

Ventilation Assessment Summary & Recommendation on Ventilation System for Direct Subsidy Scheme (DSS) / Caput Schools

School Name: \_\_\_\_\_ (School No.: \_\_\_\_\_)

**(A) Fresh Air Supply at all rooms: Min. 10L/s/person**

<b>System Description and Observation</b>	<p>According to the maximum capacity of rooms provided by school, the two nurseries in G/F are able to meet the suggested standard of 10/L/s/person. From 1/F to 6/F, no classroom could actually meet the suggested standard of 400L/s fresh air (40 persons). In some spaces such as computer room, measured exhaust air is only up for 9 person (96.19L/s). Looking at the allocation of the air purifiers, the circulated air flow provided by air purifier does enhance the all rooms' performance.</p> <p>For staff rooms and multi-purpose rooms, no space could meet the requirement as well.</p> <p>While for the hall, though the fresh air flow is not measureable, the central AC system's airflow according to supplier's manual amounts to 4500L/s, which is up to standard 1500L.</p> <p>For all rooms concerned, the fresh air flow is created by exhaust air unit, which is not the ideal condition.</p> <p>For all the figures, please refer to Appendix 1 for measured data of exhaust air flow.</p>
<b>Illustration by layout plan/photos</b>	Refer to the Ventilation and Air Flow Pattern Layout Plan and photo album
<b>Conclusion and recommendation</b>	<ol style="list-style-type: none"><li>1. Replace the 8 broken exhaust air fan units.</li><li>2. Keep the number of persons in classroom below 30 to match with existing exhaust air unit.</li><li>3. To enhance fresh air flow in all rooms, exhaust air unit can work collaboratively by creating window opening of 0.2m<sup>2</sup> on the opposite side to create unified airflow across the room.</li><li>4. For rooms with no mechanical ventilation equipment (especially for 109 staff room, 207A, G05, 106&amp;107), installation of exhaust air fan is recommended.</li><li>5. Extra ventilation equipment upon current setting such as fresh air fan is recommended for 3/F staff room and 109 staff room.</li><li>6. Install fresh air fan for rooms with high usage such general affair room on G/F, and staff room 109b.</li></ol>

## Checklist on Ventilation System for Direct Subsidy Scheme (DSS) / Caput Schools

School Name: \_\_\_\_\_ (School No.: \_\_\_\_\_)

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

District: \_\_\_\_\_

Type of school: \_\_\_\_\_

Inspection Date: 23<sup>rd</sup> March, 2022

### 1 General

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

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

# - Delete as appropriate

Remarks : 1.  
2.

#### 1.2 Summary of Assessment (Occupied Spaces)

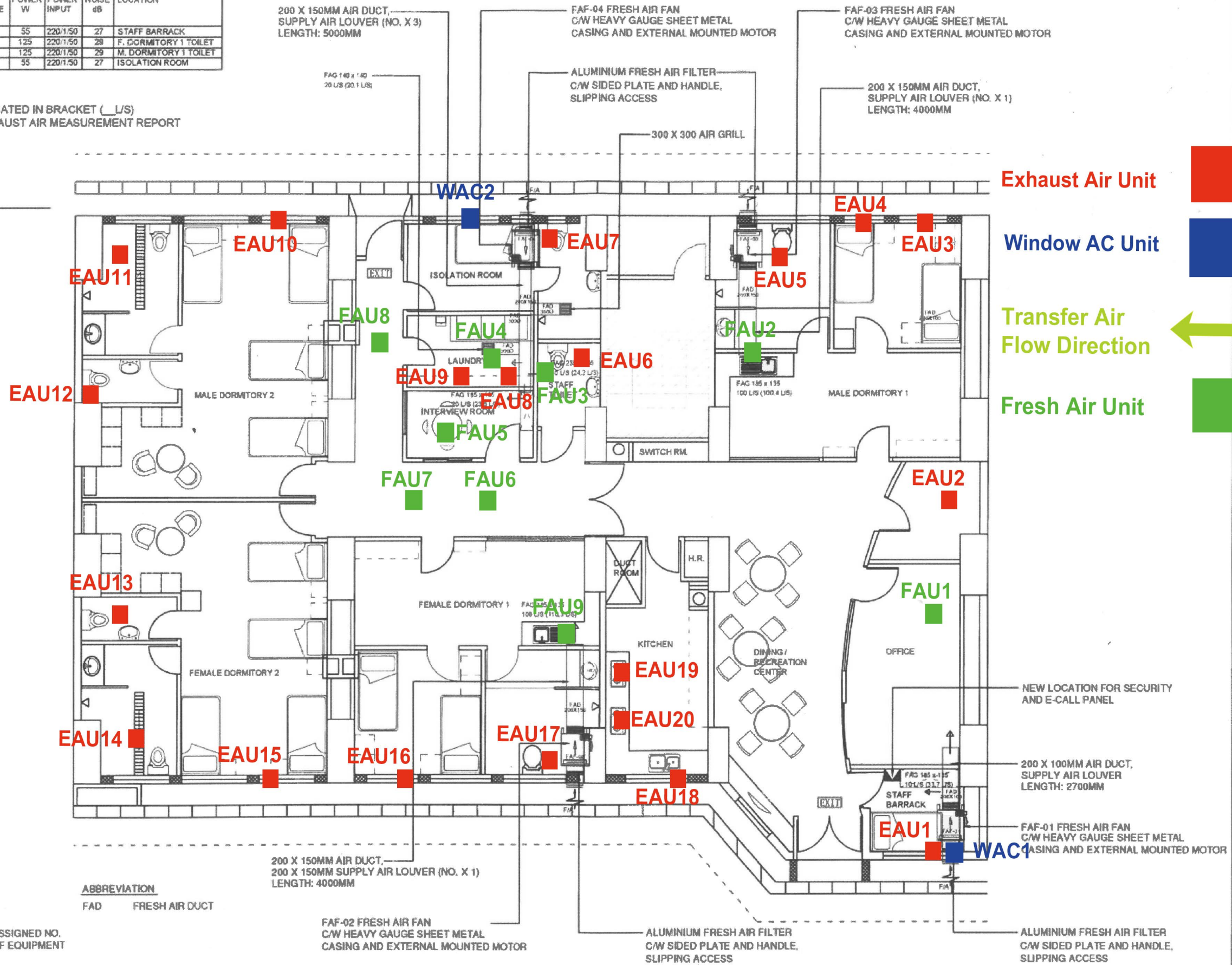
Nos. of room	Classroom	Function Room	Laboratory	Hall	Staff Room	Others
<input checked="" type="checkbox"/> 10L/s/person				1		
<input checked="" type="checkbox"/> 5 metres separation distance						
<input checked="" type="checkbox"/> 10L/s/person						
<input checked="" type="checkbox"/> 5 metres separation distance						
<input checked="" type="checkbox"/> 10L/s/person	22	12			7	3
<input checked="" type="checkbox"/> 5 metres separation distance						
<input checked="" type="checkbox"/> 10L/s/person						
<input checked="" type="checkbox"/> 5 metres separation distance						
<b>Total:</b>	22	12		1	7	3

#### 1.3 Summary of Assessment (Toilets)

Nos. of toilet		Student Toilets	Staff Toilets
<input checked="" type="checkbox"/> 15 ACH	<input checked="" type="checkbox"/> Proper air intake & discharge	5	4
<input checked="" type="checkbox"/> 15 ACH	<input checked="" type="checkbox"/> Proper air intake & discharge		1
<input checked="" type="checkbox"/> 15 ACH	<input checked="" type="checkbox"/> Proper air intake & discharge	22	8
<input checked="" type="checkbox"/> 15 ACH	<input checked="" type="checkbox"/> Proper air intake & discharge		
<b>Total:</b>		27	13

FRESH AIR INTAKE FAN SCHEDULE								
NO.	FAN DIA. (mm)	FAN SPEED (RPM)	AIR FLOW (L/S)	STATIC PRESSURE (Pa)	POWER (W)	POWER INPUT (220/1.50)	NOISE (dB)	LOCATION
FAF-01	150	1240	100	116	55	220/1.50	27	STAFF BARRACK
FAF-02	180	1360	135	191	125	220/1.50	29	F. DORMITORY 1 TOILET
FAF-03	180	1360	135	191	125	220/1.50	29	M. DORMITORY 1 TOILET
FAF-04	150	1240	100	116	55	220/1.50	27	ISOLATION ROOM

REMARKS:  
MEASURED AIR VOLUME IS INDICATED IN BRACKET ( L/S)  
AND REFER TO FRESH AIR / EXHAUST AIR MEASUREMENT REPORT



Exhaust Air Unit

Window AC Unit

Transfer Air Flow Direction

Fresh Air Unit

DESIGNATION DEFINITION

VENTILATION FAN FAF-01

EQUIPMENT TYPE FAF FRESH AIR FAN

ASSIGNED NO. OF EQUIPMENT

ABBREVIATION

FAD FRESH AIR DUCT

LEGEND

	FRESH AIR DUCT
	AIR GRILL
	FRESH AIR FAN

MAIN CONTRACTOR  
TOP GRAND ENGINEERING LTD.  
GBC 260/99

MVAC CONTRACTOR  
WARDSON ENGINEERING LTD.  
SC(V) 4/2000

ARCHITECT  
ARCHICORP (HK) LTD.

CLIENT  
HONG CHI ASSOCIATION

REMEDIATION WORKS REGARDING THE SAFETY (FS) / PUBLIC WORK SAFETY (PWS) TO HONG CHI ASSOCIATION, HONG CHI FU SHIN HOSTEL, UNIT 2, G/F, SHIN TAI HOUSE, FU SHIN ESTATE, TAI PO, N.T.

B.O.O F.S.D. OFFICE

PROJECT  
Hong Chi Fu Shin Hostel, Unit 2, G/F, Shin Tai House, Fu Shin Estate, Tai Po, N.T.

DRAWING  
MVAC LAYOUT PLAN

SCALE: 1:100 NUMBER

DRAFT: A

DATE: 22-4-2015






DESIGNER	CHECKED	APPROVED
	BS	



**Air Conditioning Units, Exhaust Fan and Fresh Fan Air Flow Measurement cum Air Change Calculation Table for all rooms**

Room of Measurement	Mechanical Ventilation													Natural Ventilation			Air-conditioning system				Air Filtration								
	Exhaust Air Unit/Fresh Air Unit/ Grille/Exteranal Wall Louvre		Air Grille/Diffuser/ Fan			Measured Air Velocity at Grille/Diffuser/ Fan Opening (m/s)	Room dimensions			Measured Air Drawn out by Fan	Air Change per hr of Room	Number of Persons in Room	Minimum FA Required in dormitory Room at 10 l/s /person (l/s)	5 metres seperation from exhaust air outlet and fresh air inlet	Discharge point of mechanical ventilation	Natural Ventilation			Air-conditioning system				Air Filtration						
	Designation No	Brand (Model)	Type	Length/ Diameter (mm)	Width* (mm)	Mean Air Velocity (m/s)	Area (m2)	Height (m)	Room Volume (m3)	litre/s	AC/hr		Cross-ventilating	Single-side		Headroom (m)	Window-type	Split-type	VRV	Central A/C	No. of Air purifier	Type	Brand/ Model	Location	Air Change per hour	Serving area (m2)			
<b>G/F</b>																													
General Affair Room	No Mechanical Ventilation Equipment						20.67	3.89	80.41	0.00	0.00	8	80	Yes		✓													
Hall	AC1	Mitsubishi				39.00	160.32	4.23	678.15	4500.00	23.89	150	1500	Yes	Semi-open air	✓		4.23		1		1	2	HEPA, UVLED	Airodoctor	Standalone	480.0	200	
G05 Activity Room	No Mechanical Ventilation Equipment						23.90	4.26	101.81	0.00	0.00	N/A		Yes		✓		3.86		1			1	HEPA	Amway	Standalone	416.3	200	
G04 Nursery	EAU1	KDK	Fan	406	406	2.30	50.07	4.26	213.30	265.39	4.48	45	450	Yes	Open Air	✓		3.86	1	1		1	HEPA	Amway	Standalone	416.3	37.2		
	EAU2	KDK	Fan	406	406	2.30	50.07	4.26	213.30	265.39	4.48	45	450	Yes	Open Air	✓		3.86	1	1									
	EAU3	KDK	Fan	406	406	2.30	50.07	4.26	213.30	265.39	4.48	45	450	Yes	Open Air	✓		3.86	1	1									
	EAU4	KDK	Fan	406	406	2.30	50.07	4.26	213.30	265.39	4.48	45	450	Yes	Open Air	✓		3.86	1	1									
G03 Storage	No Mechanical Ventilation Equipment						2.70	4.26	11.50	0.00	0.00	N/A		Yes			✓												
G02 Storage	No Mechanical Ventilation Equipment						2.70	4.26	11.50	0.00	0.00	N/A		Yes			✓												
G01 Nursery	EAU6	KDK	Fan	406	406	2.30	46.47	4.26	197.96	265.39	4.83	45	450	Yes	Open Air	✓		3.86	1	1		1	HEPA	Amway	Standalone	416.3	37.2		
	EAU7	KDK	Fan	406	406	2.30	46.47	4.26	197.96	265.39	4.83	45	450	Yes	Open Air	✓		3.86	1	1									
	EAU8	KDK	Fan	406	406	2.30	46.47	4.26	197.96	265.39	4.83	45	450	Yes	Open Air	✓		3.86	1	1									
	EAU9	KDK	Fan	406	406	2.30	46.47	4.26	197.96	265.39	4.83	45	450	Yes	Open Air	✓		3.86	1	1									
<b>1/F</b>																													
101 Staffroom	No Mechanical Ventilation Equipment						25.63	3.30	84.58	0.00	0.00	8	80	Yes		✓		3.00	1	1									
102 Classroom	EAU18	KDK	Fan	406	406	2.30	50.48	3.27	165.07	265.39	5.79	45	450	Yes	Open Air	✓		2.97	2	2		1	HEPA	Amway	Standalone	416.3	37.2		
103 Classroom	EAU19	KDK	Fan	406	406	2.30	51.62	3.27	168.80	265.39	5.66	45	450	Yes	Open Air	✓		2.97	1	2		1	HEPA	Amway	Standalone	416.3	37.2		
104 Classroom	EAU20	KDK	Fan	406	406	2.30	50.98	3.27	166.70	265.39	5.73	45	450	Yes	Open Air	✓		2.97		2		1	HEPA	Amway	Standalone	416.3	37.2		
105 Classroom	EAU21	KDK	Fan	305	305	2.10	51.98	3.27	169.97	136.75	2.90	45	450	Yes	Open Air	✓		2.97	1	2		1	HEPA	Amway	Standalone	416.3	37.2		
106 Social worker room	No Mechanical Ventilation Equipment						9.26	3.27	30.28	0.00	0.00	2	20	Yes			✓	3.27	1										
107 Multi-media room	No Mechanical Ventilation Equipment						25.57	3.27	83.61	0.00	0.00	5	50	Yes		✓		3.27	1			1	HEPA	Amway	Standalone	416.3	37.2		
108a	EAU26	Xpelair	Fan	254	254	2.01	18.50	3.27	60.50	90.77	5.40	N/A		Yes	Semi-open air	✓		3.27		1		1	HEPA	Amway	Standalone	416.3	37.2		
108b	No Mechanical Ventilation Equipment						18.55	3.27	60.66	0.00	0.00	N/A		Yes		✓		3.27	1										
109a Staff room	No Mechanical Ventilation Equipment						18.42	3.27	60.23	0.00	0.00	1	10	Yes			✓	3.27		1		1	HEPA	Amway	Standalone	416.3	37.2		
109b Staff room	No Mechanical Ventilation Equipment						8.47	3.27	27.70	0.00	0.00	5	50	Yes						1			1	HEPA	Amway	Standalone	416.3	37.2	
110 Principal room	No Mechanical Ventilation Equipment						38.20	2.67	101.99	0.00	0.00	1	10	Yes		✓		2.67		1		1	HEPA	Amway	Standalone	416.3	37.2		
110 Store	No Mechanical Ventilation Equipment						15.10	3.32	50.13	0.00	0.00	N/A		Yes			✓	2.67											
111 Computer room	EAU27	Xpelair	Fan	254	254	2.13	51.98	3.32	172.57	96.19	2.01	40	400	Yes	Open Air	✓		3.02		2		2	HEPA	Amway	Standalone	416.3	37.2		
112 Library	EAU28	Xpelair	Fan	254	254	1.69	85.07	3.32	282.43	76.32	0.97	N/A		Yes	Open Air	✓		3.02		4		2	HEPA	Amway	Standalone	416.3	37.2		
<b>2/F</b>																													
201 Staff room	No Mechanical Ventilation Equipment						#REF!	2.99	#REF!	0.00	#REF!	8	80	Yes		✓		2.64	1	1		1	HEPA	Amway	Standalone	416.3	37.2		
203 Classroom	EAU31	KDK	Fan	406	406	1.98	53.04	2.99	158.59	228.46	5.19	40	400	Yes	Semi-open air	✓		2.64		2		1	HEPA	Amway	Standalone	416.3	37.2		
204 Classroom	EAU32	KDK	Fan	406	406	1.72	52.29	2.99	156.35	198.46	4.57	40	400	Yes	Semi-open air	✓		2.64		2		1	HEPA	Amway	Standalone	416.3	37.2		
205 Classroom	EAU33	JLEE	Fan	406	406	2.34	53.49	2.99	159.94	270.00	6.08	40	400	Yes	Semi-open air	✓		2.64		2		1	HEPA	Amway	Standalone	416.3	37.2		
206 Staff room	No Mechanical Ventilation Equipment						9.26	2.99	27.69	0.00	0.00	N/A		Yes		✓		2.64	1			1	HEPA	Amway	Standalone	416.3	37.2		
207A Multi-purpose room	No Mechanical Ventilation Equipment						54.14	2.99	161.88	0.00	0.00	40	400	Yes		✓		2.64		2		1	HEPA	Amway	Standalone	416.3	37.2		
207B	EAU38	Xpelair	Fan	254	254	Broken	79.84	3.29	262.67	#####	#VALUE!	40	400	Yes	Semi-open air	✓		2.94		2		2	HEPA	Amway	Standalone	416.3	37.2		
208 Classroom	EAU39	Xpelair	Fan	254	254	2.97	52.95	2.99	158.32	134.13	3.05	40	400	Yes	Semi-open air	✓		2.64		2		1	HEPA	Amway	Standalone	416.3	37.2		
209 Classroom	EAU40	Xpelair	Fan	254	254	3.02	49.28	2.99	147.35	136.39	3.33	40	400	Yes	Semi-open air	✓		2.64		2		1	HEPA	Amway	Standalone	416.3	37.2		
210 Classroom	EAU41	Xpelair	Fan	254	254	0.42	49.91	2.99	149.23	18.97	0.46	40	400	Yes	Semi-open air	✓		2.64		2		1	HEPA	Amway	Standalone	416.3	37.2		
211 Classroom	EAU46	Xpelair	Fan	254	254	Broken	48.30	2.99	144.42	#####	#VALUE!	40	400	Yes	Semi-open air	✓		2.64		2		1	HEPA	Amway	Standalone	416.3	37.2		
202 Classroom	EAU47	KDK	Fan	406	406	Broken	52.81	3.35	176.91	#####	#VALUE!	40	400	Yes	Semi-open air	✓		3.00		2		1	HEPA	Amway	Standalone	416.3	37.2		
<b>3/F</b>																													
304 Classroom	EAU46	Xpelair	Fan	254	254	2.59	49.91	2.96	147.73	116.97	2.85	40	400	Yes	Semi-open air	✓		2.61		2		1	HEPA	Amway	Standalone	416.3	37.2		
303 Classroom	EAU47	Xpelair	Fan	254	254	2.87	47.84	2.96	141.61	129.61	3.30	40	400	Yes	Semi-open air	✓		2.61		2		1	HEPA	Amway	Standalone	416.3	37.2		
302 Classroom	EAU48	Xpelair	Fan	254	254	2.94	50.51	2.96	149.51	132.77	3.20	40	400	Yes	Semi-open air	✓		2.61		2		1	HEPA	Amway	Standalone	416.3	37.2		
301 Classroom	EAU49	Xpelair	Fan	254	254	2.09	52.68	2.96	155.93	94.39	2.18	40	400	Yes	Semi-open air	✓		2.61		2		1	HEPA	Amway	Standalone	416.3	37.2		



<p><b>基本資料 Basic Information</b></p>																
<p><b>檢測地點 Site Location</b></p>	<p>甲醛 Formaldehyde</p> 															
<p><b>顧客基本資料 Client Information</b></p> <p>Attendance: [Redacted]</p> <p>Telephone: [Redacted]</p> <p>Email: [Redacted]</p>	<p><b>詳細描述 Detailed Information:</b></p> <p>甲醛指數為<b>49.13µg/m³</b>，指數達到香港環境保護署新室內空氣質素指標的良好級別(&lt;100 µg/m³)，表現良好。</p>															
<p><b>檢測日期 Assessment Date:</b></p> <p>12/8/2021</p>	<p>相對濕度 Relative Humidity</p> 															
<p><b>場所類別 Type Of Property:</b></p> <p>[Redacted]</p>	<p><b>詳細描述 Detailed Information:</b></p> <p>相對濕度指數為<b>24.8%</b>，指數在為可接受級別(&gt;20% or &lt;80%)</p>															
<p><b>測量員 Assessor:</b></p> <p>[Redacted]</p>	<p><b>採樣週期 Sampling Period:</b></p> <p>N/A</p>															
<p><b>圖表解說:</b></p> <table border="0"> <tr> <td>良好</td> <td></td> <td>Excellent</td> </tr> <tr> <td>好</td> <td></td> <td>Good</td> </tr> <tr> <td>可接受</td> <td></td> <td>Fair</td> </tr> <tr> <td>不良</td> <td></td> <td>Dangerous</td> </tr> <tr> <td>非常不良</td> <td></td> <td>Hazardous</td> </tr> </table>	良好		Excellent	好		Good	可接受		Fair	不良		Dangerous	非常不良		Hazardous	<p>懸浮粒子0.3 Particulate Matter(PM0.3)</p>  <p><b>詳細描述 Detailed Information:</b></p> <p>懸浮粒子0.3的測量結果為<b>84542/Litre</b>。</p>
良好		Excellent														
好		Good														
可接受		Fair														
不良		Dangerous														
非常不良		Hazardous														
<p>懸浮粒子2.5 Particulate Matter(PM2.5µm)</p>  <p><b>詳細描述 Detailed Information:</b></p> <p>懸浮粒子(2.5µm)的測量結果為<b>4877/Litre</b>。</p>	<p>一氧化碳 Carbon Monoxide(CO)</p>  <p><b>詳細描述 Detailed Information:</b></p> <p>一氧化碳指數為<b>2.1ppm</b>，指數達到香港環境保護署新室內空氣質素指標的卓越級別(&lt;1.7 ppm)，表現良好。</p>															