WASH for Shelter - Rapid Assessment for IDPs relocation

in Pauk Taw and Myebon townships

Introduction

The recommendations contained in the present document are the result of three days assessment conducted in A Nawk Ywe, Nget Chaung, Sit Tet Maw (Pauk Taw Township) and Taung Paw Ward and Arakan sited in Myebon Township. Rakhine State Authorities have planned the relocation of the IDPs in these five camps to ensure better living and environmental conditions for the IPDs before the wet season as well as to guarantee them security.

The RAT (on behalf of WASH UNICEF) supported the UNHCR Site Planning Team.

The aims of the WASH assessment are summarized as follow:

1. WASH for shelter assessment in selected areas for IDPs relocation;
2. Assess flood prone areas in selected areas for IDPs relocation and define drainage solutions;
3. Define latrine designs vs environmental features of selected areas;
4. Identify sustainable water sources and their development/rehabilitation/construction options.

The State Authorities and UN Agencies participating to the assessment were:

- Department of Border Affairs and Security;
- Development Affairs Ministry;
- Sittwe General Administration Department;
- Sittwe Land Records Department;
- RAT on behalf of WASH UNICEF;
- UNHRC;
- OCHA;
- State Department of Rural Development (DRD).

Findings and possible WASH solutions have been discussed with IDPs, DRD, UNHCR and OCHA during the assessment period.

Findings

Considering the five IPDs camps above mentioned, the term “relocation” sounds questionable: the proposed sites the Rakhine State Authorities suggested to UNHCR are the same the IDPs are sited now. “Site improvement” sounds more realistic and it would provide a better understanding about the technical challenges and management efforts the humanitarian actors will face in the next future for the sites improvement.

WASH and public health concerns are already well known and widely recognized as “priorities to be managed” by all stakeholders before the wet season. In any case, during the situation analysis, it is

fundamental to remember that sanitation facilities - and their management - and public health issues were already present in the area before the present emergency. Open defecation, use of unprotected water sources, lack of drainage, use of temporary sanitation facilities and lack of waste management are practices and gaps that cannot find sustainable and realistic short term solutions. This is above all in remote rural areas where logistic for hardware activities are challenges and HP campaigns carried out during previous natural disaster had no or limited impact on personal behaviours improvements.

Consequently, considering the WASH sector, the present humanitarian operation should aim to prevent, contain and mitigate possible outbreaks through software and hardware activities focused on public health risk reduction. A multi-sectoral approach to the problem has been recommended by the different humanitarian actors and coordination efforts are already in place, but the lack of active national counterpart interlocutors, different response capacity between UN Agencies, INGOs and National NGOs makes the multi-sectoral approach not effective at field level.

WASH options (design and recommendations)

The proposed WASH technical options described in this section may be appear not fully in line with Sphere Standards or other WASH standards usually adopted in emergency operations. Despite this, each design and recommendation have been analysed as per:

1. IDPs' relocation plans;
2. Local WASH practices in use before the emergency;
3. Cultural aspects and believes;
4. Acceptance by the community for new WASH facilities designs;
5. Sustainability during dry and wet season;
6. Beneficiaries' impact related to previous HP initiatives;
7. Environmental features;
8. Access to the sites;
9. Logistic for construction material transportation and storing;
10. O&M of proposed facilities;
11. Public health risk exposure;
12. Cross cutting issues;
13. Outbreak risk reduction/prevention;
14. Effectiveness of water treatment vs water quality;
15. Availability of local construction material;

16. Food/cash for labour – Community contribution;
17. Sense of community and sense of ownership;
18. Beneficiaries' technical skills;
19. Community cash contribution for O&M of WASH facilities.

A Nauk Ywe - Pauk Taw Township

1. ***Water ponds rehabilitation***: the two water ponds are presently used by the IDPs as main water source for drinking and domestic purpose. The proposed rehabilitation aims to decrease the water turbidity in order to increase the effectiveness of the water treatment at HH level (Fig. 1-5).

   Proposed activities:

   - Scarification of the first 10 cm of the sediments on the bottom;
   - Reshaping of ponds slopes and to increase embankments high (1 m max);
   - Reshaping bottom profile and to increase the storage capacity as per water needs by elevating the pond banks and extending the pond area but not by increasing the depth of the pond;
   - Slopes lining with PVC sheets - tarpaulin (3 m overlap between two sheets);
   - Installation of rubble stones and gravel pack on bottom surface (40 cm thickness);
   - Installation of 3 wells (RC rings) with 40 cm gravel pack at the bottom;
   - Installation of pulley frames for water lifting;
   - Installation of fence around the water ponds.

These basic activities will drastically reduce the water turbidity: in case of outbreak preparedness/response, floating chlorinators may be installed directly in the water pond or water wells. Recommendation for water pond rehabilitation described in "*Pond Construction And Rehabilitation* – 2009, UNICEF WASH Section" are not feasible at present time: they could be taken into consideration at the end of the coming wet season, if the IPDs will not be relocated and after public health awareness campaigns and community mobilization activities to be conducted during 2013.

Fig. 1: Existing pond – paddy field area

Fig. 2: Existing pond – foot hill area

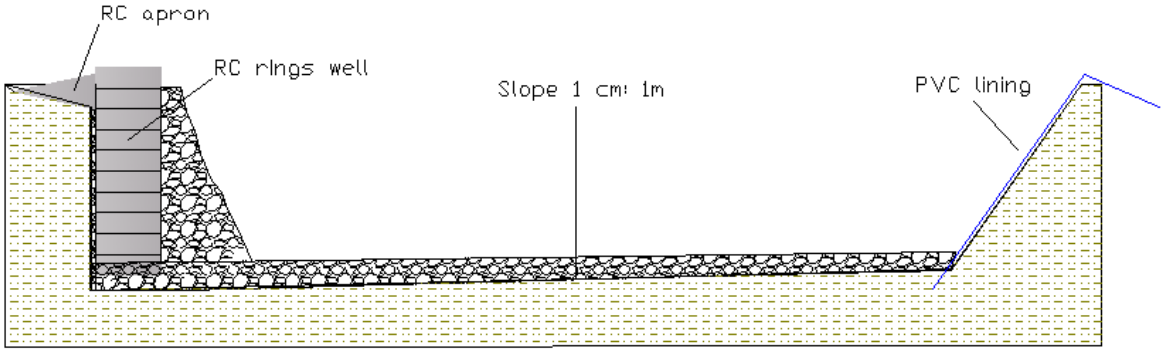

Fig. 3: Longitudinal section - rehabilitation design

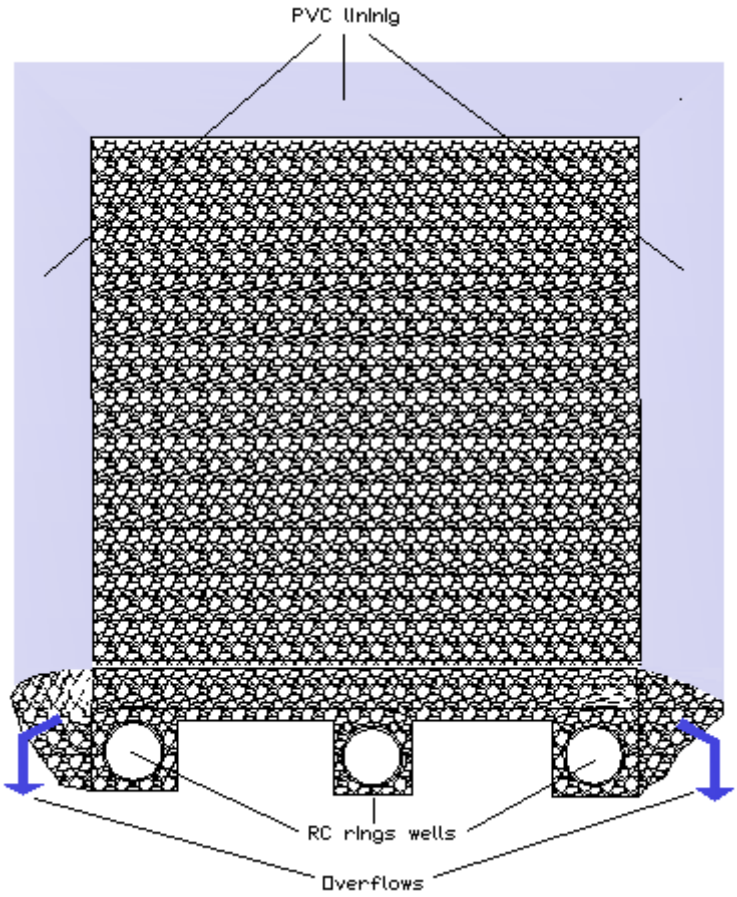

Fig. 4: Plan view - rehabilitation design

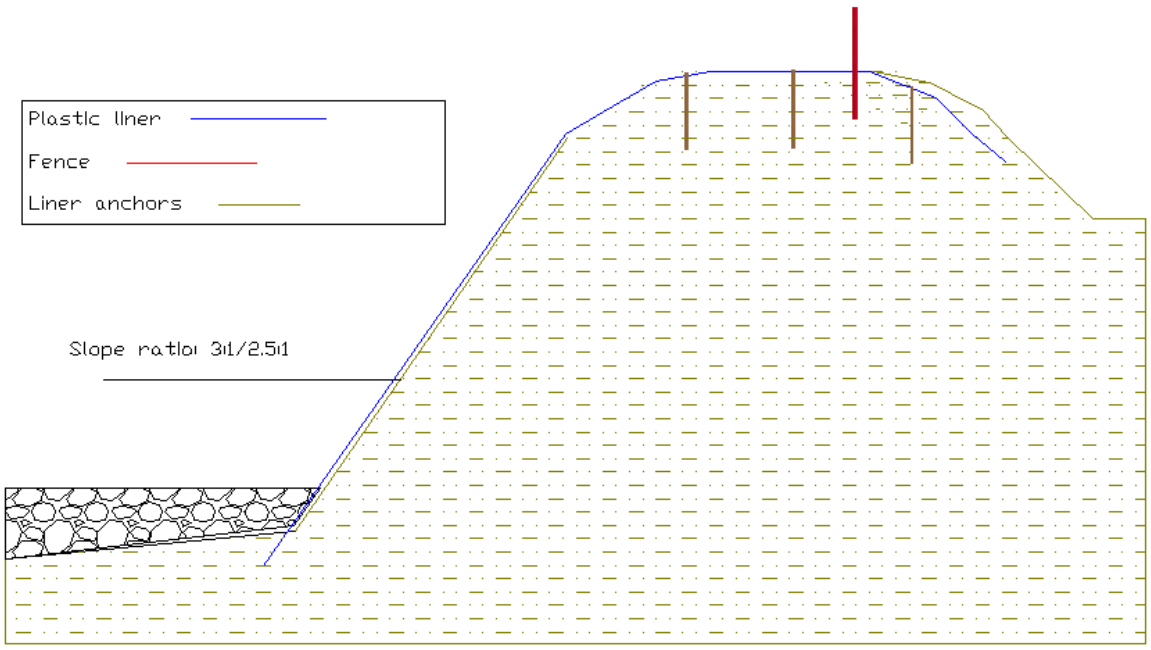

Fig. 5: Longitudinal section – pond embankment detail

2. ***Construction of RC water wells, contour lines trenches and sub-surface dam*** (Fig 6-10)

   - Construction of about 200-250 m of subsurface dam 4-5 m high along the foot of the hills. Impervious barrier constructed with PVC sheets (1 m overlapping);
   - Excavation of shallow trenches parallel to the contour lines to decrease water runoff velocity and facilitate infiltration ;
   - Construction of RC water wells 2-3 m uphill the subsurface dam.

The vegetation plays an important role in limiting the soil erosion and facilitating the infiltration. The community should be sensitized do not cut trees and bushes. The need of firewood is a treat.

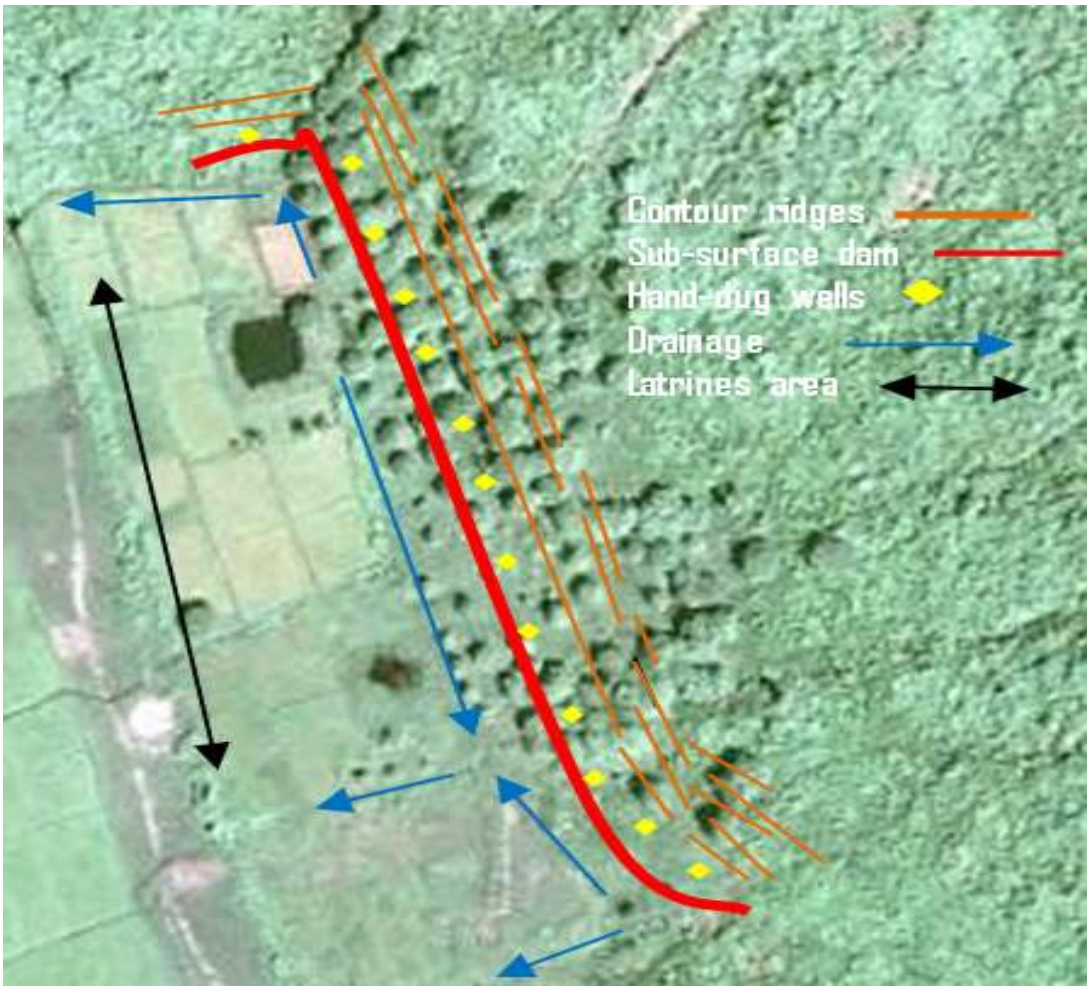

Fig. 6: Proposed WASH scheme

Fig. 7: Proposed WASH site planning

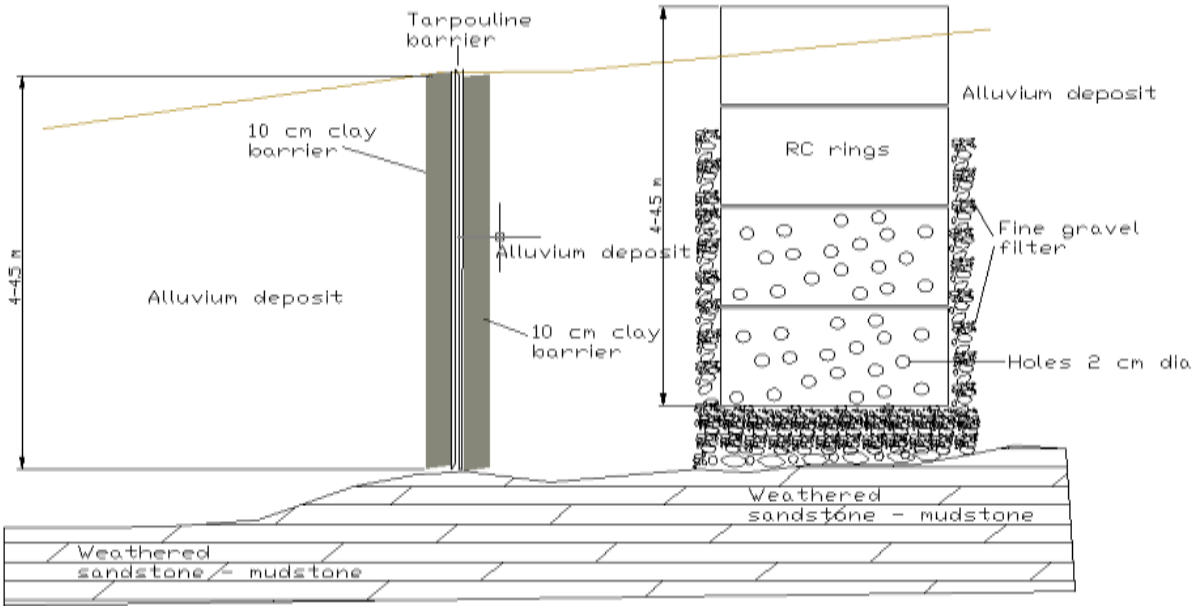

Fig. 8: Prosed design for subsurface dam and RC wells

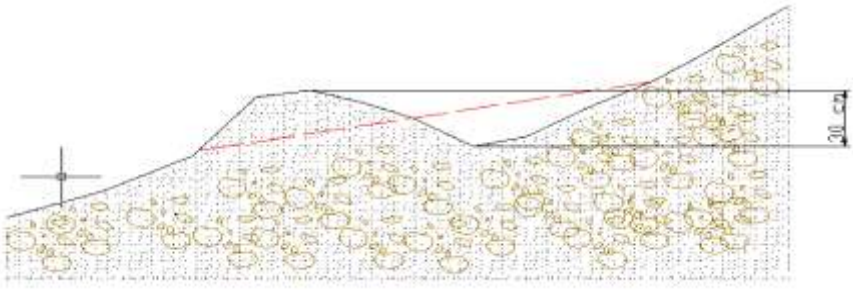

Fig. 9: Contour line trenches

Fig. 10: Example of contour line trenches

3. Excavation of shallow drainage channels

The topographic profile of paddy fields close to tidal areas is not favourable for the construction of efficient drainage networks made by trapezoidal ditches (20-30 cm deep). This is because the slope of the tidal areas is limited to few cm per kilometre and consequently the invert level of the ditches would be lower than the base level, represented by the sea level. In this case the drainage network would collect the rainy water but it would not be able to discharge it in a safe area. Stagnant water in the ditches, ideal environment for mosquito breeding, would be present close to the living areas. The elevation of the entire camp area would be the ideal solution but this option is not realistic as per cost and logistic involved. Consequently, it is much effective to exploit natural existing micro drainage pathways instead to drastically modify the tidal area. It is advisable to dig around the camp a very shallow and wide drainage network: the upper part should be just a depression in the ground surface(1-2 m wide), turning in a 2-2.5 m wide and 10 cm max depth drainage channel at the sea outlet.

4. Construction of improved bamboo pit latrines and shallow trench latrines (Fig. 11-12)

It is well known that the high water table doesn't allow the excavation of deep pit latrines. Septic tanks and soakaway would be flooded after the first days of the wet season. An improved version of the bamboo pit latrines (double bamboo liner) and shallow trench latrines seem the only sanitation option. The camp area allows the construction of new latrines when the pits are filled up. As per WHO recommendations, once the content of the pit reach 0.5 m from the top of the pit, the pit should be filled with soil and new pits dug.

Fig. 11: Double bamboo lined pit latrine

Fig. 12: Inner view bamboo lined pit latrine

Nget Chaung – Pauk Taw Township

Environmental features in Nget Chaung camp are extremely adverse to any fair option for water, sanitation and drainage management. It is a low land that in a recent past also the farmers tried to protect by river flood and rain water flood by the construction of long and massive embankments to protect their crop and the prawn farms. Fig. 13 summarizes the proposed WASH scheme.

Fig. 13: Proposed WASH scheme for Nget Chaung camp

1. ***Water ponds rehabilitation***

See technical option for A Nawk Ywe camp (Fig. 3-5 and 14)

Fig. 14: Existing water pond in Nget Chaung camp

2. ***Excavation/rehabilitation of tidal channels*** (Fig. 13 and 15-16)

The construction of basic drainage network is not feasible in this camp. The excavation or rehabilitation of tidal channels ("drainage channels") is the only realistic option to manage stagnant water and human organic waste: the tide flow would wash them away twice a day. This was a normal option locally utilized before the present emergency and it is the only feasible strategy during wet season.

Fig. 15: Proposed tidal channel to be rehabilitated

Fig. 16: Silted tidal channel to be rehabilitated

3. ***Pan-PVC pipe latrines and shallow trench latrines*** (Fig. 17,18)

The camp area is not suitable for the construction of indirect pit latrines: after few days of rain the infiltration capacity will drop from 10-15 mm/h to 0 mm/h. The saturated soil and the precipitations will not allow any infiltration of the liquid fraction of the excreta making the pits overflowing. In the delta regions and Rakhine fisherman villages the local population utilize pan-PVC pipe latrines that discharge directly into the rivers. The site should be prepared as per excavation and deepen the river bed around the latrines to guarantee water presence also during low tides. This represents the only sustainable solution of sanitation management in the camp during wet season. Shallow trench latrines, gender segregated and provided of partition for privacy can be adopted until the beginning of the wet season. Moreover, a massive clean-up campaign should be carried out in the area to avoid environmental contamination by the latrines already filled up and abandoned. Any humanitarian WASH actor involved in the area should secure a budget for this activity to be performed before the rainy season.

Fig. 17: Pan-PVC pipe latrines discharging into the river

Fig. 18: Abandoned latrines need to be decommissioned before wet season

Sit Tet Maw – Pauk Taw Township

In Sit Tet Maw the environment is favourable for fresh water exploitation by shallow tube wells with hand pump as well as for basic drainage (Fig. 19).

Fig. 19: Proposed WASH scheme

1. ***Construction of shallow tube wells with hand pump and rehabilitation of existing hand dug wells*** (Fig. 20)

Presently the IDPs are sharing the existing hand dug wells with the host community. In order to avoid frictions between users it is advisable to construct new wells as well as rehabilitate the existing ones (water table – 3 m). A detailed survey is needed for the site selection of new wells because the presence of several decommissioned latrines belonging to the host community. The IDPs dug some shallow wells (water table -1 m) in the paddy field and the water is utilized for laundry because its salinity. During the wet season these water points will be flooded.

Fig. 20: Existing water well

2. ***Water pond rehabilitation*** (Fig. 1-5 and 21)

One small water pond is present in the mosque compound and its water (domestic purpose use) is shared between the host community and the IDPs. Its rehabilitation is advisable for domestic purpose and personal hygiene during the wet season.

Fig. 21: Water pond in the mosque compound

3. Drainage network (Fig. 22)

The topographic profile of the area facilitates the natural run off of the water to the sea. Presently, a large embankment is present to contain the rainy water within the paddy field: to reduce the risk of flooding it should be partially removed.

Fig. 22: Embankment in the West side of the paddy field

Kar Than Htet Wa Ward (Arakan) – Myebon Township (Fig. 23, 24)

Arakan camp is sited in a football ward and the general slope of the area facilitates the drainage from the East side to the West side. Drainage ditches are already present and basic cleaning is the only activity needed to make them efficient during the wet season. Deepen them there is the risk to drain water from the surroundings, consequently it should be avoided. Water is piped from the town water supply. Latrines are filled up and they need to be decommissioned. Within the plot there is enough space for the construction of new latrines. Construction of septic tank latrines (brick walls or RC rings) is advisable.

Fig. 23: Drainage scheme for Arakan camp

Fig. 24: Existing ditches surrounding the IPDs camp

Taung Paw Ward – Myebon Township (Fig. 25, 25)

The proposed relocation site is the same area where the IDPs are sited at the moment. The topography, hydrology and geomorphology are not favourable for any efficient drainage work.

The area is located in the lower part of a valley surrounded by hills in the western and eastern sides, while the northern part shares its border with the sea. The southern part of the valley has similar morphological characteristics and it represents a large catchment area for water runoff flowing downstream where the camp is. A meandering river is the main water body present in the valley and it is influenced by the tidal cycle. During the wet season, the simultaneous combination of high river yields – due to the contribution of the upstream catchment area – and the high tide cycles, the low river bed slope and the run off from the hills behind the camp itself will turn the entire valley in a large pond. The only technical solution to preserve the camp area by floods is the elevation of the entire site by 1-1.2 m. This is not feasible because the large quantity of soil needed: a rough estimation quantified in 60,000 m^3 the volume of the earth works (soil excavation in selected site not flood prone, dumping and compaction). Time, cost and logistic constrains are not favourable to this solution. Cash for labour cannot be considered a solution because excavation, transportation and compaction activities need heavy earth works machineries as lorry trucks, back hoes equipped with hydraulic hummer breakers, earth movers and compactors.

The site improvement for this camp is not feasible and alternative areas should be identify before the rainy season.

Fig. 25: Hydrological characteristics of the selected site

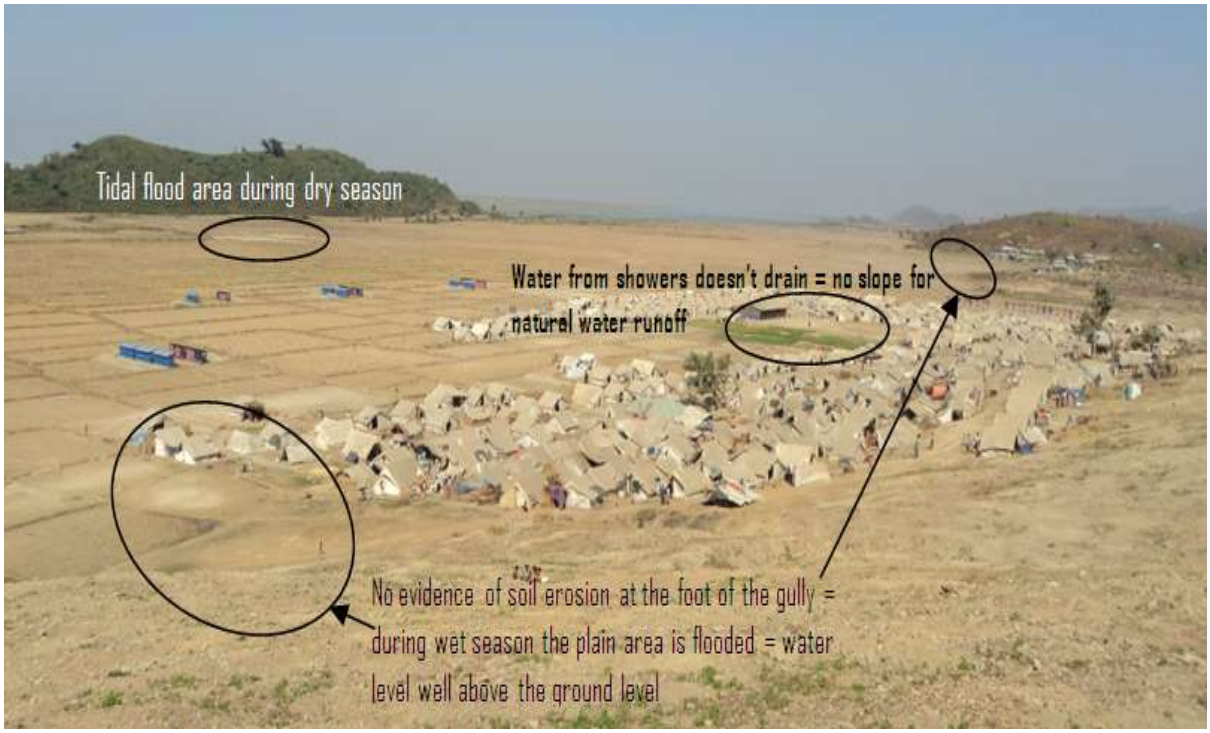

Fig. 25: Geomorphologic characteristics of the selected site

Recommendation for shelter block platform

A site improvement for flood prone areas where the shelter blocks are located is pictured in fig. 26.

The proposed design takes into consideration the availability of the building material close to the shelter site as well as UNHCR stock. Rubble stones are available in Sittwe at 17,500 Kyat/m^3 (first price). Alternative solution to the chicken wire is represented by the rise bags but the PCV they are made with is sensitive to UV and usually they don't last for more than 3-4 months.

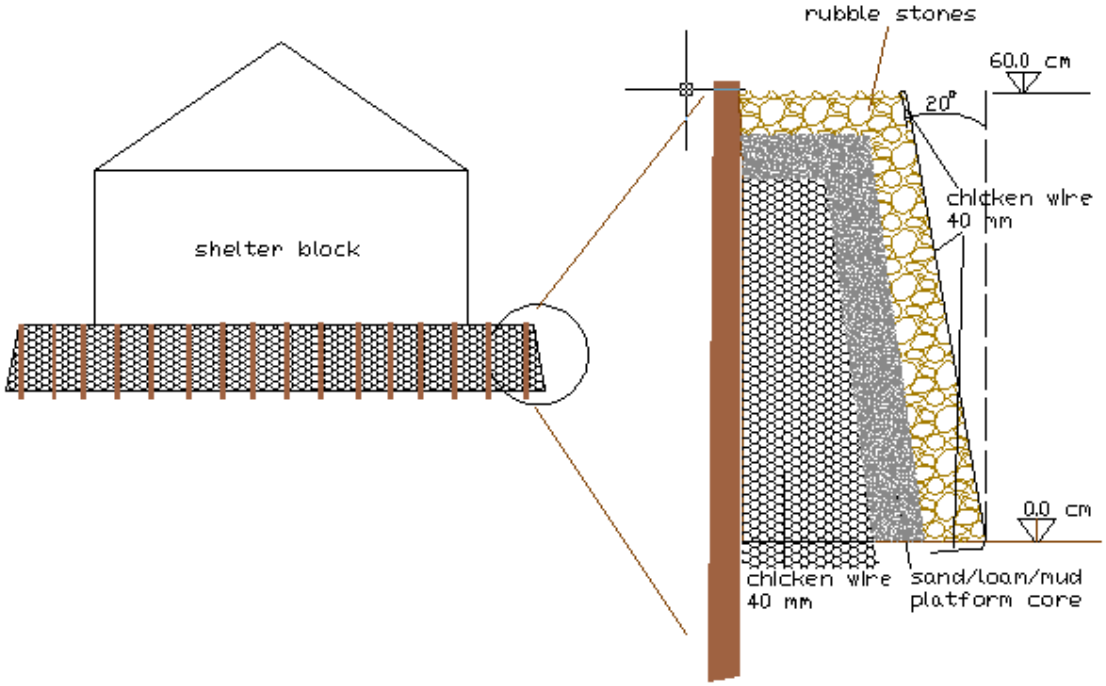

Fig. 26: Proposed shelter block platform