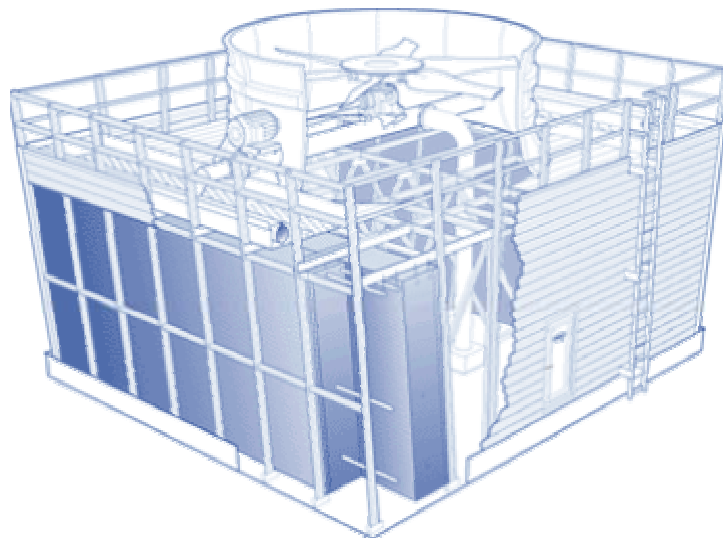


**Pilot Scheme for
Wider Use of Fresh Water in
Evaporative Cooling Towers for
Energy-efficient Air Conditioning Systems**

May, 2000



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**Pilot Scheme for
Wider Use of Fresh Water in
Evaporative Cooling Towers for
Energy-efficient Air Conditioning Systems**

Part 1: Introduction

1 Background

The Preliminary Phase Consultancy Study on Wider Use of Water-cooled Air Conditioning Systems (WACS) in Hong Kong was completed in mid 1999. The study has established that WACS has greater environmental, economic and financial benefits than Air-cooled Air Conditioning Systems (AACS). Subsequently, a territory-wide implementation study is planned to commence this year before proceeding with full-scale implementation of WACS. The implementation study is to examine and identify areas suitable for wider use of WACS and to examine in detail the financial, regulatory, land administration, infrastructural, environmental and health issues, including the prevention of Legionnaires' Disease.

Associated with the territory-wide implementation study, an inter-departmental working group has been set up to launch a 2-year pilot scheme on wider use of fresh water in evaporative cooling towers for energy efficient air conditioning systems in 6 selected areas where existing water supplies and sewerage network

would be adequate to meet the additional demand. Although both sea water and fresh water can be used as the condensing cooling media, the pilot scheme will focus on fresh water evaporative cooling after considering the source and capacity of existing water supply networks. The working group comprises members from two government bureaux and eight government departments:

- Environment and Food Bureau (EFB)
- Works Bureau (WB)
- Buildings Department (BD)
- Drainage Services Department (DSD)
- Electrical and Mechanical Services Department (EMSD)
- Environmental Protection Department (EPD)
- Department of Health (HealthD)
- Lands Department (LandsD)
- Planning Department (PlanD)
- Water Supplies Department (WSD)

The six selected areas are delineated in location plans in Paragraph 2.6. Experience gained, information and data collected from this pilot scheme will be used for reference in the territory-wide implementation study.

2 The Pilot Scheme

2.1 Aim

The pilot scheme aims to :

- (a) promote energy-efficient water-cooled air conditioning systems;

- (b) assess the additional water demand;
- (c) monitor the quantity and quality of bleed-off effluent discharge from the systems;
- (d) monitor the health and environmental effects arising from the systems; and
- (e) collect useful information and data so as to facilitate the territory-wide implementation study of WACS.

2.2 Conditions of Participation

This scheme applies to all non-domestic types of new and existing buildings within the six selected areas. All Property Developers, Landlords, Property Management Agents, Designers and System Operators are welcome to apply for the use of fresh water for air-conditioning installations in their buildings within the selected areas. Application shall be submitted together with the required information as stipulated in Paragraph 4.1 to the authorities concerned

Throughout the pilot scheme, the participants of the pilot scheme shall provide the authorities concerned with the information required as stipulated in Paragraph 4.2.

Participants shall also comply with all relevant statutory regulations as well as requirements laid down for the scheme. All these requirements are set to achieve better energy efficiency, protect the environment and

safeguard the public health and safety while using fresh water for evaporative cooling.

2.3 Time Frame

The time frame for participating in this pilot scheme is 2 years commencing from 01 June 2000.

2.4 Continuity of Water Supplies Connection

Upon expiry of the 2-year time frame, the participants can be given approval and consent from the authorities concerned for continuation of the metered fresh water supplies provided that the participants continue to comply with the requirements stipulated in this brochure and the subsequent requirements that may arise from the pilot scheme interim reviews.

2.5 Interim Reviews

The interim reviews of the pilot scheme will be conducted by the Working Group in order to analyse the effectiveness of the scheme, to examine the pace and extent of participation and to consider the recommendations of the territory-wide implementation study and the way forward for the scheme.

Part 2: Participation Procedures and Guidance

The objective of this part of the brochure is to give a general description on the statutory requirements, information required and processes involved with various government departments in application for using fresh water evaporative cooling towers for air conditioning systems in non-domestic premises located within the pilot scheme areas.

3. Statutory Requirements and Code of Practice

In general, the applicants shall comply with the following Ordinances, Technical Memorandum and Code of Practice:

- Waterworks Ordinance (WWO)(Cap. 102)
- Buildings Ordinance (BO)(Cap. 123)
- Sewage Services Ordinance (SSO)(Cap. 463)
- Water Pollution Control Ordinance (WPCO) (Cap. 358)
- Air Pollution Control Ordinance (APCO) (Cap. 311)
- Noise Control Ordinance (NCO) (Cap. 400)
- Occupational Safety and Health Ordinance (OSHO) (Cap. 509)
- Technical Memorandum on Standards for Effluent Discharged into Drainage and Sewerage System, Inland and Coastal Waters
- Technical Memorandum for the Assessment of Noise from Places other than Domestic Premises, Public Places or Construction Sites
- Code of Practice for Prevention of Legionnaires' Disease 2000 (COP).

It is advised that applicants should check other relevant statutory requirements and seek the professional advice from a Licensed Plumber (LP), an Authorized Person (AP) and

a Registered Professional Engineer (RPE) of building services or mechanical engineering disciplines when they have queries in the procedures and standard of works required.

4. Information Required

4.1 Information Required for Application

Applicants shall provide the following information in their application:

- (a) Particulars, contact telephone(s) and address(es) of the system owner(s);
- (b) Address, gross floor area and air-conditioned area served by the system(s);
- (c) Geographical location of each cooling tower(s) including street name, street number, building name, floor level, and orientation;
- (d) Number, make, model, year of installation, dimension(s), operating weight, design cooling capacity and water circulation rate of each cooling tower;
- (e) Type of each cooling tower shell and its supporting framework;
- (f) Number, diameter, and motor power of fans of each cooling tower;
- (g) Distance(s) of separation of each cooling tower from nearest window opening(s), ventilation intake(s), and ventilation exit(s);
- (h) Noise assessment;
- (i) Location plan of the equipment and premise and schematic layout plan of the system(s);
- (j) Bleed-off discharge arrangement and control and any arrangement to direct the bleed-off for flushing or other purpose;

- (k) Design electric power and cooling capacity of the system(s);
- (l) Design peak rate for evaporation, drift and bleed-off of each cooling tower and peak and average daily demand of water consumption for the system(s);
- (m) Type and dosage of chemicals intended to be used in the system(s) and
- (n) A programme for routine chemical treatment, visual inspection, cleaning, desludging and disinfection of each cooling tower.

A copy of proforma application FORM CT1 for participation of the scheme is attached in Annex I.

4.2 Information Required for Operation

Applicants shall update any change in information provided in their application and in addition, provide the following information on monthly basis to the Electrical and Mechanical Services Department during operation of the system(s) until the system(s) is/are dismantled and stop(s) for service:

- (a) Condition of each cooling tower shell and its supporting framework;
- (b) Maximum power demand and energy consumption for all water-side equipment in monthly interval of the water-cooled air conditioning system(s);
- (c) Peak rate of water consumption, total water consumption volume and the time period of the consumption in monthly interval of the system(s);

- (d) Peak rate of effluent discharge, total effluent discharge volume and the time period of the discharge in monthly interval of the system(s);
- (e) Monthly sampling concentration and composition of residual chemicals and biocides, 5-Day Biochemical Oxygen Demand (BOD5), Chemical Oxygen Demand (COD), and suspended solids loads of bleed-off discharge of each cooling tower and
- (f) Records of details of maintenance of each cooling tower as stipulated in Section 4.2.3 of the Code of Practice for Prevention of Legionnaires' Disease (COP).

A copy of proforma operational information submission FORM CT3 is attached in Annex III.

5. General Preamble

5.1 It is recommended that the applicants should appoint a Registered Professional Engineer of building services or mechanical engineering disciplines well in advance for advice in the proper design, installation, operation and maintenance of cooling towers.

5.2 Prior approval and consent shall be obtained from the Building Authority to construct the supporting framework for the cooling towers.

- 5.3 Any cooling tower shall not be placed to protrude beyond the boundary of the lot.
- 5.4 The bleed-off of cooling tower shall be required to discharge into a break tank and be reused for flushing purpose. The arrangement is to minimize the burden of additional effluent into the sewerage systems.
- 5.5 The submission for inspection on the completed cooling towers shall be accompanied by a certificate signed by a Registered Professional Engineer of building services or mechanical engineering disciplines to certify the cooling towers have been installed in accordance with the relevant statutory requirements and the COP and an undertaking signed by the owner to supply the operating information of the system to the Electrical and Mechanical Services Department as required under the pilot scheme. A copy of certification and undertaking FORM CT2 is attached in Annex II.
- 5.6 The participant is required to supply the data required in Part 2, Paragraphs 4.1 and 4.2 of the brochure to the Electrical and Mechanical Services Department. If the participant has technical difficulties in providing facilities for monitoring any of the conditions stated in Paragraph 4.2, he shall explain in his application on the situation and provide alternative information sufficient for the Authority to assess his application.

6. Waterworks

- 6.1. Prior to any submission of proposal for new plumbing installations or alteration to existing plumbing installations for mains water supplies of cooling towers, the applicant shall obtain from the Water Authority such information which is relevant as to the design of the plumbing works. Application for approval of such kind of proposal shall be made to the Water Authority in writing and shall be accompanied by the prescribed forms (Forms WWO 2 and WWO 3 for undertaking the consumership and Form CT1 copied to Director of Electrical and Mechanical Services (DEMS) and Director of Buildings) together with other documents as required under Waterworks Ordinance and stipulated in Chapter 4 of “A Guide to the Preparation of Plumbing Proposals”. In the Water Authority’s approval letters, the applicants will be reminded to observe the requirements of the COP with respect to the installation, operation and maintenance of the cooling towers.
- 6.2. Upon receipt of the plumbing proposal to use mains water for cooling towers, the Water Authority shall reply the applicant in writing within 20 working days informing him whether such proposal is acceptable or not. Under normal circumstance, separate metering, thus separate water account, for this kind of supply is required. The applicant is reminded that a break tank for retaining bleed-off of cooling towers for reuse in internal flushing is required and any subsequent alteration, revision and modification of the approved proposal should be submitted to the Water Authority for approval.

6.3. Application for permission to the commencement of the plumbing works for mains water supplies of cooling towers shown on any approved plumbing proposal shall be made to the Water Authority in Forms WWO 46, WWO 1036 and WWO 1037 by a Licensed Plumber. The Water Authority shall notify the Licensed Plumber by return of the endorsed Form WWO 46, within 7 working days whether he could commence the plumbing works. The approval of providing metered water supply will not confer any legal implication on structural status of the cooling tower(s) nor carry any effect of precluding action being taken in respect of the structure by another authority. As the building works for the cooling tower(s) is under the jurisdiction of the Building Authority, it is premises owners' responsibility to obtain relevant consent from the Building Authority for these works. Failure to do so may result in removal of these cooling towers by the Building Authority.

6.4. Upon completion of the plumbing works for mains water supplies of cooling towers, the Licensed Plumber shall submit Form WWO 46 (Part IV) requesting the Water Authority to carry out inspection on the completed plumbing works. The approval of the completed plumbing works shall be granted only when the plumbing works are inspected to be in order. Water supply will only be effected when other works are completed to the satisfaction of DEMS and the Building Authority.

7. Building Works

- 7.1. Any person intending to carry out building works such as supporting frameworks for cooling towers is required under the Buildings Ordinance to appoint an Authorised Person to prepare plans for the approval and consent of the Building Authority before the commencement of any works. Upon completion of the building works, the Authorised Person is required to certify that the building works have been carried out in accordance with the building regulations.
- 7.2. It is strongly recommended that the advice of an Authorised Person should be sought well in advance. A directory of Authorised Person registered under the Buildings Ordinance is available in the Buildings Department for viewing.
- 7.3. Building works carried out without prior approval and consent from the Buildings Authority are unauthorized. The Building Authority may take enforcement actions under Sections 24 and 40 of the Buildings Ordinance to require the demolition of such building works; and/or to prosecute the offender in the court.

8. Sewage Services

- 8.1 The water consumed by the WACS will be subject to sewage charge (SC) and, where applicable, trade effluent surcharge (TES). The SC, at a prescribed rate currently of \$1.2/m³ of water discharged, is levied on all water account holders whose premises are connected, whether directly or indirectly, to a communal drain or a communal sewer. As for the TES, it is levied on 30 prescribed trades and industries that produce effluents with sewage strength higher than that of domestic

sewage. The rates of TES for the trades have been prescribed trades and industries that produce effluents with sewage strength higher than that of domestic sewage. The rates of TES for the trades have been prescribed in the Sewage Services (Trade Effluent Surcharge) Regulation. If separate water account has been registered against the water consumed for the WACS, only SC will be levied on this account. Otherwise, the rate of SC and TES applicable to the original trade, business or manufacture of the account will be levied on the total volume of water consumed under the account.

8.2 If the consumer or agent of the inside service of waterworks for mains water supplies of cooling towers considers that the volume of wastewater being discharged to the public sewerage or drainage systems is not more than 85% of the volume of water on which sewage charge and/or trade effluent surcharge is based, the consumer can apply for a revision to the sewage charges based on a revision on the discharge factor. He will be required to provide information on the volumes of water used and the final effluent in his application. For the provision of such information, it will be preferable for the consumer or agent to install sub-meters to measure the volume of the final effluent at the terminal drainage outlet of the premises. If the consumer or agent has technical difficulties in installing these sub-meters, he should explain in his application on the situation and provide alternative information sufficient for the Drainage Authority to assess his application.

8.3 For the purpose of verifying information that is needed in determining the rate to be charged for sewage charges and trade effluent surcharges, the Drainage Authority may enter the premises of a consumer at all reasonable times and leave

equipment in a consumer's premises for measuring the volume of wastewater discharged, or collecting samples of wastewater being discharged from cooling towers into a communal sewer.

8.4 Any Application submitted to Drainage Authority and Verification results obtained by Drainage Authority will also be circulated to the Electrical & Mechanical Services Department solely to facilitate the territory-wide implementation study and for registration purpose.

9. Water Pollution Control

All discharges containing polluting matter must be licensed under the Water Pollution Control Ordinance (WPCO). Any contravention to the WPCO will be subject to enforcement action. The standards for most likely contaminants are specified in the Technical Memorandum and the Environmental Protection Department will generally follow these. For biocides however the license standards need to be determined on a case by case basis. Prospective dischargers should provide the Environmental Protection Department with advance details of the biocides they intend to use and the proposed method of their application, the nature and location of the proposed discharge. The Environmental Protection Department will then specify conditions accordingly.

10. Air Pollution Control

The emissions of water mist from cooling towers would be actionable under the Air Pollution Control Ordinance (APCO) if the emission causes a nuisance and the Environmental Protection Department would issue an abatement notice where

necessary. The most practical solution for tackling any tower fogging is to locate the tower where visible plume will not be objectionable.

11. Noise Control

Similar to other air conditioning systems or fixed noise sources, noise from any evaporative cooling towers is controlled under section 13 of the Noise Control Ordinance (NCO). The Environmental Protection Department will act on complaint and should the noise emanated therefrom exceed the relevant criteria stipulated in the “Technical Memorandum for the Assessment of Noise from Places other than Domestic Premises, Public Places or Construction Sites”, the Noise Control Authority would issue a Noise Abatement Notice requiring the Noise Producer to rectify the problem and to comply with the statutory noise standard.

12. Occupational Safety and Health

Under the General Duties of OSHO, employers or occupiers must ensure that safety and health at work of all employees, for example by providing or maintaining a good work environment, and providing information, instruction, training and supervision to the employees. In the operation of air cooling plant unit for ventilation of a building, attention should be made to avoid or reduce any health risks arising from the associated work activities or the working environment, such as the risks of Legionnaires’ Diseases occurred among employees and over exposure to chemicals used for treatment of the cooling water. Good maintenance is important to avoid contamination of the ventilation system. Knowledge on handling chemicals could reduce health risks to minimal.

**Application for Participation of Pilot Scheme for
Wider Use of Fresh Water in Evaporative Cooling Towers
for Energy-efficient Air Conditioning Systems**

Date: _____

To : Director of Water Supplies
c.c. : Director of Electrical and Mechanical Services
Director of Buildings

Part A :

(To be completed by the Designer)

Description of Cooling Towers Installation(s)

Location :

Building name : _____
Street no. & name : _____
Floor level of which installed at: _____ Orientation : _____

Total number of Installation: _____

(If there is more than one installation, please provide information of all installations by duplicating this form)

Installation no: _____

General Information

Year of Installation : _____
Make : _____ Model : _____
Dimension (mm): _____ Operating weight (kg) _____

Material

Type of Shell : _____
Type of Supporting Framework : _____

Fan(s)

Number : _____
Diameter of fan 1 : _____ Motor Power of fan 1 : _____
Diameter of fan 2 : _____ Motor Power of fan 2 : _____
Diameter of fan 3 : _____ Motor Power of fan 3 : _____

Design Loading/Capacity

Power consumption : _____ kW
Evaporation peak rate : _____ Litre/sec
Cooling capacity : _____ kW
Water circulation Rate : _____ Litre/sec
Bleed-off peak rate : _____ Litre/sec
Peak daily water demand : _____ Litre/sec
Drift peak rate : _____ Litre/sec
Average daily make-up water demand : _____ Litre/sec

Chemical Treatment

Type 1 : _____ Dosage : _____
Type 2 : _____ Dosage : _____
Type 3 : _____ Dosage : _____

Bleed off

Reuse of discharge for flushing purpose : _____
Please specify the following if the answer is "yes" :
a) Peak daily demand for the specific purpose _____ Litre/sec
b) Peak daily discharge volume of bleed-off _____ Litre/sec
c) Break tank retention volume _____ m³
d) Break tank dimension _____ mm x _____ mm x _____ mm
e) Break tank operating weight _____ Kg
Other discharge arrangement : _____
Control : _____

Distance of separation from nearest

Window openings : _____
Ventilation exit : _____
Ventilation intake : _____

Noise level

Acceptable noise level : _____ dB(A)
Sound power level : _____ dB(A)
Noise abatement measure (specify if any) : _____
Sound pressure level measured at noise sensitive receiver : _____ dB(A)

Please find attached the following information related to the cooling tower installation(s):

- Location plan of the premise
- Location plan of the installation(s)
- Schematic layout plan of the system(s)
- Programme for routine chemical treatment
- Programme for visual inspection of each cooling tower
- Programme for cleaning and desludging and disinfection of each cooling tower

The above cooling tower installation(s) at (address of premises) _____ will be installed in accordance to the attached schematic layout plans. The building gross floor area is _____m² and the air-conditioned area served by the installation(s) is _____m².

I, _____, the designer of the installation(s), confirm the above data are accurate for participation on the Pilot Scheme for Wider Use of Fresh Water in Evaporative Cooling Towers for Energy-efficient Air Conditioning System.

Signed by the Designer : _____ Date : _____
Full Name of Designer : _____ Tel. no : _____
Company : _____
Correspondence Address : _____

Part B :

(To be completed by the owner of the installation(s))

I, _____, the owner of the installation(s), wish to apply for the use of fresh water for the above cooling tower installation(s) and I understand the conditions of participating the scheme and my obligations.

Signed by the Owner : _____ Date : _____
Full Name of the Owner : _____ Tel no: _____
Company : _____
Correspondence Address : _____

*delete as inappropriate check the box where applicable

**Certification for Evaporative Cooling Tower Installation(s) and
Undertaking for Provision of Operational Information
under Pilot Scheme**

Date: _____
Ref no: _____

To : Director of Electrical and Mechanical Services
c.c : Director of Water Supplies
Director of Buildings

Part A :

(To be completed by the Registered Professional Engineer (Building Services or Mechanical Engineering Disciplines))

This is to certify that the cooling tower installation(s) installed at (address of premises)_____

has/have been installed in accordance with the requirements stipulated in the relevant ordinance, technical memorandum and code of practice as listed below :-

- Waterworks Ordinance (WVO) (Cap. 102)
- Sewage Services Ordinance (SSO)(Cap. 463)
- Water Pollution Control Ordinance (WPCO) (Cap. 358)
- Air Pollution Control Ordinance (APCO) (Cap. 311)
- Noise Control Ordinance (NCO) (Cap. 400)
- Occupational Safety and Health Ordinance (OSHO) (Cap. 509)
- Technical Memorandum on Standards for Effluent Discharged into Drainage and Sewerage System, Inland and Coastal Waters
- Technical Memorandum for the Assessment of Noise from Places other than Domestic Premises, Public Places or Construction Sites
- Code of Practice for Prevention of Legionnaires' Disease 2000 (COP)

Signed by the Registered Professional Engineer : _____

Full name of Registered Professional Engineer : _____

Date : _____

Registration Number : _____

Status : Registered Professional Engineer (Building Services*/ Mechanical Engineering Disciplines)

Company : _____

* delete as inappropriate

check the box where applicable

Part B :

(To be completed by the Owner)

This is to confirm that I, _____, the owner of the installation(s), will undertake to provide the information as listed below, and update any change in information submitted during application by FORM CT1 to the Director of Electrical & Mechanical Services continuously on monthly basis for whole of the service life, until the installation(s) is/are dismantled or permanently out of service.

The information will include the following:

- Condition of each cooling tower shell and its supporting framework
- Maximum power demand and energy consumption for all water-side equipment on monthly interval of the water cooled air conditioning system(s)
- Peak rate of water consumption and total water consumption volume and the time of period of the consumption in monthly interval for the system(s)
- Peak rate of effluent discharge, effluent discharge volume and the time period of the discharge in monthly interval of the system(s)
- Monthly sampling concentration and composition of residual chemicals and biocides, 5-Day Biochemical Oxygen Demand (BOD5), Chemical Oxygen Demand (COD), and suspended solids loads of bleed-off effluent discharge of each cooling tower
- A record of details of maintenance of each cooling tower as stipulated in section 4.2.3 of the Code of Practice for Prevention of Legionnaires' Disease (COP)

Signed by the Owner : _____ Date : _____

Full Name of Owner : _____ Tel. no : _____

Company : _____

Correspondence Address : _____

Provision of Operational Information for
Water-cooled Air Conditioning System with Evaporative Cooling Tower Installation(s)
under Pilot Scheme

Date: _____

Ref no: _____

To: Director of Electrical and Mechanical Services

Information for month of _____ in Year _____

Cooling tower installation(s) at : _____

Part A :

The operational information

Power :	Maximum power demand for all water-side equipment of the whole air conditioning system	_____	kW
	Energy consumption for all water-side equipment of the whole air conditioning system	_____	kWh
Make-up Fresh Water :	Peak rate of consumption	_____	Litre/sec
	Total water consumption	_____	m ³ /month
	Daily time period of water consumption	_____ to _____	
Effluent Discharge :	Peak rate of bleed-off	_____	L/s
	Total discharge volume	_____	m ³ /month
	Daily time period of discharge	_____ to _____	
Sampling concentration :	5-Day Biochemical Oxygen Demand (BOD5)	_____	mg/litre
	Chemical Oxygen Demand (COD)	_____	mg/litre
	Suspended solid loads of bleed off discharge	_____	mg/litre
	Residual chemicals or biocides	_____	mg/litre

This is to confirm that:

1. the cooling tower shell is in good*/fair*/bad* condition
Please specify follow-up action (or any special remarks) : _____
2. the supporting framework of the cooling tower shell is in good*/fair*/bad* condition
Please specify follow-up action (or any special remarks) : _____
3. the true record of details of maintenance of each cooling tower as stipulated in section 4.2.3. of the Code of Practice for Prevention of Legionnaires' Disease 2000 (COP)
Please specify follow-up action (or any special remarks) : _____

*delete as inappropriate

Part B :

(This part is only to be filled when there is any change in information provided in the FORM CT1.)

This is to advise that there is/are alteration(s) in information provided in previously submitted FORM CT1 and the details of alternation has/have been updated as follows:

Description of Cooling Towers Installation(s)

Location :

Building name : _____
Street no. & name : _____
Floor level of which installed at: _____ Orientation : _____

Total number of Installation: _____

(If there is more than one installation, please provide information of all installations by duplicating this form)

Installation no: _____

General Information

Year of Installation : _____
Make : _____ Model : _____
Dimension (mm): _____ Operating weight (kg) _____

Material

Type of Shell : _____
Type of Supporting Framework : _____

Fan(s)

Number : _____
Diameter of fan 1 : _____ Motor Power of fan 1 : _____
Diameter of fan 2 : _____ Motor Power of fan 2 : _____
Diameter of fan 3 : _____ Motor Power of fan 3 : _____

Design Loading/Capacity

Power consumption : _____ kW Cooling capacity : _____ kW
Evaporation peak rate : _____ Litre/sec Water circulation Rate : _____ Litre/sec
Bleed-off peak rate : _____ Litre/sec Peak daily water demand : _____ Litre/sec
Drift peak rate : _____ Litre/sec Average daily make-up water demand : _____ Litre/sec

Chemical Treatment

Type 1 : _____ Dosage : _____
Type 2 : _____ Dosage : _____
Type 3 : _____ Dosage : _____

Bleed off

Reuse of discharge for flushing purpose :

Yes*/no*

Please specify the following if the answer is "yes" :

a) Peak daily demand for the specific purpose

Litre/sec

b) Peak daily discharge volume of bleed-off

Litre/sec

c) Break tank retention volume

m³

d) Break tank dimension

_____ mm x _____ mm x _____ mm

e) Break tank operating weight

Kg

Other discharge arrangement :

Control :

Distance of separation from nearest

Window openings : _____

Ventilation intake : _____

Ventilation exit : _____

Noise level

Acceptable noise level :

_____ dB(A)

Sound power level :

_____ dB(A)

Noise abatement measure (specify if any) :

Sound pressure level measured at noise sensitive receiver :

_____ dB(A)

Please find attached the following information related to the cooling tower installation(s):

- Location plan of the premise
- Location plan of the installation(s)
- Schematic layout plan of the system(s)
- Programme for routine chemical treatment
- Programme for visual inspection of each cooling tower
- Programme for cleaning and desludging and disinfection of each cooling tower

The alternation of above cooling tower installation(s) at (address of premises) _____

_____ have/has been installed in accordance to the attached schematic layout plans. The building gross floor area is _____ m² and the air-conditioned area served by the installation(s) is _____ m².

Signed by the Owner : _____ Date : _____

Full Name of the Owner : _____ Tel no: _____

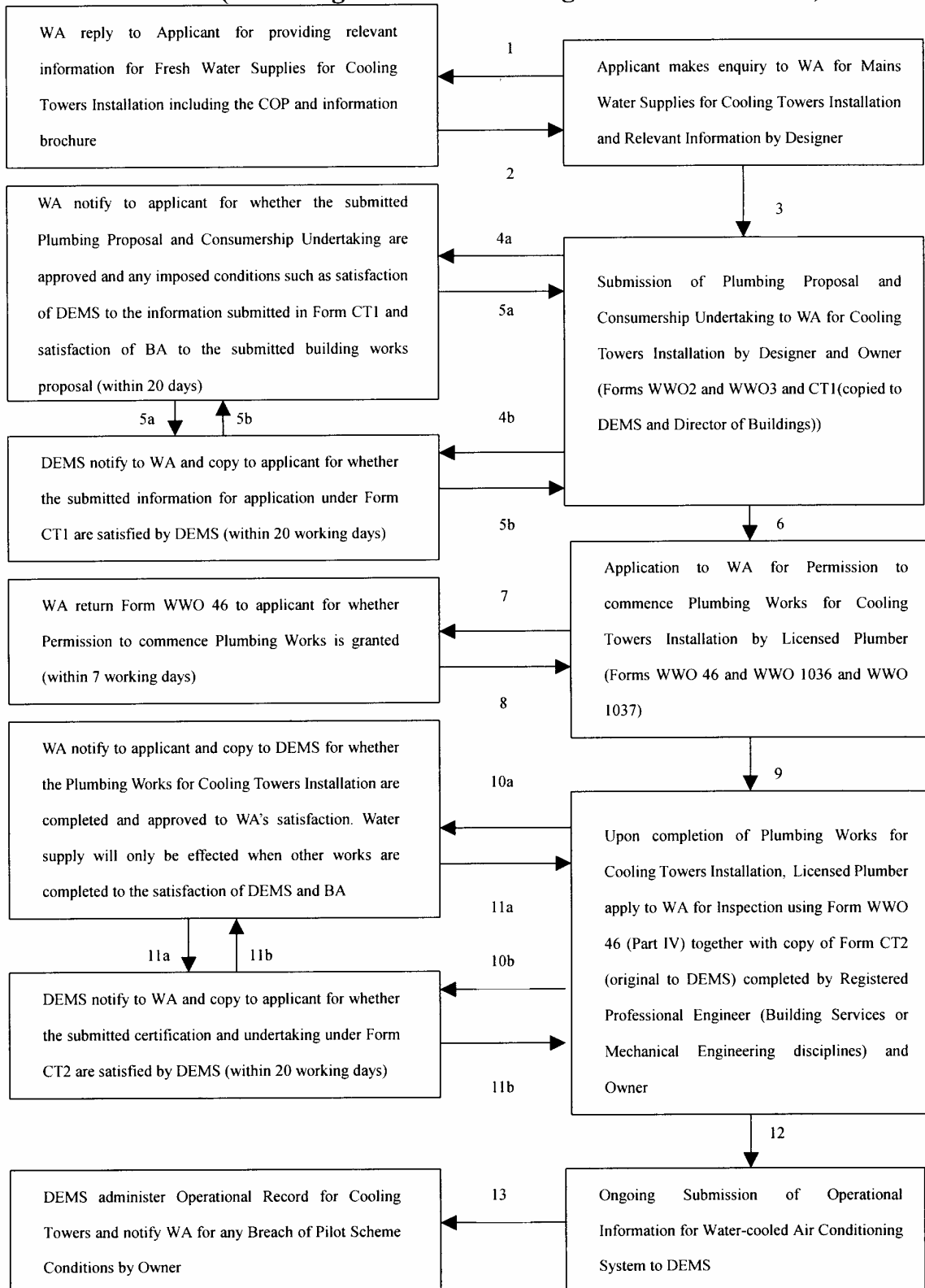
Company : _____

Correspondence Address : _____

*delete as inappropriate check the box where applicable

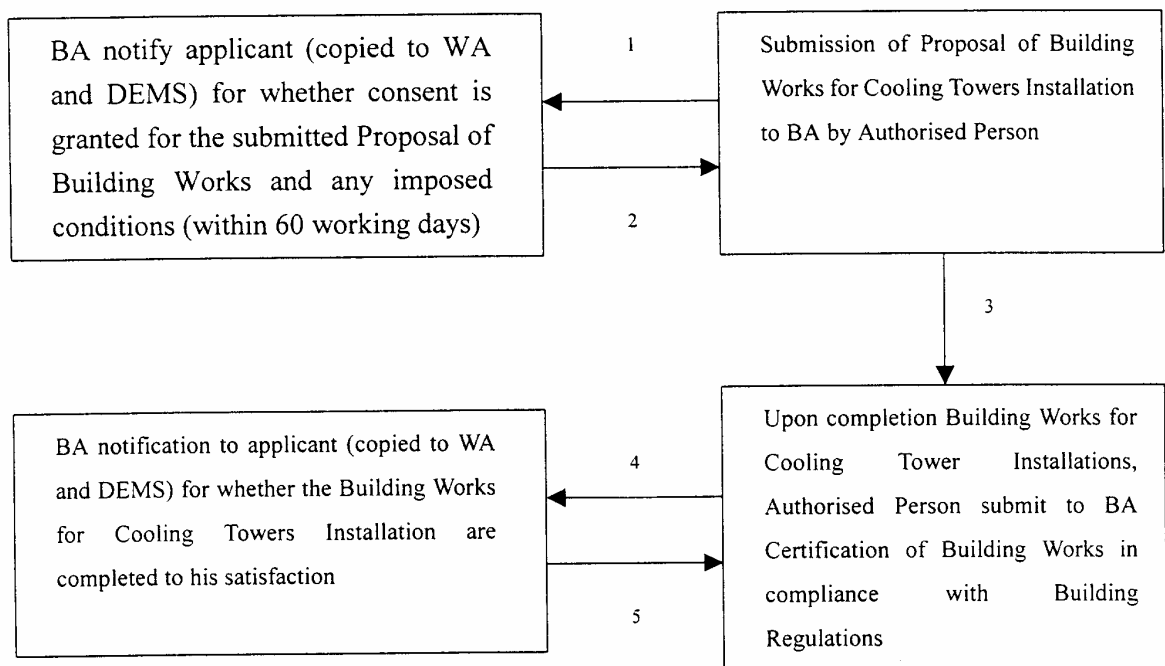
Process Chart I for Participation of the Pilot Scheme

(Plumbing Works for Cooling Towers Installation)



Process Chart II for Participation of the Pilot Scheme

(Building Works for Cooling Towers Installation)



For more information about the Pilot Scheme, please contact the following departments during office hour for relevant information:

Electrical & Mechanical Services Department
(energy efficiency and prevention of Legionnaires' Disease)

Energy Efficiency Office
11/F, 111 Leighton Road,
Causeway Bay, Hong Kong.

Tel: 2881 1562
Fax: 2890 6081

Email: emsdgr@emsd.gcn.gov.hk
Website: <http://www.info.gov.hk/emsd/>

Environmental Protection Department
(air pollution control, noise pollution control, and water pollution control as well as sewage treatment and disposal of bleed-off from cooling towers)

28/F, Environmental Protection Department,
130 Hennessy Road,
Wan Chai, Hong Kong.

Tel: 2835 1018 (general environmental protection enquiries)
Fax: 2838 2155

Email: enquiry@epd.gov.hk
Website: <http://www.info.gov.hk/epd/>

Drainage Services Department
(sewage charge and trade effluent surcharge)

Sewage Services Branch
8/F, Guardian House,
32 Oi Kwan Road,
Wan Chai, Hong Kong.

Tel: 2834 9432
Fax: 2574 5645

Email: enquiry@dsd.gov.hk
Website: <http://www.info.gov.hk/dsd/>

Water Supplies Department
(water supply, conservation and charge)

Mainland North East Regional Office
128 Sai Yee Street,
Mong Kok, Hong Kong.

Tel: 2399 4253
Fax: 2789 2149

Mainland South West Regional Office
128 Sai Yee Street,
Mong Kok, Hong Kong.

Tel: 2399 4160
Fax: 2390 6814

Mainland North West Regional Office
128 Sai Yee Street,
Mong Kok, Hong Kong.

Tel: 2399 4281
Fax: 2789 3446

Hong Kong and Islands Regional Office
611 King's Road,
North Point, Hong Kong.

Tel: 2880 2540
Fax: 2811 8152

Email: wsdinfo@wsd.gcn.gov.hk
Website: <http://www.info.gov.hk/wsd/>

Buildings Department
(building works and supporting frameworks for cooling towers)

12/F, Pioneer Building,
750 Nathan Road,
Mongkok, Kowloon.

Tel: 2626 1587
Fax: 2524 3291

Email: bdenq@bd.gcn.gov.hk
Website: <http://www.info.gov.hk/bd/>