Costone/Stulwane wetland water walk: 3rd October 2024

ATTENDANCE:

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Figure 1: Above: A few from the upper catchment and grazing area of the Costone village looking down into the valley where homesteads are present. In the picture a few small fires are visible – farmers were burning the edges of their fields in preparation for the planting season – a practice which is not promoted by MDF, but which nevertheless persists. As does burning patches of the grazing area itself to allow for quick green growth early in the season. This winter season was the first time that the whole grazing area wasn't burnt, and followed on awareness raising around burning and livestock owners undertaking communal firebreaks for the first time.

OUTLINE

The intention of the day was to explore the upper catchment and wetland complex of the Costone village upper catchment area, above the two streams that have been reticulated for water access, to assess small rehabilitation efforts to date, and check the condition of the upper catchment water channels (small streams, wetlands and gulleys) feeding into the larger wetland complex towards the bottom of the valley. The intention was also to earmark possible sites to focus on in the alien clearing and wetland rehabilitation work.

The intervention is to be undertaken using the following steps:

- Year 1 and 2: Rehabilitation of upper catchment channels:
    - Clearing of isolated patches of lantana and wattle, stabilisation of gulleys and stream edges for the two streams above the present v-boxes: Experiment with check dams, re-seeding of grass and reed species, brush packs, netting mats, vetiver grass.
    - Provide for construction of specific cattle paths and close off multitude of small paths that are leading to erosion of water courses.
    - Include specific drinking points for livestock.
    - Consider fencing off of very sensitive wetland patches for more coherent rehabilitation.

Heading up from the dip tank.

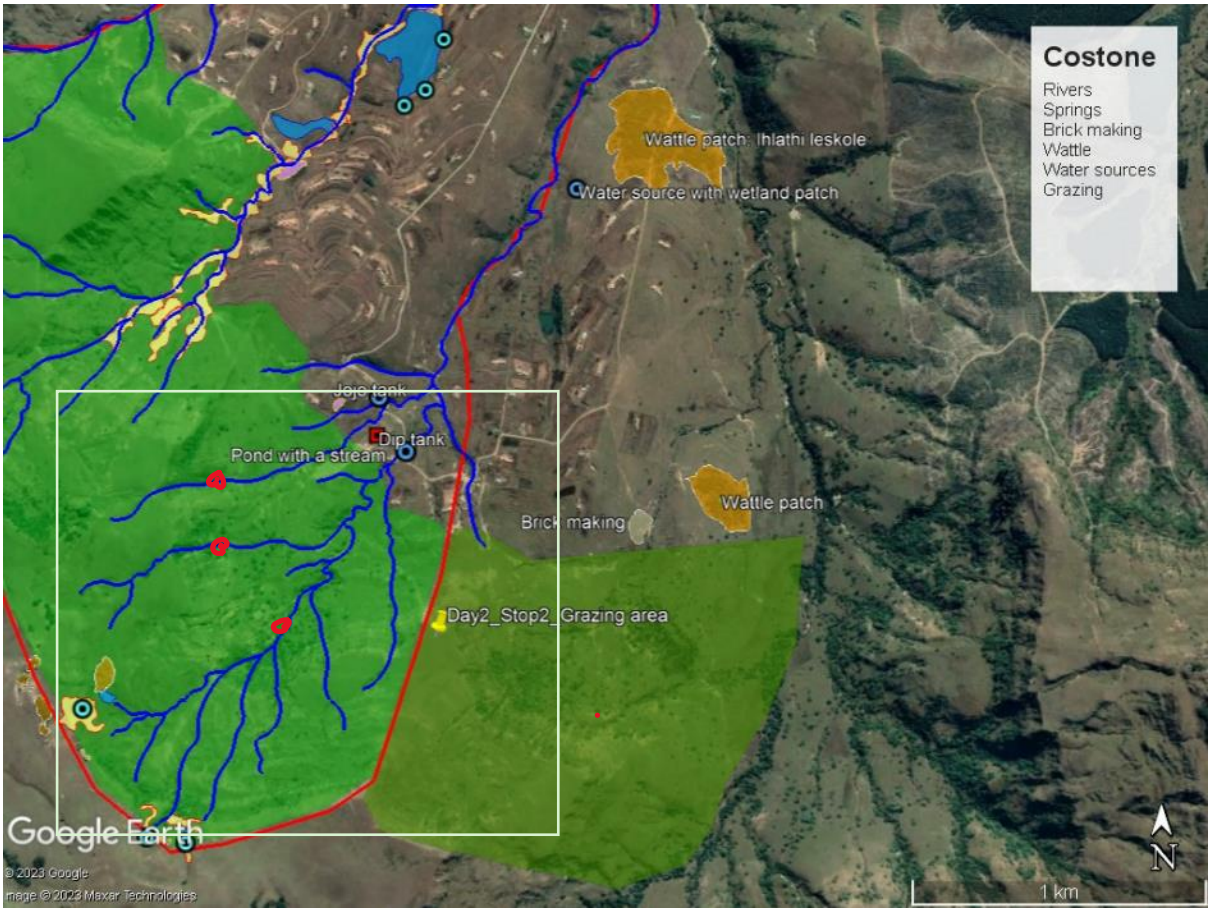

Figure 2: the Costone community map showing the grazing area in green and the stream with many small tributaries, where the two small abstraction points are for the community based water access. The three red circles in the outlined area show the rough points where the collection and settling boxes for the water scheme have been placed. The third point is a later addition by the community themselves, where there is no structure, but just a pipe in a small pond – as they found this point to have more water in the later months of the dry winter season.

This area is severely eroded due to cattle moving up and down the mountain repeatedly for dipping and for being taken to and from the grazing areas higher up. Typically a path is worn, which erodes and then another path is worn alongside until that too turns into a donga, leading to this type of extensive erosion.

Here, the few stone line and stone packs that were done by the community have had very little impact so far, both because they were not extensive enough, not well keyed into the banks and constructed too far down.

It was recommended that they start at the top of this small slope, just below the grazing area fence and work more with stone lines that cross the whole area of connected gulleys. And also that the principle of toe-heel structures is used – so 1m in height difference between structures (3-4 m on the ground), as the present attempts were also made too far apart.

In addition, the participants here used quite large rocks and piled them quite high in a rather haphazard fashion, rather than using the recommended process of keying in the larger rocks into a small ditch on contour and then packing the smaller rocks on top of these with a slop of 1:1 (50%) on the upstream side and an 'apron' on the downstream side or a steeper slop of 1:2 (75%). These recommendations should be more closely followed in the future.

Figure 3:Above Left to Right: Views of the extensive erosion of the 'cattle paths' above the road, and past the dip tank. The picture on the right shows the top of the small hill, just beyond the fence where the erosion control works should start.

Figure 4: Above Left: A stone line on the slope which has been destroyed by livestock movement and Right: A check dam which has been damaged by strong water flow, but which still managed to collect a reasonable amount of silt upstream of the structure.

Section A; Nothile's side, stream and abstraction point.

The small water course is presently dry below the abstraction point as the tiny trickle of water presently available is going directly into the collection chamber. This is likely to change once the rains start. There was a period in August-September that the flow was even lower than at present. In this time Nothile Zondi followed the recommendation to close the valves below the main JoJo tank to allow the tanks to slowly fill up and only open them for a brief period for water collection around 8am and 4pm in the afternoon. This process worked quite well to allow all participants to get some water, albeit not very much. The process however was only followed once the tanks started to run dry, before which participants collected water at will.

The design of the pipes and tanks, as well as the abstraction point is such that when the stream is flowing, not more than 10-15% of the flow is used for the water scheme. There is a concern about capturing most of the flow in the very dry months towards the end of winter – noting that this stream is by nature ephemeral and doesn't flow throughout the year. However, it is recommended that the situation is monitored in an ongoing way to ensure that the removal of water from this water course doesn't have a negative impact on the surrounding environment.

Figure 5: Above Left to Right: 1. A view of the steam bed below the abstraction point and 2. A view of the streambed above the abstraction point. 3. A view of the collection and settling chamber at the abstraction point. And 4. A view of the 'small pond' – now dry, directly below the collection chamber.

This stream bed is steep and quite rocky and little rehabilitation is possible in the streambed itself. As is the case in Ezibomvini, but more pronounced and with the yellower clay soils, the side walls of the water course have eroded quite severely in in some sections and is still somewhat stable in others.

The area surrounding this stream doesn't have any noticeable wetland patches, but a lot of erosion in the area is evident, as cattle move in and out of all the small water courses at multiple points to look for water.

Figure 6: Left to Right: A gulley with unstable side walls, exacerbated by livestock coming into the water course to find water. Two views of paths between the small water courses made by cattle and being eroded into gulleys.

Section A; Danger's side stream condition and small wetlands

For this side of the village, the abstraction point was moved by the community from the built collection chamber to another small stream for the winter months, given that there appears to be slightly more water there.

Figure 7: Above Left: The water course just below the 2nd abstraction point, for Section B of the community. Right: the small collection and settling chambers visible in the streambed.

The condition of the water course above the abstraction point is deteriorating. There are small wetland areas interspersed with crumbling side walls and a lot of rocks in the streambed itself. These rocks wash down the stream during flood events causing considerable damage lower down.

Figure 8: Above Left to Right: 1 and 2:small patches of wetlands along the water course above the abstraction point and 3 and 4, eroding side walls which are very unstable in some sections.

Figure 9: Above: A view of cattle being herded across one of the many small water courses in the upper catchment. There are a number of these tracks - which increases the erosion along the water courses.

RECOMMENDATIONS

- The livestock committee and livestock owners need to be brought properly on board. Here also the interplay between livestock owners from other villages needs to be explored. A workshop going through how this area is managed, who is allowed to do what, how many livestock there are and issues and concerns needs to be undertaken to take the first steps in designing a management strategy.
- Rehabilitation efforts are to focus upstream of the abstraction points and specifically around the small wetland patches that are still intact or only partially degraded. There are a lot of rocks in the streambeds themselves that can be used to create a cascade of small weirs all long the stream to slow the water down. This is the 1st priority.
- Linked to that is protecting the small pools of the abstraction points from livestock trampling.
- Side walls will need a similar set of strategies as in Ezibomvini – try these out in Ezibomvini first and then apply the ones that work best in the Stulwane upper catchment (check dams, brush packs, netting mats, diversion ditches, planting of vegetation and fencing)
- Build specific cattle watering points. And channel the livestock there by plugging some of the myriads of small paths and gulleys the livestock use.
- Then build ‘steps’ along these paths to stabilise them and for ease of movement for the livestock.