DIANA WOMEN EMPOWERMENT
UBIRI PRIMARY SCHOOL RAINWATER HARVESTING PROJECT FINAL REPORT DECEMBER 2011

INTRODUCTION

Ubiri primary school is the second School where the rainwater harvesting system project has been taking place in the program jointly run by Diana Empowerment Women Group and Arendal Soloptimist Club of Norway. The project commence on 24.9.2011 after contract signings have been done by all respective stakeholders.

IMPLEMENTATION

The project was at the level of tank construction when a team of visitors from Norway came to Lushoto end of October had an opportunity to see the works on progress. It was not until 15 December 2011 that the job was accomplished as verified from the pictures attached to this report.

The project is peculiar and of its kind compared to the former projects done by the two groups supported by our development partiners from Norway,Diana and Nuru women groups.. What is difference is that in the past plastic (SIMTANKS) were used as reservoirs while at Ubiri project a new design using ferro-cemet underground tank was used.

DESIGNS AND MODIFICATION

The project was constructed as per the design with the minor collections as follows:
The gravity flow from the tanks through underground was the target to deliver water in the lower part of the school compound. In order to achieve the required hydraulic gradient, the depth of the pit was reduces by 25cm. Thus the DP outlet are over 4 below the school foundation structure and 2.6 m from the tank foundation (see attached drawing)

However there are facts that have made our volume to differ from the original design. Two shapes of the tanks are coming in the mind after construction. The spherical and conical volume seem to apply so one cannot be 100 % to have dug a spherical shape as shown on the drawing with the poor tools we use it is not possible to achieve that. The conical shape is more likely to to give a true volume for it is what we could manage to make in the nearest fact. Hence the true volume will be practically established by the user but from mathematical point of view the volume is around 52 m3 (See calculation below)

With the above storage capacity, we can say that we have achieved a lot to store 3 times as much water as you compare with similar project with 3 Sim tanks of 15 m3 but almost equal project cost refer to (Mhelo primary school design and costs)

Another modification was done on the stand point. We had to change the structure from reinforced concrete and to PVC- filled with sand cement stand for cutting some cost especially iron bars in order cater for over looked cost eg ridges on roofing were not in the budget and miscalculation on the pipes connection left out the budget for 5 PVC 4 inch connection pipes..

The first flush unit also was more raised to have flowing water from the above.
This was necessary to be able to reduce slope and velocity of the water as it approaches the unit
The school provided additional bricks to cater for the shortage resulting from the height increase

So when we change design we try to accommodate some additional costs or hydraulic conditions that if not done would make as ask for additional money something we hope will not make good impression to you our donors. However our diversion to a new structure is kept to the minimal not to give the notion of misappropriation of funds.

FINANCIAL REPORT:
The budget give was used as provided for with minor plus or minus according to the exchange rates. However we could finish the jobs without asking for supplementary budget. See attached retirement schedule for expenses made.

CHALLENGES:
A new structure always comes out with some modification on site so this has been taken as modification for better and advance of the technology.

The issue of maintenance of the structure is key are for sustainability to the system. The Project at Ubiri Project is likely to be vulnerable by passerby (road cross few mtrs from system) and owners of the site where stand points are. Strict measures involving the school community and villagers have to be emphasized during hand over notes.

The challenge was delayed payment of the last installment. This was of course because of the transfer formalities of the banks. It takes almost one week to receive the money from Norway to Tanzania. This could be solved by incorporating the whole of the labor cost in the first installment.

CONCLUSION:
This project has been implemented fast and within the 6 weeks we intended. Hoping that the implementers are improving in terms of organization and upgrading design. We expect to have more beautiful structures in the remaining schools.

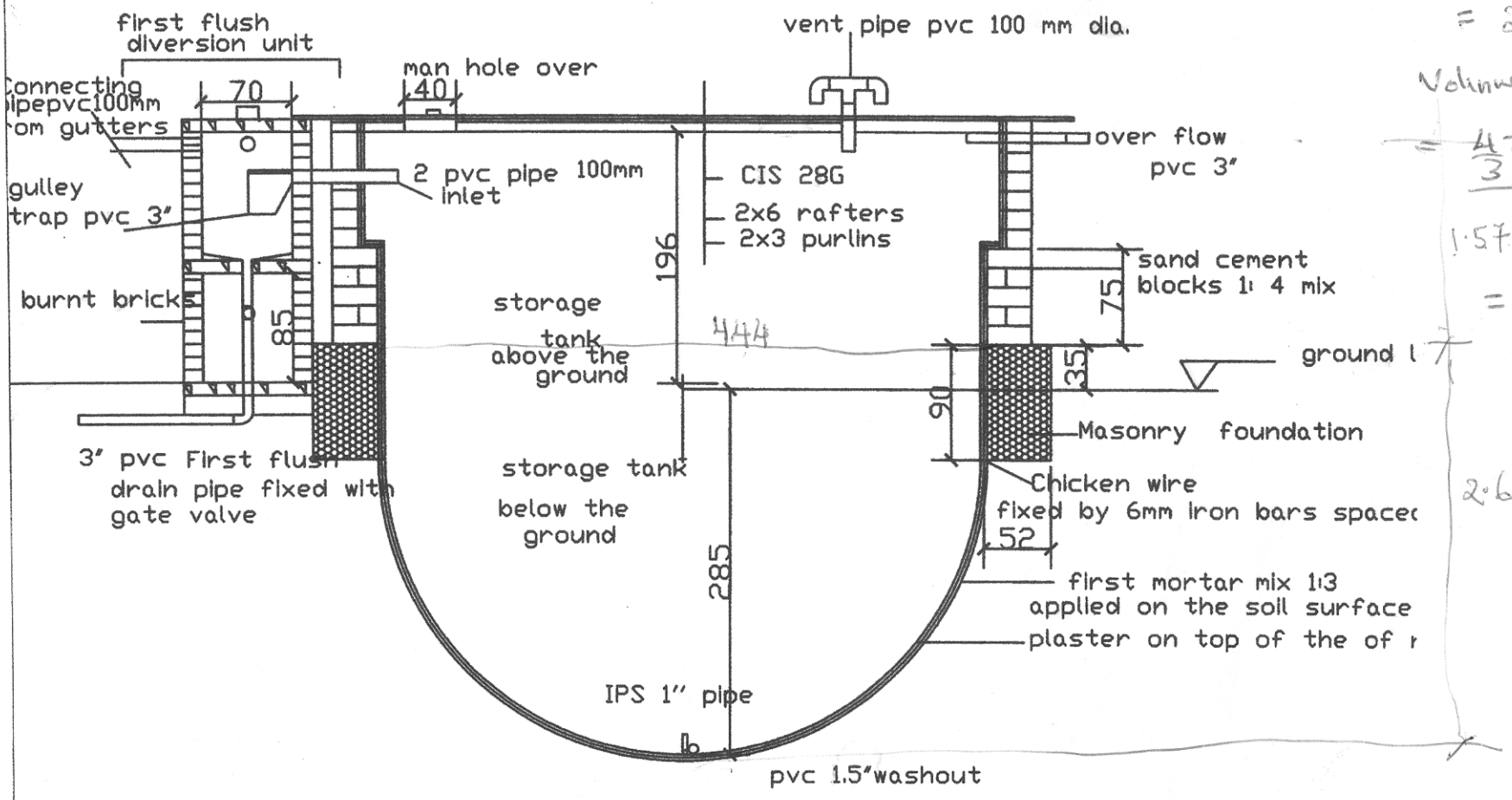
Prepared by Diana Women Empowerment group by assistance from Eng John Nshunju.

DIANA WOMEN EMPOWERMENT FINANCIAL STATEMENTS

Income and expenditure

Date	Rec/PV	Description	Income	expenditure	balance
1	Bank slip	Receiving 1st Installment from Norway	7,262,105		
		Payment to Material supplier Mr.Mvungi			
		Supply of hardcore , aggregate ,sand transport inclusive			
		Equipment as per invoices…….			
		Payment to Contractor			
28.9.2011	15	Advance payment for consultancy and labor		1,738,150,000	
		Payment to Diana women group			
		Transport charges Lushoto- Ubiri trip ….		…….	
		Writing of sign board at Ubiri primary school.		……..	
		Internet charges		……..	
	Vouchers	Communication		……	
	PV	Allowance to supervision works by Diana women		……	
		Allowance to supervision works by Diana women		……	
	Bank statement	Received money from Kamugisha	1,359,500.00		
21.12.2011	receipt	Paid to contractor		1,359,500.00	
	Pv.	Diana administration cost		…….	
		Total	8,841,605.00		

ENVIRONMENTAL ENGINEERING COMPANY LIMITED P.O. BOX 374 LUSHOTO TANGA TANZANIA.	
PROPOSED STORAGE TANK FOR RAIN HRAVESTING SYSTEM AT UBIRI PRIMARY SCHOOL LUSHOTO TANGA	
DESIGN AND DRAWING BY NSHUNJU JOHN J	DIMENSION IN CMS
JUNE 2011	SCALE NOT APPLICABLE FROM DRAWING



V = π
V = 3.1
= 2
Volume
= 4π/3
1.57
=
2.6m

The actual volume of the tank recalculated to be sure of the real effective volume of the tank. The height of the cylindrical part of the the tank is taken from the foot of the foundation hence 1.57 + 0.9 = 2.47 m. The spherical part which gives the 2.22 m as radius also dissects itself at the foot of the foundation

Therefore volume of the tank = the cylindrical volume + half the spherical volume

$= \pi r^2 x\ h \quad + \quad (4/3\ \pi r^{3)}\ /2$

$= 3.14 \times 2.22^2 \times 2.47 \quad + \quad (4/3 \times 3.14 \times 2.22^3)/2$

$= 38.2\ m^3 \quad + \quad 23.12\ m^3$

$= 61.3\ m^3$

The original volume presented was assuming the conical shape hence the volume of around 45 m3

Thus conical shape = $1/3\ \pi r^2 x\ h + \pi r^2 x\ h$

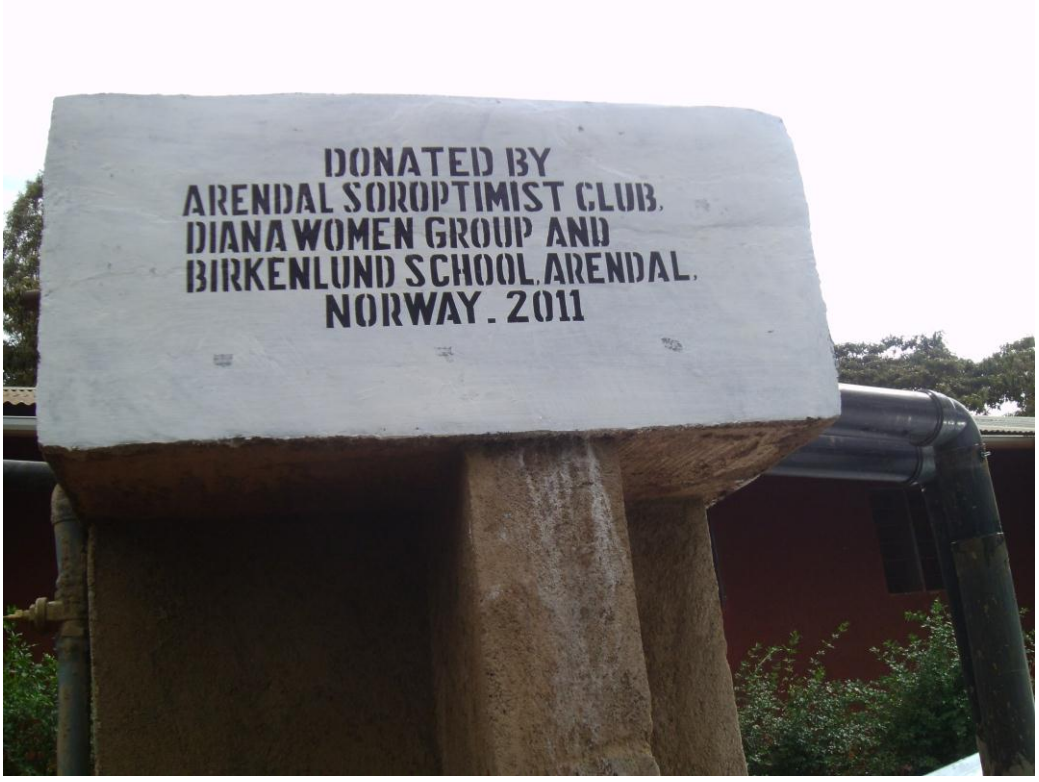
$= 1/3 \times 3.14 \times 2.2^2 \times 2.6 + 3.14 \times 2.5^2 \times 1.57$

$= 20.11 + 23.52$

$= 43.63$

Practically we could not achieve the spherical shape 100% nor a conical shape in 100 % because of the tools we use hence we can conclude that our effective volume is between the two shapes hence $(61.3 + 43.63)/2 = 52\ m^3$

Ubiri primary school pupils and their Headteacher Mr Makundi admiring their rainwater harvesting system at Ubiri ward ,Lushoto Tanzania.(*Design and Construction by EECO LTD Eng. John nshunju)*



Sign board at Ubiri primary school water harvesting system showing the development partners who supported the school to build the system.