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Project Fund Request: Matibi Mission Sewerage **2019/08/26**

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1. Management summary

Beginning April of 2019 the Mission noted and began to experience worsening situations in relation to its sewage system. Clogged toilets increasingly became the order of the day, being signs of poor drainage of waste in the school, hospital and residences. The chief cause of blockages is inappropriately-sized pipes – the pipes were mounted at least 3 decades ago when the institution was still small. In this light, pipes are now bursting all the time due to age.

Quick-fix solutions such as attending to the broken portions have not helped at all because the problem is recurring with ever-increasing frequency. Many parts of the main sewer pipeline are being affected by tree roots and this requires a system overhaul.

In June 2019, the issue was reported to the FFM, which asked for quotations to determine the intervention cost. The first set of costs was gathered by July 22nd and they amounted to a total of 17,066 Zimbabwean Dollars, which was equivalent to 2,600 US Dollars then. However, an issue arose whereby the donators queried the safety of asbestos materials mentioned in the quotations. While this was being debated with the controversy it deserves, an alternative set of quotations was sourced, this time involving polyvinyl chloride (PVC) pipes instead of asbestos ones. The new total cost came to 22,212 Zimbabwean Dollars, which is currently equivalent to 2,711 USD.

The above quoted cost takes cognisance of the sewer system across the whole Mission, namely hospital and school premises. While it is not a permanent solution to the sewage problems, it is considered the best solution at the moment, able to prevent frequent clogging but still requiring expansion in the near future. Waste from the school side will be channelled via the hospital side in the meantime to cut costs, but in future the completely broken down sewer system in the school should be rebuilt.

One challenge is that the proposed repairs will be done using PVC pipes which are comparatively less durable. Durable materials such as cast iron are hard to find in Zimbabwe these days and the asbestos option is the one that raised safety issues regardless of its wide acceptance locally.

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As expanded below, the institution is asking for 2,390 US Dollars from the FFM, which accounts for 88% of the total project cost. The hospital and school will contribute the remaining 12%, which amounts to 321 US Dollars. The overall project cost is 2,711 US Dollars.

2 Total estimated costs of the project

Pipes	1,344 USD
Labour	732 USD
Piping accessories	314 USD
Transportation	183 USD
Cement	88 USD
Sand	50 USD
Total	**2,711 USD**

3 Funding

Cash from FFM	2390 USD
Local contribution	321 USD
Total	**2,711 USD**

4 Time plan for realisation of results

Since the plumbing will be done by the local handyman, he has already done the usual first step of locating the damaged parts of the system. The second step is trenching in those areas that require trenching to bury the pipes, and this trenching will be completed in the first 3 days. During the same time the plumber will cut the pipes to appropriate sizes and then pre-arrange them before they can be fitted together. Perhaps the 4th and 5th days will see the joining of the pipes using appropriate welding solutions including priming and coupling since PVC is a highly ductile material whose joints can easily loosen up with time and weather conditions. The filling of trenches will be the last of all steps marking the completion of the project and can be done by the 5th or 6th day.

5 Financing plan

The school will gather the required two loads of sand. The suggested method is to assign each of the over 300 learners to bring at least 2 kg of sand on their way to school every day until the stipulated amount is reached. This physical effort will stand in for the 50 US Dollars budget allocation for sand.

The hospital pledged to cater for the 88 USD worth of cement. It will provide local currency equivalent to 88 USD to purchase the required 6 bags.

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It is the hospital again which will see to the transportation of materials. The materials will be purchased from Bulawayo, some 390km away. One possible strategy will be to use the available priest's pickup truck. In this way, only fuel will be required, and if fuel prices remain the same during the project period, it will still be economical even if it would involve 2 trips.

The FFM will intervene with the funds for pipes, labour and piping accessories which form the huger chunk of the project cost. A total of 2,390 US Dollars will be deposited in the FFM Trust Account as soon as possible since it may take several withdrawals to get it from the bank, possibly 3 days. The purchasing will be done within 2 days of effective withdrawal.

6 Person(s) in charge

The hospital handyman will handle the technical aspects of this project as he has done in previous technically oriented assignments. The opinions of the authorities have already been sought and considered during the planning phase. This project description will be useful to guide the implementation in the agreed direction. The FFM Projects Coordinator will cause the FFM and the Mission to enter a formal contract with clear terms on how to handle the project.

7 Detailed information about the project

7.1 Detailed project description

The population of Matibi Mission has grown extensively since the existing sewer system was put in place over 5 decades ago. For example, less than 100 people populated the area some thirty years ago when the Mission had about 20 workers and that population has quadrupled now, with nearly 100 workers for combined school, hospital and church. Worse enough, when the system was mounted it had three independent subsystems or sewer channels for school, hospital and residences but with time, it became a centralised system because some subsystems were closed due to dilapidation. For example, the school sewerage channel is no longer in use and the one for residences is in bad shape.

This is pointing to an extensive sewage infrastructure which has been poorly maintained to date. The wastewater infrastructure at Matibi Mission has been poorly looked after for at least 3 decades and therefore there is now a serious need for its renovation. More than half of its network, including treatment ponds, needs renovation. At least 300 metres of the system will be renovated under the proposed project.

Currently over 50% of the sewer network does not comply with basic standards of hygiene and sanitation. The physical deterioration of the sewerage infrastructure has reached levels which are hardly acceptable and which violate public health regulations. Therefore, there is a looming crisis if the problem is not addressed urgently. The hospital and the school may have to be temporarily closed on account of a waste-related health hazard. In fact, the school has

received more than a single threat from authorities in light of consistent bursting of sewage pipes in the school yard, sometimes in front of classes.

One unfortunate aspect of this situation is that the responsibility to maintain the sewerage system entirely falls on the Mission and its two serving arms – the school and the hospital. The broken down pipes belong to the Mission and not to the District Council. So it is hardly the responsibility of the Council to repair or upgrade the system. Even if this were the case, the prevailing economic meltdown would still produce difficulties. The maintenance backlog mentioned above reflects the financial incapacity of the Mission and its dwellers.

7.2 Project goals

The proposed project anticipates a well-functioning sewerage at Matibi Mission with no leakages, breakages or blockages in the system. The prevailing system has a small sewerage with thin pipes serving a growing population thereby creating unbearable pressure on the pipes. So, one of the aims of the proposed intervention is to make sure that the sizes of pipes are compatible with the amount of wastewater pressure involved. This speaks to the goal of upgrading the prevailing sewerage from being a small-scale structure so that it has greater capacity to serve the bulged population at Matibi Mission.

Another goal in this project is to cultivate a culture of regular sewerage maintenance at the Mission. This will promote healthier families for the residents who are very important to the broader Matibi community since most of them are in Matibi for work. A regularly maintained sewerage will keep away wastewater-borne diseases such as cholera. A culture of regular maintenance will reduce the likelihood of emergencies, including emergency repairs which are typically bothersome and expensive.

Another important aspiration of this project is to steer the Mission into a safe expansionary agenda. The Mission has plans to expand both the school and the hospital in the near future but this would not be safe if the sewage system is still in its current wrecked state. The idea to link the school sewerage to that of the hospital is a temporary measure meant to save the school from closing down. However, the school intends to reopen its abandoned subsystem when new classrooms and residential houses begin to appear. The hospital too intends to establish a nursing school among other developments which will now be possible with an enhanced sewerage capacity.

7.3 Project risks

Financial risks are probably the top all-time threats to development projects. Prices may rise during the project period and this is almost a certainty in the existing economic atmosphere. It will be difficult for example to transport the materials bought in Bulawayo if the prices of fuel shoots up because the transporters will also follow suit and peg higher fares. This proposal is budgeted for in US Dollars in order to address the fear of inflation. But then again there is still the possibility that USD prices may also rise, albeit not as much as the local

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currency. The solution to this latter worry maybe lies in the need to disburse the funds in good time and pay as soon as possible.

Another common financial fix nowadays is that suppliers increasingly reject mobile payment. This is happening at a time when exchange rates for mobile money are higher than those for cash. For example, currently 1 USD is equivalent to 13 Zimbabwe Dollars in phone but only 8 in cash. The guiding rate used in this project is the one for cash since the other alterative poses great risk.

Also, USD cash deposits are scarce in the banks nowadays. This means that one may not necessarily find the cash in time when withdrawing US Dollars. This is worsened by high costs of alternative money transfers such as MoneyGram and Western Union. The best fit position for the proposed project is to optimise the bank and accepting staggered withdrawals as long as all the money can be withdrawn in reasonable time.

Apart from possible financial quandaries, there are also health-related risks associated with such a project. As already alluded to above, some financing partners are afraid that using asbestos will be an unhealthy move. This proposal therefore opts for PVC instead. It is a given that even PVC is known for causing cancer, but the good thing is that in this project the PVC is not being used for piping clean water for human consumption.

There are also some technically oriented risks in the currently proposed work. One is that PVC is less durable and can crumble easily when exposed to weather. PVC remains the best option anyway because the project puts human health first. To achieve more durability with PVC, the plan is to protect the fragile pipes by burying them underground and fencing animals away. PVC is also highly ductile or bendy, thereby leading to fears about poor fastening of joined pipes. For this fear the project intends to make effective use of primers before any gluing or coupling is done for firm clasping.

7.4 Negative impacts of not realising this project

In case this proposal is not taken up, there is a looming health crisis related to sewage bursts. Obviously the causes of the burst pipes experienced recently are blockages in the pipelines but it is not easy to treat the problem without wholesale replacement of pipes. When piecemeal repairs are to continue as it were, this would mean constant worrying about recurrence of emergencies. The present sewer situation in the Mission can cost the institution precious resources such as time and money which would otherwise be dedicated to other significant responsibilities. Users will experience more frequent sewage outbursts because the system has aged beyond repair. Only a system substitution will treat all fears at once – be they cracked pipes, soil and grease lumps, intrusive roots of trees, problems with pipe connections or poor channelling. All these issues can not be detected and solved without substituting new big pipes.

More importantly, the continuity of the social services of the Mission will be hampered if the sewage problem is not addressed with the urgency it warrants. As already said above, the

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sewage situation is threatening the school with closure. If the school were to continue gathering children without an effective solution to the sewage issue, as many as 300 children's health will be in danger. This project is the opportunity to end septic wastewater pooling in the school yard and make the school a safe environment again. The same applies to the hospital and church where hoards of people frequently come for medication and worship respectively. Such services will have to be stopped in fear of disease outbreaks and yet these services happen to be the purposes of the Mission's existence in the community.

The current sewer situation at Matibi Mission also threatens some buildings with foundation cracks since some portions of the pipeline are under or near buildings. This project proposes to close such lines and fill them with gravel while rechanneling the sewer network. For example, the pipes which run through the school yard will be closed in this manner and a new channel opened between the school and hospital yards. This constructive option will be hopeless if this project is not assumed. The old pipes, which have become a serious blot on the landscape, will be difficult to shut down without offering alternative ones such as the ones proffered in this project.

Moreover, delays in implementing the proposed new sewerage will pose the threat of diseases associated with parasites which thrive in disused pipes. Rats for example can spread Plague and Hemorrhagic Fever among other threats to life. Insects too, such as bugs, flies and cockroaches can easily infest the home if the broken sewer lines are not attended to with finality. When a home as populous as Matibi Mission is infested with such insects, many inset-transmitted diseases can ensue and will not be good for a place whose purposes include health promotion.

8 Other organisations or governmental support

The Ministry of Health and Childcare is a key stakeholder in this project through its Department of Environmental Health. There is an Environmental Health Technician stationed at Matibi Mission and he has necessarily been part of the planning of this project. He is a qualified professional. The technician will not only wait for final inspection of the renovated system but will continue to actively guide the plumbing work as he has done from the start of planning.

9 Personal comments

This temporary project is a forerunner of a major sewerage project which is coming up at Matibi Mission in light of the abovementioned intended expansions.

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10 Decision FFM Switzerland

Project funding request status:

☒ New	☐ Assessment	☐ Ready for decision	☐ Cancelled
☐ Declined	☐ Approved	☐ Implementation	☐

Decision made by:

☒ E-Mail circular	☐ Board Meeting	☐ Telephone conference	☐

Decision date:

Signatures (two necessary)

Oliver Müller	Michael Zuberbühler	Daniel Schmidt
President	Vice president	Treasurer
Friends for Matibi	Friends for Matibi	Friends for Matibi