

Conditions for Working Within Water Gathering Grounds

For all works within water gathering ground (WGG), the Contractor is required to comply with the following conditions-

- (a) Adequate measures shall be taken to ensure that no pollution or siltation occurs to the catchwaters and catchment.
- (b) No earth, building materials, fuel, soil or toxic materials or any other materials which may cause contamination to the WGG are allowed to be stockpiled on site.
- (c) No storage and discharge of flammable or toxic solvents, petroleum oil or tar and other toxic substances shall be allowed within the WGG.
- (d) All surplus spoil shall be removed from the WGGs as soon as practicable.
- (e) Temporary drains with silt/grease traps shall be constructed at the boundary of the site prior to the commencement of any earthworks. The effluent from the drain shall comply with the standards of Group A Inland Waters as stipulated in the Technical Memorandum prepared by EPD on "Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters".
- (f) Regular cleaning of the silt/grease traps shall be carried out to ensure that they function properly at all times.
- (g) All excavated or filled surfaces which have the risk of erosion shall always be protected from erosion.
- (h) Facilities for washing the wheels of vehicles before leaving the site shall be provided.
- (i) Any construction plant which causes pollution to catchwaters or catchment due to leakage of oil or fuel shall be removed off site immediately.
- (j) Any soil contaminated with fuel leaked from plant shall be removed off site and the voids arising from removal of contaminated soil shall be replaced by suitable material to the approval of the Director of Water Supplies.
- (k) Provision of temporary toilet facilities shall be subject to the approval of the Director of Water Supplies. All waste shall be cleared away daily and disposed of outside WGG. The toilet facilities shall not be less than 30 m from any watercourse.
- (l) All mud and debris shall be removed from any Waterworks access roads and associated drainage systems.
- (m) Any chemicals to be used including disinfectants and deodorants within the WGG shall be subject to the approval of the Director of Water Supplies.
- (n) For drainage and sewerage diversions within or affecting WGG, the agreement of the Director of Water Supplies is also required.

Conditions of Working in the Vicinity of Waterworks Installations

Water Mains

1. No water mains or their support shall be interfered with or buried without the prior approval of WSD.
2. The Contractor shall check the location of water mains and cables and other services by hand dug trial holes and take precautionary measures to protect them.
3. Free access shall be maintained at all time for the staff of WSD, their contractors and vehicles to go into and/or through the site to carry out installation, inspection, operation, maintenance or repair works.
4. No additional filling material is to be deposited over a water main without the approval of WSD.
5. No Structures shall be erected or materials stored within 3 metres from the centre line of mains of 900mm diameter or under, and 5 metres for mains exceeding 900mm in diameter.
6. Full details of any proposed temporary works affecting WSD installations and of any temporary support or protective measure to mains shall be submitted to the Client Department for approval and to WSD for information. Work shall not commence until approval is given by the Client Department.
7. Diversion of WSD mains, other than those already shown on the contract drawings, shall only be considered when all other options such as protection of the mains or modification of design have been considered and found to be impracticable.
8. The programme for laying or diversions of all WSD mains shall be agreed with WSD in advance. A 14-day notice shall be served to WSD to confirm site availability for the commencement of any agreed diversion. WSD shall also be notified of any change required in the agreed programme as soon as possible.
9. All excavation works within 1.5m of water mains exceeding 900mm in diameter shall be carried out by hand. No excavation shall be carried out within lines 45° below the centre line of such mains or 45° below the edges of the foundation of their supports without approved ground support. If the support is in the form of steel sheets, they shall be left in place after works. Removal of support from underneath the mains is not permitted.
10. No earth fill ramps are to be used to form temporary crossings of the large diameter mains. Temporary ramps/bridges in steel, timber, or concrete shall be used with the deck and support piers clear of the mains so that no loading is imposed on the mains.
11. All temporary works near the large diameter water mains shall be kept to at least 1 metre away from the edge of the mains and the length of mains affected shall be well protected by a temporary timber cover raised 250mm clear of the mains to ensure no impact damage.

Blasting, Drilling and Piling near Waterworks Installations

12. No blasting, drilling, or pile driving (including sheet piling) within a distance of 60m from waterworks tunnels will be carried out.
13. The maximum particle velocity and amplitude of ground movements due to blasting or pile driving as measured at the nearest waterworks tunnel or other water retaining structures shall not exceed 13mm/sec. and 0.1mm respectively.
14. The maximum particle velocity and amplitude of ground movements due to blasting or pile driving as measured at the nearest water mains shall not exceed 25mm/sec. and 0.2mm respectively.
15. The size of charge, pattern and timing of detonation etc. will be decided by the Commissioner of Mines after carrying out test firing at site.
16. The movement of mains and structures shall be monitored by surveys jointly attended by WSD, the project Department and the Contractor. One week's notice shall be given to WSD for any survey request.
17. Vibration from blasting, piling or other causing activities shall be monitored by means of agreed vibrograph reading. The vibrograph shall comply with the Specification below and shall be provided free by the Contractor.
18. The results of monitoring of the vibration and any movement of water mains and WSD structures shall be submitted to WSD for record purposes. If the vibration limits above are exceeded or movement in excess of 5mm is detected, works shall be suspended until approved remedial works are completed. Full details of the proposed works shall be approved by WSD before any work commences.

Specification for Vibrograph

- (a) The machine shall be a direct reading type peak particle velocity vibrograph.
- (b) It shall have 3 channels, recording in 3 mutually perpendicular directions.
- (c) It must be able to record particle velocity and amplitude, although not necessarily at the same time.
- (d) It must produce a permanent trace on paper, preferably by using ultra-violet light.
- (e) The recording paper must be easily obtainable locally.
- (f) The instrument must be portable and battery operated (or else a generator must be supplied free).
- (g) Operating instructions must be in English.