A proposal for a trial program of work , in one village in Ethiopia, to improve face washing and environmental conditions to reduce trachoma

for
The Fred Hollows Foundation

January 2015

Healthabitat

HH proposal 1
Increase water per person to 20 litres per household per day.
Design and construct one solar water pump, storage tank and distribution point.

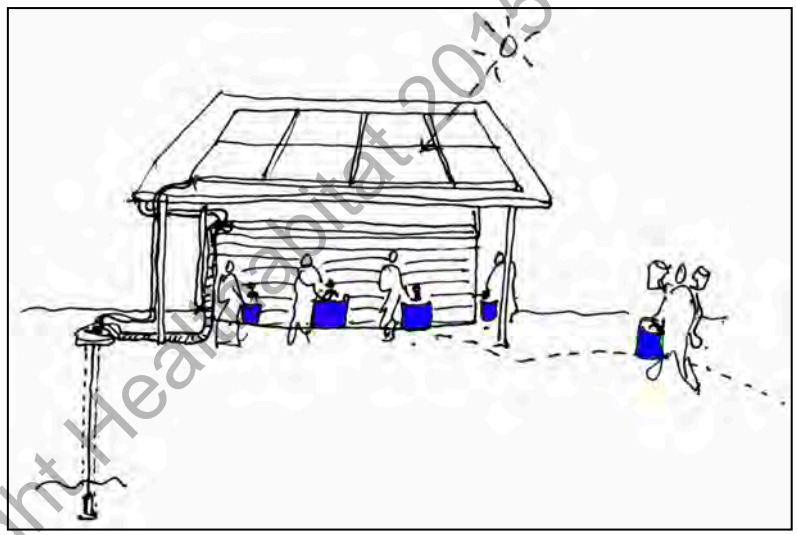
Summary: suggestions / recommendations from report 2014

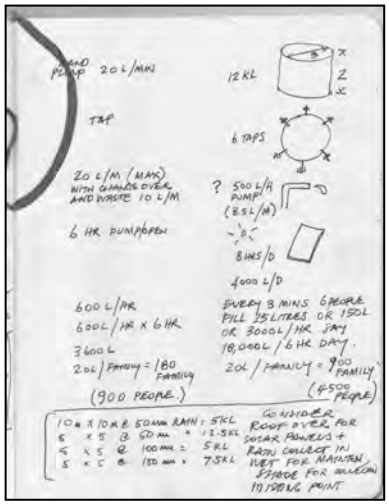
Water

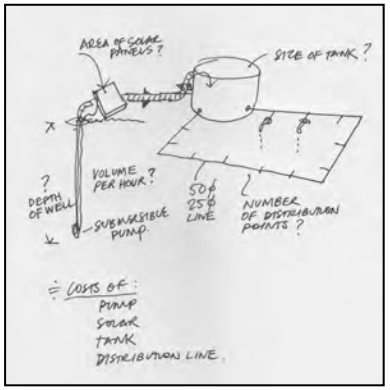
*1) Based on information supplied, there is currently a lack of water **supply to achieve the required 20 litres / household / day***

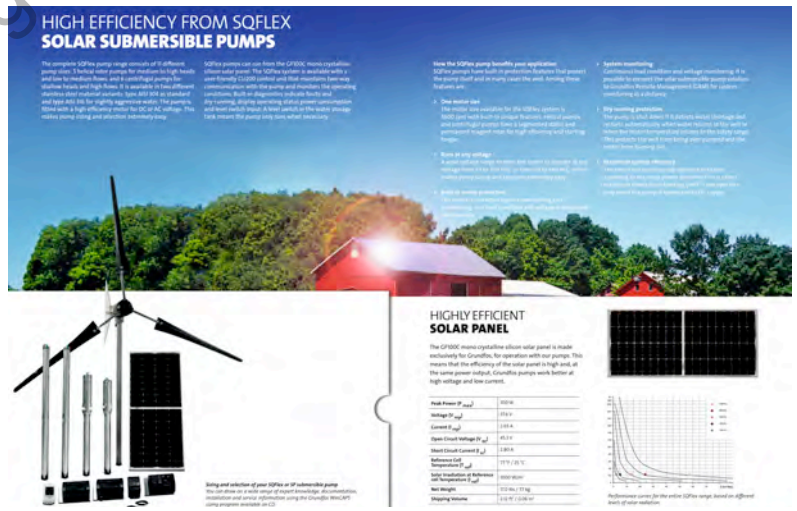
*2) Assuming this base level of water supply can be achieved by the zone and district resources then a sustained water supply and the consequent health benefits will most likely be achieved locally at the village level. The focus of future trial programs, training, management, economic structure and planning should **start at the village level.***

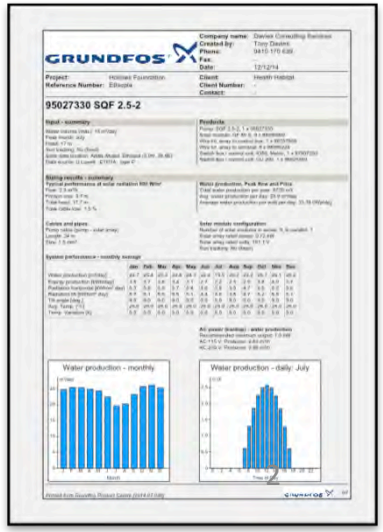
*3) **Water supply monitoring**, at the village level, will be essential for assessing the health benefits of water and the impact of available washing on trachoma.*







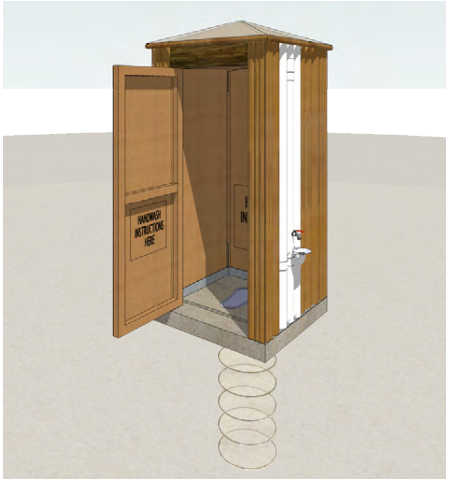




Hand pump			**Solar pump and store tank**	
10	20 litres per minute max with change over and losses between spout and container more like 10 litres per minute		30	2000 litres per hour(min) or +30 litres per minute
0	No storage		18,000	Capacity of storage and distribution tank (litres)
1	tap for distribution		6	taps on the tank for distribution
6	Hours the pump station was open for pumping water (average)		8	Hours solar pumping every day (in the clear, dry season)
3,600	max water generated per day		14,400	max water generated per day
600	distributed every opening hour		3000	water distributed per hour, with 6 tap points able to deliver 25 litres every 3 minutes from the tank
3,600	Max supply - assuming the water kiosk is also open for 6 hours a day		18,000	Max supply - assuming the water kiosk is also open for 6 hours a day
180	families of 5 who obtain water (20 litres total per family)		900	families of 5 who obtain water (20 litres total per family)
900	**People with access to 4 litres of water per person per day**		**4,500**	**People with access to 4 litres of water per person per day**
$5,000	Cost per system after well point dug		$20,000	Cost per system after well point dug
$5.56	Cost per person		$4.44	Cost per person

HH proposal 2

Build a minimum of 25 toilets for the village school, office and some families of those involved in the construction. Integrate local water storage into the toilet for hand and face washing.



Summary: suggestions / recommendations from report 2014

Sanitation,

1) *The ability to dispose of human waste safely appears to be currently non-existent in the village visited.*
2) *Model projects should be established at the village, district and zone 'office' level and schools to demonstrate working systems that are able to dispose of human waste safely.*
3) *Water The provision of wells and pumps alone will not necessarily improve eye health. Will the water from here (the water source) to these kids (hand washing and face washing)?*

One of the 10 wells and pumps provided by the zone and district

Water

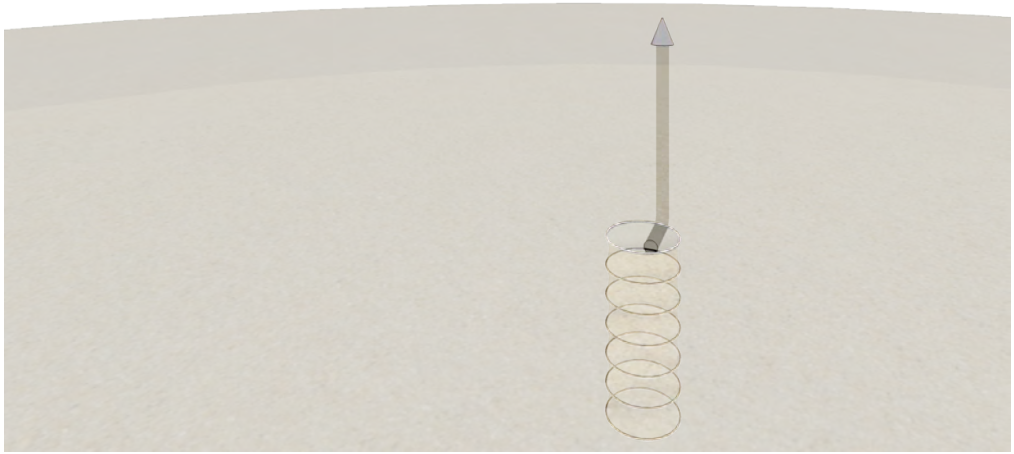
The provision of wells and pumps alone will not necessarily improve eye health.
Will water get to the faces of these kids?

From the brief village visit, there are currently no data that confirm the link between people and water.

- Volumes of water produced & distributed?
- Does the distribution of the water benefit all villagers?
- Is there a regular supply from the wells and pumps?

As the majority of the pumps and well points are new – this is an ideal time to make these connections.

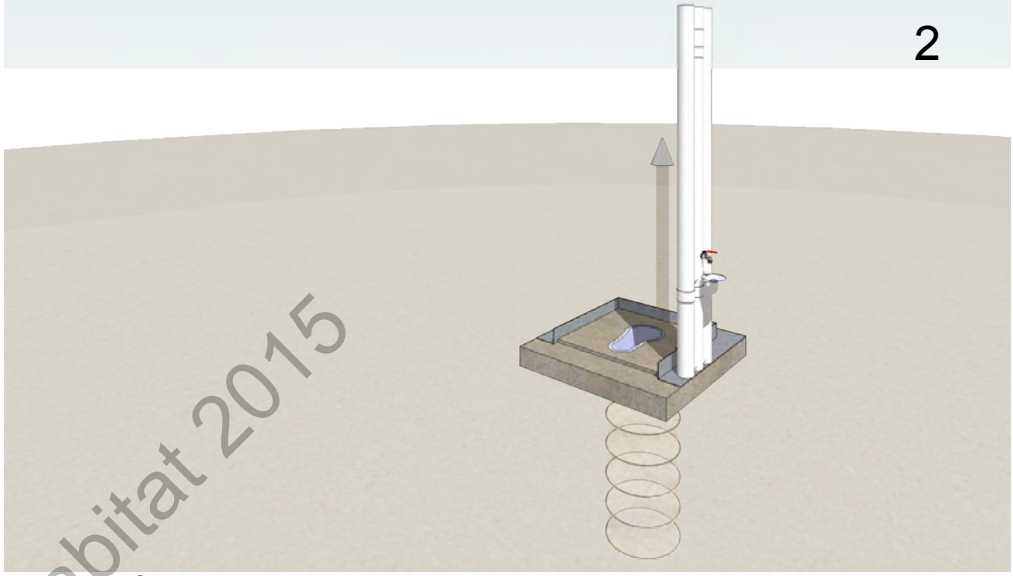
1



Bore a 450-600mm diameter shaft for pit toilet approx. 2m deep with vent pipe / fly meshed

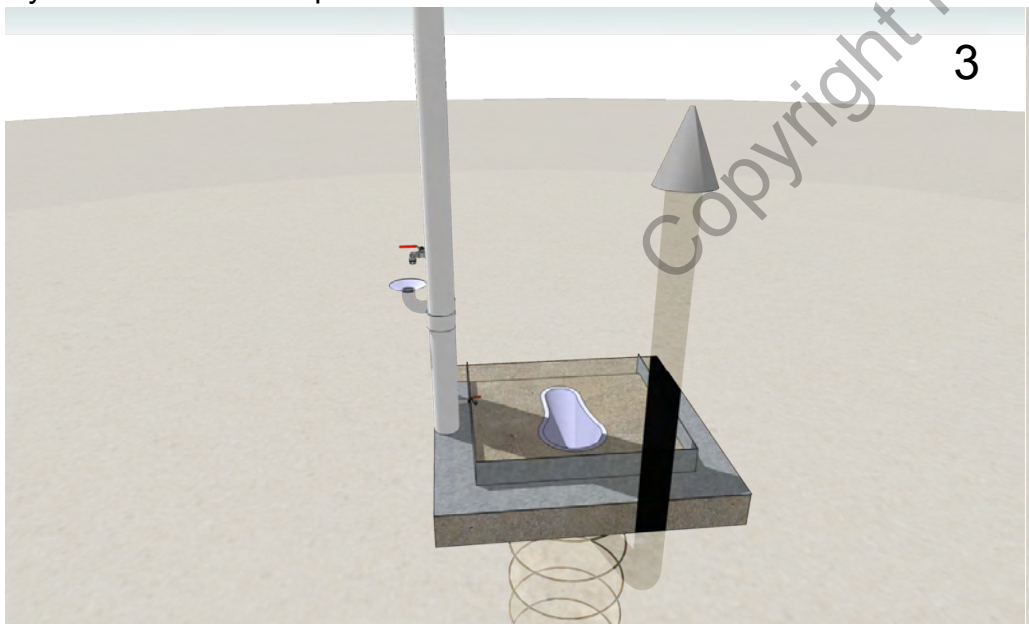
SATO pan and self sealing mechanism to reduce any access to pit by flies. Low inside tap allows ‘used’ hand wash water to clean floor

2



Locally formed (mould supplied) concrete base over hole (able to be moved every 10 years + approx. 20 litre water reservoir from pipes for hand and face washing.

3



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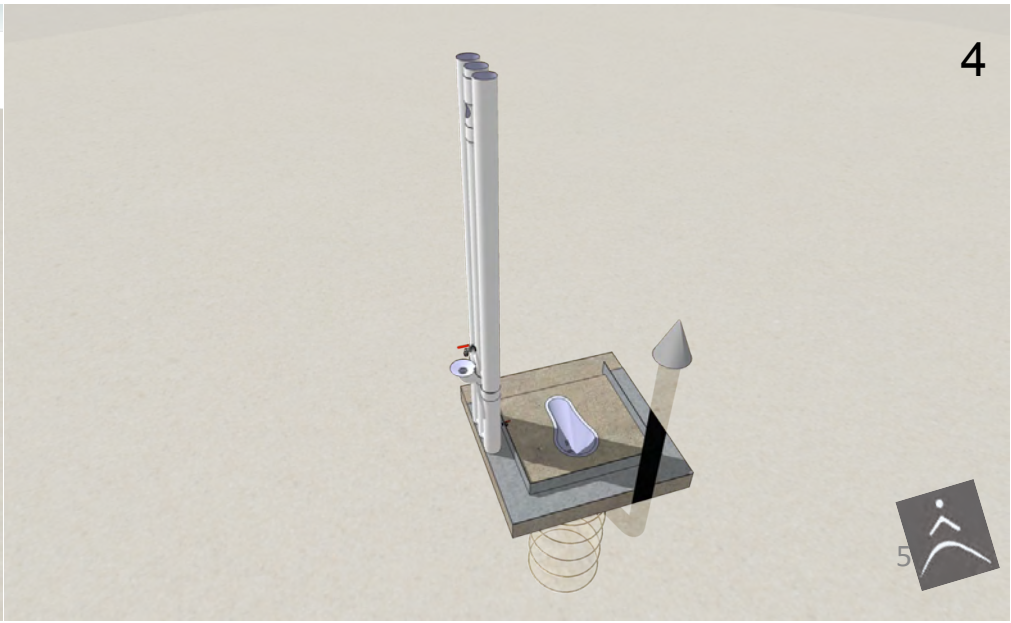
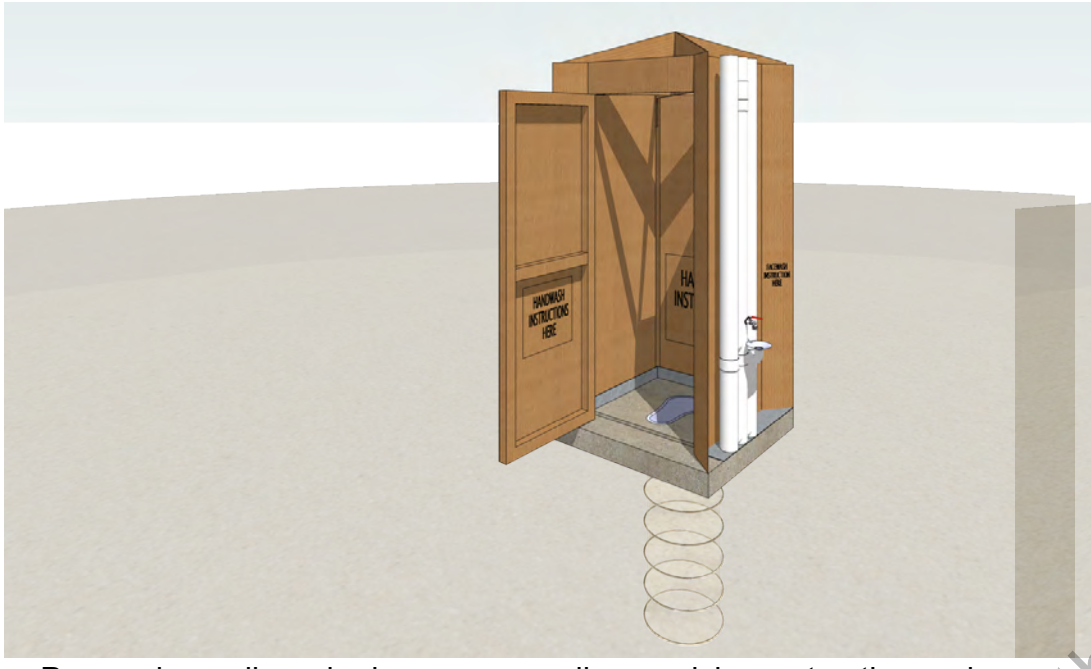
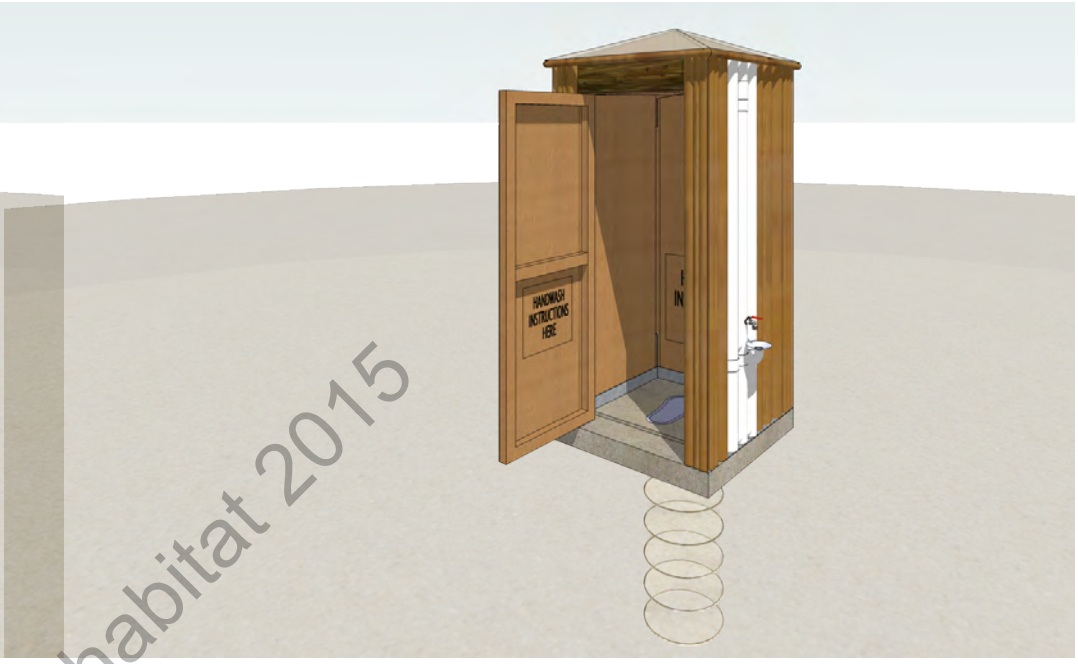


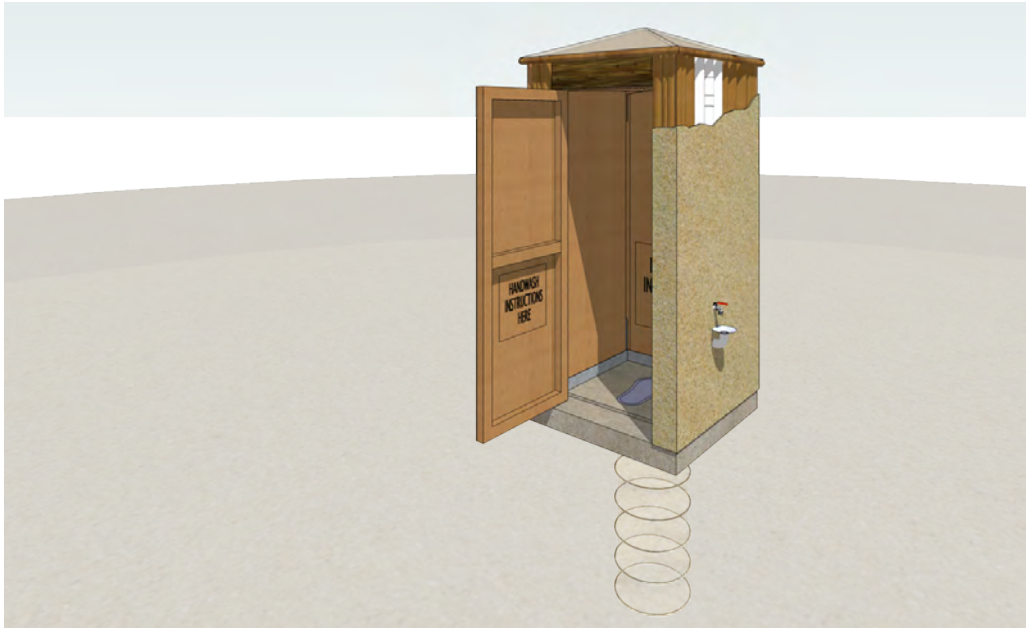


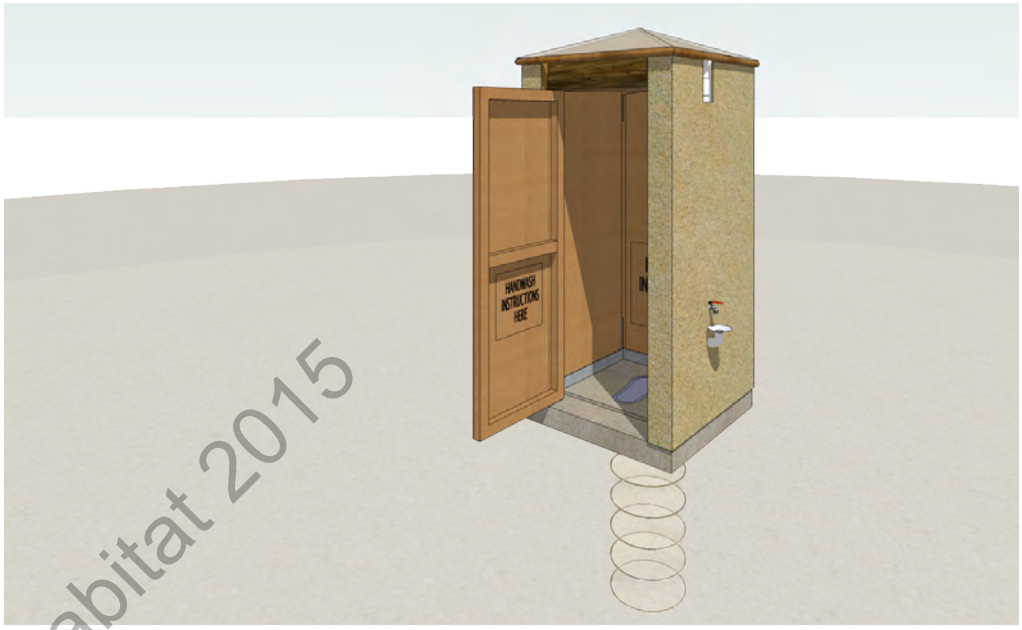
Pre-made cardboard privacy screen allows quick construction and use.
Trachoma face washing graphics pre-printed on the inside surfaces.
Pre-made cardboard privacy screen tied to based to ensure stability.
Cardboard is water and fire proof. The roof fabric will admit some light.
SATO pan prevents fly entry.



Local timber poles added within one year to make the structure more robust and permanent.

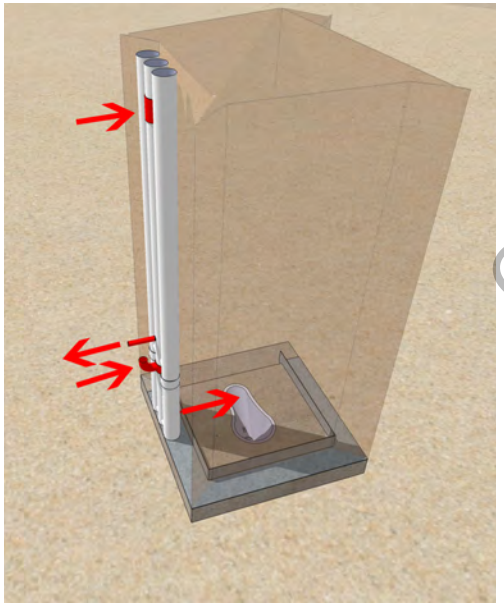
Example of an existing FHF graphic used to explain trachoma. Hand washing graphics should also be added

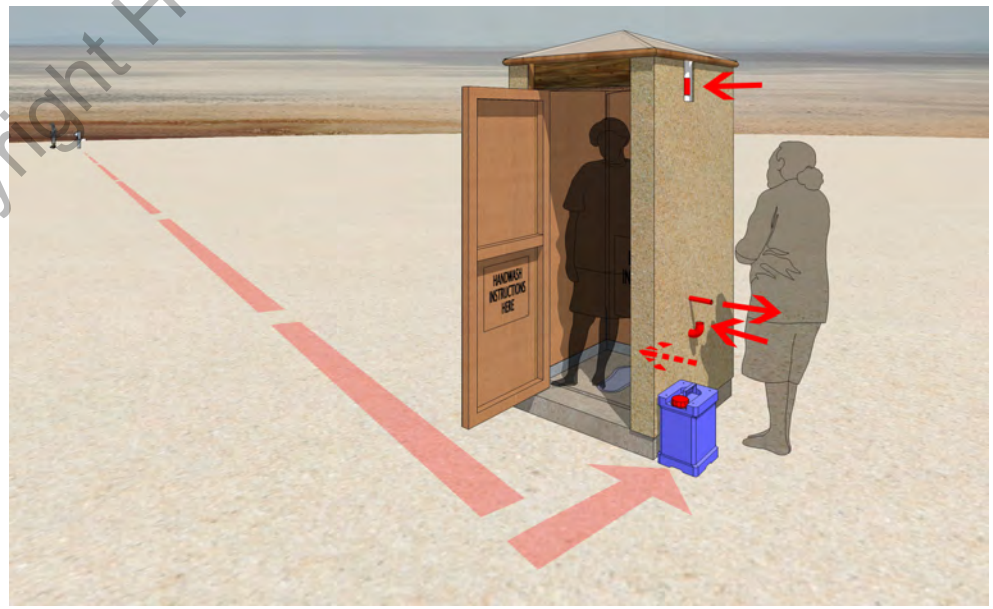




Mud render applied to poles …added cement to wall near water supply and fill point …. completed mud render

How to get water from the supply point to be stored near the toilet and then use very small amounts of from the local toilet reservoir to the faces and hands of all residents and finally, use the waste water for toilet floor cleaning, are all key parts of the problem.





Combine toilets and water collection at village, district and zone offices and village school to start.
For the school, collected water could be tipped into the tank each day by students / workers and annual rains could also fill the tank for 2 months of every year. Used hand and face washing water could be collected for cleaning the toilet floors.

HH proposed budget and schedule - preliminary

Stage of works	People	Costs (AUD)	Schedule and notes
Water pumping design and detail	1	$500	feasibility completed and initial design proposed
Toilet sketch design	1	$2,000	completed
Toilet water store detailed design workshop	20	$2,000	Mid March Melbourne
Toilet detailed design and prototype (Sydney)	20	$2,000	Uni Syd Arch students early Feb
Toilet design of the full kit and construction manual	1	$2,000	Sydney mid March
Water pumping detailed design and detail (pump, panels, tanks, taps, shed	1	$500	Engineer to complete final assembly of parts / options for local conditions
Full costing of all components and agreement with TFHF	1	$500	Mid March
Establish 'measurements of success' with TFHF. Measurement of water use and distribution success, toilet use and cleaning, face washing success and fly population base line. School eye checks ?	3	$2,000	Mid March
Budget - preliminary estimate for the works		$27,500	25 x toilets @$300 / unit and water pump station @ $20,000 (excluding well works). 10 for school, 5 for office and 10 for families.
Visit to Ethiopia (in conjunction with HH work in Sth Africa)	1	$3,000	Possible at the end of March
Presentation of the overall ideas and details to FHF and other agencies as required. Local in country FHF office agreement, village agreement and partnerships with other NGOs.	1	$2,000	Develop schedule for construction and local construction team, scout materials available locally and redesign kit as appropriate
HH appoints project manager to work in the village until completion (1 month)	1	$5,000	Start of May 2015
12 months evaluation	3	$12,000	Locally completed measurement of water use, toielt use and fly count including eye evaluation if appropriate by FHF. 1 follow up HH visit. Evaluation completed May 2016
Project total		**$61,000**	

Securing other funding and support for the project

WorldSkills Foundation / RMIT / IAPMO / HH / TFHF?

Melbourne trades/engineering and architecture challenge for 3 teams. The solution may 'plug into' the current sketch design idea for the toilet unit. Many young professionals, trades and teachers become exposed to the broader problems and may have input in the future to similar projects.

2 x 2 x 2 x 2
2 litres, 2 hands, 2 eyes, 2 days
The 2 day challenge overview

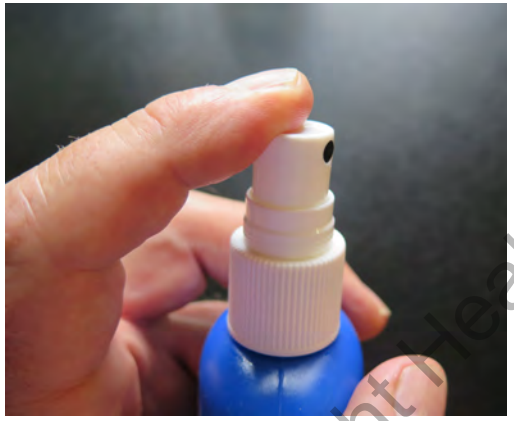
Your task is first to research, think, develop, design ways to use minimal quantities of water to enable children (first priority) and adults to wash their hands and faces to remove the trachoma bug and any remnant food etc that has collected on the face that may attract flies.
Then fabricate and assemble the solution.
Then participate in the testing of the design solution and construction quality by the rules agreed in this brief.

Alternate tap, self stopping

Locking tap and pressure to dispense

Use of ‘refuse’ to store, transport and then dispense a limited volume of water

2 x 2 x 2 x 2
Using less volumes of liquid - alternatives to the traditional tap



Trigger spray

press spray

squeeze bottle – blob or press spray (fine)

Household cleaning product

Personal insect spray

Hand disinfectant liquid

Hand disinfectant spray

2 x 2 x 2 x 2

Using *very small* volumes of liquid - alternatives to the tap