

## **BLOOM**

**Visions and development**

**BLOOM**  
**Bringing Life to the Orphans Of Malawi**

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## 1. Executive summary

### Malawi's orphans

Malawi is a beautiful and friendly country in the south-east of Africa, where fevers, malaria and AIDS has seriously decimated the population. 1.2 million children in Malawi have lost both their parents, and over half the population is below 15 years of age.

It is touching to observe children under 5 years of age who patiently and with smiles in their faces are trying to help their even younger siblings. The struggle for survival takes many forms, and food, housing, safety, education and adult guidance are critical factors.



### BLOOM is helping

BLOOM is a Norwegian voluntary organisation currently feeding 350 orphans coming from ten villages in the southern part of Malawi. Income is generated in Norway by donations from organisations, schools and individuals. Concerts and exhibitions have also been a source of income. The operational cost is low, because all officials work for free, and only a few local workers in Malawi are paid. Each child is now fed twice a day at a cost of 3 US\$ per month.

### Orphans should be helped in their villages

Orphans live throughout Malawi, but they are especially vulnerable in towns where dangers and temptations flourish side-by-side with opportunities for work and handouts. Orphans often have a local network of grandparents, uncles, aunts, nephews, friends, siblings etc. It is for this reason particularly important to encourage the children to stay in their familiar village and their well-known childhood surroundings. In the end many of them will continue their life in the villages as productive adults. For these reasons BLOOM wishes to help the village orphans where they can feel at home.

### BLOOM and the orphans today

BLOOM is feeding 350 orphans twice a day. The children, who come from ten villages, also get a minimum of adult guidance whenever needed or possible.

A borrowed house has formed the base for the work, but there is not enough space in the house for the children to live or rest.



### Building a proper home for the orphans

Many of the children have no safe place to stay and no proper guidance in life. BLOOM is therefore planning an orphanage housing 120 of the neediest orphans, and feeding a total of 350. BLOOM's aim is not only to provide the children with the means for temporary survival in the form of food, but to offer the opportunity to learn important lessons, thus preparing the children for a happy and productive life as adults.

Depending on finance available, the Centre may be established in phases. The main layout of the Centre is found on page 5. More details can be found in the following sections of this document describing details of building design, economy and purpose of the various structures.

### The BLOOM Centre - growing

The main plan for the Centre (see below) enables gradual development. Different parts of the Centre should generally be built in a certain order to create proper conditions for eating, living and working there (details in sections 7, 8, 9 and 10).

### Houses – priorities and expenses

This is a preferred sequence or priority. The sequence may however be changed on request. More detailed descriptions of priorities and expenses are found in sections 7 and 8.

1. Assembly building/meeting house and cooking area	25.300 US\$
2. The first 4-unit toilet	3.200 US\$
3. Home no. 1 and 2 each to house 20 orphans and a “mother”	2x11.600 US\$
4. Temporary washing facilities in traditional style (estimated)	500 US\$
5. Home no. 3 to house 20 orphans and a “mother”	11.600 US\$
6. Home no. 4 to house 20 orphans and a “mother”	11.600 US\$
7. The second 4-unit toilet	3.200 US\$
8. Home no. 5 to house 20 orphans and a “mother”	11.600 US\$
9. Home no. 6 to house 20 orphans and a “mother”	11.600 US\$
10. Washroom building	10.200 US\$
11. Sickbay and admin building	11.100 US\$
12. One 2-unit toilet	2.000 US\$
13. Farming tools and livestock (no cost is specified)	N/A

### Other future expenses

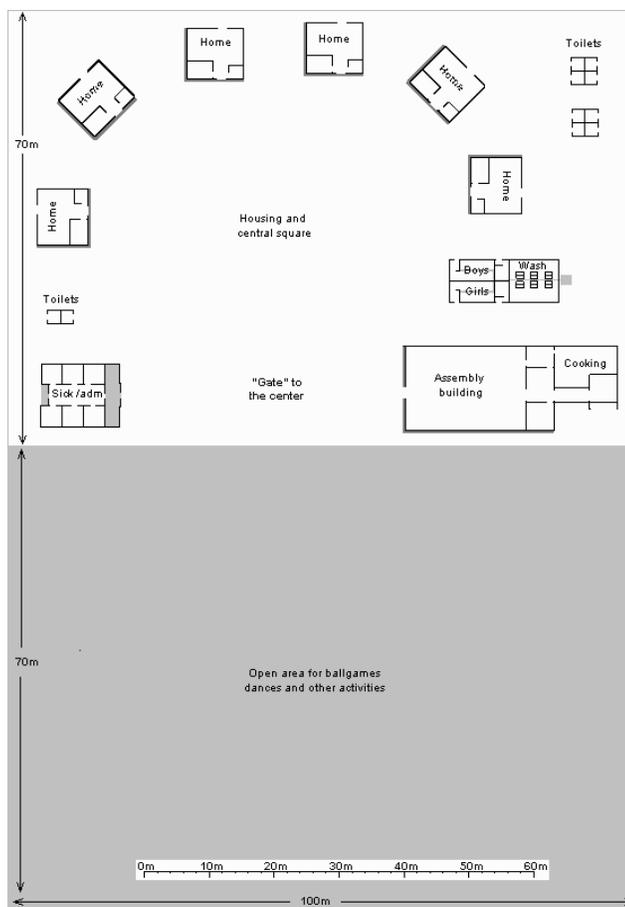
The remaining expenses are hard to estimate and will vary from day to day. Details are found in sections 6 and 10.

### Future monthly expenses:

• Food (currently)	1.000 US\$
• Health/medicine	300 US\$
• Hospital fees	250 US\$
• Soap etc	50 US\$
• Funeral expenses	100 US\$
• Lamp oil	40 US\$
• Firewood	50 US\$
• Schoolbooks	100 US\$
• Building mainten.	200 US\$
• Basic transport	200 US\$
<b>Sum</b>	<b>2.290 US\$</b>

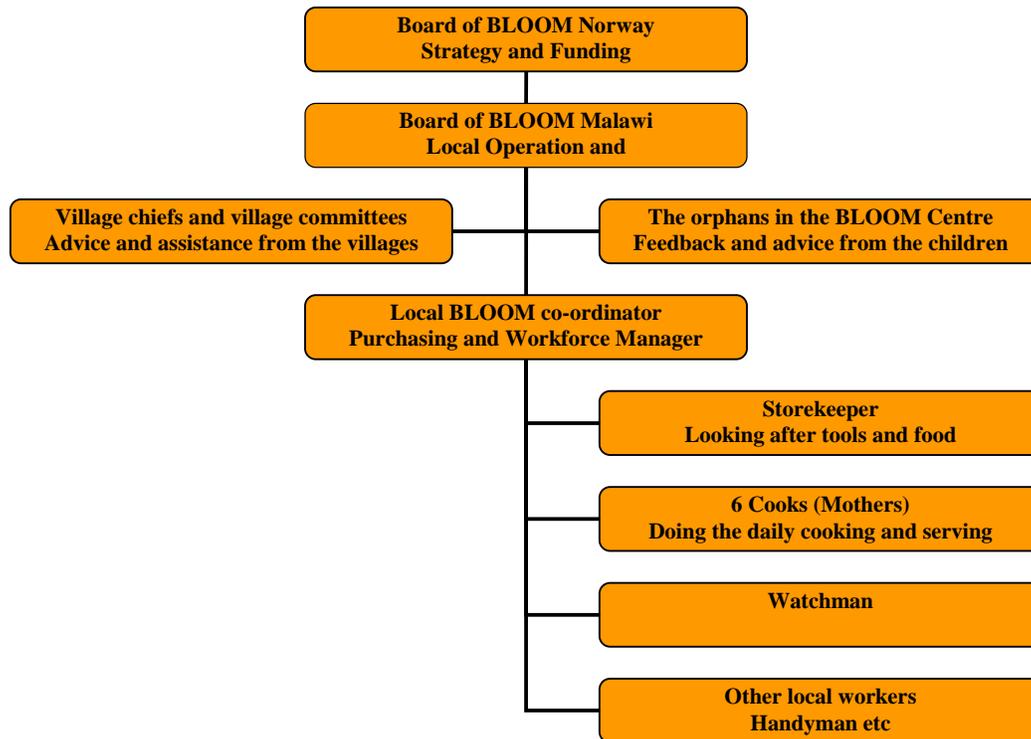
### Future monthly staff expenses:

• Six “mothers”	300 US\$
• Centre coordinator	70 US\$
• Storekeeper	70 US\$
• 2 night guards	50 US\$
• Handyman / guard	25 US\$
• Nurse and travel	100 US\$
<b>Sum</b>	<b>615 US\$</b>



All costs are based on Nov. 2007 exchange rates. 1 US\$ = 5.3NOK = 140 Malawi Kwacha. The rates are continuously changing, and the expenses must be adjusted accordingly.

## 2. Organization



**BLOOM was founded in 2005 by Isabel Maguja Nielsen** who is also the chairman of BLOOM Norway. She was born and raised in Malawi, and is now a Norwegian citizen living in Hokksund, Norway.

**The Board of BLOOM Norway** is the executive assembly and is responsible for overall strategies and detailed project plans. The Board is also responsible for public relations and fundraising. BLOOM Norway transfers funds to BLOOM Malawi based on previously specified daily expenses or approved receipts for extraordinary spending. BLOOM's financial affairs are monitored on a regular basis by a chartered accountant according to Norwegian law.

**The Board of BLOOM Malawi** is responsible for initiating and monitoring BLOOM's local activities. Responsibility for daily operations is delegated by BLOOM Malawi to the local coordinator. The BLOOM Centre is visited regularly by Malawi Board members to monitor the local activities.

**The ten Village Chiefs and their Village Committees** are important partners at the local level. They are also responsible for advising BLOOM when needy children are identified in any of the ten villages. The Chitimbe village chief is of particular importance because the BLOOM Centre is located in his village. **The Head Chief and the Sub-Chief** are briefed and consulted by BLOOM Malawi whenever necessary.

**The local BLOOM coordinator** is responsible for the daily work, and the local purchases of food, firewood and other materials and services. The local coordinator communicates directly with BLOOM Malawi and with BLOOM Norway whenever necessary. The local coordinator is also the main supervisor of the workforce consisting of storekeeper, cooks, watchman etc.

**BLOOM's Norwegian board**

Ms. Isabel Maguja Nielsen	Linneaveien 51	3300 Hokksund
Ms. Lene Mørch-Kerrison	Heggedalsmarka 10	1389 Heggedal
Ms. Lynda White Petterson	Solstadveien 31 B	1395 Hvalstad
Ms. Sidsel Knutsen	Granbakken 26	1386 Asker
Mr. Knut Petterson	Solstadveien 31 B	1395 Hvalstad
Mr. Lars Bache Nielsen	Linneaveien 51	3300 Hokksund

**BLOOM Norway's treasurer**

Mr. Tron Hvaring	Radarveien 11	1152 Oslo
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**BLOOM Norway's chartered accountant**

Mr. Rolf Müller	Grant Thornton Asker DA
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**BLOOM's Malawian board**

Mr. Richard Chigwenembe	Lilongwe
Ms. Rosta Msaka	Blantyre
Mr. Henry Maguja	Ntaja
Mr. George Naphambo	Blantyre
Ms. Rexa Naphambo	Blantyre
Mr. Fredrik Mkula	Lilongwe
Ms. Lingalireni Mihowa	Blantyre

**Villages and village chiefs**

Traditional Authority	T. A Mwambo.
Sub Traditional Authority	S.T.A. Kimu
Village Headman Masikini	Mr. Lewis Chigamba
Village Headman Chitimbe	Mr. Beston Namalira
Village Headman Sitima	Mr. Patrick Gomeka
Village Headman Siliya	Ms. Edda Maphuwa
Village Headman Mutano	Mr. John Pondani
Village Headman Chilumphu	Mr. Fransisco Nakohi
Village Headman Chikwatu	Ms. Mmude Likaka
Village Headman chingondo	Mr. Colins Nanseta
Village Headman Chauya	Ms. Margaret Mataka
Village Headman Kambwiri	Mr. Ginnes Muhehe

**BLOOM is a voluntary and non-profit making organization.** Except for a few members of the local staff none of BLOOM's officials receive any compensation for their work.

BLOOM Norway was registered June 2005 in "The Brønnøysund Register Centre" [www.brreg.no](http://www.brreg.no) which is a government body under the Norwegian Ministry of Trade and Industry, and consists of several different national computerized registers. These registers contain information and key data about most Norwegian organizations. BLOOM's registration number is 988 369 268.

### **3. BLOOM is active in the villages**

Orphans live throughout Malawi, but they are more vulnerable in towns where temptations and dangers flourish side-by-side with opportunities for work and handouts. BLOOM will help village children in the village for the following reasons:

#### **3.1. Orphans need their local community**

While orphans are without a mother and father, they are not entirely without other personal contacts. Siblings, grandparents, uncles, aunts, friends and other people form an important local network that may support orphans, or at least help them become aware of their roots. If these children move away from their home village and travel to town, then personal ties are broken and they become rootless. And although some children believe that life is easier or better in town, they are sometimes tempted to survive or are forced into prostitution or crime. BLOOM will help the village orphans before they move to town and encounter these dangers.



#### **3.2. Malawi thrives with orphans in the villages**

Children who have lived for a while in towns are often unwilling to return to their villages even if they may have good opportunities there as farmers, craftsmen or artists. Malawi may gain great benefits by demonstrating to young people that life in the villages can be good. The official Norwegian district policy has also encouraged regional development and village life over the years.

#### **3.3. Local activities enrich local culture**

Children who grow up in a village maintain the traditional lifestyle that has supported good living in the African villages for millenniums. The local culture may in this way be maintained and hopefully enriched by new generations. This is particularly important in communities where the effects of AIDS and other diseases have decimated the population.

#### **3.4. Local acceptance, contact and joy**

The local people living in the villages are an important source of social contact, socialization and general learning for the orphans. The locals demonstrate to the children that there is a good life waiting outside the BLOOM Centre. The Centre also enriches the village inhabitants by supporting the local orphans among them thereby strengthening a sense of community. Local workers may receive a modest income from the project, and the local water supply is secured.

#### **3.5. Orphans can assist at the Centre**

Farming should be an integral part of the Centre's activities, because the Malawi economy is based on agriculture. Children need to learn basic farming skills. They will also learn important social skills, and the BLOOM Centre may reduce costs when growing some of the food that is needed.

#### **3.6. Strengthening the local communities**

Local activities including farming, handicrafts etc will enable the community to be self reliant and reduce the future need for funding or other external assistance.

## 4. Children working

### 4.1. Children learn and grow when involved

In the African tradition children participate from their early years in the family chores. Even small children look after siblings, and general work in the house or in the fields is done proudly and happily by children of almost all ages. The great pride of managing a useful task generates motivation and the wish to do more.

Children are not born with the knowledge needed in a normal home. The critical skills of washing, cleaning, fetching food and firewood, cooking, maintaining houses, farming etc are best learned-by-doing. Because children of different ages have different strengths and varying intellects their way of learning should be adapted to their levels of skills. Work must not interfere with school, but most children will learn a lot by participating in local chores for a limited time each day.



### 4.2. Child Labour and Trafficking is not acceptable

The attitude to child labour has varied during the centuries and from place to place. The International Labour Organization ([www.ilo.org](http://www.ilo.org)) describes child labour as:

*"work situations where children are compelled to work on a regular basis to earn a living for themselves and their families, and as a result are disadvantaged educationally and socially; where children work in conditions that are exploitative and damaging to their health and to their physical and mental development; where children are separated from their families, often deprived of educational and training opportunities; where children are forced to lead prematurely adult lives."*

**BLOOM fully supports the ban on child labour.**

## 5. Status

### 5.1. What has been done?

Before the Centre was opened for the orphans some infrastructure was needed, and many preparations were made:

- BLOOM Norway was established, organized and registered.
- BLOOM Malawi was established and organized.
- Concerts and other activities were arranged to generate a minimum of income. This was a major and long lasting effort by dedicated volunteers.
- The location of the Centre was decided, and it is now operational in Chitimbe village in south-east Malawi in the Zomba district (map section 5.2).
- An existing house was borrowed and totally renovated to perform a temporary Centre for the project. Here is safe storage for food and tools, and a location for the local project administration. The house also provides simple accommodation for BLOOM officials or visitors whenever needed.
- A well with a manual pump was built. However, access to local water was not satisfactory, and BLOOM had to drill for water and set up a pump which now provides clean and healthy water to both the orphans and the local community.
- Meetings were held with the Village Headmen, and the Village Committees. Here the ground rules for the project were presented, discussed and agreed upon. Local acceptance and goodwill is critical for success.
- The Village Headmen identified orphans in each of their villages. The children then went to the BLOOM Centre for registration. All orphans in the district are welcome therefore the children were not questioned about their religious beliefs or their state of health. The following data were collected when available:
  - Name of the orphan
  - Age of the orphan
  - Gender of the orphan
  - Name of his/her village
  - Name of one parent
- In order to supervise the establishment of the project the chairman of BLOOM Norway, Isabel Maguja Nielsen spent 2 months in Malawi, mainly organizing the BLOOM infrastructure and work. Neither the stay nor the trip was financed by BLOOM. The Centre was however established with good assistance from BLOOM Malawi:
  - Pots, plates, food, firewood and tools were purchased, and the cost of each purchase was registered to establish the basic cost structure of the project.
  - Local staff was engaged to carry out the daily assignments including a local coordinator, a storekeeper, cooks and a watchman.
  - During the first days of cooking and feeding the children, the work process and the actual expenditure was registered. This was important to create a foundation for the future expenses when feeding a number of orphans. These statistics will enable the monitoring of daily expenditure.
  - The village people were involved to create a positive relationship between the Centre and the local population, and to increase community participation.



## 5.2. Present activities

BLOOM is now successfully feeding 350 children twice a day. The children arrive in the morning for breakfast. Then some of them will leave and go to school before returning to the BLOOM Centre for lunch. Preschool children and children who do not have the possibility to go to school will stay at the Centre until lunchtime. Several of the children walk for more than three hours every day to appear at the BLOOM Centre and to return home. The present cost of feeding the children is 5500 Norwegian kroner (NOK) per month (1000 US\$), thus feeding one child costs 20 kroner per month.

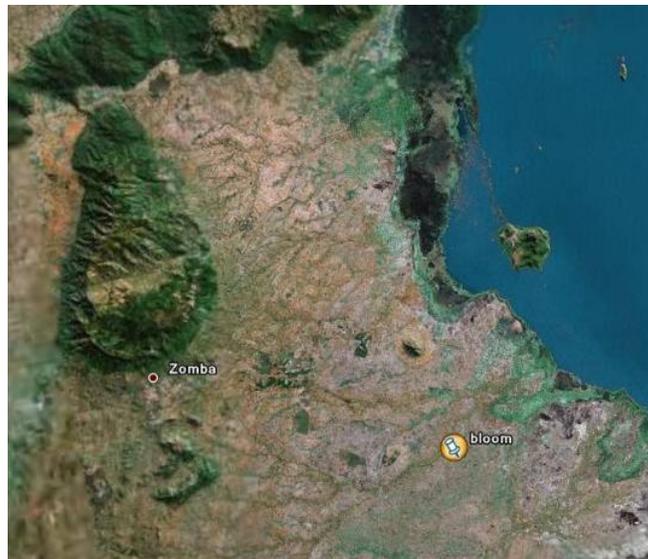


BLOOM has refurbished a house that was borrowed from a local resident. The house is too small for all planned purposes, and it doesn't have the space for cooking, feeding the children or other activities involving most of the children. It enables safe storage of food and equipment and offers space for simple administration.

BLOOM also built a well with a pump, which supplies both BLOOM and the local people with fresh water. In addition to providing a good water supply, the well enables good contact between the orphans and the locals.



The Centre is located in the south-Eastern region of Malawi about 45 minutes travel from Zomba. It is situated by a tiny road and has no electricity. The orphans come from nearby villages which are less than 1 ½ hours walking distance from the Centre.



*The BLOOM Centre is located in southern Malawi, east of Zomba town*

## **6. Plans**

Feeding a group of orphans is important, but not enough. BLOOM is only successful when the orphans have good physical and mental health and adequate domestic and health related education. Currently BLOOM has limited resources, and a number of important activities have yet to be initiated. The following issues are considered important by BLOOM, and will be addressed as soon as funding permits. The plans are developed in close co-operation with the village chiefs, village committees and the local community to create plans based on local needs and local acceptance.

### **6.1. Housing**

- Assembly building / meeting house with space for cooking and eating during the rainy season. Later on it will be used for different kinds of activities or teaching where many of the children are assembled at the same time
- Housing: 6 standardized homes for 120 /350 children and one “mother” for each house. Each house has 20 beds, and in addition to that it will be a day-centre for approximately 40 additional children per house. In this way six houses and the assembly building can operate as a care centre for 350 orphans
- Sanitary facilities: Toilets, washing facilities and laundry facilities
- Health Centre: A place where a nurse can receive sick children, and where very sick children can be isolated and nursed when necessary
- Storage: Safe and dry storage space for food and tools protected against humidity, insects, vermin and theft

### **6.2. Manpower and healthcare**

- 6 ladies who cook the food, and eventually become the care persons (“mothers”) looking after groups of children, and living in the houses together with the orphans
- Storekeeper
- Local project coordinator
- Nightshift: one or two guards
- Dayshift: one combined guard/handyman
- Primary healthcare. A nurse should visit the Centre two to four times a month. The Centre also needs most other health services in addition to elementary medical supplies and medicine

### **6.3. Education**

- Domestic education: will include learning basic household skills, such as cleaning and light house-work
- Health Education: will include learning ways of living safely e.g. knowledge of hygiene, diseases, fevers, malaria, AIDS, insects and dangerous animals. Health Education will also include sex education with a focus on safe sexual behaviour
- Farming: The BLOOM Centre is located in an area where farming is vital for survival and usually the main source of income. Farming education is important, and should be carried out locally. Learning will include information about crops and small animal farming. Local farming will also create a supply of food for BLOOM and thereby reduce the food bills. All the orphans are able to participate in some farming tasks
- Primary and secondary schooling: BLOOM policy is that children should attend the local schools when possible. When possible BLOOM will support orphans with school materials, clothes and school fees. The question of preschool education for the youngest children, who are unable to walk over long distances

to get to school, is being considered. Currently volunteers are providing teaching for the younger children

- Vocational training. After secondary school (O-level stage) there may be a need for vocational training or academic education. At present BLOOM has not developed plans for this stage in the children's education, and children with further needs should move to other places in the region to receive further education. The final target of BLOOM's efforts is to help orphans to survive and to give them enough knowledge to enter a good and productive life as adults. Orphans that are helped today may help others in the future. This is an important and integral part of BLOOM's work

#### **6.4. Transport and communication**

- Fetching food, moving building materials and transporting sick people to and from hospital when needed. A pickup car will in the future enable this
- Communication by phone, letter and word-of-mouth
- Simple office equipment to be used at the Centre and in town by the BLOOM Malawi board and supervisors

#### **6.5. Protecting the environment**

Cooking is traditionally done on open fires in Malawi. The use of firewood and charcoal has resulted in extensive deforestation followed by erosion and landslides. Burning wood is only CO<sup>2</sup> neutral when the forest is growing back again. Because trees are not re-planted in Malawi this emission is therefore not CO<sup>2</sup> neutral. BLOOM wishes to limit the environmental damages both locally and globally whenever feasible. To limit the use of firewood the project will investigate the use of highly efficient stoves. An investment in these stoves may be paid back by reduced costs for firewood.

#### **6.6. Electrical power based on solar panels**

The traditional villages and the BLOOM Centre have limited electrical power supplies. Light is mainly supplied by battery torches and traditional kerosene lamps. Firewood is used for cooking. Many orphans at the BLOOM Centre will return to villages with the same basic facilities, and BLOOM has decided to reflect that lifestyle.

While lack of electrical power is usually fully acceptable, some functions are safer or more effective when using electricity. The distance to public power is too far and expensive, and the use of diesel or petrol powered generators considered an unnecessary expense and a disturbing and polluting element in the village. A few critical functions can still be served efficiently by using solar power, thus limiting the fuel expenses and the pollution:

- Cooler bag or small fridge for critical medicine storage in the health Centre. This will form the main power consumer
- Small emergency lights for the health Centre and administration
- Emergency lights in the yard for a few minutes or hours
- Charging of cell phones and electrical torches
- Operation of portable computers and chargers used by visitors
- TV or video player for educational purposes

Electrical power may be considered at a later stage, but at presently it is too expensive. The cost of a basic solar power electrical system is estimated at 7200 US\$

#### **6.7. Future projects**

There are 1.2 million orphans in Malawi. At present BLOOM cares for 350 of them. When the first BLOOM Centre is fully operational it will be evaluated, and if it is considered successful then more centres may be established.

## **7. Priorities**

The development of the BLOOM Centre and its activities will be prioritized. It is a fact that most of the activities below are equally important and hard to separate. However, it is also important to consider that as well as the building costs there will also be ongoing expenses for building maintenance and staff fees (section 8.3)

The following is a prioritized list of planned development:

### **7.1. Assembly building for safe cooking, feeding and assembly activities**

Food is the most critical issue, and BLOOM is currently feeding 350 orphans. Cooking and feeding is presently carried out outdoors. This causes serious practical problems especially during the rainy season. The children must eat sitting on the ground, and cooking outdoors causes a number of practical and health-related problems. An assembly building is also critical when carrying out basic teaching. This has already started at the BLOOM Centre in a modest form.

### **7.2. Sanitary installations for the assembly building**

Sanitary installations are quickly needed too. One four-unit toilet building is described in this document (section 9.5).

### **7.3. Housing and sanitary installations for 20-120 orphans.**

It is estimated that one out of two orphans at the BLOOM Centre are in need of housing and parental care and guidance. Although children may have inherited their parental home, it is virtually impossible for them to maintain a safe and healthy life on their own. Children cannot properly protect themselves from assaults or abuse, and they are unable to manage all the necessary farming tasks to harvest crops for a living.

The BLOOM housing project is based on a group of houses where each building can accommodate 20 children and a “mother”. Six homes housing 120 children are the target, and it is possible to build a few houses first and then expand whenever funds are available. Even if a health centre is postponed until later on, a house may give temporary space for sick children. Washing facilities are not too critical with only one or two houses, but with more houses they are important too. If all the houses, toilets and washing facilities cannot be financed immediately, then the progress in smaller steps may be:

1. Two houses or “homes” as described in this document offering space for 2x20 children and two “mothers” (see section 9.3). While one house alone will probably not form a social platform that is solid enough on its own, it is likely that two mothers in two houses will be able to support each other in many aspects of their role as carers
2. It will probably be necessary to build very simple and temporary washing facilities. These simple washing facilities may be built quickly in the traditional manner and form a temporary replacement of the facility that is specified in section 9.4
3. Two more houses for 2x20 more children and two additional “mothers”
4. One additional four-unit toilet building (section 9.5)
5. Two more houses for 2x20 more children and two additional “mothers”
6. Washroom building offering facilities for 120 children and 6 mothers (section 9.4)

Even when one or more homes have been built, children will soon become sick with infectious diseases and need isolation. Until a proper sickbay is built the “mother’s” room can be used for that purpose. With two bunk beds it is possible to house 4 sick children, and even more if the children are small (section 9.3.2).

#### **7.4. Sickbay, administration and guestrooms. Separate toilets.**

Although rudimentary health care may be made available by allocating beds in the houses, 350 children will quickly generate a need for better health services. A nurse visiting once a week or once every two weeks will be able to handle many cases. There will be a need for facilities for isolating very sick children or children with infectious conditions.

There is also a need for some storage space and basic administration facilities. Visitors and inspectors may need guestrooms, because the village is far from town, and there are no other places where visitors can sleep.

In order to secure a good standard of hygiene the sickbay and administration buildings require a separate two-unit toilet building. Neither sick children nor visitors should use the general toilet facilities in the Centre.

The nurse's regular visit to the Centre will underline the lack of primary health care available to the local villagers. This is likely to present a challenge for the BLOOM project and may result in added costs since it will be difficult to separate the local needs and the orphan's needs for basic medical advice and attention. This situation will be continuously evaluated by the BLOOM board.

#### **7.5. Farming**

The BLOOM Centre is surrounded by farmland that can provide a healthy and inexpensive supplement to the food from the markets. The amount of purchased food can be reduced, and the children can have first hand experience in local farming. Although child labour is totally unacceptable, there is a vital need for the orphans to feel useful by participating in daily chores such as cleaning, washing, cooking, fetching food and firewood etc.

The care of small animals such as chicken and goats may also form useful activities, good food and fine lessons in village life. To establish such activities there is a need for tools, seed grain, poultry, eventually goats or cows and some fencing to protect and to enclose the larger animals.

Expenses (not yet evaluated):

- Knowledge transfer, training
- Farm workers and supervisor
- Seeds
- Livestock
- Farming tools
- Simple farming machinery
- Milling equipment (mill and generator)
- Fuel

## 8. Economy

### 8.1. Present sources of income

As a small organization BLOOM has a modest income. Monetary support and assistance has been kindly donated by helpful individuals and organisations. Sources of income have been:

- Monthly donations from individuals or families
- Single donations from individuals, families, businesses or organizations
- Income generated by concerts and shows. One popular combined concert and show was held October 2005 at Union Scene in Drammen. Another successful show including the assistance of the well known artist Anita Hegerland was held in March 2006 in Vardåsen Church in Asker
- Income through exhibitions and small events where African life and customs were demonstrated e.g. mask painting, face painting, storytelling, and the sale of African artefacts
- The “Russ” (High School Graduates) in Hokksund donated their surplus from 2006 to BLOOM’s work
- Students in Gulskogen School in Drammen first studied the conditions in Malawi thoroughly, and then they all donated “a day’s work” to BLOOM
- Berit Oppheim donated a major sum of money to BLOOM
- Canadians Women’s Club
- Fredensborg Eiendom



### 8.2. Future needs and sources of income

Our present income is feeding 350 orphans and vulnerable children twice daily. This is a wonderful improvement for the children, and demonstrates that BLOOM is active and able. Nevertheless feeding the children will not alone prepare them for the future. Housing, sanitary installations, health services, educational assistance, vocational training etc. are important too. BLOOM Norway has decided that both private entities as well as government institutions shall be approached to increase financing of the project and to ensure the continuation of the programme. Funding requirements fall into several categories:

- Investments in infrastructure such as housing and hygienic facilities
- Covering daily costs buying food, firewood etc, and the cost of labour
- Tools for basic tasks such as cleaning, maintenance and farming
- The cost of health services including medicine, a visiting nurse and hospital or doctors expenses in certain cases

Today BLOOM has a modest income from regular donors, and other activities that generate enough funds to feed the children. To make the Centre a place for a reasonable standard of living and learning it is necessary to identify donors who can participate in building the infrastructure for the Centre. Donors may be approached in the following groups:

- Interested individuals
- Students in public and private institutions e.g. schools, universities etc
- Artists and other performers who can assist by generating funds through exhibitions, concerts, shows or by the sale of artefacts and other activities
- Businesses where the management can contribute to the development and operation of the BLOOM Centre
- Public organizations with development aid as one of their main activities

Donors wishing a first-hand experience of where and how their funds are used are of course very welcome to visit the Centre. Meeting the children and their helpers is a very touching and almost overwhelming experience.

### 8.3. Cost summary

Item	Qty	Unit cost US\$	Total cost US\$
<b>8.3.1. Designing and building houses</b>			
Assembly building (details in section 9.2.)	1	25.300	25.300
Homes (total cost of 6 units) (details in section 9.3.)	6	11.600	69.600
Washing facilities (details in section 9.4.)	1	10.200	10.200
Toilets / sanitation (4-seat units) (details in section 9.5.)	2	3.200	6.400
Sickbay, storage and admin. building (details in section 9.6.)	1	11.100	11.100
Toilet for sickbay (2-seat unit) (details in section 9.5.)	1	2.000	2.000
<b>Sum housing costs</b>			<b>124.600 \$</b>
<b>8.3.2 Tools and equipment</b>			
Cooking and serving utensils	N/A		1.000
Administration material, blackboard, paper, pens etc	N/A		300
Electrical equipment (NOT a priority) (details in section 10.6)	1 set	7.200	7.200
<b>Sum</b>			<b>8.500 \$</b>
<b>8.3.3. Running expenses – monthly costs</b>			
Food (current costs)		1.000	1.000
Basic health services and medicine			300
Hospital fees if BLOOM chooses to cover such expenses	N/A		250
Housing materials, soap, toilet paper brooms, buckets etc			50
Funeral expenses			100
Lamp oil, 15 litre per month (0.6 litre per day)	20 l	2	40
Firewood			50
Schoolbooks etc (students material)	N/A		100
Building maintenance (all planned buildings)	N/A		200
Basic transport expenses	N/A		200
Car expenses. Will be evaluated at a later stage.	N/A		0
<b>Sum</b>			<b>2.290 \$</b>
<b>8.3.4. Staff payment - monthly expenses</b>			
“Mothers”	6	50	300
Centre coordinator	1	70	70
Storekeeper	1	70	70
Two watchmen - nightshift	2	25	50
One watchman/handyman - dayshift	1	25	25
Nurse one day per week including travel expenses (estimated)	1	100	100
<b>Sum</b>			<b>615 \$</b>

All base calculations for the cost estimates are described in detail in section 10.

## 9. Housing in detail

BLOOM does not currently own buildings at the Centre. The Project uses a small borrowed house where food and tools are stored. All main activities at the Centre presently take place outdoors including cooking, eating, playing and main assembly. The rainy season lasts from December to May/June, and it also rains outside of these months. Cooking and eating outdoors should be avoided not only for practical reasons and comfort but because it is difficult to maintain hygienic standards. Although it is important to use local materials where possible to empower the local economy, there is a need for other materials in particular cases:

- The traditional thatched roofing has a relatively short lifetime – usually less than 5 years before major renovation is necessary. The thick roofing with straws also constitutes a very serious fire hazard. BLOOM will use corrugated iron sheets for roofing to obtain a longer lasting roof and to provide acceptable fire protection
- The traditional mud-wall design requires regular maintenance. Local bricks are however available and although the initial costs will be slightly higher, bricks are much more durable. These can also be put in place by local manpower, and painted for better protection against humidity and other external influences
- The traditional dirt-floor construction raises the floor over the common ground to keep water out during the rainy season. It will however be quickly worn down by many children, and it will be difficult to maintain and to clean properly. To form a reliable and clean foundation for the buildings, concrete foundations are necessary, even though this will increase building expenses in the short-term.



*A traditional house built with thatched roof, mud walls, dirt floor and an outdoor veranda for comfortable daily seating*



*Home in traditional building style close to the BLOOM Centre housing a family of five. The oldest inhabitant is 18 years of age taking care of her own baby and three small siblings.*



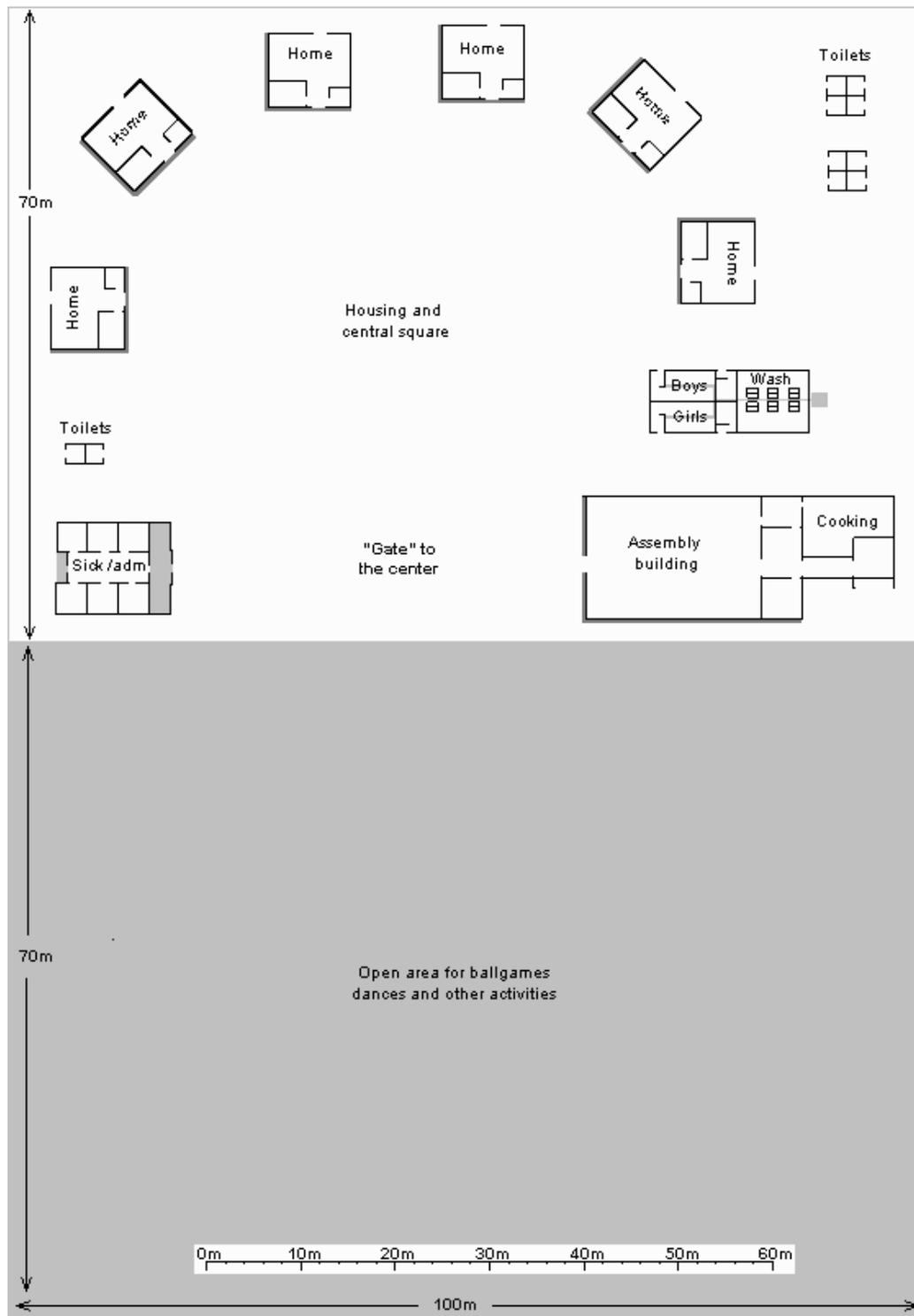
*BLOOM cooking facilities. All activities are outdoors and unprotected during the rains.*

## **9.1. Centre main layout**

Buildings and other facilities in the Centre may be added over a period of time. As funds become available more structures can be built. The locations of the buildings are guided by the following principles:

- The buildings also including the six homes are placed in a circular shape around a common central area to allow everyone to be included in the life of the Centre
- The washroom building and cooking areas (assembly building) are placed close to each other, because this is where the main adult activities are concentrated. The toilets are located in a remote corner for hygienic reasons, but close to the washing area
- The washroom building is placed in clear view of the other buildings for added safety for children entering the building
- A separate double toilet for sick children and for the adults is placed by the sick bay and administration building
- The outlets for “grey water” from the washrooms and the cooking area where the dishes and pots are cleaned are found at the same side of the Centre
- The “black water” or sewage is only found in the tanks below the toilet buildings
- The sickroom/administration building faces the assembly building. They stand at either side of a wide “entry” to the central area. In this way all the buildings are accessed from the central place in the BLOOM Centre
- Outside the ring of buildings by the “entry” and beside the assembly building a wide space will provide the opportunity for ballgames, dances or other activities. This area is the same size as the area with buildings

## Centre main layout



*The BLOOM Centre layout. The houses are located in an inclusive circle, keeping the sanitary and washing functions at the same place when possible. The area for housing is 70x100m = 7000m<sup>2</sup>. The activity and recreation area is 70x100m = 7000m<sup>2</sup>.*

## **9.2. Assembly building/meeting house.**

Currently the BLOOM Centre is cooking and serving food outdoors. The rains will quickly disturb these and other activities, and there is an urgent need to erect a building to house the most important activities.

An assembly building forms a common space for 350 orphans and includes cooking and storage facilities. It will cover 250 m<sup>2</sup> (12x21 metres) with a raised concrete base plate to keep rainwater out. The walls will be built using local bricks with windows for adequate air circulation and daylight. The roof will be covered with corrugated iron sheets to prolong its life and to give long-term protection from rainwater. At the end of the building there will be separate areas where food is prepared and served. There will also be storage space, and an area where cooking utensils and dishes are cleaned. At the same end of the building there will be storage space for food, cooking utensils etc. In a small shelter beside the main assembly building an open and covered fireplace will enable cooking even in the rainy season. This construction is separated from the main assembly building to keep out smoke, and to reduce fire hazard. The shelter will have a covered space for firewood storage. The children will be seated by tables and benches that can be moved when an open space is needed.

A narrow outdoor veranda similar to the one outside the traditional house will supply comfortable traditional outdoor seating for leisure and simple work.

The building is urgently needed, and has the first priority of all BLOOM constructions.



*Types of materials for the planned BLOOM buildings with concrete foundations and floors, brick walls and fireproof roofing. The BLOOM buildings will be built in various sizes, of mainly the same type of design.*

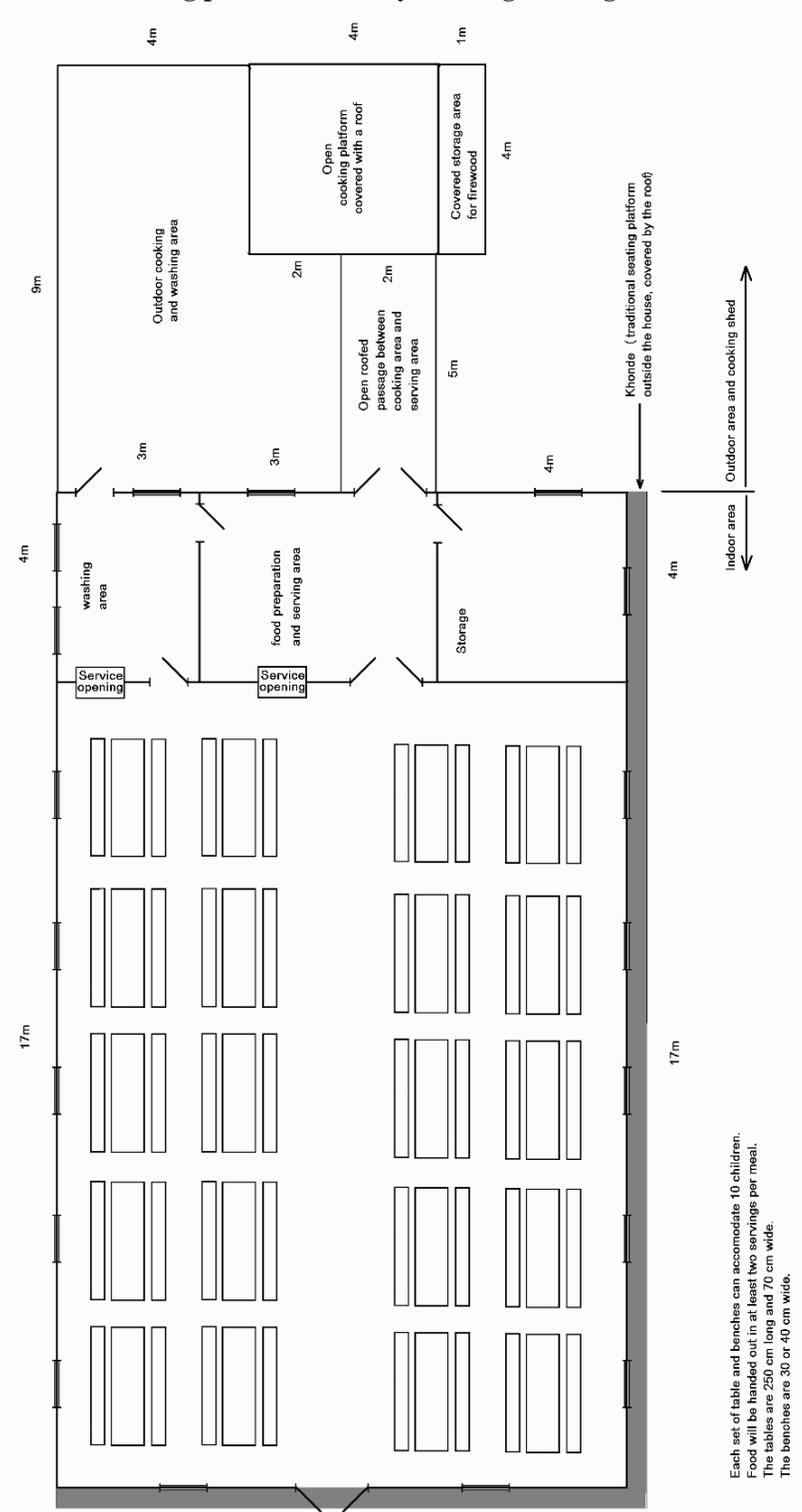


*Traditional narrow outdoor seating platform 50-100 cm deep and 30-40 cm high. The platform is protected by the roof that is extended to give proper cover during the rainy season. The BLOOM buildings will have a similar design by the base of the buildings to enable adequate space for waiting and for casual social gatherings.*

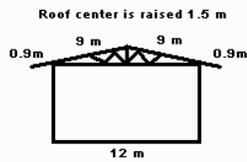


*Planned type of design of the cooking shed with low walls, iron roof, good ventilation and a covered corridor to the main building*

### 9.2.1. Building plan for assembly building/meeting house



*The planned assembly building  
 200 seats, also including the outhouse for cooking and an outdoor cooking area.  
 The children will be served by two seatings per meal to give space for all 350.*



#### Roof design elements for assembly building/meeting house

- 37m of 6"x2" timber forms one top layer for a truss.
- 6.5. of 2"x4" timber forms the web for a truss.
- Horizontal 3"x2" sleepers carry the iron sheets with a 30 cm distance between parallels.

#### 9.2.2. Cost overview for assembly building and cooking outhouse

All items are calculated without loss factor. It is estimated that the consumption is 20% higher than the ideal stated values.

Location	Item description	Qty.	Unit cost US\$	Total cost US\$
Floor, main building	Indoor floor	250 m2	19	4.750
Floor cooking shed, 20 m2	Indoor floor	20 m2	19	380
Floor, cooking/washing and corridor	Outdoor floor	80 m2	32.5	2.600
Walls, main building	Outside wall	66 m	33	2.178
Seating platform 21m long, 30x70 cm cross section = 4.41 m3 (only along one side of the building)	Platform	4.4 m3	88	390
Cooking shed banister 15 m long, 75 cm tall, 20 cm wide = 2.25 m3	Banister	2.25 m3	88	200
Windows, 1m wide, 1.2m tall		18	43	774
Service opening doors/windows		2	43	86
Double outside doors, 1.5 m wide		2	108	216
Double inside doors, 1.5 m wide		1	90	90
Single doors outside, 0.8 m wide		1	54	54
Single doors inside, 0.8 m wide		3	45	135
Roofing and roofing accessories	Roof 30x12m	300 m2	18	5.400
Tables 250x70 cm		20	70	1.400
Benches 40x250 cm		40	30	1.200
Storage room, racks, shelves cabinets etc			Assumed	400
Tables and equipment for food preparation area			Assumed	400
Tables and equipment for washing area			Assumed	400
<b>Estimated cost</b>				<b>21.053 \$</b>
<b>Small items / calculation inaccuracies</b>			<b>+ 20%</b>	<b>4.210 \$</b>
<b>Overall cost</b>				<b>25.263 \$</b>

### 9.3. Homes.

To enable a stable and safe life all orphans need adequate living conditions. Some live alone in the same homes they used to share with their parents. These traditional buildings require continuous maintenance which the children usually cannot manage or afford. Sometimes their house or farmland is taken away, and the children may not be able to successfully fight for their rights. Living alone is hard, and robbery of food and household equipment or physical assault is not uncommon. Even orphans with their own property may therefore be in urgent need of guidance and a safe place to stay.

Other orphans live for a while with friends or distant relatives, but these good helpers are both economically and personally challenged when they try to include another hungry mouth in an already poor and extended family. The life as the “odd” child in a family is unpredictable and represents possibilities of both wonderful blessings and of serious dangers.

Some orphans have no place to live, and only rarely find a safe and dry place to sleep or food for the day.

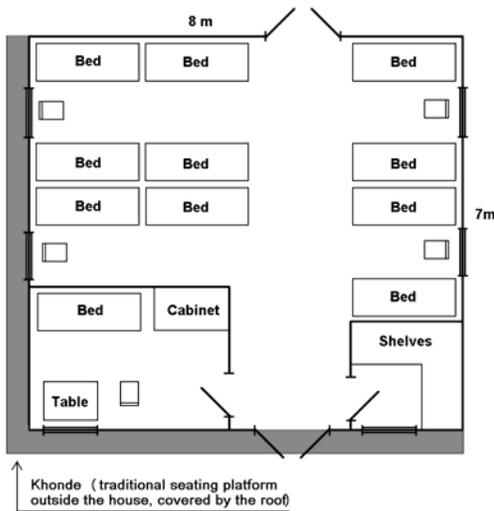
It is estimated that more than half of the children living by the BLOOM Centre have no safe, healthy or reasonable place to stay. And orphans who have their own housing are still in great need of food, teaching and guidance from grown-ups with knowledge and the capacity to help.

It is considered extremely important that each child has a safeguard in the form of a person who can be looked upon as a “Mother”. The BLOOM Centre will be organized in smaller groups or homes where a limited number of children can live or be helped. The cooking and other daily tasks to look after 350 orphans are managed by 6 women on a voluntary basis. It is a natural progression to employ these women and to let them live with the children becoming the “mothers” at the BLOOM Centre. With 350 orphans and six “mothers” living in the six “homes”, each “mother” will be responsible for almost 60 children. Twenty of those will sleep in the house together with their “mother”, while the remaining ones are day-visitors receiving food, care and guidance.

Each “home” is a house that is built by the same principles and in the same style as the assembly building described above. Each “home” can be described like this:

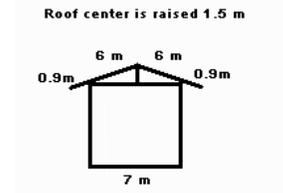
- There will be 6 “homes”. Each “home” will house only girls or only boys of all ages
- The walls are built using local bricks with windows for good air circulation and indoor daylight
- The roof is covered by corrugated iron sheets for proper and long-term protection from rainwater
- The base area is 60 m<sup>2</sup> (7x8 metres) with a raised concrete base plate to keep rainwater out and an outdoors seating platform. The house will include three rooms:
  - One room is 47 m<sup>2</sup> with space for 10 bunk beds with two level sleeping space and private storage boxes to be placed under the beds. Each bunk bed will be 190x70 cm, and include a mattress, a blanket and a pillow.
  - One lockable storage room 2x2m (4 m<sup>2</sup>) is accessed by the “mother” of the house. The room has shelves for bed linen, pillow casings towels, washing materials, spare clothes, soap, house cleaning materials etc.
  - One room is 2.5x3.5m (9 m<sup>2</sup>) and forms a living space and “office” for the “mother” including a bed 190x70 cm, one chair and one cabinet. Apart from serving as the private space for the “mother” it can also be used occasionally when receiving visitors or when attending to children with a particular need for a private conversation.

### 9.3.1. Building plan for homes



#### Roof design elements

- 27m of 6"x2" timber forms top layer for a truss.
- 6.5. of 2"x4" timber forms the web for a truss.
- Horizontal 3"x2" sleepers carry the iron sheets with a 30 cm distance between parallels.



One of the six planned "homes"

It has 20 beds for the orphans, a lockable storage room and a separate room for one "mother". The beds are bunk beds in two levels 190x70cm.

### 9.3.2. Cost overview for one of the six planned homes

All items are calculated without loss factor. It is estimated that the consumption is 20% higher than the ideal stated values. **Please note that all numbers refer to a single house. To fill the actual need 6 houses are planned.**

Location	Item description	Qty.	Unit cost US\$	Total cost one house US\$
Floor	Indoor floor	60 m <sup>2</sup>	19	1.140
Walls 30m long, 3 m tall	Outside walls	90 m <sup>2</sup>	33	2.970
Walls 10 m long	Inside walls	10 m <sup>2</sup>	18	180
Seating platform 7 m long, 30x70 cm cross section = 1.5 m <sup>3</sup>		1.5 m <sup>3</sup>	88	132
Windows, 1m wide, 1.2m tall	Windows	6	43	258
Double outside doors, 1.5 m wide	Double doors	2	108	216
Single doors inside , 0.8 m wide	Single doors I	2	45	90
Single doors outside, 0.8 m wide	Single doors O	0		0
Windows		6	43	258
Roof	All roofing	70 m <sup>2</sup>	18	1260
Two level bunk beds 190x70 cm		10	65	650
Mattress, waterproof cover (pillow?)		21 sets	71	1.491
Blankets (also for some of the children that are not staying)		50	10	500
Single level bed 190x70 cm		1	32	32
Bedroom "mother" cabinet and table		1 set		200
4 chairs for the bunk bed spaces one chair for the "mother bedroom		5	18	90
Storage room, shelves	Assumed	1 set		200
<b>Estimated cost</b>				<b>9.667 \$</b>
<b>Small items / calculation inaccuracies</b>			<b>+ 20%</b>	<b>1.933 \$</b>
<b>Overall cost</b>				<b>11.600 \$</b>

#### 9.4. Washing Facilities

When the BLOOM Centre is fully established washing facilities for personal hygiene and the laundering of clothes, beddings, blankets etc. are needed. Traditionally personal hygiene is managed in different locations such as riverbanks, in living quarters or in screened washing areas. The water is usually retrieved in water basins, and the person washing uses cups to pour the water over their body.



Because most of the children in the BLOOM Centre will return later to their own villages without electricity and plumbing, it is important to operate the BLOOM Centre as close to the traditional manner as possible. Good habits regarding personal hygiene and the proper laundering of clothes and beddings must be learned. When the Centre is fully operational there will be a need for the regular washing of bed-sheets and clothes for 150 people. Washing facilities are located nearby the source of water, and used water is safely and reliably disposed of. The cleaning facilities for cooking and eating utensils are not included here.

The washrooms are built in the same style as the other buildings, but the top of the walls are perforated for air circulation and daylight. The floor is sloped for proper drainage to secure the safe disposal of used water from all washing areas.

- Common washroom for girls. Capacity 4x15 persons – 3x5m (excl entry)
  - Common washroom for boys. Capacity 4x15 persons – 3x5m (excl entry)
  - Washroom for the female staff. Capacity 3x3 persons – 3x2m
  - Washroom for the male staff. Capacity 3x3 persons – 3x2m
  - Common half-open washing area for clothes and bedding. Workspace for 6 people simultaneously – workbenches. Some of the workbenches are built with low workspace for children to participate in the work. 6x7 m
  - Areas or places where washed bedding and clothes can dry.
- The walls are 2 metres tall using traditional bricks. On top of that one metre is added using perforated building style to enable efficient air circulation and proper daylight.
  - The roof is covered by corrugated iron sheets
  - The base area is 85 m<sup>2</sup> (6x14m) with a slightly raised concrete base plate to keep rainwater out
  - The water runs across the sloped floor. Then it will pass through the foot of the walls and stream outside the building in open channels to a drainage pit. The pit is filled with rocks and allows the grey spillage water to filtrate back into the sandy ground

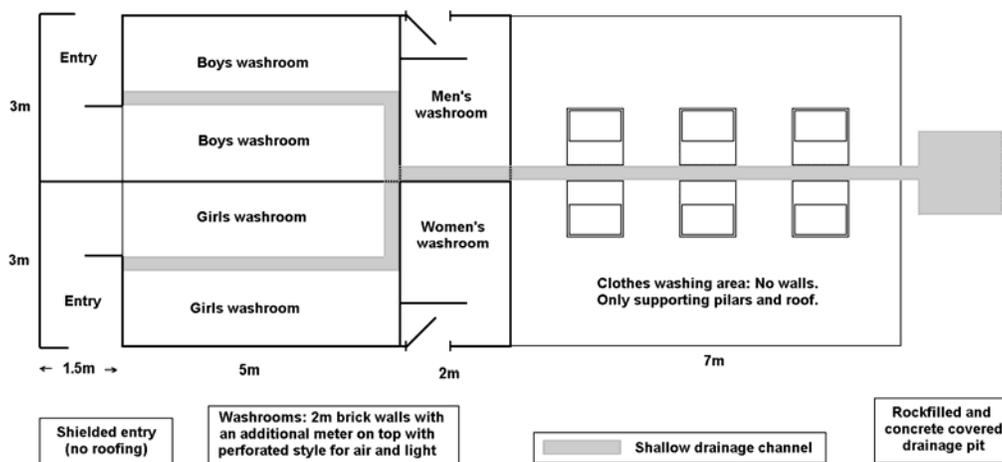


*Building style with perforated wall.  
The washing facilities will have walls in this style between levels 2-3m heights to enable good ventilation and daylight into the washrooms*



*Washstand for easy washing of clothes and bedding.*

### 9.4.1. Building plan for washing facilities



The washing facilities are used for personal hygiene and for the washing and drying of clothes and bedding. The water is fetched manually from the well/pump, and is drained out into a covered drainage pit.

### 9.4.2. Cost overview for washing facilities

All items are calculated without loss factor. It is estimated that the consumption is 20% higher than the ideal stated values.

Location	Item description	Qty.	Unit cost US\$	Total cost US\$
Floor	Outdoor/wet floor	100 m <sup>2</sup>	32.5	3.250
Walls 60m long, 2.5 m tall	Outdoor/wet walls	60 m	33	1.980
Walls perforated style top 60 m long, 1m tall perforated = 50m <sup>2</sup>	Wall top	60 m	10 (estimate)	600
Waterproof plastering and paint for wet areas (washrooms)	Plaster and paint	60 m <sup>2</sup>	5 \$/m <sup>2</sup> Estimate	300
Roofing and roofing accessories		100 m <sup>2</sup>	18	1.800
Single doors, 0.8 m wide	Doors outside	2	54	108
Windows		0		0
Washing stands 6x1x1m = 6 m <sup>3</sup> 50 % inside opening => 3 m <sup>2</sup>	Platform style	3 m <sup>3</sup>	88	264
Drainage pit estimated to 3 m <sup>3</sup> concrete, rock fill materials and work		3 m <sup>3</sup>	Estimate	200
<b>Estimated cost</b>				<b>8.502 \$</b>
<b>Small items / calculation inaccuracies</b>			<b>+ 20%</b>	<b>1.700 \$</b>
<b>Overall cost</b>				<b>10.202 \$</b>

### 9.5. Sanitation facilities.

With 350 people visiting on a daily basis at the BLOOM Centre and with 150 of those as permanent residents there is an urgent need for toilet facilities. The only practical way of attending to this need is building a set of latrines.

The traditional village designs are not hygienic, healthy or safe when they are used by many people and by persons of different ages and skills.

The safer small town design includes pits that are covered by solid concrete plates for safe and hygienic access. For privacy the concrete plates are topped by an uncomplicated building with lockable doors. When the pits are full they must either be emptied by hiring a septic pumping truck service to carry out the task, or by building new units to replace them.



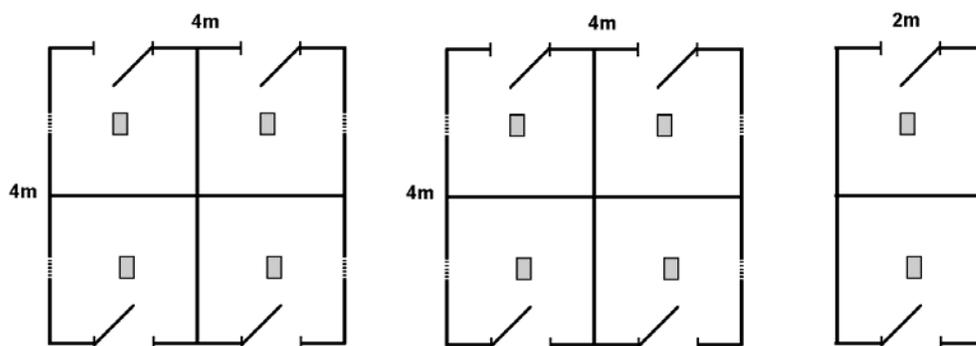
*Traditional toilet in a small town*

*The construction has an underground sewage pit of the same size as the building on top of it. This construction with a 2x2x2 metre pit is sufficient for a family of ten. After some years of use it must be emptied or replaced.*

Initially it is estimated that one toilet unit can serve the inhabitants of one “home”, which is, less than 25 persons. A group of 6 units will serve the houses. Two more units serving the BLOOM staff and visitors are suggested.

- All 8 units are based on an underground pit 2x2x2 metres, and they are gathered in two groups each of 4 units
- The base area of one unit is 4 m<sup>2</sup> (2x2m) with a slightly raised concrete cover base plate to keep rainwater out
- The cover plate has a central 20x30cm opening to the pit. If necessary a suitable removable seat can be placed on top of the opening to enable both comfort and proper cleaning
- An additional opening with a safe cover may be needed by each pit for emergency access, or for access to enable emptying the pit
- The walls are 1.8m tall using traditional bricks. On top of that 50 cm is added using perforated building style to enable efficient air circulation and daylight
- The roof is covered by corrugated iron sheets
- One additional toilet half of the size (two rooms) described above is placed by the sickbay and administration building for quick access for the sick and for visitors

### 9.5.1. Building plan for sanitation facilities



Sanitation facilities. Two blocks each including four toilets, and one block including two toilets for the sickbay and administration. Each unit has a lockable door and a 2x2m concrete cover plate with a suitable opening in the plate. Each unit has a 2x2x2 metre pit

### 9.5.2. Cost overview for sanitation facilities (toilets).

All items are initially calculated without loss factor for a single 4-room facility. It is estimated that the consumption is 20% higher than the ideal stated values. In the final project there is a need for two 4-seaters, and a single 2-seater.

Location	Item description	Qty.	Unit cost US\$	Total cost US\$
Digging the pit – 5x5 m wide, 2 m deep Digging 1 m <sup>3</sup> a day per worker	Digging	50 m <sup>3</sup> = 50 workdays	1.5 \$/day	75
Cover plates (floor)	Toilet floor	16 m <sup>2</sup>	18	288
Pit walls		48 m <sup>2</sup>	18	864
Pit bottom		16 m <sup>2</sup>	18	288
Brick walls 16 m long		16 m	33	528
Formwork and covering boards			Estimate	100
Single doors, 0.8 m wide	Outside doors	4	54	216
Roofing and roofing accessories		16 m <sup>2</sup>	18	288
<b>Estimated cost for a single 4x4 unit</b>				<b>2.647 \$</b>
<b>Small items / calculation inaccuracies</b>			<b>+ 20%</b>	<b>529 \$</b>
<b>Overall cost for a single 4x4 unit</b>				<b>3.176 \$</b>
4x4 toilet units		2	3.176	6.352
2x4 toilet unit (estimated)		1	2.000	2.000
<b>Sum for all toilet units</b>				<b>8.352 \$</b>

#### **9.6. Health care and administration building.**

With 350 children and several adults visiting or living at the BLOOM Centre, there is an urgent need for basic health services. Orphans may be poorly protected against serious or deadly diseases because of -

- A lack of or poor primary health care nearby
- A lack of knowledge and education about infections and serious diseases
- A lack of isolation and care of persons with infectious conditions
- Lack of medicines
- A need for proper sanitary and hygienic facilities, and protection against diseases or infections caused by insects, animals or improper infrastructure

The orphans may be better protected if information, training, medicine and basic health care are available. Regular visits by medical staff, preferably a nurse is necessary.

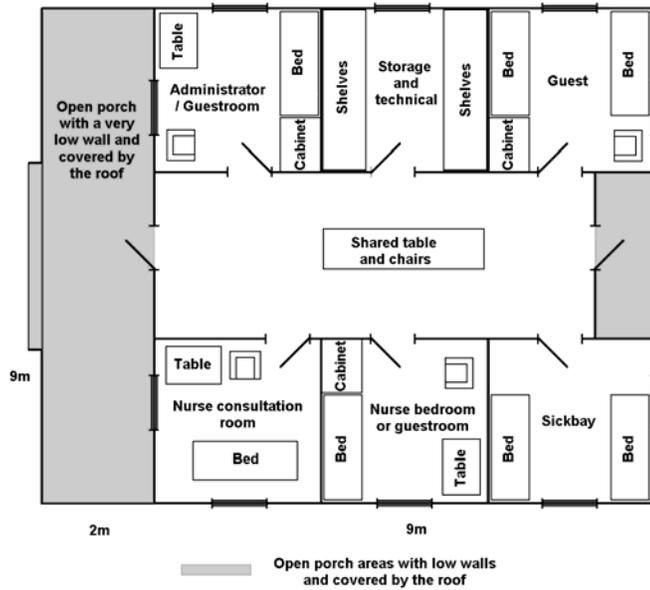
In a sickbay orphans carrying infectious diseases can be isolated to protect the other children. Life-threatening conditions may be caused by for instance malaria, varying problems caused by HIV infections or different fevers caused by insect bites or contagious surroundings.

Guest care facilities and space for technical equipment and administration are also needed.

The building is designed by the same principles and in the same style as the assembly building previously described:

- The walls are built by local bricks with windows for good air circulation and daylight
- The roof is covered by corrugated iron sheets for proper and long-term protection from rainwater
- The base area 81 m<sup>2</sup> (9x9m) with a raised concrete base plate to keep rainwater out and an outdoor seating platform. The house will include seven rooms:
- A lockable nursing room with one bed, a table and a visitors chair. It will be used by the nurse for regular health checks or emergency work. The room will also include basic medical equipment and supplies possibly including a fridge for medicines
- A sick bay with 2 beds 190x70 cm where infectious or seriously sick children can be isolated and nursed. The beds should be single beds for easy nursing, but if necessary bunk beds can be used here instead to supply additional capacity in the top beds during emergencies. The other bedrooms can also be used in an emergency, so the capacity is good
- A central room with a large table and chairs. The room doubles as a lunchroom for visitors, and a meeting room / lunchroom for staff meetings
- Accommodation. Three rooms may from time to time house important visitors, a nurse and/or a local administrator/coordinator
- A lockable storage space for unused clothes, utensils and shared supplies. This room may also include a few critical modern types of technical equipment like the centre for an electrical solar power panel and battery, phone charging equipment, emergency light controls for the sickbay, outdoor emergency lights etc.
- Main food supplies, tools, firewood etc is stored elsewhere

**9.6.1. Building plan for the health care and administration building**



*Sickbay and administration building. Here is space for administration, overnight visitors and a sickbay. One side of the building is the nursing side; the other side is for administration and storage.*



*Open porch. This solution will give space for relaxed meetings and social contact between administrators, the inhabitants of the Centre and the local people*



*The same porch viewed from the house front. The building style is close to the style that will be used in the BLOOM Centre. This design is common and is proven safe and durable.*

### 9.6.2. Cost overview for the health care and administration building

All items are calculated without loss factor. It is estimated that the consumption is 20% higher than the ideal stated values.

Location	Item description	Qty.	Unit cost US\$	Total cost US\$
Floor 100 m2	Indoor floor	100 m2	19	1.900
Walls, 66m long, 3 m tall	Outside walls	66 m	33	2.178
Walls	Inside walls	33m	18	594
Banister 1 m tall, 0.2 m wide,10 m long	Banister	2 m3	88	176
Windows, 1m wide,1.2m tall		10	43	430
Single doors, 0.8 m wide	Inside single door	6	45	270
Single outside doors 0.8 m wide	Outs. Single door	2	54	108
Roofing and roofing accessories		110 m2	18	1.980
Storage room, shelves			Estimate	200
All rooms - single beds		7	32	224
Mattresses with covers		7	71	497
Blankets (some extra for sickbay)		20	10	200
3 rooms - cabinets		3	Estimate	150
3 rooms – tables		3	20	60
All rooms – chairs		4	18	72
Common area - table		1	70	70
Common area - chairs		8	18	144
<b>Estimated cost</b>				<b>9.253 \$</b>
<b>Small items / calculation inaccuracies</b>			<b>+ 20%</b>	<b>1.851 \$</b>
<b>Overall cost</b>				<b>11.104 \$</b>

## **10. Cost estimates in detail**

This section describes the common costs for building materials, running costs and the staff wages.

### **10.1. Cost variation factors**

#### **Exchange rates**

1 US\$ = 140 Malawi Kwacha (MK)

1 US\$ = 5.3 Norwegian kroner (NOK)

#### **Inflation and change in building costs**

The estimations are based on prices in Malawi summer 2007. An increase of material and labour cost of 20% per year can be assumed in the estimate if the costs are projected beyond 2007.

#### **Calculation accuracy and limitations in detail**

All cost and wages estimations are calculated without any safety factors. This means that only the main costs are included, while smaller expenses are not described. When describing the building and use of houses there is for example no calculation for the use of small items like kitchenware, cups, spoons, forks, knives glasses etc. These costs must be added as an estimate to the main expenses that are documented. The expenses for the buildings include a 20% addition to compensate for missing costs that are not directly identified.

### **10.2. Manpower wages**

Housing “mothers” and cooks (wages per employee)	50 \$ per month
Centre coordinator	70 \$ per month
Storekeeper	70 \$ per month
Guard	25 \$ per month
Handyman	25 \$ per month
Nurse one day per week including travel expenses	100 \$ per month

### **10.3. Running expenses**

The expenses are based on 120 children and 10 adults living in the Centre permanently, and 230 children visiting and eating on a daily basis.

Food	1000 \$ per month
Firewood	50 \$ per month
Washing materials like soap, oil etc	10 \$ per month
Toilet paper (1000 rolls per month) 60 rolls = 1 \$	17 \$ per month
Kerosene (lamp oil – half a litre per night at 2 \$ per litre)	30 \$ per month
Medical and medicine expenses related to nurses regular visits	300 \$ per month

#### 10.4. Furniture expenses, beddings etc.

Bunk beds 190 x 70 cm (two levels)	(9000 MK)	65 \$
Beds 190 x 70 cm (single level)	(4500 MK)	32 \$
Chairs – ordinary dining-room type of chair	(2500 MK)	18 \$
Large table. Common seating in sickbay 250 x 80 cm	(assumed cost)	70 \$
Tables – 70 x 100 cm	(assumed cost)	20 \$
Tables for assembly building 70x250	(assumed cost)	70 \$
Benches for tables in assembly building	(assumed cost)	30 \$
Blankets (two for a single bed for one person)		10 \$ per bed
Bed sheets (one bed sheet per person)		5 \$ per person
Towels (one towel per person)		2 \$ per person
Mattresses		71 \$ per person
Oil lamps		10 \$ per lamp

#### 10.5. Building materials, building methods and costs

##### Building labour costs:

One simple building 4m x 4m metres in town	60.000 MK	430 \$ (27 \$/m <sup>2</sup> )
One 9m x 9m building in the village	100.000 MK	720 \$ (9 \$/m <sup>2</sup> )
In the village the building cost of floors, walls, wall foundation and roof is estimated to be an equally large part of the total cost of building.:		
Floor work 9x9m building = 81 m <sup>2</sup> floor at 240\$ =		3 \$/m <sup>2</sup>
Wall setup = 9+9+9+9m wall = 36m at 240\$ =		7 \$/m
Roof = 11x11m = 121 m <sup>2</sup> roof at 240\$ = (revised from 2 to 3)		3 \$/m <sup>2</sup>

##### Design principles:

- An outdoor wall foundation is built on a 20cm x 20cm pit filled with iron rods, reinforcement materials (quarry stones) and concrete.
- An indoor wall foundation is built on a 10cm x 10cm pit filled with iron rods, reinforcement materials (quarry stones) and concrete.
- Indoor floor is made by rock-fill (gravel) on the floor, and then covered by a 5 cm layer of concrete.
- The roof design for the large buildings is based on the drawings below. Buildings with shorter distances between the walls do not have a support in the building centre:

##### Concrete mixing materials:

50 kg bag of cement	18 \$
7 metric ton of sand including transport	36 \$
7 metric ton of quarry stone including transport	65 \$
7 metric ton of filling rocks and leftover material (assumed)	30 \$

##### Reinforcement rod (strands)

Iron rod 6 mm (1/4")	0.23 kg/metre
Iron rod 10 mm (3/8")	0.64 kg/metre
Iron rod 12 mm (1/2")	0.91 kg/metre
Iron rod price Norway 2007	1800 \$/ton
Iron rod price in Malawi 2007 (ref 700 MK at 10mm x 6m)	1300 \$/ton
Iron rod Malawi 2007: 10mm x 6 m = 700 MK	5 \$ per 6m
Iron rod Malawi 2007: 6mm x 6 m =	2 \$ per 6 m

**Walls:**

3000 burned bricks in a 7 ton delivery including transport	72 \$ for 3000 bricks
Brick force wire 10 m <sup>2</sup> of brick wall covered by one roll	3 \$ per roll
1 m <sup>2</sup> single layer wall requires 68 bricks + wire	2 \$ for 1 m <sup>2</sup> wall

**Wall outside – 1 metre of length**

• Foundation 20 x 30 cm. Cement	19 kg	7 \$
• Foundation 20 x 30 cm. Sharp sand	36 kg	0.2 \$
• Foundation 20 x 30 cm. Gravel	72 kg	0.7 \$
• Foundation 10 mm Ø reinforcement steel rods	6 m	5 \$
• 3 m tall wall bricks = 68x3	200 bricks	5 \$
• Brick force wire 3 m <sup>2</sup>	1/3 roll	1 \$
• Cement for walls (estimated)	20 kg	7 \$
• Sand for walls (estimated)	40 kg	0.2 \$
• Labour to build the wall (1 metre long)		7 \$
<b>Sum</b>		<b>33 \$/m</b>

**Wall inside – 1 metre of length,**

• Foundation 10 x 10 cm. Cement	3 kg	1.2 \$
• Foundation 10 x 10 cm. Sharp sand	6 kg	0.03 \$
• Foundation 10 x 10 cm. Gravel	12 kg	0.1 \$
• Foundation 6 mm Ø reinforcement steel rods	3 m	1 \$
• 2.2 m average tall wall bricks = 68x2.2	150 bricks	3.5 \$
• Brick force wire 3 m <sup>2</sup>	1/4 roll	1 \$
• Cement for walls (estimated)	15 kg	5 \$
• Sand for walls (estimated)	30 kg	0.2 \$
• Labour to build the wall (1 metre long)		6 \$
<b>Sum</b>		<b>18 \$/m</b>

**Floor inside (dry) – 1 m<sup>2</sup> coverage**

• Gravel 10 cm deep: 0.1 m <sup>3</sup> x 5ton/m <sup>3</sup> =	500 kg	5 \$
• 6 mm reinforcement rods 2x6 m (“network”)	12m	4 \$
• Concrete top layer 0.05 m <sup>3</sup> Cement	16 kg	6 \$
• Concrete top layer 0.05 m <sup>3</sup> Sand	30 kg	0.2 \$
• Concrete top layer 0.05 m <sup>3</sup> gravel (rock fill)	60 kg	0.6 \$
• Labour to build the floor (1m <sup>2</sup> )		3 \$
<b>Sum</b>		<b>19 \$/m<sup>2</sup></b>

**Floor outside and wet floors inside - 1 m<sup>2</sup> coverage**

• Gravel 10 cm deep: 0.1 m <sup>3</sup> x 5ton/m <sup>3</sup> =	500 kg	5 \$
• 10 mm reinforcement rods 2x6 m (“network”)	12m	10 \$
• Concrete top layer 0.1 m <sup>3</sup> Cement	32 kg	12 \$
• Concrete top layer 0.1 m <sup>3</sup> Sand	60 kg	0.3 \$
• Concrete top layer 0.05 m <sup>3</sup> gravel (rock fill)	120 kg	1.1 \$
• Labour to build the floor (1m <sup>2</sup> )		4 \$
<b>Sum</b>		<b>32.5 \$/m<sup>2</sup></b>

**Seating platforms and banisters:**

These constructions are built with large stones, broken bricks, reinforcement iron and cast with concrete. 30% of the volume is estimated to be proper concrete mix. To make 1 m<sup>3</sup>:

• Cement (0.3 m <sup>3</sup> resulting concrete volume)	96 kg	38 \$
• Sand (0.3 m <sup>3</sup> resulting concrete volume)	180 kg	1.4 \$
• Gravel (0.3 m <sup>3</sup> resulting concrete volume)	360 kg	3.6 \$
• Reinforcement iron rod 2x6 m	12 m	10 \$
• Filling material (remaining 2/3 m <sup>3</sup> )	3500 kg	15 \$
• Labour to build the banister (1m <sup>3</sup> )		20 \$
<b>Sum</b>		<b>88 \$</b>

**Floor and pit walls in toilet (1 m<sup>2</sup> reference)**

• Max overhang 8' (actual with is 2x2 m)	2.5 m	
• Slab thickness 3 1/2"	9 cm	
• Strands (iron reinforcement rods) 3/8"	10 mm	
• Strand spacing 8"	20 cm	
• Cement	29 kg	0.5 \$
• Sharp sand	54 g	0.3 \$
• Gravel (rock fill)	108 kg	1 \$
• Strands with 20 cm spacing	5 m	1.7 \$
• Labour to build the floor or wall	(Estimate)	4.5 \$
• <b>Sum for 1 m<sup>2</sup> toilet floor</b>		<b>18 \$</b>

**Doors and windows:**

Window and frame without glass. 6-glass type	43 \$ per unit
Outside single door frame 9" + door leaf 36\$ + 18\$	54 \$ per unit
Inside single door frame 4 1/2" + door leaf 29\$ + 16\$	45 \$ per unit

**Roofing material costs:**

Timber 6" x 2" (delivered in 6 m lengths)	1.0 \$ per metre
Timber 4" x 2" (delivered in 6 m lengths)	0.7 \$ per metre
Timber 3" x 2" (delivered in 6 m lengths)	0.6 \$ per metre
Timber 2" x 2" (delivered in 6 m lengths)	0.5 \$ per metre
Roofing sheets, ridges, fixing material etc	26 \$ per sheet
Roofing sheets 1.2m x 2.4 m covers 2.4m <sup>2</sup>	(11 \$ per m <sup>2</sup> )

**Main roofing dimensions**

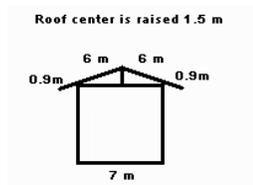
Dimensions of trusses	2" x 6"
Distance between trusses when using corrugated iron sheets	1.2 m
Dimensions of brazes (additional supports under trusses)	2" x 4"
Distance between braces (horizontal corrugated sheet support)	1.2 m
Braces dimensions	2" x 3"
Flashboard (last board) 30 x 200 mm	1" x 8"

### Roof per m<sup>2</sup> ordinary buildings

• Main support beams (trusses)	1.5 m	6" x 2"	1.5 \$
• Binding beam - Bottom support	1.5 m	6" x 2"	1.5 \$
• Sleepers for support of roofing sheets (braces)	1 m	4" x 2"	0.7 \$
• Roofing sheets			11 \$
• Miscellaneous materials			0.3 \$
• Labour to build the roof (1m2)			3 \$
<b>Sum</b>			<b>18 \$</b>

### Roof per m<sup>2</sup> for 7 metre wide building

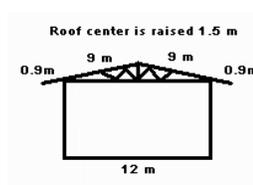
The calculation is based on a support system with trusses and a web built from 4m long pieces of timber. Overlap is therefore needed to make the trusses long enough. This is why they seem to be extremely long.



• Main support beams (trusses)	2 m (including overlap)	6" x 2"	2 \$
• Binding beam – (under)	2 m (including overlap)	6" x 2"	2 \$
• Web timber for trusses	0.2 m	4" x 2"	0.2 \$
• Sleepers for support of roofing sheets (braces)	1 m	4" x 2"	0.7 \$
• Roofing sheets			11 \$
• Miscellaneous materials			0.6 \$
• Labour to build the roof (1m2) (higher cost for complex roof)			3.5 \$
<b>Sum</b>			<b>20 \$</b>

### Roof per m<sup>2</sup> for 12 metre wide building

The calculation is based on a support system with trusses and a web built from 4m long pieces of timber. Overlap is therefore needed to make the trusses long enough. This is why they seem to be extremely long.



• Main support beams (trusses)	2m (including overlap)	6" x 2"	2 \$
• Binding beam – (under)	1.5 m (including overlap)	6" x 2"	1.5 \$
• Web timber for trusses	1 m	4" x 2"	0.7 \$
• Sleepers for support of roofing sheets (braces)	1 m	4" x 2"	0.7 \$
• Roofing sheets			11 \$
• Miscellaneous materials			1.1 \$
• Labour to build the roof (1m2) (higher cost for complex roof)			4 \$
<b>Sum</b>			<b>21 \$</b>

### 10.6. Cost overview for solar power system

All items are calculated without loss factor. It is estimated that the consumption is 20% higher than the ideal stated values.

Item	Qty.	Unit cost US\$	Total cost
250W solar power package <ul style="list-style-type: none"> <li>• 2x125W solar panel</li> <li>• 20 amp regulator</li> <li>• 4x wall lamps 10W</li> <li>• Overhead bench lamp</li> <li>• 50m 2x2.5 mm2 cable</li> <li>• 10m 2x6mm2 cable</li> <li>• 200 cable clips 2x2.5mm2</li> <li>• 100 cable clips 2x6mm2</li> <li>• 4 double electric outlets</li> <li>• 4 single plugs</li> <li>• 2 connection boxes</li> <li>• 2 battery clamps</li> <li>• 1 cable for battery</li> </ul> Wall brackets for solar panels	1	4.200	4.200
Batteries 115/125 Ampere-hours	2	420	840
12V/220V converter and installation	1	240	240
Additional lamps, wires etc	1	980	980
Installation, shipment etc	1	1.120	1.120
<b>Total cost estimated</b>			<b>7.200 \$</b>