

5. Useful Forms/ Check List – Samples

5.6 Sample Independent Audit Report for Cooling Tower System

Cooling Tower EMSD Registration No.	PS- _____ No. _____ to _____
Auditing Period	_____ (month/ year) to _____ (month/ year)

A. System Description

Record	Details
Building Name & Building Address	
Cooling tower type	
Number of cooling towers in system	
Heat rejection capacities of the cooling towers	
Building owner's name/contact details	
Owner of cooling towers' name and contact details	
Designer of cooling towers' name and contact details	
O&M contractor of cooling towers' name and contact details	
Water treatment services provider's name and contact details	

*To include company name, contact person's business and after office hours telephone numbers

B. Documents Checking

Documents	Record available		Recommendation
	Yes	No	
Operation & maintenance manual			
Testing & commissioning records			
System schematic and layout drawings			
Routine inspection records			
Routine maintenance records			
Routine cleaning and disinfection records			

Documents	Record available		Recommendation
	Yes	No	
Monthly heterotrophic colony count (HCC) results			
Monthly/Quarterly* total legionella count results			
Routine water quality monitoring records (if available)			

*Delete as appropriate

C. Visual Inspection

Item	Acceptable		Recommendation
	Yes	No	
General cleanliness of cooling tower system			
Integrity of components including ladders, rails and platforms			
Operation condition of cooling towers and pumps			
Operation condition of water treatment equipment			
Cleanliness of plant area			
Drift loss control			

D. Risk Identification

	Assessment of Cooling Tower System	Recommendation/ remedial action required
System alteration	Any system addition, alteration and improvement work carried out in the previous year? <input type="checkbox"/> Yes <input type="checkbox"/> No	
	If yes, has operation and maintenance programme been reviewed? <input type="checkbox"/> Yes <input type="checkbox"/> No	
External environment	Is there any newly occupied building regarded as high risk designation located in vicinity to the system? <input type="checkbox"/> Yes <input type="checkbox"/> No	
	If yes, has operation and maintenance programme been reviewed? <input type="checkbox"/> Yes <input type="checkbox"/> No	

	Assessment of Cooling Tower System	Recommendation/ remedial action required
	Is there any construction site found nearby? <input type="checkbox"/> Yes <input type="checkbox"/> No	
	If yes, has operation and maintenance programme been reviewed? <input type="checkbox"/> Yes <input type="checkbox"/> No	
	Is the separation between the cooling towers and the nearest opening(s) maintained to meet the separation requirements as stipulated in Section 4.1 of Code of Practice Part 1? <input type="checkbox"/> Yes <input type="checkbox"/> No (please specify in details)	
System performance	Has fouling of cooling towers system occurred in the previous year? <input type="checkbox"/> Yes <input type="checkbox"/> No	
	If yes, has appropriate rectify work been carried out? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Water treatment programme performance	Has HCC results exceeded 100 000 cfu/mL during the previous year? <input type="checkbox"/> Yes <input type="checkbox"/> No	
	If yes, has appropriate rectified work, including cleaning and disinfection and water treatment programme review been carried out? <input type="checkbox"/> Yes <input type="checkbox"/> No	
	Has total legionella count results exceeded 10 cfu/mL during the previous year? <input type="checkbox"/> Yes <input type="checkbox"/> No	
	If yes, has appropriate rectified work, including cleaning and disinfection and water treatment programme review been carried out? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Compliance of Code of Practice for Fresh Water Cooling Towers	Is the system complied with the Code of Practice? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Potential risk identified during walkthrough inspection		

E. Progress of remedial works

	Assessment of Cooling Tower System	Recommendation/ remedial action required
Remedial works	Are all the remedial works as recommended in the previous year being carried out? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	

F. Other recommendation

G. Personal declaration

Part I: To be completed by Auditor*

*I, _____ (Full name of Auditor), Registered Professional Engineer (*Building Services / Mechanical Discipline), RPE Registration No: _____, have carried out annual independent audit for the above cooling tower system in according to section 4.3 of the Code of Practice for Fresh Water Cooling Towers, Part 2. And I am not involved in any O&M activities of this cooling tower systems.

OR

I, _____ (Full name of Auditor), holder of _____ (Qualification of Auditor), issued by _____ (Institute issue the Qualification), have carried out annual independent audit for the above cooling tower system in according to Section 4.3 of the Code of Practice for Fresh Water Cooling Towers, Part 2. And I am not involved in any O&M activities of this cooling tower systems. (delete as appropriate)

Signed by the Auditor: _____

Full name of Auditor: _____

Registration no.: _____

Date: _____

#Remarks: The Auditor should have relevant operation and maintenance experience on cooling tower systems and possess either one of the following qualifications. a) Registered Professional Engineer in Building Services or Mechanical discipline,
or
b) Higher Certificate or above in building services engineering or mechanical engineering or air-conditioning system, plus at least five years of operation and maintenance experience on cooling tower systems

Part II: To be completed by the owner of cooling tower system

I am the owner of this cooling tower system. I acknowledge that I have read this annual audit report and understand the latest conditions of this cooling tower system.

Signed by the Owner of cooling tower(s): _____

Full name of Owner of cooling tower(s): _____

Date: _____