

Water Supply and Wells

Where a development will, for one reason or another, be dependent upon a source of water supply other than from the Water Authority, the procedures set out in this Practice Note are to be followed.

WATER SUPPLY

2. Where a supply of water from the waterworks for the purposes of paragraph (1) and/or (2) of the Building (Standards of Sanitary Fitments, Plumbing, Drainage Works and Latrines) Regulation 10A cannot be made available my permission is required to obtain water from a well or other source. Such permission is conditional upon a certificate being produced from the Water Authority (Form WWO 1004 or current equivalent) under Building (Standards of Sanitary Fitments, Plumbing, Drainage Works and Latrines) Regulations 10A(5) stating that a supply of water from the waterworks is not available.

Assessment of Probable Demand

3. In making assessments of flushing and potable water demand Authorised Persons should have regard for the provisions of Building (Standards of Sanitary Fitments, Plumbing, Drainage Works and Latrines) Regulation 10A(4). For clarification, the term 'potable' used herein refers to a supply of water for the purposes of Building (Standards of Sanitary Fitments, Plumbing, Drainage Works and Latrines) Regulation 10A(2).

Flushing Supply

4. In determining the quantity of water required daily from a well or other source for flushing, the assessment should be in accordance with the following standards :-

User	Unit	Average Flushing Demand
Domestic buildings	per number of required soil fitment per day	450 litres
Offices, factories, shops, department stores, public buildings and other non-domestic buildings of a like nature	per number of required soil fitment per day	450 litres
Restaurants	per seat per day	13.5 litres
Cinemas	per seat per day	4.5 litres
Schools	per head per day	18 litres
Hotels and boarding houses	per room per day	90 litres

### Potable Supply

5. In view of the diversity and degree of fluctuation in potable water demand it is felt inadvisable for me to quantify requirements for user classifications. Each case should be considered on its individual merits and it is incumbent on yourselves to ensure that the supply is satisfactory and sufficient in all respects for all the purposes for which such supply is to be used. Where in doubt as to assessment of potential demand the Water Authority may be consulted for advice.

### For Air Conditioning

6. For information you are advised that neither a fresh nor a salt mains water supply will be provided by the Water Authority for evaporative type air-conditioning, except where required in connection with a specific industrial process, and then only for the immediate needs of that process.

### **WELLS**

#### Wells on Government Land

7. Normally, wells may not be sunk on Government land to obtain water for any purpose.

#### Wells on Private Lots

8. Wells within private lots to provide water for any purpose are subject to the appropriate Building Regulations, and permission under Building (Construction) Regulation 175 will only be given where I am satisfied that :-  
(i) the well water yield is adequate and (ii) the water abstraction will not adversely affect nearby services, buildings, structures and land. In this connection, an application to the Buildings Ordinance Office to sink a well within a private lot should be accompanied by the following :-

- (a) a plan, including cross-sections, showing the proposed well relative to any services, buildings, structures and land which are within the area of groundwater drawdown likely to be caused by the water extraction, existing ground conditions in the area, and any changes to such conditions which will result from the development for which this well is required;
- (b) a plan showing details of the well design, including well screen and electrode switching devices, if any, and a statement of the proposed well development method;
- (c) a statement of the proposed rate and duration per day of water extraction; and
- (d) a proposal for carrying out a well yield test.

9. If the above cannot demonstrate that the nearby services, buildings, structures or land will not be affected, I may require that the following particulars be provided in addition to those given in paragraph 8 above :-

- (a) a site investigation report specific to the proposed well construction, with drillhole logs embracing the site area, including measurements of groundwater/piezometric levels and field permeability tests;

cont'd/.....



- (b) a geotechnical assessment, supported by calculations, of the effect of the proposed water extraction, in both the short and long term, on affected services, buildings, structures and land. The assessment should include groundwater changes, ground movements, and stability of adjacent buildings, structures and land as appropriate; and
- (c) if necessary, a detailed proposal for conducting field tests either separately or in conjunction with the yield test, to verify assumptions and predictions made in (b) above.

10. There are certain areas in the Territory, where because of the geological conditions, it is not advisable to sink wells to extract groundwater as this is likely to cause excessive settlement. It has been agreed with the Water Authority that, within these areas, flushing water will normally be supplied whenever possible; included at present is Yuen Long Town (Planning Area Nos.1 to 16 as shown on the Outline Development Plan OD/NWNT/2).

#### Well Yield Test Procedure

11. Where, under Regulation 10A(3)(b) of the Building (Standards of Sanitary Fittings, Plumbing, Drainage Works and Latrines) Regulation, I permit the source of water for flushing and/or potable purposes to be a well, and provided the period of pumping for the well is to be less than 12 hours per day, the manner and method of testing described in Appendix I is approved for the purposes of Building (Construction) Regulation 177(2) and (3). Where the required quantity of water cannot be obtained with less than 12 hours pumping per day or where there is concern over the long term yield of a well, a more sophisticated test may be required. For such cases, subject to my approval, other methods as recommended in B.S. 6316 (1983) "British Standard Code of Practice for Test Pumping Water Wells" may be used alternatively.

12. Authorised Persons must advise the Buildings Ordinance Office and the Geotechnical Control Office, in writing, at least one week before the commencement of the well yield test(s).

#### Certificates as to Supply of Water

13. The Certificates required by Building (Administration) Regulation 25A to be made by an Authorised Person will be accepted in the model forms suggested at Appendix II (for permanent connection) and Appendix III (in accordance with Building (Construction) Regulation 177(4)). Authorised Persons are requested to submit one extra copy of their reports on well yield test(s) to the Buildings Ordinance Office for the Geotechnical Information Unit of the Civil Engineering Library via the Geotechnical Control Office.

14. The water quality of potable water supplies should also be to my satisfaction and in this respect I may require submission of a water sample test examination report [obtainable from the Water Authority on application in the approved manner], or other acceptable evidence.

cont'd/.....

**GENERAL**

15. It cannot be too strongly emphasized that if a development for one reason or another will be dependent upon a source of water supply other than from the waterworks, the adequacy and probable effects of this should be closely investigated before any design work is started. Neglect in this regard by Authorised Persons will not be accepted as a mitigating circumstance should a developer in difficulty regarding the supply of water for any purpose approach Government officers for assistance. Accordingly you are recommended to make an application to the Office of the Water Authority for the issue of a Certificate regarding Water Supply Availability at an early date; and are reminded that such certificate should be submitted to the Buildings Ordinance Office at the time of the first submission of building plans.



(CHAU Cham-son)  
Building Authority

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Wells on Government Land or within Private Lots -  
water supply from  
Water Supply - from wells/other sources/for air-conditioning,  
flushing or potable purposes  
Well Yield Test - procedures

Building (Construction) Regulations 1975  
(Regulations 177(2) and (3))

WELL YIELD TEST PROCEDURE

1. A yield test on a well shall only be carried out during the period from 1 December to 30 April, as stipulated in Building (Construction) Regulation 177(2).
2. The well yield test shall be carried out over a period of seven consecutive days. The rate of pumping for the first to the sixth day shall be the proposed daily yield averaged over the proposed daily pumping period for the well, which shall not be more than 12 hours per day, to permit at least a 12 hour daily recovery period. (See para. 5 for the pumping rate on the seventh day).
3. The actual quantity of water pumped each day shall be measured by a water meter. The quantity pumped shall not be calculated from the rated output of the pump.
4. The water level in the pumping well, measured from the ground surface, shall be read at least 24 hours before the start of the test, immediately prior to the start, and immediately before the finish of each day's pumping. For the first and the sixth day of pumping, the water level shall also be measured, with respect to time since pumping commenced, at 1 minute intervals for the first 10 minutes and every 10 minutes from 10 to 120 minutes, and every 1½ hours thereafter for the duration of pumping.
5. An examination for suspended soil particles in the pumped water shall be made on the seventh day, at the full discharge rate of the installed pump and at the maximum drawdown level.
6. The water pumped from the well shall be discharged into a proper drain or water course and not into any position where it can percolate back into the well or the aquifer.

Notes

- (a) This test is used only to ascertain that the quantity of water required is available, to test the recharge and recovery of groundwater, and to test the adequacy of the well screen and filter pack to prevent excessive soil loss.
- (b) The duration of pumping per day should be long enough to provide the required daily well yield. Under no circumstances should it be assumed that, because the required flow can be met for part of a 24 hour period, it can continue to be met for a 24 hour day for 7 days per week.
- (c) The test results are acceptable if the quantity of water pumped each day is not less than the required daily quantity and there is adequate recovery of groundwater after the pumping is stopped each day, and the pumped water is clean when examined as in para. 5 above.
- (d) Well yield test results to be recorded in the form as Annex I.



### RECORDS OF WELL YIELD TEST

1. Quantity of flushing/potable\* water required per day = litres.
2. Depth of well = m. (Depth to : top of screen = m.)  
bottom of screen = m.)
3. Diameter of well = mm.
4. Type of pump : surface/submersible\* (Make/Model No. ).
5. Groundwater level at 24 hours before test = m. (taken on ).
6. For test carried out in accordance with the procedure described in Appendix I to PNAP:17.

Date	Time		Hours pumped	Quantity of water abstracted (litres)	Water level in well(s)	
	Start	Stop			Before Pumping	After Pumping

7. For tests carried out on the first and sixth days of pumping in accordance with the procedure described in Appendix I of PNAP:17.

Date	Time	Time since pumping commenced (min.)	Groundwater level (m.)	Drawdown (m.)

Notes : The drawdown data versus log time in minutes should be plotted on semilog graph paper. When this plot forms a straight line, the test data can be analysed by Jacob's Method for non-equilibrium conditions. For plots showing a non-linear relationship between drawdown and log time data, another appropriate method to analyse the time-drawdown data should be used e.g. see those given in Todd, D.K. (1980) Groundwater Hydrology, Second Edition, John Wiley & Sons, New York, 535p.

\* Delete as appropriate.

(Model Certificate)

Certificate by an Authorised Person  
regarding Water Supply Connection

Building (Administration) Regulation 25A

To : The Building Authority

BOO Ref. : \_\_\_\_\_

Date : \_\_\_\_\_

Address : \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Lot No. : \_\_\_\_\_

Flushing/Potable\* Water Supply from a Well  
within the site of the building/other than from the  
waterworks or a well within the site of the building\*

I hereby certify that a permanent connection of a supply of water from a well/..... other source\* (state source) for the purposes of paragraph ((1)/(2)\*) of Regulation 10A of the Building (Standards of Sanitary Fitments, Plumbing, Drainage Works and Latrines) Regulations by virtue of sub-paragraph (b)/(c)\* of paragraph (3) of the same regulation has been made to the above premises.

Signed \_\_\_\_\_  
Authorised Person

\* Delete as appropriate.

(Model Certificate)

Well Yield Test Certificate

Building (Construction) Regulation

(Regulation 177(4))

To : The Building Authority

BOO Ref. : \_\_\_\_\_

Date : \_\_\_\_\_

Address : \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Lot No. : \_\_\_\_\_

I hereby certify that a Well Yield Test has been carried out in accordance with the approved well plan and the standard procedure described in Appendix I of Practice Note for Authorised Persons and Registered Structural Engineers No.17 (or state other approved alternative method)\* and that the results shown in Annex I attached are a true record.

Signed \_\_\_\_\_  
Authorised Person

\* Delete as appropriate.