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RAPPORT DE MISSION

Subject: South Sudan WASH RSO Mission (WASH in camp in Malakal; *follow up of recommendation from last monitoring in September 2014*)
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Main partners and visited sites list:

Malakal:

- IOM: Antonio Torres (WASH Coordinator), Techekan XXX (Water supply Officer), Samuel XXX (Sanitation officer) and others staff
- Solidarites International, SI: Baudouin XXX (WASH Manager Malakal), Cecile Deneau (Field Coordinator and Co lead Malakal WASH cluster)
- UNICEF: Philippe Otieno (WASH Specialist Malakal)
- Cluster WASH: Pauline Mwaniki (National cluster lead), Rainer Gonzalez Palau (State WASH cluster Focal point)

Appendices list:

- ❖ 1: IOM Malakal hygiene promotion strategy
- ❖ 2: Upper Nile state fact sheet
- ❖ 3: POC extension and relocation map
- ❖ 4: POC surrounding area map
- ❖ 5: Presentation of ultra-filtration unit *skyhydrant*

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1. EXECUTIVE SUMMARY

The mission in Malakal was a joint mission with Gloria Puertas (ECHO TA Juba) and Susana Perez-Diaz (ECHO Desk South Sudan, Brussels). The main focus of the mission was to assess the WASH performance of ECHO funded partners, as well as follow up on the recommendations made in September 2014. The population of Malakal has almost tripled over the past three months, while the numbers of partners have decreased; currently only IOM and Solidarite International are operational in the PoC. WASH partners have scaled up WASH interventions to an acceptable level.

Despite of the challenge to deal with the additional needs of the new comers, the WASH partners succeeded in making substantial improvement in the setup, the cost efficiency and in building a clear development plan of the WASH services. Some of the former recommendations have been addressed:

- ⇒ Protection and replacement of pump at river intake
- ⇒ Improvement of the setup and quality control of the water treatment plant with improvement of the cost efficiency and the reliability of the performance of the system
- ⇒ Rationalization of the distribution network by implementation of elevated tank to decrease resort to fuel and improve the regulation of the hydraulic network
- ⇒ Improvement of the latrine design
- ⇒ Decreasing (*almost 20%*) of incentive payment by implementation of an innovative community approach which generates less dependency to the relief and more sustainability to the action.

The most urgent needs identified are: decongestion of sector 1, reception of supplies to improve the water supply system, improving drainages and balancing the service provision between the different PoC sectors and blocks.

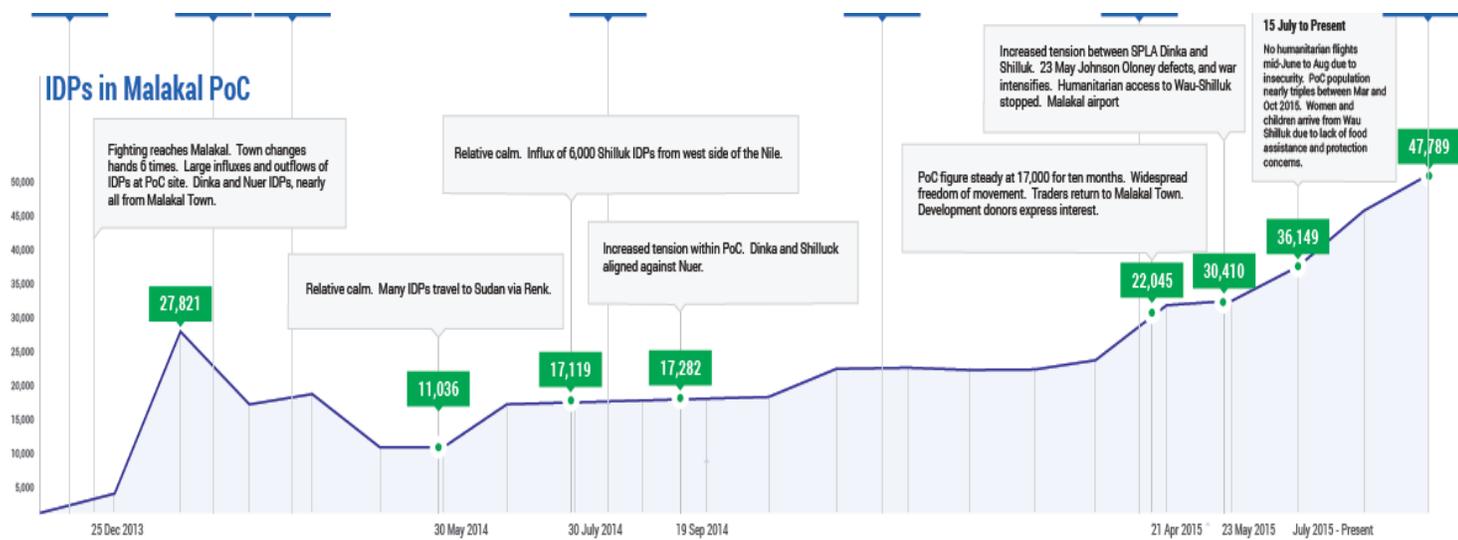
The humanitarian partners in Malakal face, in addition to the new influx of Idp's, numerous others challenges:

- ⇒ Volatile security situation, due primarily to the ethnical/political composition of the POC population
- ⇒ Accessibility of the site for supplies with high risk of shortage of consumable
- ⇒ Official exchange rate for local currency (Official and market exchange rate unified in the week commencing 14/12)
- ⇒ Level of proficiency of national staff
- ⇒ Relation/synergy among clusters
- ⇒ Natural environment with black cotton soil and flat area, problem: seeping capacity of the ground with high need of desludging (*cost about 500 000USD/year*) and drainage outlet.
- ⇒ Challenging relationship with UNMISS

2. BACKGROUND

. WASH partners have worked tirelessly to ensure an adequate provision of WASH services while ensuring cost-efficiency, in order to respond to the influx of population since July 2015.

Not all planned actions have been implemented yet, but partners have begun the process and will continue to implement their plan to optimize WASH services.



There is need to speed up the decongestion of sector 1 by making available the land of sector 5 to start implementation of minimum of services and ensure inefficient and dignified relocation. Anticipation of the needs, is more cost efficient that reaction to the needs.

It is very important that the humanitarian community as a whole lobby UNMISS, the government (and maybe Shiluk leaders) to make sector 5 available for the humanitarians actors to prepare the site for host idp's.

3. CAPACITY OF THE PARTNERS:

IOM:

IOM seems to have a relevant technical capacity on site with a good and proficient backup support at national level. The IOM WASH activities in Malakal are managed by sector: water supply, sanitation, hygiene promotion and community mobilization. From the last visit in August 2014, substantial improvements have been made on the set up of the water supply system and on the resort to incentive payment for daily activities such as cleaning the latrine. However, the new arrivals and the lack of space at the PoC limited further scale up. Most of their staffs (their WASH Coordinator for example have been in South Sudan for quite some time and are skilled at analyzing situation and identifying necessary responses, compared to other partners with high staff turnover (people changing every 3-6 months) In such a challenging context plus the environmental features (black cotton soil) and the volatile security, the performance of IOM in the WASH sector of Malakal where they are the main actor, is satisfactory IOM has been very good at anticipating developments,



conducting assessments and providing the correct technical solutions.

Critical issues such as drainage remain to be addressed. In the coming year, in case of stability of the situation in POC substantial improvements and further fine tuning should be anticipated.

SI¹:

In Malakal, SI is mainly involved in sanitation in sector 1 of the camp. The sector 1 is the oldest and most congested sector of the camp far from the others, and the biggest challenge in terms of sanitation management (*see pic below*). The new latrine design seems to be harmonized among actors.

Sector 1 has lack of space for new construction or upgrade of the WASH facilities and poor accessibility to maintain existing one for example for desludging.

In spite of their challenging role in providing sanitation, the performance of SI is satisfactory. However, as for IOM a great deal of improvement and fine tuning are needed.



4. MAIN FINDINGS / ISSUES DISCUSSED AND TO FOLLOW UP

4.1. Miscellaneous:

❖ Volatile security situation;

The Shilluk who used to support government troops at the beginning of the conflict are now supporting the opposition UNMISS is experiencing problems with the Shilluk and government to negotiate more land to expand the PoC. Malakal is hosting IDPs from three ethnic groups (Dinka, Nuer and Shilluk). Coordination between UNMISS and humanitarian actors has been challenging, with UNMISS recently evicting and relocating IDPs without previously informing the humanitarian community.

❖ Accessibility:

Malakal suffers from its remote location which drives up the cost and timeliness of supplies. Most of the supply is done by air.

❖ Balance of service provision between sector:

Special attention should be given to the balance of service provision within the different areas of the camp. Actually, today the sector 1 is very crowded and the oldest area of settlement with limited access to water (*see pic aside*) compared to others location of the camps. The sanitation situation is also of

¹ Solidarites International

concern, with high density of habitat and difficulties to access latrine pit for desludging or to decommission and rebuild when necessary.

❖ Biometric registration

Apparently IOM start this week bio registration of the idp's in Wau Shiluk.

❖ Inter cluster:

There is a lack of an adequate link between WASH and health clusters. It seems that the WASH state cluster coordinator faces a lot of challenges to ensure appropriate information exchange with the health cluster, limiting timely response to outbreaks.

❖ Problem with currency situation:

. The difference between the official exchange rate and the black market is affecting partner's financial management.

4.2. Overview of the WASH service level of performance by sector:

Indicators

| Sectors | Population | WATER | | | | SANITATION | | | HYGIENE PROMOTION | | | |
|----------|------------|-----------------------------|--------|-------|--------------|------------|--------------------------|------|-------------------|------------|-----|--------|
| | | Water supplied | | LPPD | Water Points | Taps | Number of facilities | | Ratios | HP and HCs | | Ratios |
| Sector 1 | 29.000 | Water network | 215 m3 | 9,14 | 12 | 144 | Latrines | 368 | 79 | HPs | 12 | 2.417 |
| | | Water trucked | 50 m3 | | | | Bathing facilities | 168 | 173 | HCS | 182 | 159 |
| Sector 2 | 7.200 | Water network | 102 m3 | 14,17 | 11 | 108 | Latrines | 319 | 23 | HPs | 11 | 655 |
| | | Water trucked | - | | | | Bathing facilities | 132 | 55 | HCS | 130 | 55 |
| Sector 3 | 7.200 | Water network | 102 m3 | 14,17 | 3 | 30 | Latrines | 202 | 36 | HPs | 8 | 900 |
| | | Water trucked | - | | | | Bathing facilities | 75 | 96 | HCS | 48 | 150 |
| Sector 4 | 4.300 | Water network | - | 18,60 | 3 | 18 | Latrines | 180 | 24 | HPs | 4 | 1.075 |
| | | Water trucked | 80 m3 | | | | Bathing facilities | 65 | 66 | HCS | 30 | 143 |
| TOTAL | 47.700 | Water trucked Institutional | 5 m3 | 12,56 | Total Taps | 306 | Total latrines | 1069 | 45 | Total HPs | 35 | 1.363 |
| | | MSF | 10 m3 | | Person / tap | 156 | Total Bathing facilities | 440 | 108 | Total HCs | 390 | 122 |
| | | Hub | 35 m3 | | | | | | | | | |
| | | Total Water supplied | 599 m3 | | | | | | | | | |
| | | Total Water Produced | 705 m3 | | | | | | | | | |

4.3. Water supply:

Due to the huge influx of idp's, the water demands have considerably increased during 2015. Limited by the few assets present on site, IOM had to ad lib to try to cope with the new demands. The first limitation faced in increasing the level of water supply was the main pressure line between the river and the water treatment plant. Limited by the diameter of pipe and pumps available, IOM installed two more pipeline (from river to camp), so a total of 3 lines each connected to a specific pump are operate today (two pumps have been put aside as backup). The second main limitation was the pipeline diameter between the water treatment plant and the main storage tanks of sector 1, which is too small to match the current needs.

The whole water supply of the camp is managed by IOM. Since the last monitoring visit many of the recommendation have been addressed by IOM.

At the river intake:

- ❖ The pump has been replaced by more appropriate model
- ❖ Pump protection has been installed (*see photograph aside*)
- ❖ The pump station site has been also improved. Pumps have been installed on a non-floating wood platform.



At the water treatment plant:

- The chlorination setup has been improved. The chlorination is now operate by batch chlorination in storing tanks within the camp after numerous malfunctions of the dosing pump (diaphragm pump are very fragile).
- The way to control the water quality (turbidity) of the outlet has also been improved and is now effective.
- The fine tuning of the treatment is also ongoing. IOM plan to implement after the coagulation and sedimentation facilities, and ultra-filtration units composed of 28 filters to ensure safe water distribution and to have a buffer capacity in term of treatment.

Note: the water supply resource is surface/river water. This type of water in this type of context shows very high variation in turbidity after rain. The main problem comes from the capacity to foresee such variation in order to adjust the setup of the treatment to the raw water quality variation. There is high risk of reduced water quality at the distribution point or risk of service disruption time to adapt the treatment to the new quality parameter. The ultra-filtration units working at low pressure will improve the capacity of the system to cope with this issue and will also enable to reduce drastically the consumption of aluminum sulphate (Al_2SO_4). The consumption of aluminium sulphate (use to perform coagulation-flocculation to mitigate the turbidity of the water) varies from 55 to 75kg per day and the price is 50USD for a bag of 10kg. The cost this consumable alone varies from 275 to 375 USD/day, meaning from 100 000 to 135 000 USD/year. Then, the potential save made by using the filtration units could be quite significant. In addition, given the remote situation of Malakal and the problem of accessibility coming with, the filter will also secure the water supply; even in case of Al_2SO_4 supply issue.

On the storage tank and hydraulic network setup:

- There is no connection between the water treatment plant and the main storage tanks capacity. The supply starts after storage tank which eases the treatment of water and the regulation of the system.
- In the new sector developed (like sector 2), there is no distribution network under pressure (no pumping). Elevated tanks have been installed and the distribution is now achieved by gravity flow. This rationalization of the hydraulic network setup will ease the regulation of the system and also will substantially decrease fuel consumption (Fuel is very expensive, and delivery is unreliable so this measure reduces costs and risks). IOM is currently working to ensure that the whole water distribution system of the POC will operate/function in the same way: supplies

have been ordered a basic preliminary study carried out. It is important to note that IOM tries as far as possible to reuse existing materials to improve the setup of the POC water supply.

- The water storing capacity of the camp/POC is ongoing (*see photograph*)
- Currently 90m³ of water is trucked per day to the camp. The water trucking cost 40USD/trip with a total capacity of 13m³ of cisterns. The water trucking cost is still very high: about 275USD/day meaning over 100 000USD/year. IOM expect already ordered supplies to extend the water distribution network capacity allowing for the water trucking to be phased out by January 2016.



Still some issues were identified that should be corrected as a matter of urgency, the main ones being:

- Schedule of the water point of sector 1. While IOM have said this is 4 to 5 hours, the discussion with people at water point and the walk about in the camp revealed that only 2hours of water supply is provided, Compare for example sector 3 which gets more than 6hours. The water points are very crowded (*see photograph*).
- The proficiency of staff in charge of chlorination should be assessed and improved.
- The follow up of pumping station: fuel (*fuel being the most valuable consumable frequently subject to diversion*) and chlorine consumption, water production, history of maintenance/breakdown of pump or generator, must improve. No log book was present at pump station site and the staff in charge of chlorination struggled to explain their task.
- The balance of service provision varies a lot from one sector to another, for instance: water access in sector 1 between 7,5 to 9,5L/cp/day and in sector 2, 20L/cp/day; 200 persons per water taps in sector 1 (*see photographs: showing the crowdedness of water point*); 240pp per water tap in sector 4 and 67 persons per water taps in sector 2; 70 pp/latrine stance in sector 1 and 23 pp/latrine stance in sector 2. This can become a serious issue which can trigger security risks.
- Efficiency of the network (leakage) have to be taken into account when calculating the rate of available water per capita and per day
- Lack of cleaning of jerricans is a serious issues that remains to be addressed



4.4. Sanitation:

✓ Latrine:

Improving sanitation is the greatest challenge in the POC. The black cotton soil has very low seepage capacity and cracks during the dry season causing damage to the latrine facilities). The design of the latrines has been improved in terms of quality and sustainability but still there is an issue to ensure that latrine is an effective barrier on the route of disease transmission. Simple measures are missing for example covers on drophole, lack of mosquito net on the vent pipe.



The cost of latrine construction remains quite high with about 7000USD per block of 16 stances, meaning about 440USD/stance. However the costs are just about acceptable given the context.

Some latrine pits should be decommissioned urgently (*see photograph*).



In sector 1, SI has attempted to optimize space by installing tents on properly decommission latrine block (*see photograph*).

✓ Cleaning of latrine organization: see hygiene promotion section

The large scale desludging operation is costly about 100m³ of sludge are disposed per day, for a total cost over 500 000USD/year.

✓ Desludging disposal management - Sewage treatment plant:

SI is investigating a potential solution to mitigate pollution load disposal into the natural environment, and have come up with a basic preliminary study to develop a lagoon system. This requires further work terms of quality control and regulation of the system. There is concern about the capacity of SI and the cost. Depending on what happens in the camp and the developing relationship between the camp and the town such system should be considered for funding. The best way would be to mitigate the initial cost by involving several donors in it



In ICRC, may have the capacity to advise further regarding the feasibility and relevancy as well as cost of such project.

✓ Drainage:

Given the numerous sewage ponds/standing water in the drainage

system primarily but not only in sector 1, this is of concern. The very low seepage capacity of the ground and the absence of outlet for the drainage system undermine most of the attempts to improve the drainage system. All the grey water from bathing unit or hand washing facilities is going to the drainage system as well. In the new sector 2, the situation regarding drainage is satisfactory.



4.5. Hygiene promotion:

The hygiene promotion has improved a lot since last monitoring. The new IOM hygiene promoter is very dynamic and committed to find the best approach. After, many trials the new community approach have reduced resort to incentive payment, as shown by the table below. This is highly appreciated. Daily activities such as latrine cleaning are now done without incentive for the users (*see table in the next page*).



The women in charge give the name of a man from her family who will then be appointed for irregular activities such as drainage cleaning.

They get an incentive for the family for this. This new approach piloted in sector 2 has shown good results so far (*see photograph of girls washing their hand after visiting the latrine*). The sense of ownership has been raised and in the targeted sector now hand washing facilities tend to have water, soap is usually present and not stolen (*see photograph*)

Soap is regularly distributed with the food distribution

| Before | | | Now: IOM-HP Model | | |
|----------------------------|-------------------|--------------------------|----------------------------|--|--|
| Work | Who does it | Cost | Work | Who does it | Cost |
| HP messaging | Hygiene Promoters | Paid (1/500) | HP messaging | Hygiene Promoters | Paid (1/1300) |
| Latrine cleaning | Random women | Paid (1/16 doors) | Latrine cleaning | Women from the Roster (Hygiene committees) | Paid (1/40 doors) |
| Shower cleaning | Random women | Paid (1/2 blocks) | Shower cleaning | Women from the Roster (Hygiene committees) | Community contribution (1/4 blocks) |
| Drainage cleaning | Random men | paid | Drainage cleaning | Women from the Roster (Hygiene committees) | Community contribution |
| Water carrying to latrines | missing | - | Water carrying to latrines | Women from the Roster (Hygiene) | Community contribution |

| | | | | | |
|---------------------------------------|------------|-------------|--|--|-------------------------------|
| | | | | committees) | |
| Soap carers | missing | - | Soap carers | Women from the Roster (Hygiene committees) | Community contribution |
| Handwashing station carers | missing | - | Handwashing station carers | Block leader | Community contribution |
| Loading/offloading materials, digging | Random men | Paid | Loading/offloading materials, digging | Men from the Roster (Hygiene committees) | Paid |

The main problems noticed about hygiene promotion are:

- Management of awareness materials
- Develop approach more focus on practices to support people to translate messages into action at level of householder
- Harmonization of approach (*ongoing*)

4.6. Note on UNICEF activities in Upper Nile State:

UNICEF has reduced its involvement in currently their level of involvement is mainly limited to provision of supplies from the core pipeline. SI has a PCA with UNICEF to manage the core pipeline in Malakal and Wau Shiluk. *Main outputs from UNICEF within the Upper Nile state are:*

- Supply of soap together with IOM
- Provide asset to SI: 1 desludging truck 3,7m³ and 1 dump truck 16m³
- Fund a local NGO (called SCPDA) to implement hygiene promotion activities in school, mainly implementation of hygiene club.
- The directly implement an ad hoc training related to cholera preparedness with teachers and community leaders
- Fund World Vision to build latrines in Wau Shiluk
- PCA with GOAL to manage supplies for Melut, Ulang, Maiwut counties
- PCA again with World Vision (1M USD) for a comprehensive WASH action in Khor Adar and Rom, Akoka County for a resident population of 15 000pp plus 7000 idp's .
- PCA with a local NGO called Nile Hope Development (500 000USD), for WASH activities in Nassir County (2000 IDP's).

UNICEF explains that the conflict in Malakal triggered internal ethnic displacement. In Malakal a certain number of people originally from Akoka county who seek security decided to return to their original ethnic territory. As a result, the stress on water resources notably have been increased in those returns location where the level of service (WASH) was already low. According UNICEF 2000 idp's have been displaced to Akoka County from Malakal. In the meantime, the relevancy of the content of action should be justified as the explanation provide by the UNICEF WASH specialist was really confused and demonstrated a lack of proficiency in water supply. The

WASH specialist of UNICEF is apparently specialist in CLTS and hygiene promotion. The project just started but no assessment have been made by the Malakal based UNICEF WASH specialist.

Given the level of work of UNICEF in the state and that you cannot access the interior of the County without passing by Juba, it is **hard to justify the permanent presence of an UNICEF expatriate staff specialist in WASH in Malakal.**

4.7. Note on IMC health center:

The sanitary situation of the health center manage by IOM in sector 1 of the camp is not acceptable. Numerous hygiene breaches have been noticed:

- No solid waste pit (just 1 garbage bean) and no incinerator
- 3 blocks of 4 latrines stance almost totally collapsed but not close with all the risk of contamination imply by having an open pit in a health structure. Moreover, the pit are filled with solid waste. Someone could be badly injured by falling in the pit. Latrines are unhygienic . **Not acceptable.**
- High presence of open defecation
- Access from the back of the health center directly to IDP's shelters without fence
- No functional hand washing facilities and no presence of soap

5.RECOMMENDATION / PROPOSITION:

5.5. Miscellanous:

- Given the volatile and unpredictable situation of Malakal, in case of proposal for further action funding in Malakal WASH sector include in the initial proposal the two following assumptions:
 - Situation in terms of influx of population stabilized (at least in increasing of population)
 - New influx of into PoCs
- The IOM funding contract with ECHO should be flexible to allow for :
- A capacity to in the first case improve the fine tuning/balance of service provision among sectors of the camp/POC and thus cost efficiency/quality of the WASH service provided
 - And in the second case, deal with the new needs.
- Monitoring should enable clear and realistic overview of the level of service provision among sectors to avoid people trying to access services from another sector or block than the one they are located. That will reduce risk of conflict over access services and of chaotic movement within the camp.

5.6. Water supply

- Concentration of aluminum on the water distribute should be tested.
- The setup of the ultrafiltration system requires appropriate difference of head (differential pressure) between the inlet tank and the outgoing tank of 1 to 4m. The performance of the filter in terms of flow rate for instance will also depend on this pressure differential as well as raw water turbidity level. The good compromise in terms of setup has to be found to ensure appropriate flow rate and water quality performance of the filter and avoid resort to too many filtration units to match the water demands.
- Check the maintenance of the skyhydrants filters ready to be installed as water treatment fine tuning at the outlet of the water treatment plant. Check operating and maintenance cost of the equipment on yearly basis and on 5, 10 years basis taking into account lifespan of the various equipment composing the ultrafiltration unit: filter materials/membrane, washing equipment ...
- The setup of the pump on the river bank should be improved. Installation of the pump on floating platform anchor on the river bank should be envisaged. In the meantime, the implementation of the new pressure pipeline between the river and the treatment plant located inside the camp will enable to have only one functional and one backup pump at the riverside instead of 3 or 4 of them for the time being.
- The maintenance of the hydraulic vessel used to protect the pump should be ensured. For instance manometer and compressor should be available to ensure appropriate functioning of that equipment and thus protection of the pump.
- Try to avoid water supply pipeline passing through sewage effluent.
- Continue to try to find solution to decrease the operating cost of the water supply system in general.
- Ensure presence of log book as much as possible at each pump station/generator location. To record breakdown, maintenance operation, production, fuel consumption, chlorine consumption... Improve control of the fuel and chlorine consumption for instance by random comprehensive follow up and crossing information source. Assess proficiency of the staff in charge to perform properly chlorination.
- Improve the warning system to try as much as possible to anticipate rising up of turbidity of the raw water to adjust treatment in accordance (the filter will improve the capacity to cope safely with variation in the raw water quality).
- Improve water meter coverage on the distribution network and integrate a realistic percentage of leakage/losses on the hydraulic system when estimating the rate of water availability per user and per day.
- Improve monitoring of water availability and schedule of water point. Ensure clear and respected schedule at the water point.
- Improve the design/strategy in terms of storing facilities within the camp.
- Assess relevancy and feasibility of solar pumping technology to mitigate the operating and maintenance cost of the water supply system.

5.7. Sanitation, hygiene promotion and community approach

- *This remains a huge technical challenge and maybe one of the main one for WASH and camp planning sector within Malakal POC.* Feasibility should be carried out and topographic survey completed to enable relevant technical assessment.
- Improve water saving of domestic water uses such as cleaning the latrine. Try to avoid pouring of water directly to the pit and help ensure use of appropriate quantity of water for cleaning.
- Harmonize and ensure that the activity of hygiene promotion related to community mobilization for latrine cleaning is coherent in the modalities, most importantly the uses of incentives by SI and IOM.
- Improve the relevancy of the awareness materials. Those materials should be posted in strategic location (water point, latrine block,...) on notice board which could be also used to inform people on various topics using drawings and pictures. The awareness materials should be based mainly on illustration and if presence of text should be in the local language or others relevant language.
- Improve the efficiency of latrine to constitute a barrier on the route of transmission of disease: cover on the latrine drophole, mosquito net on the vents pipe... Ideally, a cover lift by foot and fix to the slab should be implemented.
- Assess potential use of local available construction materials to decrease resort to imported expensive ones.
- Continue to optimize reuse of materials and equipment when applicable (e.g.: pipe, slab, iron sheet, tank...)
- Consideration given to incinerating solid waste prior to burial in order to stabilize them and reduce their volume.
- The sewage/sludge from latrine disposal should be fenced to avoid children accessing it as they run the risk of injury
- Sewage treatment plant to mitigate the pollution load dispose into the natural environment should be consider at some point (e.g.: basic lagoon with anaerobic and oxidation pond...).

5.8. IMC health structure (sector 1):

- Ensure presence of hand washing facilities filled up with water and with soap or chlorine available
- Implement a solid waste pit and at least an incinerator for the medical waste
- Close all collapsed structure. Decommission or rehabilitate the structure to ensure safe access and hygienic facilities.