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Building Brighter Futures

Review of sanitation design & facilities

Lessons to date & recommendations for way forward

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September 2012

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Appendices detailed project specific observations and recommendations are available on request.

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1 INTRODUCTION

This report summarises the results of a brief review that has been conducted into the design and construction of sanitation facilities at Build It projects in Zambia. Recommendations are made for refinements to the design, siting and construction of such facilities at future projects. Richard Boak, the main author of the report, is an independent consultant engaged to undertake the review, and all views expressed in the report are his. The scope of work for the sanitation review was:

1) To visit a selection of Build It construction projects in Zambia during June 2012, namely, Fiwila, Butempa, Donata, St Agness, Mikumbila and Twapia.
2) To appraise the design, condition and siting of sanitation facilities in these places and to assess how well the completed facilities are performing. For example, what is their general condition, are they being used and maintained as intended, and are users satisfied?
3) To make recommendations for the outline specification of standard designs for future projects, including how the basic design can be improved while still meeting the criteria of being low-cost, easy to maintain, durable, comfortable to use, and consistent with Build It's principles on sustainable materials and techniques.
4) To provide general guidance on sanitation facilities, such as siting, maintenance, hygiene education, and any other points of relevance or concern.

The project visits were conducted in June 2012, while Richard Boak was in Zambia for other purposes. The dates of the visits and the sanitation facilities completed to date are shown in the table overleaf. Detailed feedback on each of the project visits can be found in the Appendix.

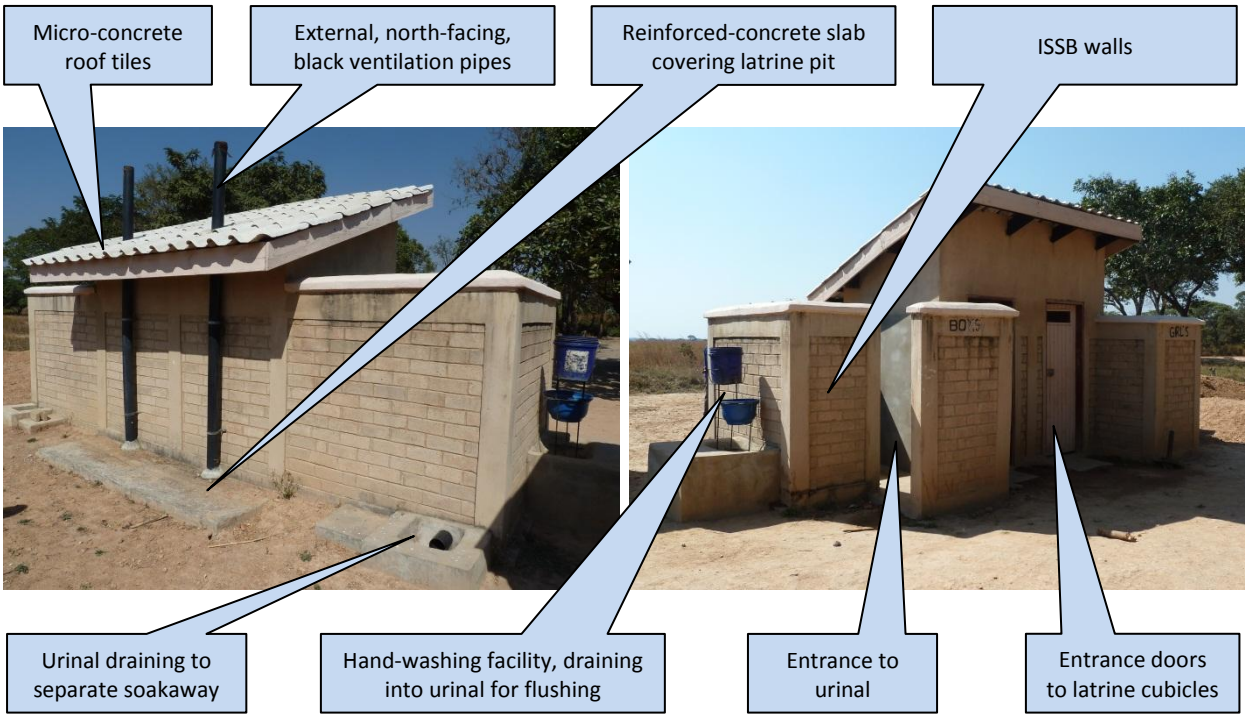
Project	Date visited	Sanitation facilities completed to date
Fiwila	7 June 2012	Two individual latrines with curved walls (2007); water-based ablution block for secondary school (2008); internal ablution facilities for boys' dormitory (2010, no fittings yet, pending water supply)
Butempa	8 June 2012	Primary school completed (2009), but no latrines yet
Donata	11 June 2012	Special needs school approaching completion, but no latrines yet
St Agness	11 June 2012	Combined block for boys & girls, including urinals, plus internal Ecosan for teacher's house (2009/10)
Mikumbila	11 June 2012	Combined block for boys & girls, including urinals (2009)
Twapia	15 June 2012	Two large ablution blocks for secondary school (2011/12)

2 CURRENT DESIGN APPROACH

The current Build It design approach for sanitation facilities is to use ventilated improved pit (VIP) latrines wherever possible. Water-based systems are generally avoided, due to high costs and maintenance demands, and the need for an appropriate water supply. A standard design has evolved with the following key features:

- Separate VIP latrine cubicles for boys and girls (the number of cubicles varies according to the size of the school).
- External, north-facing, black ventilation pipes with fly screens.
- Block/brick-lined pit with reinforced-concrete slab, but no access for future pit emptying.
- Urinals for boys and girls, draining to a separate soakaway (rather than into the latrine pit).
- Superstructure constructed with interlocking stabilised-soil blocks (ISSBs) and micro-concrete roof tiles.
- External hand-washing facilities at each end of the block, draining into the urinals to assist with flushing.

A good example of this design can be seen at Mikumbila, near Kapiri Mposhi:



3 OPTIONS FOR SANITATION

There are many different options for sanitation systems in sub-Saharan Africa, including: basic pit latrines; VIP latrines; composting/urine-diversion latrines; pour-flush toilets; aqua privies with soakaway; septic tanks with soakaway; and so on, right up to full water-borne sewerage. Most Build It construction projects are in rural areas or in areas where there is no reliable water supply, and certainly no option to connect to mains sewerage. One water-based system has been built so far (in 2008), at Fiwila, near Mkushi, with conventional ceramic toilet pans or squat plates and flushing cisterns. This is the standard government specification for secondary schools in Zambia and remains a long-term aspiration. In the meantime, VIP latrines undoubtedly represent the most appropriate option for the vast majority of Build It projects, being a well-known, low-cost, robust technology that does not require large quantities of water. The remainder of this report concentrates on VIP latrines.

4 BASIC PRINCIPLES OF VIP LATRINES

The operating principle of a VIP latrine is very simple: waste (solid and liquid) drops into the pit, where organic material decomposes and liquid soaks away into the surrounding soil. A good flow of air is maintained, through the superstructure, down into the pit and up the ventilation pipe, to remove unpleasant smells and vent gases to the atmosphere. The interior of the cubicle is kept fairly dark (while still allowing sufficient light for people to see what they are doing), so that flies in the pit are attracted to the light at the top of the vent pipe, where they are trapped by a fly screen. The pit eventually fills up, as not all solids are broken down. It is then either emptied, or the pit is sealed and abandoned and a new latrine constructed elsewhere. Separate hand-washing facilities are required.

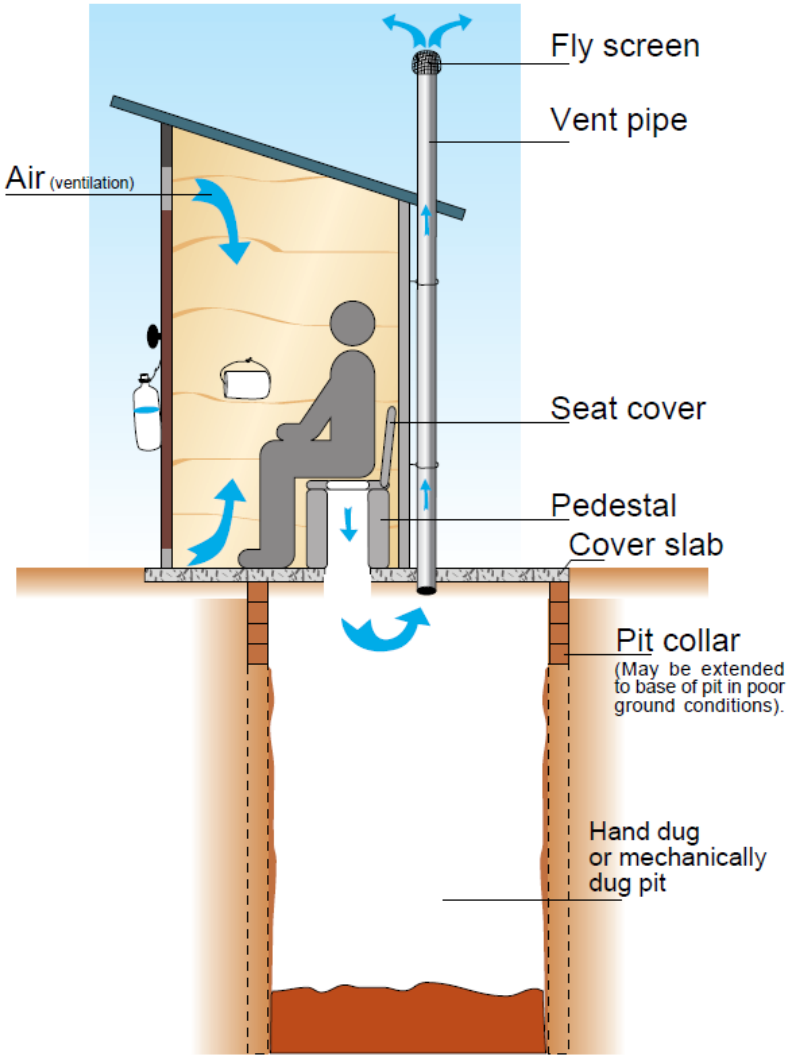


Diagram from: "Sanitation Technology Options", Department of Water Affairs and Forestry, Republic of South Africa, February 2002.

The operation of a VIP latrine depends on excess liquid infiltrating into the surrounding soil. This may be problematic in soils that are not sufficiently permeable, or which become unstable when saturated, and there is also a risk of groundwater pollution.

The diagram on the left shows a VIP latrine equipped with a seat on a pedestal over the drop-hole, but it is much more common for the user to squat directly over the drop-hole.

The design aspects of VIP latrines will now be discussed in detail, along with implications for Build It.

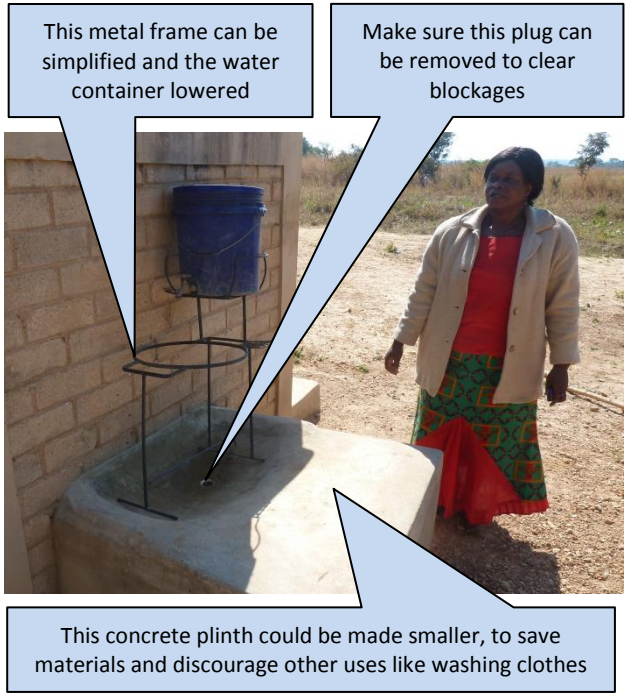
5 DESIGN ASPECTS OF VIP LATRINES

Design aspect	Discussion	Implications for Build It
Pit construction	• A strong collar around the top of the pit is essential, to support the cover slab and provide a seal at the surface (to prevent surface run-off from entering the pit). • In stable ground that is self-supporting, the pit lining only has to extend downwards about 0.5-1.0 m, with the remainder of the pit left unlined. However, this requires confidence that the ground will remain self-supporting in the long-term, even when saturated. • In unstable ground conditions, the sides of the pit should be fully supported, although the floor should always be left unlined, to allow liquid to soak away. • For the top 0.5 m, the pit wall should be fully mortared. Below that point, the pit wall should allow seepage of liquid into the surrounding ground, usually achieved by leaving the vertical joints open (in brick or blockwork). • If the surrounding soil is fine, unconsolidated sand that could enter the pit through the open joints, it may be necessary to backfill the gap between the pit wall and the soil with fine gravel.	In the ground conditions likely to be encountered by Build It in Zambia, the default design should be: • Fully support the sides of the pit by building a full-height pit wall. • Mortar all joints in at least the top 0.5 m of the pit wall; below that, leave the vertical joints open. • If necessary, backfill with fine gravel between the pit wall and the surrounding soil. This is the design already being used on most Build It projects, so there are no major changes. In unstable ground conditions, the pit should be dug much wider at the top, to reduce the risk of the sides of the excavation collapsing on the diggers. If necessary, the sides of the excavation should be supported temporarily.
Pit dimensions	• The dimensions of the pit depend on the number of people using the latrine, the accumulation rate of solids, and the desired design life. The pit should be at least 2.5 m deep. • Typical design figures (for the rate of accumulation of solids) are 0.02-0.04 m^3 per person per year when the pit is wet (below the groundwater level), or 0.03-0.06 m^3 per person per year when the pit is dry. Biodegradation of solids is faster under wet conditions than under the only just moist conditions in dry pits. These figures are sometimes increased by up to 50% when bulky anal cleansing materials are used (such as grass, leaves or maize husks). 10 years is a typical design life, but in practice this is hard to predict. • Pit depth calculations should take into account an extra 0.5 m, as the pit is considered to be full when the contents reach about 0.5 m from the top. At this point, if the contents are to be left to decompose, the pit is filled to the top with earth, the latrine closed and left for at least a year, preferably two years. • This implies that alternative facilities are available to use in the meantime, which is often not the case. It may therefore be necessary for the pit to be emptied before the contents have had a chance to biologically degrade.	Using the higher figure for rate of accumulation of solids for dry pits (0.06 m^3 per person per year), with a 4-cubicle latrine with internal pit dimensions of say 1.8 m (W) by 4.8 m (L) by 3 m (D), for a school with 250 children, gives a pit life of only 1.7 years. In practice, the accumulation rate is likely to be much lower, because the latrines tend to be used only during the day in school terms. It is recommended that: • The standard pit depth be increased from 3 m to at least 4 m, subject to soil conditions, to extend the pit life closer to the target of 10 years. • All future latrines be constructed with access for emptying (see next item), to extend latrine life. • All pits be monitored periodically to check on how quickly they are filling up. Use a dip-stick, or check visually with a torch. • Users be educated not to use bulky anal cleansing materials, or to dispose of other rubbish in the pit.

Design aspect	Discussion	Implications for Build It
Pit emptying	• When full, pit latrines must either be emptied, or sealed and abandoned and a new latrine constructed. In rural areas, the normal approach is abandonment, because there is plenty of space, but in urban areas, or for permanent latrines at institutions such as schools (where land is limited), the ability to empty the pit is essential, and saves the cost of constructing new latrines. • One approach in urban areas is to use a double-pit system. Once the first pit is full, the superstructure is moved across to the second pit, so that the first pit can be left for one or two years to decompose properly before emptying. • If no access hatch has been provided, the concrete slab will have to be broken open and repaired or replaced later. It is sometimes possible to use a vacuum tanker to pump the contents out, although the contents have to be in the form of a slurry. • Manual pit emptying is an unpleasant and hazardous operation, especially if the contents have not fully degraded.	A design change is required, so that all future latrines constructed by Build It are equipped with access hatches for emptying. • The superstructure should be shifted off-centre (as illustrated in the diagram in Section 4), and access hatches incorporated into the exposed cover slab. • The access hatches should be tight-fitting and either locked or difficult to open (for safety reasons, and so that the pit ventilation still takes place via the vent pipe, see below). • A safe method of working should be devised for pit emptying, especially when the contents have not degraded and are still a health hazard.
Cover slab	• The cover slab must be strong enough to span the pit and support the weight of the superstructure, vent pipe and users. The slab can be made from many materials, ranging from a wooden structure plastered with mud to reinforced concrete. For latrines with heavy, public usage, reinforced concrete is preferable. This can be precast or cast *in situ*. • If the locally-preferred defecation position is squatting, the cover slab should slope towards the drop-hole, for drainage of spilled urine and water used to clean the cover slab. The recommended slope is 5%, which can either be achieved by casting the slab with this surface slope (difficult), or plastering the slab to give the required slope (much easier). • The cover slab (and interior of the cubicle) should only be cleaned with water. Chlorine, bleach or other disinfectants should not be used if the liquid will enter the pit, as this destroys the microbiological population responsible for decomposition of the organic waste.	In view of the need for pit emptying access: • All future cover slabs should be cast with three apertures (for the drop-hole, the vent-pipe and the access hatch). • The design of the steel reinforcement for the cover slab should be adjusted accordingly, and must also take into account that the cover slab will now be partially supporting the weight of the rear wall of the cubicles. • Build It should consider pre-casting the cover slabs (upside down, in a standard mould), rather than erecting formwork for casting *in situ*. • Users should be educated not to allow chlorine, bleach or other disinfectants to enter the pit.
Drop-hole	• The size of the drop-hole is important; it should not be large enough for a child to fall through. Key-shaped or pear-shaped openings, with a maximum width of 200 mm are often used. • If the locally-preferred defecation posture is sitting (rather than squatting), a simple pedestal seat can be constructed (as shown in the diagram in Section 4). A pedestal seat also improves ease-of-use for physically-disabled people. • Although not essential, moulded foot-plates can be provided, which have the advantage of positioning the user correctly to minimise spillage.	If the cover slabs are pre-cast in moulds, more sophisticated drop-hole shapes can easily be formed, along with slightly-raised foot-plates, both of which increase the utility of latrines.

Design aspect	Discussion	Implications for Build It
Superstructure	• The superstructure can be made from any appropriate material, as long as it provides privacy, is easy to clean, keeps the interior in semi-darkness, and allows ventilating airflow. • Latrine cubicles are usually provided with doors, for privacy and security, although spiral wall designs have been developed, which do not need a door. • Ideally, doors should be lockable from the inside (for privacy) and from the outside (to prevent unauthorised use outside school hours, for example). • It is important to maintain airflow into the cubicle, often achieved by air bricks or gaps under and over the door. The minimum recommended size of ventilation openings is 3 times the cross-sectional area of the vent pipe.	No major changes are required to Build It's current design, just the following amendments: • In the building plans, allow for the fact that the superstructure will now be off-centre, with respect to the pit. • Consider dispensing with air bricks, and leaving small gaps under and over the door instead. • If there are likely to be physically-disabled people in the school, fit hand-rails to the walls of the cubicles and if there are any steps, use ramps instead.
Vent pipe	• The principle mechanism inducing ventilation in VIP latrines is the movement of air across the top of the vent pipe, which causes an updraught in the pipe, thereby sucking air into the pit through the drop-hole. To facilitate this, the top of the vent pipe should be at least 0.5 m above the highest roof level, with the airflow not seriously obstructed by trees or other buildings. • Another ventilation mechanism is convection, induced by the sun heating up the vent pipe. This effect is enhanced if the vent pipe is black, external and north facing (in the southern hemisphere). Vent pipes have been successfully constructed from many materials: PVC pipes, bricks, even plastered reeds. • A third mechanism is air being forced into the latrine through the opening by the wind, an effect greatly enhanced if the door faces into the prevailing wind direction. In fact, it is possible for this mechanism to operate in reverse and over-ride the other mechanisms if the door is facing away from strong prevailing winds. • For PVC vent pipes, the minimum recommended diameter is 150 mm, in order to achieve the required ventilation rate. There can be a problem with cobwebs building up inside the vent pipe, restricting the air movement, in which case the inside of the pipe should be flushed with a bucket of water from time to time.	No major changes are required to the current design for external vent pipes, just ensure the following: • The top of the vent pipe is at least 0.5 m above the highest latrine roof level. • The airflow is not seriously obstructed by dense trees or tall buildings nearby. • The orientation of the latrine takes into account the prevailing wind direction as well as the direction of maximum insolation. If there is a conflict, consider changing the position of the vent pipe. • Users should be educated to flush the inside of the vent pipe periodically (say annually), with a bucket of water, to clear away cobwebs.
Fly-screen	• The top of the vent pipe must be fitted with a fly-screen to trap insects. This is fundamental to the operation of VIP latrines. • The mesh aperture must not be larger than 1.2 mm by 1.5 mm. • Gases passing up the vent pipe (such as methane, carbon dioxide and hydrogen sulphide) are very corrosive and fly-screens made from mild steel do not last long. Plastic or glass-fibre fly-screens overcome the corrosion problems, but they are not robust and are easily damaged (by birds and lizards). Stainless steel is the best material, followed by aluminium.	No major changes required, but: • The choice of fly-screen material should be reviewed (taking into account the availability of suitable materials in Zambia), along with the method of fixing to the top of the vent pipe. • Fly-screens should be inspected periodically and replaced if necessary.

Design aspect	Discussion	Implications for Build It
Semi-darkness	• For good fly control, it is essential that the interior of the latrine be kept in semi-darkness, with a straight vent pipe positioned directly over the pit. Any flies inside the pit are then attracted to the strongest light, at the top of the vent pipe, where they are trapped by the fly-screen. • If the cubicle doors are left open, this effect is lost, and flies will go to and fro via the drop-hole. This is mitigated by placing a cover on the drop-hole, but this significantly reduces the airflow and is not to be encouraged. • Discipline is needed to keep cubicle doors closed at all times, especially if there are several cubicles over a single large pit with no pit-dividing walls. In this case, all cubicles must be kept in semi-darkness, otherwise the effect is lost. Some latrine designs use self-closing doors (easiest to achieve if the doors open outwards), or a spiral wall so that the interior is kept in semi-darkness even without a door.	No major changes required, just: • Educate users to keep the doors closed at all times. • Experiment with some robust designs for self-closing doors (as long as the doors open outwards), such as a spring, or a chain with a weight.
Urinals	• Most sanitation systems based on VIP latrines do not have separate urinals. Design guidelines for pit volumes assume that both urine and faeces will enter the pit. They also assume that the pit is *not* used for disposal of significant quantities of wastewater such as drainage from showers, washing clothes, etc. • Decomposition of solid waste is assisted by the presence of water (hence the lower design volume figure for 'wet' pits), so there is an argument that routing urine to a separate soakaway decreases the efficiency of the main pit. • However, separate urinals have the big advantage of higher throughput of people when there is a time constraint, which is exactly the situation in schools, with many people wanting to use the facilities in short breaks between lessons. For this reason, urinals should continue to be included in the designs. • While boys are used to using communal urinals, girls are initially reluctant. Comparison of the popularity of identical girls' urinals at different schools suggests that success depends to a large extent on encouragement and education when the facility is first introduced. • Another important factor for girls is privacy (no direct sight-lines into the facility from passing people). If users feel the need for more privacy, then screening walls can be extended slightly, or additional screens can be built from traditional materials.	Some design changes are required, as follows: • Assuming there is no issue with dealing with wastewater drainage from showers, washing clothes, etc, then the construction of separate soakaways for the urinals can be discontinued. • Boys' urinals should definitely be constructed, with the drainage routed into the main latrine pit. • Build It should persevere with the construction of girls' urinals, taking care with sight-lines and privacy. It would be worth trying a different design for the plinth and channel, such as:  From: www.watercan.com "Urinals for the girl child"

Design aspect	Discussion	Implications for Build It
Hand-washing	• It is essential that convenient hand-washing facilities are provided alongside latrines and urinals. Many different devices are used, ranging from old plastic bottles suspended from string, to sinks with running water on tap. The wastewater from hand-washing can be routed into the latrine pit, as long as the surrounding ground is sufficiently permeable for liquids to soak away, and as long as large volumes of water are not involved (from running water on tap). • Comparison of the success (in terms of consistency of use) of similar facilities at different schools suggests that the most important factor is hygiene education. Attempts to engineer success by routing people past the hand-washing facilities on exit from the latrines are not sufficient, in the absence of hygiene education and encouragement. • Keeping containers full of water and making sure soap is always available are both very important, and should be added to the responsibilities of staff and the chores allocated to pupils. • The plastic U-bend fittings on some of the current hand-washing facilities are open and vulnerable to damage at the moment (as at Twapia, see photo below). Concrete plinths should be used in preference. 	Some design changes are required, as follows: • The drainage from the current design of hand-washing facility can also be routed into the latrine pit (rather than a separate soakaway), having flushed the adjacent urinal on the way. • The current design of hand-washing facility could be simplified and made more robust by dispensing with the lower bowl and using a concrete plinth with built-in bowl and drainage (see below). • The construction of a separate screening wall, as at Twapia, should be discontinued, and the outline design from Mikumbila adopted. 

6 CHOOSING SITES FOR VIP LATRINES

When choosing a site for new VIP latrines, the following factors need to be taken into account (using a school as an example):

- **Land ownership:** In many cases, the choice is limited by the boundaries of the plot allocated to the school in question. In rural areas this does not usually present a problem, because there is plenty of space, but it can be a significant constraint in urban or peri-urban areas.
- **Convenience:** Although from other points of view it would be good for the latrines to be as far away as possible from the school buildings, a balance must be struck with the need for the latrines to be convenient, to encourage their habitual use. This is especially important for schools, where large numbers of people need to use the latrines within relatively short time periods (breaks between lessons).
- **Wind direction:** Ideally, the latrines should be downwind from the main school buildings, so that smells and gases from the vent pipes do not cause a nuisance. The occupants of neighbouring plots downwind also have to be considered.
- **Sunshine and airflow:** For reasons explained in the table in Section 5, the latrines should not be too sheltered or shaded (so that there is sufficient wind and insolation).
- **Surface run-off and erosion:** The latrines should not be built in a spot where surface run-off flows or collects after heavy rainfall, or where there is a risk of soil erosion. If necessary, bunds should be built to shield the latrines, to prevent surface run-off entering the cubicles or pit. Local knowledge is very important for this factor, because the effects of heavy rainfall are not always obvious, especially if the construction work takes place exclusively in the dry season.
- **Soil permeability:** As long as pit latrines are not used for the disposal of significant quantities of wastewater from other facilities such as showers and laundries, the hydraulic loading is very low (less than 2 litres of excreta per person per day), so soils with permeabilities as low as 2.5 mm per hour (such as clays and silty clays) are acceptable, provided expansive clays are not present1. The vast majority of the locations encountered by Build It in Zambia are therefore likely to be acceptable. If there is any suspicion that the permeability might be too low, the most practical method for estimating the in-situ permeability is to: excavate a trial pit to the design depth; add water to a depth of about 0.5 m and allow it to soak away, while measuring the rate at which the water level drops; repeat this a couple of times until a steady rate is obtained. Note that many soils are layered, with different layers having different permeabilities. The presence of highly-permeably shallow layers is not necessarily a reliable indication that the deeper layers (at the design depth, where the liquid will be trying to soak away) are permeable enough. There is no practical substitute for digging a trial pit.
- **Groundwater level:** It is very difficult to excavate and line pits in areas with a permanently high groundwater table. If at all possible, another location should be chosen so that the groundwater level is well below the excavated depth of the pit. VIP latrines can pose a threat to human health if bacteria and viruses from the excreta find their way into the groundwater, which is then used for drinking water supply. The depth of soil above the water table (the unsaturated zone) is the most important line of defence against groundwater pollution. Bacteria will not penetrate more than about 2 m in most unsaturated soils[2]. The risk of groundwater pollution is greatly increased if the pit penetrates the water table, and the fact that excavation of the pit removes several metres of the unsaturated zone needs to be borne in mind. In other words, ideally, the groundwater level should be at least 2 m below the base of the pit. If this is not possible, then think carefully about the risk of contamination.
- **Contamination of water supplies:** There is no single figure for the minimum separation distance between water-supply wells and latrines. It depends on several factors, including: a) the construction of the latrine (in particular, the pit depth and whether the pit is lined or unlined); b) the existence or not of an unsaturated zone; c) the hydraulic loading on the latrine

[1] *Mara D D (1984). "The design of ventilated improved pit latrines", TAG Technical Note No.13, Technical Advisory Group, United Nations Development Programme, Washington DC, USA.*

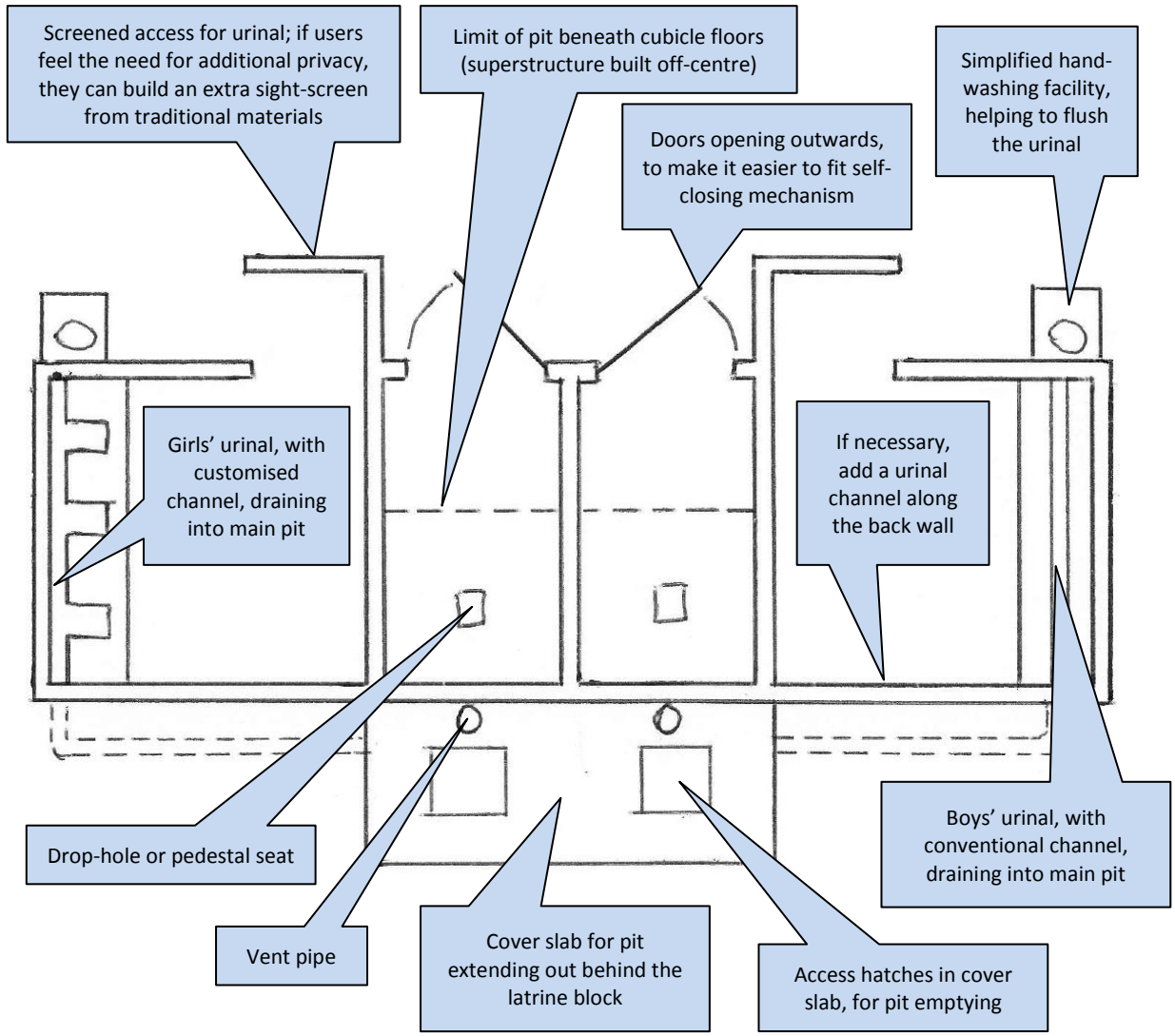
[2] *Cairncross S & Feachem R G (1983). "Environmental health engineering in the tropics", John Wiley & Sons Ltd, Chichester, UK.*

(how many people are using it and how much water goes into it); d) the hydraulic properties of the soil and rock (the permeability being the most important – how easy it is for water to flow through the ground), taking into account the presence or absence of fast transmission routes such as fissures or limestone karst; e) the direction of regional groundwater flow (it is preferable for the latrines to be down-gradient of the well); f) the construction of the well (it might be sealed through the shallow layers and only abstracting groundwater from much deeper); and g) the rate of groundwater abstraction (a low-volume hand-pump or a major municipal abstraction, for example). Many references quote a minimum separation distance of 30 m from the nearest groundwater supply, or use another criterion such as the distance travelled by the groundwater itself in 10 days (to allow for bacterial die-off), but local conditions should always be reviewed.

7 CONCLUSIONS & RECOMMENDATIONS

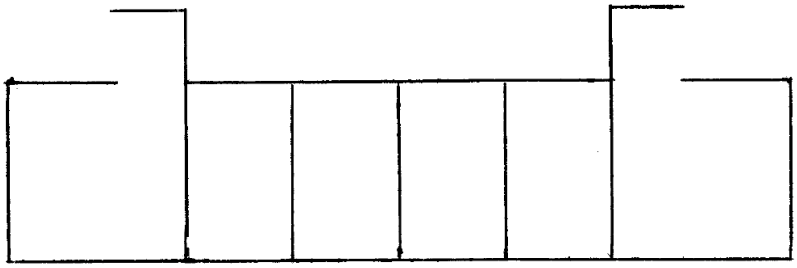
Outline design of sanitation blocks

Build It's approach to sanitation facilities at its projects is basically sound. No fundamental changes are required, just some refinements and revisions. Drawing together many of the points made so far, the main recommendations for the outline design of a basic sanitation block are illustrated here:

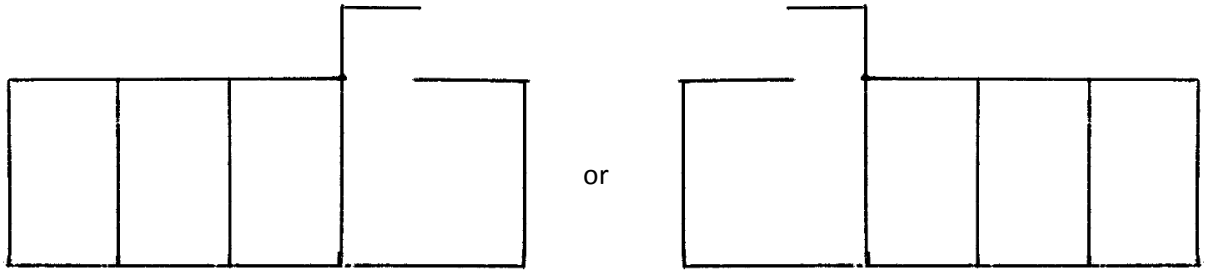


This layout is suitable for a primary school or as the staff sanitation block in a large secondary school. For other situations, the design can be treated as modular, with components multiplied, expanded or separated as necessary.

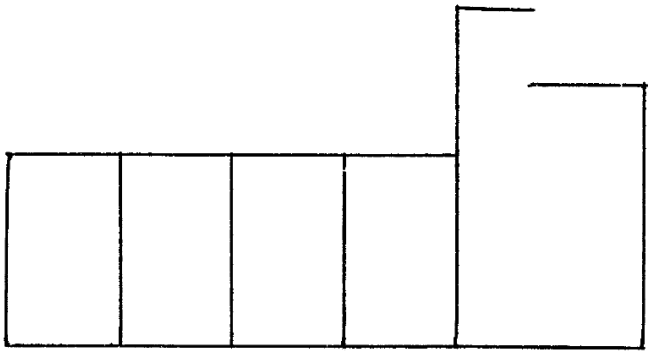
For example, for a large primary school, the design can be kept as one block, but the number of latrine cubicles increased (with the pit length being increased accordingly):



For a secondary school, it is desirable for there to be separate blocks for girls and boys, in which case there would be only one urinal per block (note that the layout is essentially the same for blocks for either boys or girls; the only difference would be in the design of the urinal channel, as discussed in the table in Section 5):



The number of cubicles in these blocks can, of course, be varied according to the size of the school. In addition, the length of the urinal can be increased for larger numbers of users:



Maintenance

Several recommendations were made in the table in Section 5 on the subject of maintenance and they will now be repeated for convenience. In addition to routine maintenance tasks of cleaning and mending small defects, the following tasks should be carried out at least annually:

1) The level of accumulated waste in the pit should be monitored, to check how quickly it is filling up. Use a dip-stick, or check visually with a torch.
2) The inside of the vent pipe should be flushed with a bucket of water, to clear away cobwebs.
3) The fly-screens should be inspected and replaced if necessary.

Remember not to use chlorine, bleach or other disinfectants when cleaning the latrines.

Hygiene education

It was mentioned earlier that the success of the girls' urinal and hand-washing facilities at Mikumbila (compared to other places with identical facilities) is largely due to persistent hygiene education and reminders from the headmistress. Efforts to force people into certain actions, such as routing people past the hand-washing facilities by use of a wall (as at Twapia) are usually ineffective in the absence of such leadership. As with maintenance, several recommendations were made in the table in Section 5 on the subject of user behaviour, repeated here for convenience. Users should be educated and encouraged:

- Not to use bulky anal cleansing materials;
- Not to dispose of other rubbish in the pit;
- Not to allow chlorine, bleach or other disinfectants to enter the pit;
- To keep the cubicle doors closed at all times;
- To always wash their hands after using the latrines or urinals;
- To put in place arrangements for keeping the hand-washing containers full of water, with soap available;
- To make full use of the urinals (including the girls).

It is recommended that more emphasis be given to hygiene education and instructions for users of the facilities, as part of the handover process for newly-constructed VIP latrines. There are many publications available on sanitation and hygiene education in sub-Saharan Africa, often under the heading of WASH (water, sanitation and hygiene). See, for example, the following references:

Posters for WASH in schools: http://www.unicef.org/wash/schools/

Manual on school sanitation and hygiene: http://www.unicef.org/wash/files/Sch_e.pdf

Child-friendly hygiene and sanitation facilities in schools: http://www.irc.nl/content/view/full/9587