



School WASH improvement in Adama, Ethiopia

Final report

commissioned by Aqua for All, Lettinga
Foundation and Waterschap Zuiderzeeland



Title: School WASH Improvement In Adama, Ethiopia

Status: Final

Date: 2 April 2019

Client: Lettinga Foundation

Author(s): Darja Kragić Kok

LeAF project number: 15021

Number of pages: 18

LeAF B.V.
P.O. Box 500
6700 AM Wageningen
+31 (0)317 484208
info@leaf-wageningen.nl
<http://www.leaf-wageningen.nl>

Summary

This document is providing a brief overview of the activities and approaches undertaken within the project “School WASH improvement in Adama, Ethiopia”. The project was successful in meeting its objectives and reaching planned outputs. Additionally, new innovative methods were designed and applied.

During a previous project, ROSSA (2012-2015), two schools were identified in the poorest part of the city of Adama where the situation regarding sanitation facilities was identified as the worst: Abdi Boru and Kidus Kora’an.

LeAF teamed up with Mr Lemma, previously employed at Adama Town Health Office (ATHO) and co-developed a four-step school WASH improvement model, giving the school - director, teachers, parents and pupils - a central role.

The approach was first applied in the school Abdi Boru. School parents organized themselves and purchased materials for construction of toilets, a handwashing facility and planted a reed bed filter for grey water treatment. Treated greywater is subsequently reused for school garden irrigation and cleaning of toilet floors. In the spring and summer of 2016, training sessions on operation and maintenance (O&M) of grey water treatment took place. A school WASH club was organized for school pupils. The feedback of the training participants (n=20) was very positive and undertaken approach for school WASH improvement was appreciated.

Unforeseen factors caused some delay in the project implementation for the second school Kidus Kora’an. The declared state of emergency in Ethiopia hindered communication with partners. In the first half of 2017, project activities in the school Kidus Kora’an continued. In the meantime, several stakeholders and project partners changed jobs.

LeAF adapted the WASH improvement approach by using serious games for knowledge transfer. Within VIA Water programme, funds were obtained for this innovative approach.

Prior to the construction activities at Kidus Kora’an school, a committee was formed, consisting mainly of parents and school staff that purchased the materials for construction of toilets and grey water treatment. WASH clubs were formed and involved in the WASH board game testing. A local SME constructed the latrines and the grey water treatment. All stakeholders participated in one or more gaming sessions, where the idea of water recycling was introduced and operation and maintenance of the constructed wetland was simulated.

The project was completed in the summer of 2018.

While in Ethiopia for another project in February 2019 LeAF revisited both schools. The infrastructure at schools was operational, and supra structures of latrines were clean. However several challenges with O&M were identified related to extensive use of the renovated facilities by the surrounding communities, new generations of students and new school staff (not previously involved in the project). Possible ways to solve these challenges were discussed with local project partners and ATHO officials.

Table of Contents

1. Background information about two schools in Adama	1
1.1 Approach	1
1.2 School WASH model development.....	2
2. Abdi Boru school.....	4
2.1 Steps I & II.....	4
2.2 Steps III & IV.....	4
2.3 After the completion of activities	6
3. Kidus Kora'an school.....	7
3.1 Adapting the approach based on the lessons learned	7
3.2 Construction activities	8
4. Operation & Maintenance	9
4.1 O & M approach	9
4.2 Observations after site visits	9
5. Dissemination & next steps	11
6. Concluding: project outputs	12
Annex 1. Drawings - toilet and grey water treatment systems	13

1. Background information about two schools in Adama

During the baseline study activities within the ROSSA project (www.rossa-adama.com), primary schools have been visited in the project case study area - Kebeles 06, 07 and 08 of the Adama city in Ethiopia. At two schools the situation was identified as the worst regarding sanitation facilities: Abdi Boru in Kebele 07 and Kidus Kora'an in Kebele 08.

At both schools the present toilets were poorly maintained and the numbers of facilities were insufficient. The Abdi Boru school has only two toilets, one for 113 boys and one for 160 girls. At the Kidus Kora'an school the situation with sanitation for girls in particular is unsatisfying. Due to circumstances, the number of toilets for 210 girls reduced from eight to two, and these two toilets are being shared with female visitors of the nearby mosque.

Mr Lemma from Adama Town Health Office (ATHO) and Ms Kragic Kok from LeAF, who cooperated already within the ROSSA project, worked jointly on the project proposal and fund raising to improve the situation with WASH in the two schools - with support of the ROSSA project coordinator and other project partners.

1.1 Approach

The aim of the project is to improve the WASH situation at Abdi Boru and Kidus Kora'an schools by addressing both hardware and software aspects of the problems:

- New toilets will be constructed and existing ones will be renovated.
- Grey water (wastewater from handwashing basins) treatment facilities will be constructed.
- Trainings will be given to school staff on maintenance and operation of the new and renovated facilities, and on suitable reuse options for the treated grey water.
- Pupils of the two schools will be trained on hygienic practices, through workshops co-organized by the City of Adama Educational Office, Adama Town Health Office and LeAF.
- School boards will be supported in the development and implementation of sanitation management plans.

School and surrounding communities have a central role in our approach

The hypothesis is that the intervention made with introducing grey water treatment will promote water reuse to school children on the one hand, while savings will be made in water consumption at schools on the other hand. Treated grey water can be reused for classroom floor cleaning, cleaning of toilets, and for irrigation of gardens (for which currently tap water is being used).

Small and medium sized enterprises (SMEs) are involved in the construction of school latrines and grey water treatment facilities. It has been previously reported that involving local businesses in school latrine construction has positive effects, as it:

- Offers an expanded market to SMEs,
- Builds capacity in the community,

- Local builders can market themselves to households through a good job done in schools,
- Local skills are available for future maintenance.

Mr Lemma and Ms Kragic Kok developed the log book (Table 1-1) and used it to communicate with each other on the distance about the activities that took place and the project progress.

Table 1-1 Example of Log book outline used in communication between project partners – an example of communication

Date	Activity	Persons involved (with contact details)	Action points agreed	Entry filled in by (name)
June 8 2015	School toilet and grey water treatment plant construction	Mr. Kadir -Abdi boru school director +25191xxxxxx	Time of construction recommended if in July and August - Site of construction the school prefer renovation/maintenance than new construction - The school director have an interest for construction of grey water treatment	Lemma Tulu
...

Next to promoting treated water reuse for irrigation purposes and for cleaning of toilets, reuse of the construction materials was also encouraged - bricks from demolished old toilet block were (re)used for construction of grey water treatment facility.

1.2 School WASH model development

For the systematic involvement of school, surrounding communities and representatives of Municipality in the school WASH improvement activities, a four step model was created (presented in Figure 1-1). The model was developed by Mr Lemma and Ms Kragic Kok – where giving school a central role from the very beginning of the project was seen as a priority.

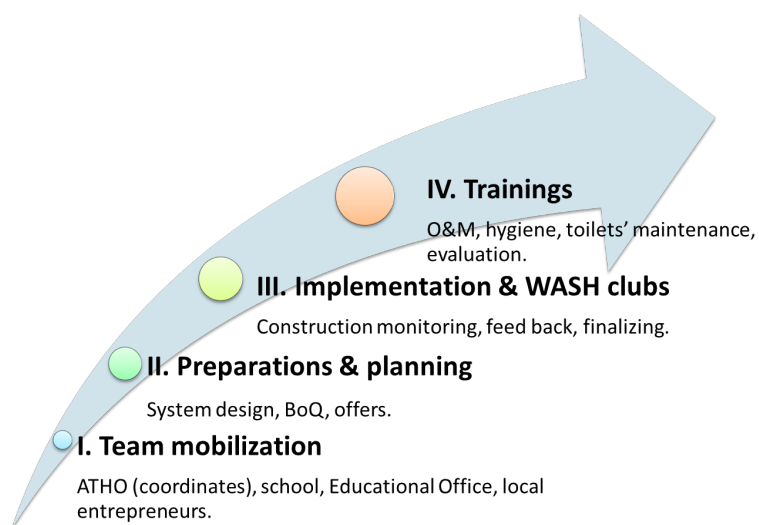


Figure 1-1. Four steps of school WASH improvement model in Adama

2. Abdi Boru school

2.1 Steps I & II

The first steps of the model (Figure 1-1) were undertaken: Mr Lemma contacted principal of the Abdi Boru school (Mr Kadir) who set a parents committee and presented the project. Though the toilets renovation were first planned for the mid 2015 during the summer holidays, the plan was postponed for 6 months, when the next school break was taking place.

For design of the toilet blocks, Mr Atnafe was contacted, who was previously hired for construction works within the ROSSA project. The idea was to maximize the space available for toilets, which was very limited and of irregular shape. In place where were two toilets previously located, four toilets and urinals for boys were planned. Applying tiles to floor, urinals and walls, would ease the cleaning of the toilet facility.

In addition, handwashing facility next to the toilets was planned to be constructed, together with reed bed filter as water treatment facility (Figure 2-1). The idea of the handwashing wastewater (grey water) treatment was further discussed with Mr Kifle, who in the past constructed and maintained the reed bed filters at ASTU University within the GTZ project.

Annex 1 includes the construction drawings prepared by Mr Atnafe and Mr Kifle of the toilet block and greywater treatment. LeAF provided a feedback on the drawings and they needed adaptation prior to construction.

School parents committee took the responsibility to prepare bill of quantities (BoQs) and collect pro-formas, as one of the parents is also a mason. Desludging of the pit latrines took place prior to renovation.

2.2 Steps III & IV

Implementation step took place – first of the toilet block (led by one of the school parents), followed by the construction of the hand WASHing facility and grey water treatment by Mr Kifle (Figure 2-1).

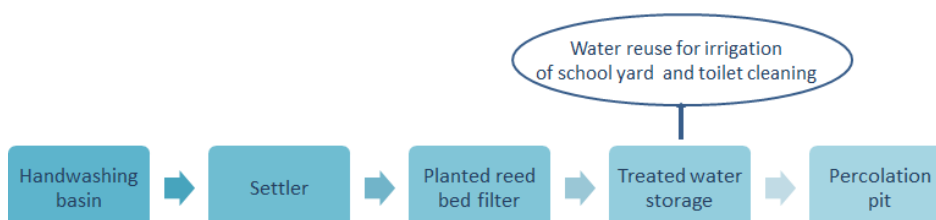


Figure 2-1. Schematic representation of the grey water treatment concept

Figure 2-2 and Figure 2-3 show pictures of the completed handwashing facilities and constructed wetland.



Figure 2-2. Image of the hand WASHing facility and planted reed bed filter



Figure 2-3. Image of the renovated toilet facility (left behind) and the planted reed bed filter

A School WASH club was formed and content of the first trainings were discussed in parallel. Preparations for the training on operation and maintenance (O&M) of toilets and grey water treatment were done by LeAF, Mr Kifle and Mr Lemma.

The training on O&M was given to 20 participants by Mr Kifle and facilitated by Mr Lemma. During the training, special attention was paid to:

- importance of reuse;
- teachers role in sustaining school WASH and waste management;
- students role in sustaining school WASH and waste management;
- cleaners role in sustaining school WASH and waste management;

The training on importance of hygiene followed, where link between proper hygienic practices and possibility to get ill were addressed.

2.3 After the completion of activities

The applied four-step school WASH improvement model received a positive feedback from stakeholders involved: school principal, school teachers, students, parents, ATHO, educational office. The emphasis given to reuse of water and low-cost improvement of sanitary infrastructure was perceived as important for Ethiopian setting.

3. Kidus Kora'an school

After finalizing project activities in the school Abdi Boru in 2016, a political instability in the country caused a delay in further project implementation. As communication with local partners was not always possible due to power failures, mobile network failures, and lack of access to internet, it was decided to put project activities for the second school on hold until the situation improves.

In the summer of 2017, project activities in the school Kidus Kora'an continued.

3.1 Adapting the approach based on the lessons learned

In 2016 several persons involved in the project (director of school Abdi Boru and a representative of ATHO – Mr Lemma) changed their jobs. It meant that some of the key stakeholders, who received the training within the project, have left the school. LeAF wanted to tackle the challenge of urban dynamics by producing training modules that will be more engaging and delivered in another form than a report.

In the beginning of 2017 LeAF applied for the co-funding within VIA Water programme for developing games for improving knowledge on operation and maintenance of the grey water treatment system and hygiene. The hypothesis was that developed board games will be played multiple times by stakeholders, and will contain clear rules, so that after the project has ended school staff and pupils can still use/play them. For more information you can visit: <https://www.viawater.nl/projects/simulation-and-gaming-for-grey-water-treatment>

The adapted approach is presented in the Figure 3-1.

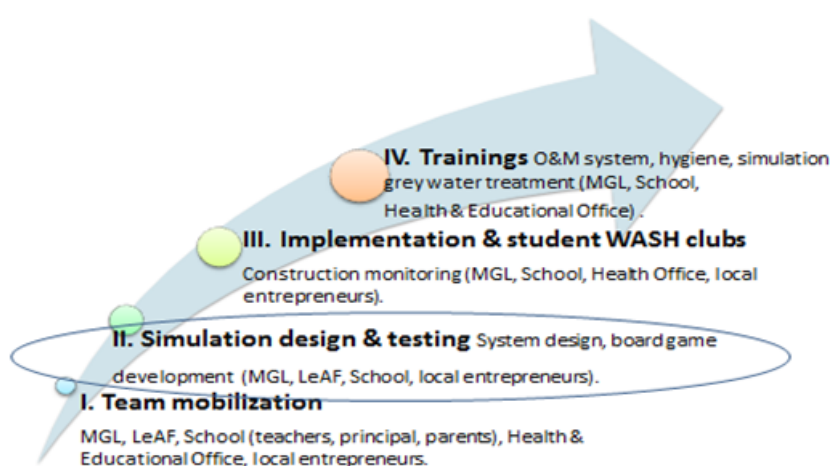


Figure 3-1. Phases of the adapted school WASH model activities – the proposed innovation is in the Phase II.

3.2 Construction activities

The plan to reconstruct latrines for female students took place. The number of latrines doubled from 2 to 4, whereas one latrine was designed to be accessed by female students with disabilities. The handwashing basin was constructed next to latrines. Due to the fact that there was no space available for constructed wetland next to the latrines, it was - after consultations with school management - decided to construct infiltration pit for the handwashing wastewater with the green area on top.

The latrines for boys, were emptied and renovated. Next to the latrines, handwashing basin was also constructed, followed by the constructed wetland system. Previously was noted that the latrines have never been de-sludged (more than 20 years), as there was no need due to the properties of the soil in Adama and depth of the pits.

For the school Kidus Kora'an a horizontal type constructed wetland was chosen, being one the first applications of this type in Ethiopia (Figure 3-2). Though ample communication took place and feedback was provided by LeAF to the local team - the hydraulic profile of the implemented system was functional but different than expected.



Figure 3-2. Grey water treatment system at the Kidus Kora'an school

4. Operation & Maintenance

The project embedded activities related to proper operation & maintenance (O&M) of both the toilets and the constructed wetlands for grey water treatment. The project team acknowledges that one of the key reasons for the failure of sanitation systems in low-income countries is the lack of proper O&M.

4.1 O & M approach

The developed school WASH approach included activities and trainings (of students and school staff) for the sustainable O&M of the latrines and grey water treatment system. The WASH clubs for students were founded at both schools (supported by Adama Town Health Office) where next to the O&M activities of the system, the importance of hygiene and handwashing was addressed, together with the promotion of the treated grey water reuse. Emptying of the latrines was not specifically addressed, as latrines at both schools never needed to be emptied previously, as Adama city is characterized by sandy soil.

Both schools are located in one of the poorest areas of the city and serving the poorest communities, with no budget readily available for possible additional costs for O&M of the latrines and the CW system. During the project duration simple tools (low cost & locally available) were provided to the schools. The training on proper use of the tools for the maintenance of the system was done by using the quiz game WaterGo (developed through VIA Water programme) and summarized in the O&M manual.

In order to improve hygiene at schools, next to handwashing practices with soap, the toilets need to be cleaned and maintained on regular basis. The project made the cleaning activity of toilets easier by applying ceramic tiles on the floors and the walls of the latrines – compared to the concrete floors previously in place.

4.2 Observations after site visits

Both sites were revisited after the project has ended. After revisiting the 1st school in February 2019 - 3 years after infrastructure improvement took place - the latrines were found to be very clean (indicating that they were probably cleaned shortly to our arrival).

The water is being reused for irrigation of the school garden during the dry season. The seedlings of the various plants were visible in the schoolyard, that have not been there prior to the project.

During the talk with the person responsible for the O&M he mentioned that the pits are getting full due to the solid waste being thrown into them (i.e. plastic bottles). Since the surrounding community has extensively used the latrines as well the situation indicated that the trainings performed at school on proper use of latrines did not have a sufficient reach to the communities. Due to the discarding of solid waste in the pits, emptying of the pits will become an issue in the near future. The pits were designed to last at least 10 years and non-biodegradable solid waste in the pits was not anticipated during the design phase of the project.

The observation was also that the school had (again) the new director, not previously trained within the project. Students' WASH clubs could be playing a more prominent role in strengthening knowledge transfer on WASH in schools. If integrated in the school curriculum, the WASH clubs could provide better outreach to new students and new school staff.

When revisiting the 2nd school, the toilets were found to be relatively clean, however the CW was not working optimally since less water was entering the system than previously estimated. The reason for low grey water volume was that the visitors of the toilets were not practising hand washing.

The Health Office professional, who was joining the team during these short visits to schools in February, contacted the Health Office extension worker responsible for the Kidus Kora'an school to perform additional trainings on hand washing with students and to monitor the situation with WASH clubs. The challenge of sufficiently reaching out with WASH trainings to communities surrounding the schools remains. In both schools, and in Kidus Kora'an particularly, the members of surrounding communities make extensive use of the renovated toilet facilities.

5. Dissemination & next steps

Providing the possibility to reuse water on-site was appreciated by both schools' staff, parents committee, and all stakeholders involved. As a small example of their appreciation, school Abdi Boru and ATHO organized as a surprise, a painting of the toilet blocks and the grey water treatment system. The painting depicted that the school WASH improvement was a result of the donation of the people of the Netherlands and Lettinga Foundation.

Throughout the project, and in particular during the training activities, Lettinga Foundation was mentioned as one of the project donors.

Representatives of the Dutch co-funding organization Aqua for All visited the school Abdi Boru and published an update on the project in their newsletter (June 09, 2016): *"...The school in this slum is poor and water is scarce, but is very happy with the improvements and the local supervisor was proud to have used local materials"*.

At the second school Kidus Kora'an a traditional inauguration was organized in July 2018, where local media was present, Municipality representatives, community and pupils (Figure 5-1), and all project funders were mentioned.

LeAF plans to further investigate possibilities for scaling of the developed school WASH approach where water reuse is promoted and both hardware and software aspects of WASH are simultaneously addressed in an engaging way and continue cooperation with the Health and Education Offices.

From the visits to the schools after the project has ended, it can be concluded that the proper use of toilets and handwashing promotion should be better advocated and with more frequency by the project partner Adama Town Health Office (with their respective extension workers), especially among the poorest communities in Adama. For the sustainability of the WASH trainings and the capacity building, the role of WASH clubs in schools can be further strengthened by integrating their activities into school educational curriculum, which can be further supported by the Educational Office.



Figure 5-1. Opening ceremony of the sanitation facilities and constructed wetlands and handing over of the project to Kidus Kora'an school officials

6. Concluding: project outputs

An overview of the project outputs, covering both hardware and software aspects of WASH, is provided below.

- At Abdi Boru school the number of latrines has doubled (n=4) used by both boys and girls;
- The number of latrines for girls at Kidus Kora'an school has doubled (n=4);
- A total of three handwashing basins was constructed at the two schools;
- Two constructed wetlands for treating the water from handwashing were implemented.
- More than 40 people followed the training sessions about the greywater treatment, water reuse, operation & maintenance of the latrines and constructed wetlands and hygiene practices.
- The estimated outreach of the school WASH improvement is at approximately 600 pupils and more than 1,000 adults.

Annex 1. Drawings - toilet and grey water treatment systems

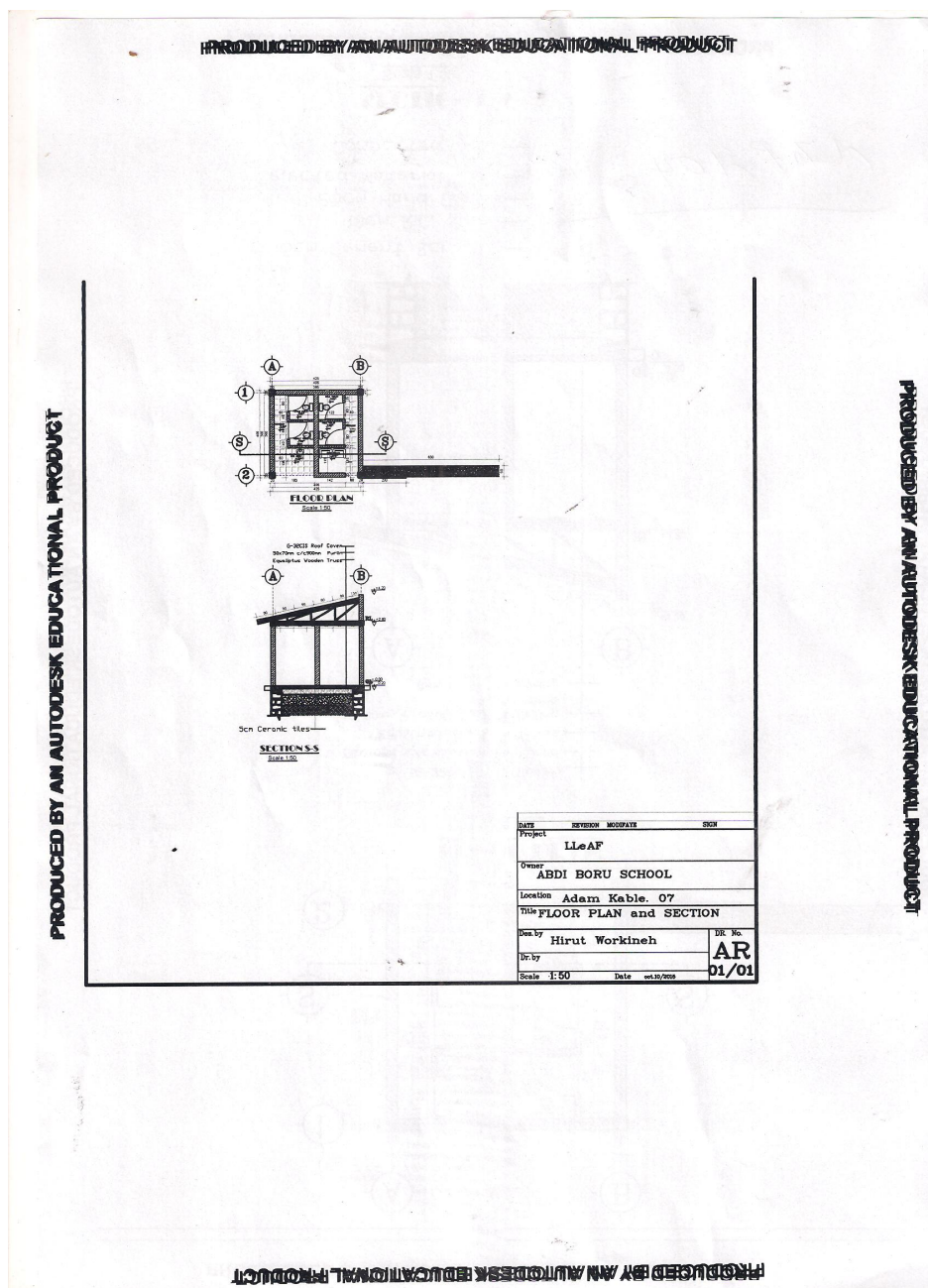


Figure A-0-1. Construction drawing of toilet.

Detail B
Percolation pipe
Ø 110mm

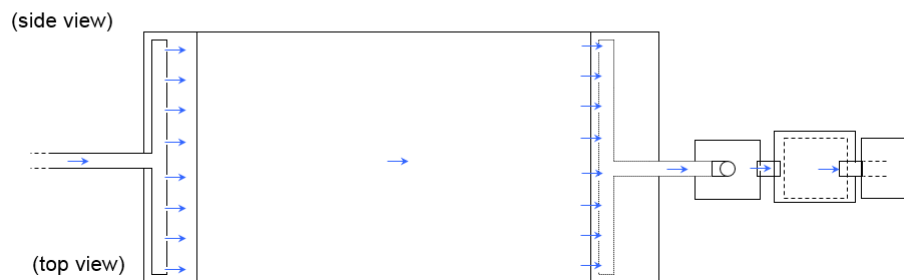
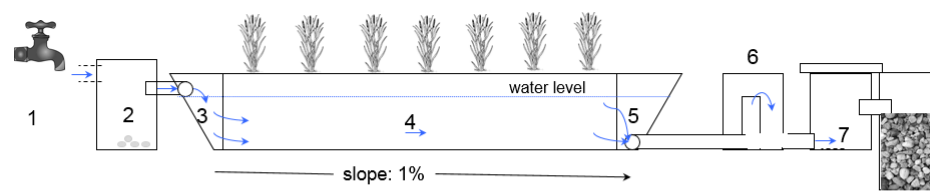
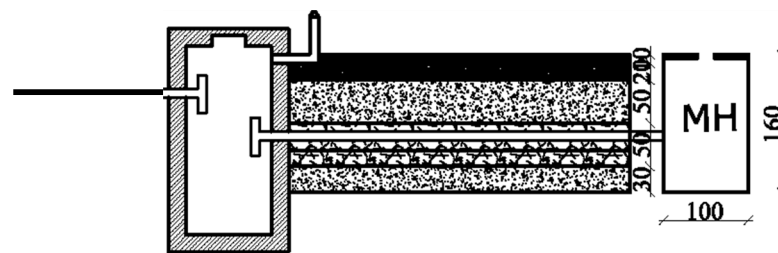
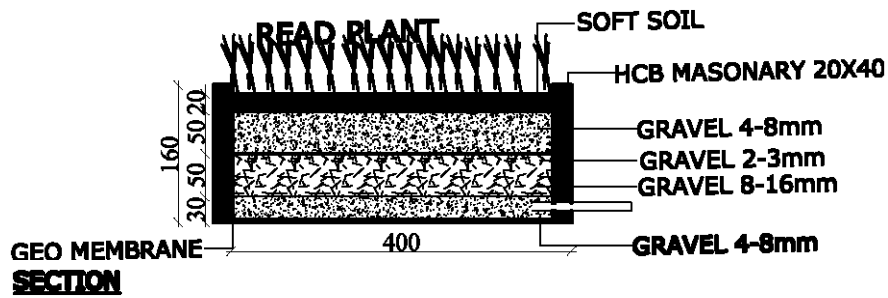


Figure A-0-2. Construction drawings of constructed wetlands