Project Background

Type of Project: Hospital WASH Infrastructure Improvement
Funded by: Lien Aid Cambodia
Implementation Approach: Consultancy, Design, Implementation
Executing Agency: BORDA-Cambodia
Supporting Organisation: BORDA-SEA
Client: Lien Aid Cambodia / Kampong Speu Referral Hospital
Location: Kampong Speu Referral Hospital
Project Start: January, 2010
Construction Start: 10th November, 2010
Start of Operation: 25th May, 2011

System in Brief

Sources of Wastewater:
- Domestic wastewater from hospital patients, staff and visitors

Wastewater treatment Unit:
- 1 Settler
- 6 Anaerobic Baffle Reactors
- 2 Anaerobic Filters
- Automatic Pump Station

Wastewater Pipeline:
- 532 m PVC pipeline
- 82 manholes (main and secondary)

Sanitary Facilities:
- 34 toilets (4 disabled)
- 9 shower rooms
- 35 hand-washing sinks

Key Figures:

| Number of Users/day | 600 |
| Treatment Capacity (m3/day) | 40 |
| Area of DEWATS (m2) | 60 |
| Construction Cost (USD) | $26,100 / $13,000* |
| Operation Costs (USD/month) | N/A |

*DEWATS / Pipelines

Specific Problem

Kampong Speu Referral Hospital’s water and sanitation facilities were in very poor condition. Wastewater treatment was limited to many soak pits or semi-sealed septic tanks around the hospital, some of which would overflow into a broken and blocked sewage system which ended with a non-functioning wastewater treatment filter (sand/charcoal). However, because the sewage system was blocked most wastewater infiltrated into the ground. During the rainy season poor drainage caused wastewater and rainwater to mix and resulted in minor flooding around the hospital. This was a significant risk to public and environmental health.
Technical Description

Technical components

The Kampong Speu Referral Hospital DEWATS is designed to treat 40 m³ of domestic wastewater a day. It is 12.9m long, 4.6m wide and 3.3m deep.

DEWATS Modules:

- 2 Chamber Settler
- 6 Chamber Anaerobic Baffle Reactor (ABR)
- 2 Chamber Anaerobic Filter (AF)
- 1 Automatic Pump Station

Effluent quality: The nutrient rich effluent is discharged into a small collection tank, which discharges to a public channel. The effluent from the collection tank is reused for irrigating some of the gardens.

The calculated effluent quality complies with the Ministry of Environment’s regulations for wastewater effluent discharged into public water areas and sewers:

COD <100, BOD <80
(Sub Decree on Water Pollution Control - No : 27 ANRK.BK, 1999)

Management

Operation & Maintenance

The DEWATS will be operated and maintained by staff at the hospital. The O&M staff have been trained in all aspects DEWATS operation and maintenance by BORDA-Cambodia. There is a regular schedule for cleaning and checking that there are no obstructions to the wastewater flow. Desludging of the settler would be required every 2 to 3 years.

Monitoring

Effluent testing will be conducted after the first six and then twelve months of operation, to ensure optimal treatment efficiency and compliance with performance guarantees.