sky Juice Kiosk installations with following the dam improvement works.
- Youth employment, a program to reduce juvenile crime - he would like to commit local youth to assist in operation and maintenance of Sky Juice Kiosks

In closing, I verbally invited the Governor to officially open the Manyasi Dam Kiosk when completed, which he happily accepted.

3.3.5 Obambo Kubar Community Initiative (OBANKUKSI)

Prior to leaving Australia, a request was made to TKMP by members of OBANKUKSI (a UK aid organisation) to arrange a meeting with their representative Monica Cook during the Safe Water 5 Program.

This was agreed to resulting in a TKMP volunteer Robert Hanby, TKMP Outreach worker, Sylvester Owino, and George Onyango (host family) meeting with Monica and her manager, Andrew.

Monica explained what activities she was undertaking in Obambo, mainly a jiggers program and that she hoped TKMP could support her in some way. Her program is focused on the Obambo area.



L-R, Community Rep George Onyango, TKMP Volunteer Robert Hanby, OBANKUKSI Rep Monica Cook & TKMP Outreach worker Sylvesteer Owino

I then gave an overview of the work of TKMP, our aim to provide safe drinking water and improve sanitation issues. This work was for the broader community and not focused on one small locality. TKMP do have a small program in addressing Jiggers. However this was limited to supporting Kenya Health, an initiative also based in Murwillumbah, and the follow up works of their treatment.

Monica sought detail of Kenya Health asking whether they would come to Obambo to support her work.

Again I explained that whilst Kenya Health undertook clinics in her area, they offer their help to Kenya as a whole, visiting areas of the most impoverished.

We chatted about organisational structure, probity and service delivery. Monica and her church group are well intentioned but face many challenges including focus on what their long term goals are.

I recommended she bring these comments to the table with her colleagues and seek support from a Non Government Organisation based in the UK. Whilst TKMP was happy to share information via emails or other forms of communication, I do not recommend TKMP become involved in supporting a small community within the larger Siaya County.

3.4 Manyasi Dam

The Manyasi community members were keen to get underway following a community meeting at the dam.

The Sky Hydrant Kiosk, donated by the Sky Juice Foundation was still at the wharfs in Mombasa awaiting customs clearance. To get the project underway TKMP volunteer Robert Hanby designed a concrete slab arrangement to erect the kiosk, tank stand and service delivery area rather than wait for the compressed sheet flooring and pad footing supports which are included within the kiosk kit.

Materials had been ordered and some delivered. Further deliveries were difficult due to the wet season and high rainfall.

As the dam level rose, the access road was cut off resulting in materials being dropped on the road as close as possible to the works site. Everything was carried or barrowed from there.



Manyasi Community meeting prior to works commencing



Wilfreda cutting tie wire for steel reinforcing within the concrete slabs

Undaunted the community worked hard to progress the works, men women and children. The area for each slab and footings were dug by hand. An alternative access cut through the scrub adjacent to the flooded road, 50kg bags of cement, gravel and sand carried to the work site.

Steel bar was cut to length and hand wired into slab fabric to form the reinforcing.

In less than a week the site was ready for the erection of the new kiosk.

Unfortunately, clearing of the container at the port of Mombassa could not be undertaken in time to be put in place during the operating time of Safe Water 5. Arrangements are currently underway with Larry James of the Sky Juice Foundation to finalise the works and put the plant online using foundation employees and TKMP coordinators in Siaya.



The men celebrate finishing the concrete pour in preparation for the SkyHydrant Kiosk

3.5 Kubar Primary School Amenities

Prior to arrival, design detail for the new amenities block had been agreed upon and initial funding provided to allow for the excavation of the pit trench to begin.

The excavation was commenced by hand. However as a result of works being undertaken within the wet season the trench soon became flooded by uncontrolled overland flow upslope from the site.



Initial toilet pit failed due to water

Upon the arrival of Bob Hanby, the trench was assessed and considered that due to the saturation of the soils, the walls were not sufficiently stable to allow construction to continue digging without shoring. It was agreed to undertake the concrete base slab construction at Manyasi Dam allowing time for the removal of surcharge loads above the walls, installation of diversion drains and the drying out of the pit.

Unfortunately the ongoing rains resulted in total failure of the trench walls.

Following consultation with the school committee an adjacent site was agreed upon to relocate the structure. In addition Bob redesigned the trench to form two, lined circular pits servicing six cubicles.

Each pit was hand dug by community members comprising of two teams. A friendly competition between each group saw two pits, 1.8 metres in diameter and 5.0 metres deep, dug in less than three days.



A hand dug pit nearing completion



More bricks please

Each pit was lined with hand made bricks to support the walls.



All formwork and reinforcing for the slab is prepared for the concrete pour.

There is no electricity or power tools, timber and steel rod is cut by hand

The children help with collecting larger ballast stone to level the base



Hand mixing the concrete, the slab pour commences, reinforcing steel is put in place when the concrete is nearing 50mm to the surface.

As the building takes shape the smiles on the children's faces grow with anticipation for the new facilities.



Upon completion of the structure, the walls are rendered and ready for painting,



Now complete and painted in the school colours. As shown in the photograph, the block consists of two female cubicles and two male cubicles separated by a urinal. The rear of the structure consists of two cubicles designed for people with disabilities and a store for cleaning products.



3.6 Additional Projects

During my stay in the village, other minor works were undertaken in regard to the performance of previous safe water projects.

3.6.1 Gona Dam



Gona Dam now at peak capacity

A visit to Gona dam was scheduled to gauge the effectiveness of the works undertaken during Safe Water 4. This consisted of de-silting the dam proper, replacement of the existing Sky Juice filters and the installation of a Triangle Disc inline filter.

At the time of my visit the dam had exceeded all expectations. The extensive rains had resulted in filling the main dam storage and the external dam for use by cattle. Waters were flowing through de-silting ponds and surcharging along the overland flow path.

The Sky Hydrant Kiosk was operating well with only very minor maintenance issues being identified (leaky taps / fittings).



Gona Dam SkyHydrant Kiosk in operation

3.6.2 Tinga Dam



Community members inspect Tinga Dam

Tinga Dam was also full and overflowing. The dam however is reported to be approximately 1.5 metres deep and subject to drying out during the dry season. Upstream siltation ponds were also full of silt and ineffective. Opondo shall provide photographs of the dam when dry to consider the potential for any future works.

The access door to the kiosk has rusted badly with arrangements in place for its repair funded by the TKMP annual budget.



This is the only area of corrosion identified at all kiosks



Pumping water from the dam to the kiosk

The connection point for pumping from the dam is also in need of repair. The connection point between the pump and dirty water storage tank has failed. Currently the kiosk operators physically hold the hose line in place whilst pumping. This results in the loss of excess amounts of water and extended pumping times.

It is recommended any future program upgrade the connection to a threaded fire hose coupling, cam lock or similar system.

The four existing Sky Hydrant filters are original prototypes and have reached the end of their serviceable life. Negotiations are currently underway with the Sky Juice Foundation to provide replacement filters which have been redesigned for a much longer serviceable life.



Existing SkyHydrant installation at Tinga Dam

end



Inline Tee Disk Filter after installation

An inline disk filter donated by Triangle Waterquip was installed to improve the performance of the existing filters and compliment any future upgrade.

3.6.3 Ochillo Dam

As with the other previous Safe Water projects visited, Ochillo Dam was also full and overflowing, the result of an exceptional wet season. Unfortunately this is a luxury short lived due to the much longer dry season.



Ochillo Dam also at peak capacity



Wall mounted Tee Disk Filter is installed to remove larger suspended particles

The kiosk and filters are in excellent working order. Again an inline disk filter donated by Triangle Waterquip was installed to improve the performance of the existing filters.

As with Tinga Dam the only maintenance issue needing attention is the connection point for pumping from the dam is also in need of repair. The connection point between the pump and dirty water storage tank has failed. Again, it is recommended that any future program upgrade the connection to a threaded fire hose coupling, cam lock or similar system.



Failed pump coupling at Ochillo Dam

4.0 Project Costs

The total investment in Safe Water 5 by TKMP was approximately AU \$21,000

The lower contribution to the previous program was mainly due to the ability to deliver the various components of the project without the need to employ contract plant and equipment.

Much of the labour was provided by the community and materials were pre purchased from local suppliers where ever possible.

My personal contribution to the program was five weeks of leave entitlement and approximately 300 hours of voluntary time in preparation and reporting. I also provided personal financial contributions to the program, families and friends whom supported Safe Water 5.

My wife whom supported Kenya Health also contributed during the same period self funding her travel, accommodation and personal costs

For the people of Siaya County, the outcomes achieved in improving everyday lives, reducing disease and gaining the support of several Government authorities, I consider the time, cost and effort well worth it.

5.0 Farewell Siaya

My last day in the village was a very emotional time. Both the Manyasi and Kubar Primary School communities insisted on me attending a meeting to show their gratitude for the work undertaken by TKMP. Many of the people had been involved in previous Safe Water Projects and spoke fondly of the volunteers whom had travelled before me, referring to each by name and ensuring that any future volunteer would again be taken in as one of their own.

I was presented with a farewell gift, a handmade stool engraved with my Kenyan name, Robert Omondi.



I am a much wealthier person for this experience and welcome the opportunity to remain a part of the TKMP program.

I encourage anyone, within Tweed Shire Council or the Tweed Community to take part in the program to help improve the lives of those less fortunate than ourselves.



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