

MINISTRY OF LAND MANAGEMENT, URBAN PLANNING AND CONSTRUCTION

# The Sewage System & Construction Permits

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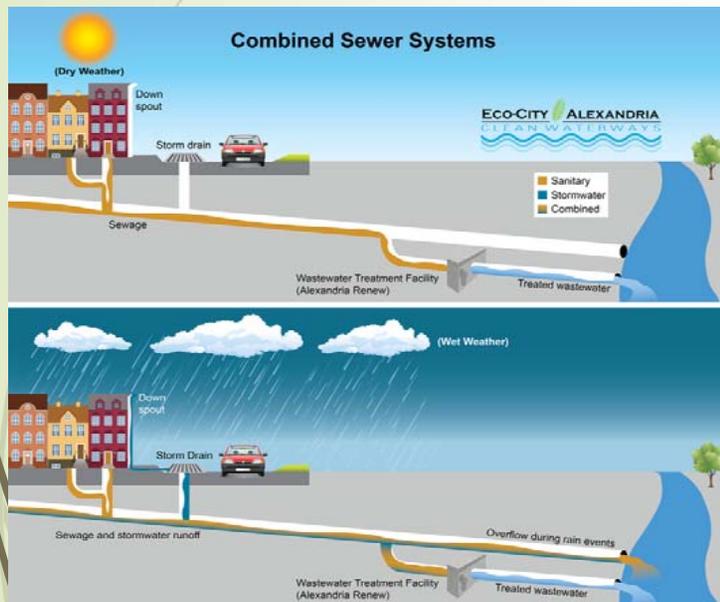
Dr. Iv LIM, Deputy Director General of Land Management and Urban Planning, MLMUPC

## Mainstream wastewater treatment into housing and buildings design

- The MLMUPC is going to build a better urban planning and strongly to consider the issues of wastewater treatment system as important priority that need to cooperate with other ministries;
  - Formulate Technical standards of wastewater treatment
  - Technical Guidelines, standardized CWTP and DWTP for sub city and province
  - Integrate the installation of wastewater treatment onto housings/buildings construction permits

# Sewage System

## Combine Sewer System



## Separate Sewer System

- Pipe carries storm water (rain water) from storm drains to local streams. Pollution and trash in storm water flows to local streams with little or no treatment



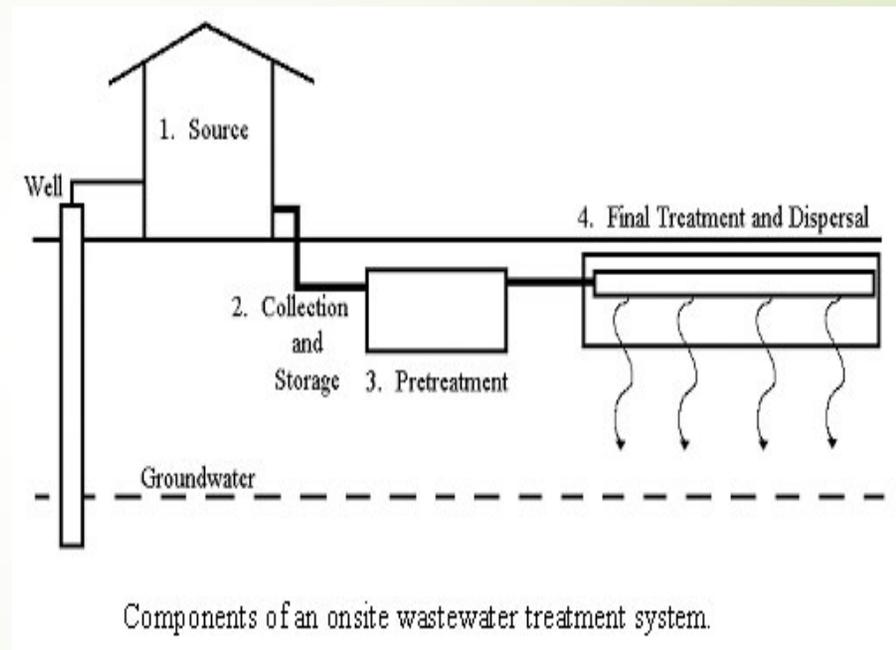
Peak Runoff = CIA  
 Where A is  
 Catchment of City  
 Area, km<sup>2</sup>, I is  
 Intensity of rainfall,  
 mm, and C is  
 Coefficient of Runoff,  
 0.5\_0.7

- Pipe carries sanitary sewage to the wastewater treatment facility

## On-Site Treatment System

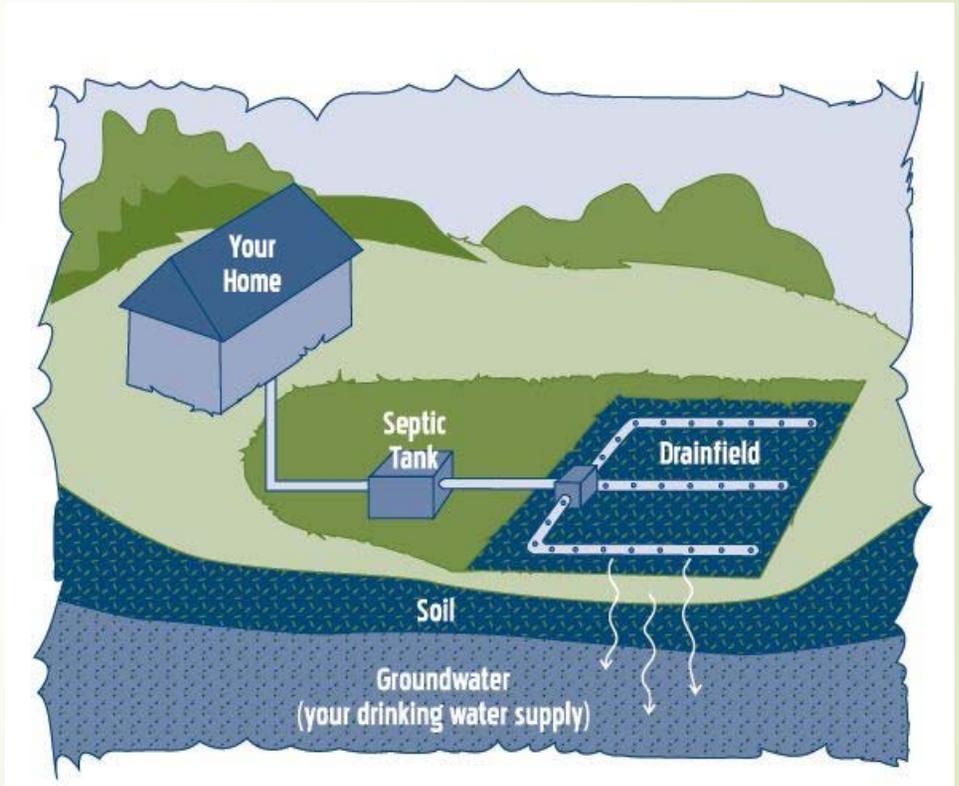
- Uncontrolled Building Construction with no specific waste collector system can cause severe environmental hazard

Solution: On-site treatment systems can be adopted when the individual houses/Buildings are scattered over a large area, and where centralized systems do not exist. This can also be a preliminary option in newly developing localities. Thus, the option of on-site treatment system should be considered mostly as an interim solution, and not a permanent waste water treatment/management option



# On-Site Treatment System

- Various on-site waste water treatment systems are available. Selecting the most appropriate option requires a thorough analysis of all factors including cost, cultural acceptability, simplicity of design and construction, operation and maintenance, hydrogeological conditions and local availability of materials and skills. DWTS is an on-site sanitation system that treats waste water (both black and grey water) mostly at community scale, or even larger scale.



## The Differences of CWTS and DWTS

	<b>Centralised systems</b>	<b>DWTS</b>
<b>Reliability</b>	Require complex operation and maintenance schedules to ensure optimal performance.	Do not require intensive maintenance for better performance.
<b>Environmental sustainability</b>	May generate partially treated or untreated waste water that may not meet discharge standards. Also require higher energy supply.	Treated waste water can be used locally, or can be safely disposed into local water channels. Energy requirement is low.
<b>Financial sustainability</b>	Substantial grants, government funding and subsidies are required for construction, operation and maintenance.	Require less capital cost when compared with centralised sewerage systems.
<b>Affordability</b>	Scores low on affordability due to substantial cost of installation, sewerage network, operational and maintenance costs.	Affordable due to lower costs when compared with centralised systems. Requires locally available materials, as a major portion of such systems is based on natural technologies.

## The Roles and Mandatary of MLMUPC

- ▶ MLMUPC is responsible to manage and enlarge urbanization
- ▶ MLMUPC is responsible for city flood control and any negative impacts
- ▶ MLMUPC is responsible for buildings and housing inspection
- ▶ MLMUPC is to ensure that city infrastructure installation are going on proper and in-order, and functional at all any certain times
- ▶ MLMUPC is to provide the city infrastructure constructions with construction permit in order to avoid any irregular construction, of which one of all kind of constructions is sewage system construction and management

## Urban Planning and Construction

- ▶ The growth of population recently is an issue of need of proper city enlargement and good urban planning with adequate system of infrastructure installation.
- ▶ Great urban planning need to address to all connected infrastructure, one of which is sewage system and the collection of solid and liquid waste from households.
- ▶ Many cities in Cambodia are challenged with the inadequate system of waste collection and it is also influenced by the changes of rain fall pattern that caused flood over the capacity of collection where sewage system is the type of combined system. **Therefore**, all kinds of buildings and houses are required to concern on waste management and its system.

# The Challenges

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- ❑ New city development project lacks of STP/WWTP system – Permit has to be given using on-site treatment method, not compulsory anyways;
- ❑ WWTP has been emphasized in Sub-Decree 42 on Urban Planning and Prakas 087 on Land Development, but it requires technical guidelines and technical standard norm with design format;
- ❑ Effort has been made, but still as form of combine sewer system;
- ❑ Dilemma of city people is environmental pollution in rain season
- ❑ No any foundation to provide construction permits unless clear technical standard, guideline
- ❑ City developers just submit it city design with the drawing of STP/WWTP, but not clearly know how it works technically and environmentally for long age of usage
- ❑ If city developers perused their construction with inadequate design of STP/WWTP, it will be a future consequences problem and negative impacts

## Formulate Technical Standards & Norms

- ▶ Though, no wastewater regulations/guidelines had yet been clearly developed or properly implemented. The conventional on-site treatment practice through a three chambers-septic tank has been the approach suggested by an outdated sub-decree 86 on construction permits (1997). Such practice has been improved under the newly established Sub-decree 42 on Urban Planning, Prakas 087 on Land Development and the renew Sub-decree 86 on construction permits. MLMUPC has expressed the concerns that the fresh water bodies would be more and more polluted and the rehabilitation would be even costly and time consuming.
- ▶ MLMUPC has appointed a group of technical staffs to deal with regulation, technical standard, form of sewage system, and place them into the procedure of building permits prior to allow all kind of buildings/housing construction
- ▶ The team does currently stakeholder mapping to identify the resources availability to do this tasks.

## Current Preparation for Technical Standards and Norms

- Government Budget Contribution
- Seeking for DP financing sources
- Seeking Private Partnership
- Doing Stakeholders Mapping
- Planning for Feasibility Study and Detail Design
- Dissemination for Use

1. The Proposal Requires 5.8 Million USD for Documentary, Technical Designs and Pilot Implementation Project in 3 new places of cities.

2. Initially Ministry needs the technical assistance supports from Japan

Thanks & Welcome Comments