

GUIDELINES ON MOSQUITO PREVENTION IN DOMESTIC RAINWATER COLLECTION SYSTEM FOR NON- POTABLE USES

Introduction

Rainwater collection systems can be potential mosquito-breeding sources. This guideline is intended to address this concern and suggests measures that can be taken to prevent mosquito breeding in rainwater collection systems.

System Overview

2 A typical rainwater collection system for non-potable domestic use would consist of the following key components:

- a) Catchment area;
- b) Rainwater conveyance; and
- c) Storage tank

2.1 Catchment Area

The design of the catchment area should take into consideration water stagnation due to poor design that impedes maintenance, accumulation of leaves and debris, or inappropriate gradient.

2.1.1 The developer shall ensure that the intended catchment area is kept clear of overhanging branches so as to reduce the amount of fallen leaves and debris.

2.1.2 If a pond is to be used as a catchment area, its sides should be smooth and without pockets that could collect stagnant water.

2.1.3 Drains should be constructed with an adequate gradient that allows the free flow of water.

2.2 **Rainwater conveyance**

The use of roof gutters for rainwater conveyance is discouraged. These gutters are difficult to maintain regularly and tend to be either clogged with leaves and debris or be of an inappropriate gradient, resulting in water collection and stagnation.

2.2.1 If the roof gutters are to be included in the design, the developer shall ensure the following:

- a) The gutters shall only be used in conjunction with a flat rooftop with easy access for inspection and maintenance. Gutters for pitched roofs and roofs without easy access to the gutters shall not be allowed;
- b) The gutters must be constructed with a good gradient to allow for sufficient and continuous fall to downpipes;
- c) Gutters for flat roofs with access should not be covered so that regular maintenance can be easily carried out by the owners;
- d) The inlet points to the downpipes should be shielded from large fallen debris (leaves, bark, etc) with a mesh or strainer; and
- e) Wherever possible, all downpipes should be directed down and rainwater should flow into the top of the tank. Horizontal and rising sections and bends should be avoided.

2.3 **Storage tank**

The storage tank shall be mosquito-proofed, regardless of its location of installation.

2.3.1 The size of the tank to be constructed shall, as far as possible, commensurate with the household usage so as to ensure regular turnover of the water. If the water is not continuously consumed and replenished, no batch of water should stay in the storage tank for more than 7 days such that it allows the development of mosquito larvae into adults.

2.3.2 If a tank room is to be constructed, the room floor shall be properly graded towards a floor trap to prevent water ponding on the floor.

2.3.3 The tank shall be impervious to light to minimise algal growth.

2.3.4 All joints in the tank shall be sealed with a sealant on the outside to ensure there is no gap, and further covered with a fine mesh of non-rusting material with mesh size of 0.315mm diameter and 6x7 mesh openings per cm².

2.3.5 The inlet and overflow pipe opening shall be covered with a mesh (non-rust, 0.315mm diameter, 6x7 openings per cm²) which is properly secured with a ring clip to prevent any mosquito from entering into the tank to breed.

2.3.6 All access points except for the inlet and overflow shall be provided with close fitting lids and kept shut unless in use.

2.3.7 The tank inspection opening must have a tight-fitting lid with a rubber seal and provided with a locking device.