

9 August 1995

**EDB Circular No.101/1995**  
**(Formerly referred as EMB Circular No. 101/1995)**  
**(Formerly referred as Schools Miscellaneous Circular No. 101/95)**

**Inspection and Maintenance of  
Buried Drainage and Water Services Affecting Slopes**

[Note: This circular should be read by

- (a) Supervisors/Heads of all schools (excluding Government schools) - for necessary action; and
- (b) Heads of Government Schools/Sections - for information]

The purpose of this circular is to remind owners of the school premises which have slopes in their grounds to arrange regular inspections of the buried services such as sewers, storm-water drains and water supply pipes to ensure that such services within their lot are properly maintained and functioning.

2. Ingress of water from leaking buried services into the ground may adversely affect the stability of slopes or retaining walls. To guard against any instability, it is essential to carry out regular inspections, maintenance and monitoring of buried services. In this connection, an Advisory Note on 'Inspection and Maintenance of Buried Drainage and Water Services Affecting Slopes' is enclosed for the reference of all schools.

S T KWAN  
for Director of Education

(RETYPE DOCUMENT)

**Advisory Note**  
**on**  
**Inspection & Maintenance**  
**of**  
**Buried Drainage & Water Services**  
**Affecting Slopes**

This advisory note is intended to help property owners and their building managers to ensure that services within their lot are properly maintained and functioning.

## **Why is inspection & maintenance of Services important?**

Persistent leakage of water from private services within the lot not only causes nuisance, but can also be a serious risk to the stability of slopes (including retaining walls) in the vicinity. These services include sewers, stormwater drains and watermains. As a preventive measure, it is essential for owners or their building managers to employ experienced personnel to carry out regular inspection and maintenance of the services within their lot. Neglect may result in leakage which would affect the stability of slopes within or even some distance away from the lot.

## **Identification of water-carrying services affecting slopes**

As a first step in planning an inspection programme, it is necessary to identify and locate all the water-carrying services affecting slopes. Preliminary site reconnaissance to pick up locations of manholes and valve pits will give some indication of the existence of buried services and their alignment. Property owners or building managers can seek detailed information on services from building plans and records kept by them or by the respective Authorised Person or Developers of their properties. If the necessary information cannot be found from such sources, then the following government departments may assist in locating the missing details: -

Buildings Department (for records of private drains)	Tel No. 2848 2815
Drainage Services Department (for records of public drains)	Tel No. 2877 0660
Water Supplies Department (for watermains records)	Tel No. 2880 2500

## **Routine inspection**

Sewers, stormwater drains and watermains should be inspected regularly for blockage and structural soundness.

The condition of sewers and drains can be checked by inspecting the water levels and silt depths at manholes. Closed circuit television (CCTV) can be employed to inspect the internal structural condition and any infiltration, joint movement or other signs which may give rise to leakage. Watermains, usually buried at shallow depth, can be inspected visually at the ground surface along their alignments; any leakage will cause apparent localized wet spots.

### **Take actions when services leak**

When water leakage is observed, the property owner or his building manager should investigate the cause and stop the leakage immediately. If the situation cannot be improved, or there is an apparent danger of slope instability, Geotechnical Engineering Office (GEO) (Tel No. 2762 5165) should be informed promptly.

### **Investigation to identify leakage source**

With an inventory of services, it is possible to identify the source of leakage by visual inspection and simple tests. The physical characteristics of leakage from different water sources are given below: -

- o groundwater                    - clear, almost continuous particularly during the wet season, seeping over a large area below a certain level.
- o sewage                            - turbid, smelly, continuous, white grey slime.
- o stormwater                    - clear, leaking during and after rainy days.
- o salt water                        - clear, continuous, leakage confined to isolated spot.
- o potable water                   - clear, continuous, leakage confined to isolated spot.

For foul sewers and stormwater drains, a dye test can be performed to check for leakage. Suitable dye solution is added continuously to the flow through an upstream manhole and observe whether any dye appears in the leakage.

CCTV is considered as the most effective method of inspection of the internal condition of sewers and drains. Some drainage contractors have the capability of carrying out CCTV inspections.

Leakage from watermains can usually be traced by visual inspection along their alignments. Subsidence of ground or continuous wet spot are indications of possible leakage. Leakage will stop or be reduced after closing the water supply valve upstream.

### **Repair immediately**

When any sewers, drains or watermains behind slopes are found damaged or leaking, competent contractors should be employed to rectify them as early as possible. It is a statutory requirement that only waterworks licensed plumbers can be employed to repair watermains. The list of licensed plumbers is available at all Customer Enquiries Counters of Water Supplies Department and District Offices.

### **Permanent measures to minimise impacts if services leak**

The following permanent measures to reduce the possibility of leaking services affecting slope stability should be considered: -

- o realign buried pipes or watermains away from slopes,
- o house the services within a duct or trench which is drained to the surface water drainage system through an inspection chamber,
- o dig out watermains buried behind slopes and re-lay on the ground surface. Suitable protection will have to be provided to the exposed pipe against corrosion or damage.
- o install stop-valves upstream of watermains so that any leakage can be controlled easily when spotted.