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The People's Republic of China
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致：各私立中小学校监 / 校长

各位校监 / 校长：

私立学校的通风检测及优化措施

自 2019 冠状病毒病爆发以来，教育局鼓励学校采取多项防疫措施，包括保持良好通风以确保学校环境的安全。根据《学校健康指引》所载的规定，学校须保持室内空气流通，礼堂、课室及特别室须适当地打开门口 / 窗户以增加鲜风的流入；尽可能避免使风从一人吹向其他人；及定期清洗空调设备的隔尘网等。

鉴于最近疫情严峻，我们已要求公帑资助学校为校舍进行通风检测及在可行情况下尽快采取适切的优化措施，以保持校舍室内适当的通风，保障学生和教职员的健康。我们亦建议私立中小学进行一次全面的通风检测及优化相关措施，以遏制疫情和预防传染病。

通风检测及优化措施

学校须自行安排报价 / 招标程序以采购通风检测的顾问服务及注册承办商建议的优化措施和所需的通风设备。注册承办商名册见屋宇署网页（网页连结：https://www.bd.gov.hk/sc/resources/online-tools/registers-search/registrationsearch.html）（拣选「注册类型」为「RSC(V)专门承建商名册（通风系统工程类别分册）」，然后点击「搜寻」）。为协助学校采购所需的服务，采购承办商服务的服务规格样本（只有英文版）已载于附件 I。

学校亦可参考以下有关通风检测的清单和范本（如适用）：

(a) 学校通风系统清单（只有英文版）(Checklist on Ventilation System) – 为校舍所有占用空间进行全面通风检测（附件 II）；

(b) 通风检测报告（只有英文版）– 为建议应采取的必要措施（附件 III）；及

(c) 通风系统证明书（只有英文版）– 为确认已作出相应的补救措施（附件 IV）。

视乎注册承办商的建议，优化措施可包括安装抽气扇，进行小型改善工程或采购空气净化机。如注册承办商建议购买空气净化机，须符合与用于餐饮业务指定规格的空气净化机相同，学校可参考食物环境卫生署网页（网页连结：https://www.fehd.gov.hk/sc_chi/licensing/guide_general_reference/Information_air-changes_purification.html）以获取相关资料。在采购服务 / 设备时，私立学校须依循教育局通告第 14/2003 号「学校及其教职员收受利益和捐赠事宜」内相关要求。

为保障学生和教职员的健康，我们建议私立中小学在可行情况下尽快完成通风检测及优化措施。这是保持良好通风以确保学习环境安全的重要一步。如有查询，请联络所属的高级学校发展主任。

教育局常任秘书长

（刘颖贤 代行）

2022 年 3 月 1 日

副本送： 各区总学校发展主任

Annex I

Provision of Ventilation Assessment Services

Service Specifications

Notes: (a) Tenderers shall note that **all the specifications stated in these Service Specifications are essential requirements**.

(b) Tenderers shall provide documentary evidence thereto wherever requested in the Service Specifications to show compliance of their offered ventilation assessment services with all the requirements.

Service Specifications

1. General

1.1. Introduction

1.1.1. This Invitation to Tender calls for the provision of ventilation assessment services for _____ (the School).
(Name of school)

1.1.2. The information of the School as stated in Clause 1.1.1, including names, addresses, school size and estimated number of rooms are provided below.

Address	
School Size (m^2)	
Estimated number of occupied spaces (including classroom, function room, Hall, library, laboratory, staff room, toilets, etc.)	

1.2. Scope of Services

1.2.1. The scope of services under these Service Specifications is to call for provision of ventilation assessment services to the School in accordance with the below guiding principle.

Items	Suggested Standard
Fresh Air Supply at occupied space[1]	6 Air Change per Hour in enclosed rooms or 10L/s/person whichever is greater
Toilet Ventilation	15 Air Change per Hour (Exhaust)
Distance between fresh air intake and other sources of contamination	5 metres
Air Flow Pattern	Maintain the air flow direction from clean zones to dirty zones

Note:

1. This fresh air requirement should cover all occupied space, including but not limited to classrooms, function rooms, staff rooms and the school hall. (The School shall specify other occupied space e.g. laboratories, theatre(s), etc, as appropriate.) The number of persons per room shall follows the permitted accommodation.

1.2.2. Reference should also be made to "*A Supplement on Ventilation* – Guidelines on Prevention of Communicable Diseases in Schools/ Kindergartens/ Kindergartens-cum-Child Care Centres/ Child Care Centres*"* and the relevant guidelines / regulations as set out by the Buildings Department and the Fire Services

Department.

1.2.3. The ventilation assessment services as set out in section 2 of the Service Specifications shall be provided to the School during the contract period.

1.2.4. The ventilation assessment services shall be conducted by an **engineering team**. The engineering team shall comprise a team of technical competent persons which is led by a professional engineer as stated in Clause 3.1.

1.2.5. The engineering team leader (professional engineer) shall provide a report on the ventilation assessment findings and the shortcomings of ventilation system based on the guiding principle stated in Clause 1.2.1 and also provide the remedial action plan. The plan shall include the short-term modification/housekeeping proposal and long-term improvement plan.

1.3. Contract Period

1.3.1. This contract commence from _____ to _____ inclusive

Service Specifications

2. Ventilation Assessment Services

2.1. Collection of Operation Data

2.1.1. The engineering team shall collect information on operation and technical characteristics of the ventilation system of the School. The collection method shall include, but not limit to, site visits, interviews, surveys, and reviews on building layouts, drawings, schematic diagrams, operation and maintenance records.

2.1.2. The operation data of the ventilation system shall include, but not limit to, the following items:

(i) Operation days and hours of ventilation system;

(ii) Estimated internal floor area, categories and number of individual rooms;

(iii) Records on all ventilation system installation as far as reasonably practicable;

(iv) Equipment list of ventilation system as well as operation and maintenance status; and

(v) Ventilation performance in accordance with the guiding principle as stated in Clause 1.2.1 under mechanical ventilation with air-conditioning or mixed mode of natural and mechanical ventilation.

2.1.3. The engineering team shall bear any cost to collect and retrieve operation data from the building management system or similar system(s), with no additional cost to the School.

2.1.4. If some of the building data are not available, the engineering team shall conduct measurement at representative instant and intervals in order to reasonably predict the operation data with no additional cost to the School.

2.2. Site Inspection

2.2.1. The engineering team shall study the collected building data and conduct site inspections as far as practicable according to the guiding principle as stated in Clause 1.2.1.

2.2.2. The site inspection shall include, but not limit to, verification of equipment data, air flow (L/s) measurement, smoke test, CO_2 measurement and visual inspection of the ventilation system.

2.2.3. The engineering team shall identify any abnormalities of the ventilation system

installation and take photo record of any abnormalities found. The engineering team shall also examine their effects according to the guiding principle as stated in Clause 1.2.1.

2.3. Analysis and Recommendations

2.3.1. With the analysis of site inspection result, the engineering team shall be able to advise the School and the School Sponsoring Body (SSB) / School Management Committee (SMC) / Incorporated Management Committee (IMC) of the School of the followings: -

- Condition of the existing ventilation system;
- Fresh air supply status to different rooms in the School;
- Air change rate of toilets;
- Dead air zone / area;
- Distance between fresh air intake and other sources of contamination; and
- Proposed short-term modification/housekeeping proposal and long-term improvement plan.

2.3.2. For each item mentioned in Clause 2.3.1, the engineering team shall provide the root cause and propose remedial action plan with illustration of drawings and photos, which include a short-term modification/housekeeping proposal and a long-term improvement action plan.

2.4. Number of Ventilation Assessment Service Provided

2.4.1. The engineering team shall at least provide one full ventilation assessment and a follow-up visit to the School during the Contract Period. As the exact number of the on-site visits to school may vary, the engineering team shall also bear the cost of all on-site visits with no additional cost to the School.

2.4.2. The engineering team shall visit the School and complete the first ventilation assessment (including submission of an assessment report as specified in Section 4) within 1 month upon award of contract. The follow-up visit shall be provided to the School within 1 month after the improvement measures have been put in place to check and advise the School again on the ventilation condition.

Service Specifications

3. Staffing Requirement

3.1. The engineering team shall at least comprise of 4 members, 2 sub-team heads and a team leader. Their qualification requirements are listed as follows: -

Grade of Staff	Role	Qualification
Professional Engineer	Team Leader	• Member of HKIE in Building Services Engineering or Mechanical Engineering or equivalent; and • 3 years' experience in air-conditioning design or 6 years' experience in maintenance of air-conditioning installations
Inspector	Sub-team head	• Higher diploma / higher certificate in Building Services Engineering or Mechanical Engineering or equivalent; and • 3 years' experience in supervision of air-conditioning projects or 6 years' experience in maintenance of air-conditioning installations
Work Supervisor	Team member	• Diploma /Ordinary certificate in Building Services Engineering or Mechanical Engineering or equivalent; and • 3 years' experience in supervision of air-conditioning projects or 6 years' experience in maintenance of air-conditioning installations

Service Specifications

4. Ventilation Assessment Report

4.1. The engineering team shall complete the ventilation assessment report in a specified form in **Appendix 1** [Please refer to Annex III of EDB's letter to private schools dated 1 March 2022 on *Ventilation Assessment and Improvement Works for Private Schools*.] with Check list on Ventilation System for the School as an appended annex upon the full ventilation assessment, and the Certificate on Ventilation System for School in a specified form in **Appendix 2** [Please refer to Annex IV of EDB's letter to private schools dated 1 March 2022 on *Ventilation Assessment and Improvement Works for Private Schools*.] upon the follow-up visit, taking into account the guiding principle as stated in Clause 1.2.1 and such report shall be approved and issued by the engineering team leader.

4.2. If the School is recommended to procure air purifier(s) and/or air disinfection equipment(s) as the remedial action plan, the engineering team shall be responsible to vet the model of such equipment(s) proposed/submitted by the School to ensure the specification compliance.

5. Briefing on Ventilation Assessment Report

5.1. Upon completion of the ventilation assessment service for the School, the engineering team leader shall conduct a briefing to explain the report to the School. The presentation shall cover the following items:

(i) detailed description of the ventilation assessment;

(ii) findings and results of the ventilation assessment;

(iii) short-term proposal; and

(iv) long-term improvement plans if necessary.

5.2. The presentation shall normally include questions and answers.

Annex II

Checklist on Ventilation System

School Name: _____ (School No.:_____)

Address:

District:

Type of school: Primary / Secondary / Primary-cum-Secondary#

Inspection Date:

1 General

1.1 MVAC Installation adopted for school (Please tick ✓ as appropriate)

System Type	Classroom	Function Room	Laboratory	Hall	Staff Room	Others
A/C system (1.window-type / 2.split-type / 3.VRV / 4.packaged a/c unit / 5.central a/c)	☐ (1 /2 /3 /4 /5)#	☐ (1 /2 /3 /4 /5)#	☐ (1 /2 /3 /4 /5)#	☐ (1 /2 /3 /4 /5)#	☐ (1 /2 /3 /4 /5)#	☐ (1 /2 /3 /4 /5)#
Natural ventilation (1.cross-ventilating / 2.single-side)	☐ (1 / 2)#	☐ (1 / 2)#	☐ (1 / 2)#	☐ (1 / 2)#	☐ (1 / 2)#	☐ (1 / 2)#
Mechanical ventilation (1.exhaust / 2.OAP / 3.FAP / 4.packaged a/c unit / 5.central a/c)	☐ (1 /2 /3 /4 /5)#	☐ (1 /2 /3 /4 /5)#	☐ (1 /2 /3 /4 /5)#	☐ (1 /2 /3 /4 /5)#	☐ (1 /2 /3 /4 /5)#	☐ (1 /2 /3 /4 /5)#
Other (**)**	☐	☐	☐	☐	☐	☐

 # - Delete as appropriate

Remarks : 1. _____

2. _____

1.2 Summary of Assessment (Occupied Spaces)

Nos. of room	Classroom	Function Room	Laboratory	Hall	Staff Room	Others
☑ 10L/s/person ☑ 5 metres separation distance						
☑ 10L/s/person ☒ 5 metres separation distance						
☒ 10L/s/person ☑ 5 metres separation distance						
☒ 10L/s/person ☒ 5 metres separation distance						
Total:						

1.3 Summary of Assessment (Toilets)

Nos. of toilet		Student Toilets	Staff Toilets
☑ 15 ACH	☑ Proper air intake & discharge		
☑ 15 ACH	☒ Proper air intake & discharge		
☒ 15 ACH	☑ Proper air intake & discharge		
☒ 15 ACH	☒ Proper air intake & discharge		
Total:			

Annex II

Checklist on Ventilation System

School Name: _____ (School No.:_____)

2 Classroom / Function Room / Laboratory / Staff Room (*please add supplementary sheet if necessary*)

2.1 Room number:

2.2 Size of room: (meter) _____W _____D _____ H (Volume = _____m^3)

2.3 Capacity: ____ Students + ____ Teachers = ____ Persons

2.4 Air-conditioning system: Window-type ☐ Split-type ☐ VRV ☐
Central A/C ☐

2.5 Natural ventilation: Cross-ventilating ☐ Ventilation Path = metres
Single-side ☐ Room Depth / Headroom =

2.6 Mechanical ventilation:

Mechanical ventilation system: Exhaust ☐ OAP ☐ FAP ☐ Central A/C ☐

Fresh air supply for room/ Flowrate (estimated / measured#) _____ litres / second

- Fresh air supply per person _____ litres / second / person
- Meet the fresh air requirement of 10L/second/person Yes ☐ No ☐
- Air change per hour (fresh air)[1] _____

Distance between fresh air inlet and contaminated exhaust outlet _____ metres

- Meet the 5 metres separation distance Yes ☐ (default / operation#) No ☐
- Discharge point of mechanical ventilation Open air ☐ Semi-open air ☐

Remarks:

2.7 Air filtration:

- Brand & Model of air purifiers _____
- Type of air purifiers: HEPA filter ☐ UV-C device☐ HEPA filter cum UV-C☐ Others (please specify): _____
- Location: Standalone at floor level ☐ Ceiling-mounted ☐ Wall-mounted or standalone at middle level ☐
- Number of air purifier _____
- Serving area per air purifier (m^2) _____(No. of Air Purifier / Floor area)
- Air change per hour (recirculated air) _____

2.8 Recommended Improvement works:

(e.g. Additional exhaust fans / Re-fix existing exhaust fans / Additional FAPs / Re-fix existing FAPs)
(e.g. Additional OAP / Air balancing / Increase the capacity of PAU)

[1] Calculated air change rate using formula: ACH = Room Volume / Total Air Flow Rate (i.e. (L x W x H)/(Quantity x flowrate))

Annex II

Checklist on Ventilation System

School Name: _____ (School No.:_____)

3 Hall (*please add supplementary sheet if necessary*)

3.1 Size of Hall: (meter) _____W _____D _____ H (Volume = _____m^3)

3.2 Capacity: ____ Persons *(if available)*

3.3 Air-conditioning system: Split-type ☐ VRV ☐ Packaged A/C unit ☐ Central A/C ☐

3.4 Natural ventilation: Cross-ventilating ☐ Ventilation Path = metres
Single-side ☐ Room Depth / Headroom =

3.5 Mechanical ventilation:

Mechanical ventilation system Exhaust ☐ OAP ☐ Packaged A/C unit ☐ Central A/C ☐

Fresh air supply for room/ Flowrate (estimated / measured[#]) _____ litres / second

- Meet the fresh air requirement of 10L/second/person Yes ☐ No ☐
- Allowable capacity based on 10L/s/person _____ persons
- Air change per hour (fresh air)[1] _____

Distance between fresh air inlet and contaminated air outlet _____ metres

- Meet the 5 metres separation distance Yes ☐ (default / operation[#]) No ☐
- Discharge point of mechanical ventilation Open air ☐ Semi-open air ☐

Remarks:

3.6 Recommended Improvement works:

Annex II

Checklist on Ventilation System

School Name: _____ (School No.:_____)

4	**Toilet (Student / Staff#)** (*please add supplementary sheet if necessary*)	
	4.1 Toilet number:	
	4.2 Size of toilet: Volume = _____m^3	
	4.3 Mechanical ventilation:	
	Exhaust System	Exhaust Fan ☐ Central Exhaust ☐
	Exhaust Flow Rate (estimated / measured#)	_____ m^3 / hr
	• Air change per hour[1]	_____
	• Meet the 15 ACH requirement	Yes ☐ No ☐
	• Discharge point of mechanical ventilation	Open air ☐ Semi-open air ☐
	• Do the exhaust air discharge to play area or assembly area?	Yes ☐ No ☐ (toilet no.__)
	• Do the toilets have door louvre or window/louvre at opposite side?	Yes ☐ No ☐ (toilet no.__) N/A ☐
	Remarks:	
	4.4 Recommended Improvement works: (e.g. Additional exhaust fans / Re-fix existing exhaust fans)	

Note: Site layout plan with exhaust fans / FAPs / package a/c unit indicated are attached at the end of this report.

~ End ~

Annex III

Assessment Report on Ventilation System

Part A - Background Information

School Name:	
School No.:	
Address:	
District:	
Type of School:	Primary / Secondary / Primary-cum-Secondary#
Consultant:	
Inspection Team Member:	(1)(TC)
	(2)(MTC)
	(3)(MTC)
Inspection Date:	
Inspection Time:	

Part B - Assessment Findings

Details of the assessment findings are given in the attached Checklists (***Annex A***) [Please refer to Annex II of EDB's letter to private schools dated 1 March 2022 on *Ventilation Assessment and Improvement Works for Private Schools*.] . The assessment findings are tabulated below. *The relevant site photos and school layout plans are shown in* ***Annex B*** *and* ***Annex C*** *respectively.*

Room No.	**Room Type[1]**	**Findings (☒ indicates irregularity)**				
		Insufficient mechanical ventilation[2]	Insufficient separation between fresh air inlet & other sources of contamination	Equipment Malfunction of ventilation equipment	Improper Installation / Location of ventilation equipment[3]	Others (please specify)
		☐	☐	☐	☐	☐ _____ _____ _____

[1] Classroom, function room, laboratory, staff room, hall, toilet, etc.

[2] For example, lack of air grilles / transfer air grilles, resulting in ineffective operation of ventilation equipment.

[3] For example, exhaust fans and fresh air intake grilles on the same side of a wall / window, resulting in unsatisfactory cross ventilation.

		☐	☐	☐	☐	☐ _____ _____ _____

Part C – Recommendations

Based on the site inspection conducted, the following improvement work is recommended, with illustration of drawings and photos in the attached Checklists *(Annex A)*.

Room No.	Room Type[1]	Recommended Improvement Works

Assessment Report on Ventilation System

Part D – Copyright Notice

The _____(name of school)_____ reserves the copyright of this document. It may not be reproduced, distributed, transmitted, displayed, published or disclosed any content without consent from the copyright owner.

Part E – CAVEAT

This report is confidential to the _____(name of school)_____ for the specific purposes to which it refers. It might be disclosed to the Education Bureau and / or other professional advisers assisting the ____(name of school)___ in respect of that purpose.

This report is based on the condition of mechanical ventilation system in the inspected area on the date of inspection. No liability can be accepted for any deterioration / change in condition of the premises after this date.

- END OF REPORT-

_____ _____

Chop of Registered Specialist Contractor (Ventilation Works Category) and signature of Authorized Signatory

Date (dd/mm/yy)

Name of Registered Specialist Contractor (Ventilation Works Category):

Name of Authorized Signatory:

_____ _____

Registration Number:

Date of Expiry of Registration (dd/mm/yy):

_____ _____

Registered Address:_____

Contact Tel. No.: _____ Fax No. : _____

Annex III

Assessment Report on Ventilation System

Part F – Acknowledgement

I / We (Representative of the School) agree to carry out the proposed improvement works as recommended in Part C of this report.

Signed: _____

Name: _____

_____
(School Chop)

Checklist on Ventilation System

Annex A

Inspection Report on Ventilation System

Annex B

Inspection photo	
Photo no. 1 Item: 1 Problem finding:	Photo no. 2 Item: 2 Problem finding:
Photo no. 3 Item: 3 Problem finding:	

Inspection Report on Ventilation System

Annex C

Layout Plan

Annex IV

Certificate on Ventilation System

School Name:	
School No.:	
Address:	

I have inspected the above school premises on _____ (dd/mm/yy) (inspection date) and certify the particulars in respect of the above premises as follows and in the Ventilation Assessment Report and Checklist on Ventilation System:

Type of Occupied Spaces Assessed	**Classroom**	**Function Room**	**Laboratory**	**Hall**	**Staff Room**	**Toilet**	**Others (please specify)**
Number of Occupied Spaces Assessed							

I confirm that the ventilation of the abovementioned occupied spaces have been assessed, improvement work has been done according to the recommendations as written in the Ventilation Assessment Report

I understand that the matters and information stated herein and the related documents submitted (if any) are subject to further checking, vetting and verification by officers of Education Bureau (EDB) or authorized officers if deems necessary by EDB.

Note: **If separate sheet is necessary, every page should be signed by the Authorized Signatory of the Registered Specialist Contractor (Ventilation Works Category).**

_____ _____

Chop of Registered Specialist Contractor (Ventilation Works Category) and signature of Authorized Signatory

Date(dd/mm/yy)

Name of Registered Specialist Contractor (Ventilation Works Category):

_____

Name of Authorized Signatory:

_____

Registration Number:

_____

Date of Expiry of Registration(dd/mm/yy):

_____

Registered Address:_____

Contact Tel. No.: _____

Fax No. : _____