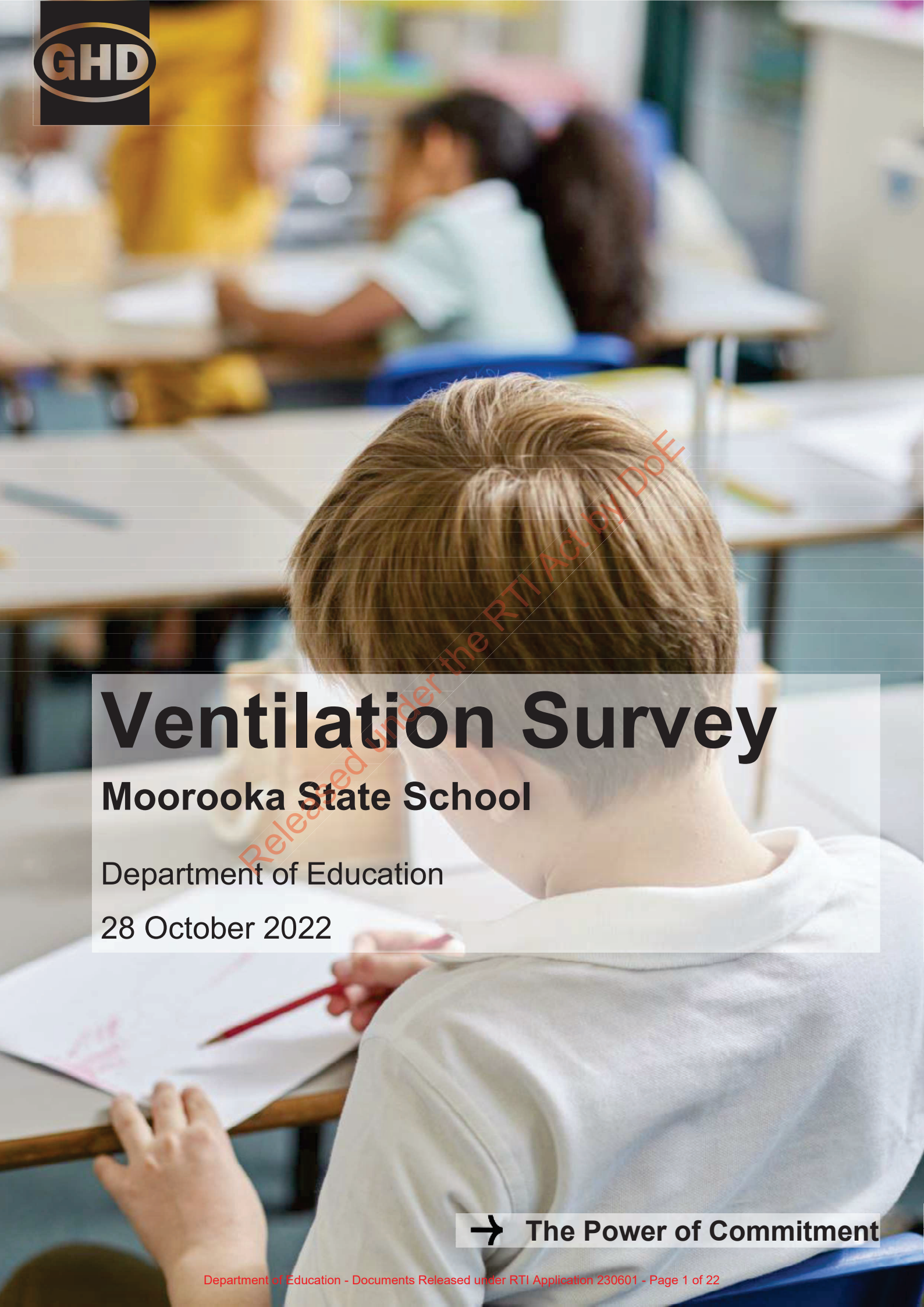

Ventilation Survey

Moorooka State School

Department of Education

28 October 2022

The Power of Commitment

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Executive Summary

This report is subject to, and must be read in conjunction with, the limitations set out in section 1.2 and the assumptions and qualifications contained throughout the report.

This report summarises the findings of the ventilation audit of Moorooka State School, Moorooka.

An inspection of the school was carried out on the 1st of September 2022. The inspection included measuring CO_2 levels in classrooms using a CEM DT-967 CO_2 sensor.

CO_2 levels over the 800 ppm threshold were noted in more than half of the classrooms inspected.

In general, classrooms had suitable windows and doors to promote adequate cross ventilation. This was reflected in the low CO_2 levels observed in occupied classrooms where windows and/or doors remained opened. However, at the time of inspection, windows and doors remained closed in most classrooms due to the health and safety of the children.

It is recommended that at least some classroom windows, and where feasible the classroom doors, are kept open during lessons in order to promote cross ventilation. Air-conditioning should also be used where fresh air fans are installed to ensure they are running during lessons. At least one window or louvre opposite the fresh air fans should be left partially open to improve the efficiency of the fan and promote cross ventilation of the room.

It is further recommended that all fresh air fan filters are cleaned to ensure optimum performance of all fan units.

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1. Introduction

1.1 Purpose of this report

GHD were requested by Education Queensland to inspect and review schools across Queensland to provide qualitative assessment of the effectiveness of the natural and mechanical ventilation systems serving various classrooms and administration areas and advise the department of any perceived shortcomings or inefficiencies.

This report summarises the findings of the inspection of Moorooka State School, Moorooka, carried out on the 1st of September.

1.2 Scope and limitations

The scope of the ventilation assessment at Moorooka State School is to develop a qualitative assessment of classroom ventilation.

Carbon dioxide (CO_2) monitors provided by Education Queensland provided a point-in-time assessment of CO_2 concentration. Education Queensland have determined, in consultation with OzSAGE guidelines [1], that an upper limit of 800 ppm represents acceptable air quality.

It must be noted that the measure of CO_2 levels is not a measure of the probability of the spread of the SARS COVID-19 virus. The measure of CO_2 levels was used as an indication of the effectiveness of the ventilation strategy (i.e. natural, mechanical or hybrid systems) for a particular area. This report does not investigate the probability of spread of the SARS-Covid-19 virus.

No heat load calculations were carried out and the capacity or effectiveness of cooling systems was not reviewed.

GHD's investigations were limited to determining the effectiveness of the installed natural and mechanical ventilation systems. The quality of installation and / or maintenance was not reviewed.

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The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared. The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report (refer section 1.3 of this report). GHD disclaims liability arising from any of the assumptions being incorrect.

1.3 Assumptions

It is assumed that the mechanical ventilation systems were designed in accordance with the requirements of AS1668.2 – 2012: *Australian Standard – the use of ventilation and air-conditioning in buildings – Part 2: Mechanical ventilation in buildings.*

It is assumed that all fan unit filters were intact and clean at the time of the inspections.

2. Methodology

The audit involved a physical inspection of the associated classrooms / administration areas.

The inspection commenced with the key areas and classrooms as identified by the principal or business manager of the school, followed by a general inspection of randomly selected classrooms. Where possible, at least one classroom in each building / block was inspected. Where several similar classrooms existed in a block, the perceived "worst case" classroom was selected. This included smaller classrooms with higher student densities and centrally located classrooms with less windows than perimeter classrooms with windows on more than two facades. Testing was undertaken in occupied classrooms.

A commercially available CEM DT-967 CO_2 sensor was used to measure point-in-time CO_2 levels. The sensor was as procured and not recalibrated.

Fresh air fans were tested for operation only. No air flow readings were taken.

The classroom inspection involved the following:

1. Placement of the CEM DT-967 CO_2 sensor in a centrally located position, as far as possible from open windows and doors. The sensor was left to refresh the CO_2 level readings while the doors and windows serving the area were measured.
2. The measurement of all openable doors and windows serving the area inspected. Refer to Appendix A.
3. Where present, recording the quantities of all installed air-conditioning units and fresh air fan units.
4. Noting the condition and operation of all fresh air fans and air conditioning units where possible.

3. Observations

3.1 Site Inspection

At Moorooka State School, the following areas were occupied and inspected (room numbers as per Education Queensland building plans provided). Figures in **red** denote CO_2 levels above 800 ppm.

Table 1 Inspected Rooms

Block	Level	Room	Measured CO_2 Level (max - ppm)	Observations
B BLOCK	1	R10B101	660	19 students, 1 staff. No windows open Cross ventilation available but not used. Door 1 closed. Door 2 open. AC 1 operational and running. AC 2 operational and running. No fresh air fan installed.
	1	R1B101A	530	22 students, 1 staff. 15% windows open. Cross ventilation available and used. Door 1 open. Door 2 open. Door 3 closed. AC 1 operational and not running. AC 2 operational and running. AC 3 operational and running. No fresh air fan installed.
C BLOCK	1	R10C102	630	20 students, 1 staff. 15% windows open. Cross ventilation available and used. Door 1 open. Door 2 closed. AC 1 operational and not running. AC 2 operational and not running. No fresh air fan installed.
D BLOCK/ADMIN GROUND FLOOR	1	R10D101	668	22 students, 1 staff. 10% windows open. Cross ventilation available and used. Door 1 open. Door 2 closed. AC 1 operational and not running. AC 2 operational and not running. Fresh air fan operation could not be verified.
	2	R20D206	1068	22 students, 1 staff. No windows open. Cross ventilation available but not used. Door 1 open. Door 2 closed. AC 1 operational and not running. AC 2 operational and not running. Fresh air fan operation could not be verified.
E BLOCK	G	Classroom Year 1C	782	16 students, 1 staff. No windows open. Cross ventilation available and not used. Door open. AC operational and running. No fresh air fan installed.
	G	Classroom Year 1B	1375	20 students, 2 staff. No windows open. Cross ventilation unavailable. Door open. AC operational and not running. No fresh air fan installed.

Block	Level	Room	Measured CO_2 Level (max - ppm)	Observations
	G	Classroom Year 1A	1015	13 students, 1 staff. No windows open. Cross ventilation unavailable. Door open. AC operational and not running. No fresh air fan installed.
	G	Classroom Year 2A	960	16 students, 1 staff. No windows open. Cross ventilation unavailable. Door open. AC operational and not running. No fresh air fan installed.
	G	Classroom Year 2C	1352	20 students, 1 staff. No windows open. Cross ventilation available but not used. Door closed. AC operational and not running. No fresh air fan installed.
	G	Zen room	548	3 students, 1 staff. No windows open. Cross ventilation available and used. Door 1 open. Door 2 open. Door 3 closed. AC operational and not running. No fresh air fan installed.
F BLOCK	1	R10F102	560	23 students, 1 staff. 25% windows open. Cross ventilation available and used. Door 1 open. Door 2 open. AC 1 operational and not running. AC 2 operational and not running. No fresh air fan installed.
	1	R10F104	720	18 students, 3 staff. 5% windows open. Cross ventilation available and used. Door open. AC 1 operational and not running. AC 2 operational and not running. No fresh air fan installed.
	1	R10F106	640	18 students, 1 staff. 5% windows open. Cross ventilation available and used. Door open. AC 1 operational and running. AC 2 operational and running. No fresh air fan installed.
	G	RG0F003	595	18 students, 1 staff. 15% windows open. Cross ventilation available and used. Door 1 open. Door 2 closed. Door 3 closed. Door 4 closed. Door 5 closed. AC operational and not running. No fresh air fan installed.
H BLOCK	G	Classroom H1	791	18 students, 1 staff. 5% windows open. Cross ventilation available and used. Door open. AC operational and not running. No fresh air fan installed.
	G	Classroom H2	705	14 students, 1 staff. 10% windows open. Cross ventilation available and used. Door open. AC operational and not running. No fresh air fan installed.

Block	Level	Room	Measured CO_2 Level (max - ppm)	Observations
	G	Classroom H4	740	19 students, 2 staff. 20% windows open. Cross ventilation available and used. Door open. AC operational and not running. No fresh air fan installed.
J BLOCK - HALL	1	R10J101	1375	21 students, 1 staff. 80% windows open. Cross ventilation available but not used. Internal Door closed. AC operational and not running. No fresh air fan installed.
	1	R10J103	910	4 students, 1 staff. 85% windows open. Cross ventilation available and used. Internal Door closed. AC operational and not running. No fresh air fan installed.
N BLOCK- PREP	G	Prep C	1056	16 students, 1 staff. No windows open. Cross ventilation available but not used. Door open. AC operational and not running. Fresh air fan operation could not be verified.
	G	Prep D	560	20 students, 2 staff. 20% windows open. Cross ventilation available and used. Door open. AC operational and not running. Fresh air fan operation could not be verified.
PREP UNIT 1	G	RG0P100	669	23 students, 2 staff. 5% windows open. Cross ventilation available and used. Door 1 closed. Door 2 open. Door 3 open. AC 1 operational and running. AC 2 operational and not running. Fresh air fan 1 operation could not be verified. Fresh air fan 2 operation could not be verified.
PREP 2 UNIT	G	RG0P200	580	23 students, 3 staff. 20% windows open. Cross ventilation available and used. Door 1 closed. Door 2 open. Door 3 open. AC 1 operational and not running. AC 2 operational and not running. Fresh air fan 1 operation could not be verified. Fresh air fan 2 operation could not be verified.

**It must be noted that the drawings for E Block, H Block and N Block were not available in the drawing pack received. Classroom names as noted on site were used.*

The CO_2 levels in most classrooms were observed to be lower than 800 ppm. Where the 800 ppm threshold was exceeded, rooms were found to have closed windows and doors.

The following areas were noted to have CO_2 levels in excess of the 800 ppm threshold:

3.1.1 D Block

D Block is a three-storey brick building mainly consisting of administration and counselling rooms. There is one classroom on each level except for ground level. An external hallway runs in front of the classrooms where outside air can passively flow into the classrooms if the windows and doors in the classrooms are opened.

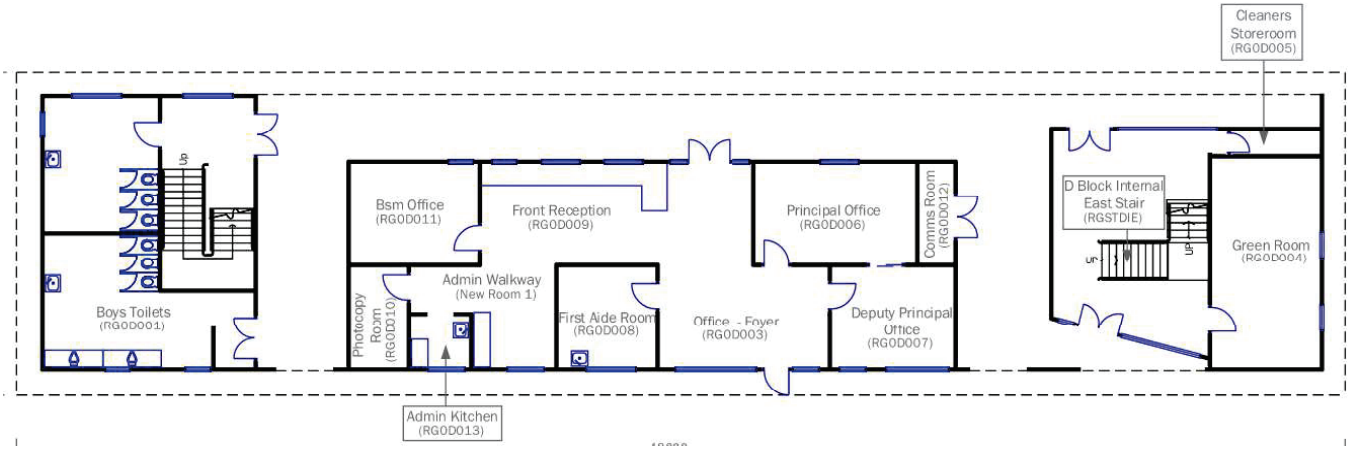

Figure 1 – D Block Floor Layout

Cross ventilation is available in both R10D101 & R20D206 as openable windows and doors are located on the opposite sides of the room. R10D101 was the only classroom to utilise cross ventilation at the time of inspection and as a result a CO_2 level under 800 ppm was observed. It must be noted that one of the two doors and all windows were closed in R20D206.

Figure 2 – R10D101 AC Unit

Figure 3 – R20D206 External Window

Each classroom utilises two under ceiling direct expansion (DX) air conditioning units that cool and heat the classrooms and wall mounted filter / fan units, interlocked with the air conditioning units, that supply outside air to the classrooms when running. The air conditioning units and wall mounted filter / fan units were not running in R10D101 & R20D206 at the time of the inspection.

A CO_2 level of 1068 ppm was recorded in R20D206 with closed doors, closed windows and an unused HVAC system. It is suspected that the lack of natural and mechanical ventilation resulted in the high CO_2 level observed.

3.1.2 E Block

E block is a single storey modern building that has been refurbished into eight separated classrooms as shown in Figure 4. Cross ventilation is available to the classrooms located at the corners of the building as openable windows and doors are positioned on the external perimeter façades of each classroom. The classrooms in the middle of the building only have openable windows and doors on one façade and are thus unable to utilise cross ventilation.

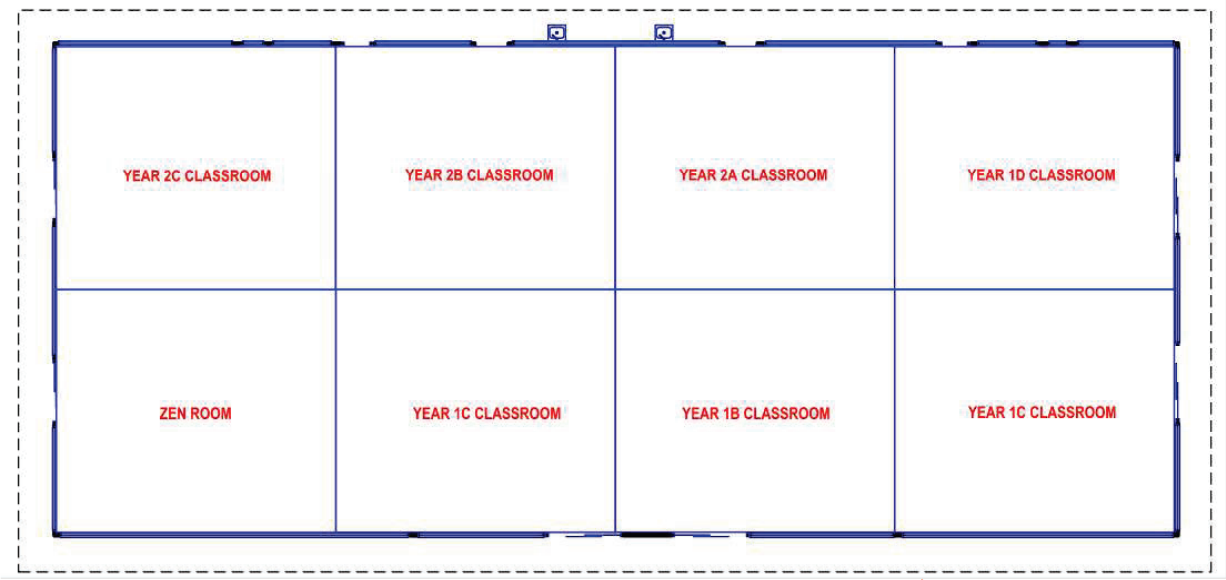

Figure 4 – E Block Layout

At the time of inspection, cross ventilation was utilised in the Zen room as external doors were opened which contributed to the lowest CO_2 level observed in E Block. It was noted that external doors were opened in classrooms Year 1A, Year 1B, Year 1C and Year 2A. All windows and doors were closed in Year 2C classroom.

Figure 5 – Classroom Year 1B External Windows

Figure 6 – Classroom Year 1A AC Unit

Each classroom utilises a single wall mounted DX air conditioning unit that cools and heats the classroom. It was noted that there was no indication of outside air fan systems in any of the classrooms. The air conditioning unit was running in the Year 1C classroom at the time of inspection. It is believed the combination of the air conditioning unit running and opened external door in Year 1C classroom promoted sufficient air movement in the classroom which resulted in a CO_2 level under 800 ppm.

Figure 7 – Zen Room External Bi-fold Doors

Figure 8 – Classroom Year 1C External Windows

CO_2 levels over 800 ppm were recorded in more than half of classrooms inspected. Although the external door was opened in each classroom except for the Year 2C classroom, the opening was insufficient to ensure air movement through each classroom. It is suspected that the lack of outside air via natural and mechanical ventilation in the classrooms resulted in the high CO_2 levels observed.

3.1.3 J Block - Hall

J Block is a modern building consisting of a large multipurpose hall and with music classrooms on the first floor. An internal foyer (New room 1) runs in between the two classrooms which can act as a breezeway if the external window is opened, along with the doors in the multipurpose hall.

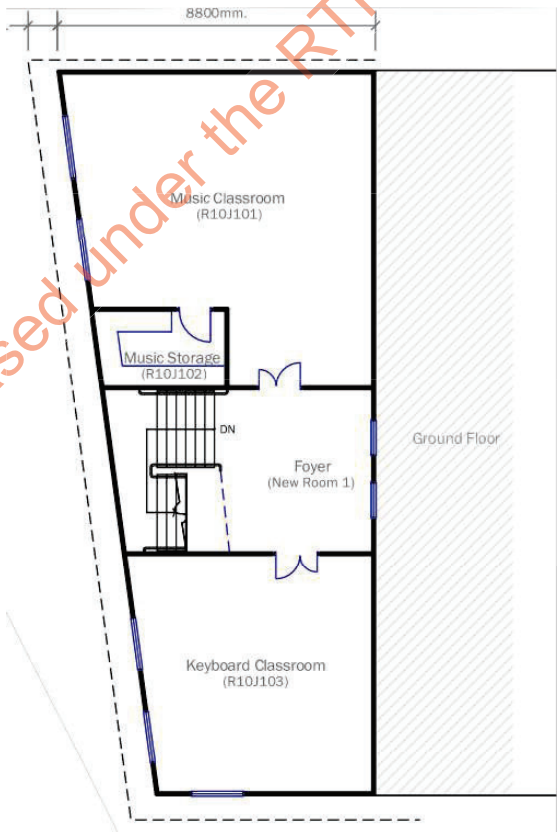

Figure 9 – J Block Level 1 Floor Layout

Cross ventilation is available for R10J101 and R10J103 provided that the window in the internal foyer (New Room 1) is opened, along with the windows and doors in the classrooms. Cross ventilation was not utilised in either room as the external window in the internal foyer (New Room 1) was closed, as was the internal door of each classroom.

Figure 10 – R10J103 External Windows

Figure 11 – R10J101 External Wall and AC Unit

A wall mounted DX air conditioning unit that cools and heats the classroom is utilised in each classroom. No outside air fan units are installed in any of the classrooms and therefore outside air cannot be mechanically ventilated into the classrooms. Air conditioning units were not running in both classrooms at the time of the inspection.

CO_2 levels over 800 ppm were observed with levels of 1375 ppm and 910 ppm in R10J101 and R10J103 respectively. Although several windows were open in each classroom, it is suspected that the classrooms' musical activities combined with the absence of a mechanical ventilation systems, resulted in the high CO_2 levels recorded.

3.1.4 N Block

N Block is a single storey demountable building consisting of two classrooms and an office area. Cross ventilation is available in both classrooms as openable windows and doors are positioned on opposite external façades of the classrooms. Windows and doors were only opened in Prep D classroom and therefore it was the only classroom to utilise cross ventilation. The use of cross ventilation in Prep D classroom contributed to the lowest CO_2 level observed in N block. It was noted that only the external door was only open in Prep C classroom.

Each classroom utilises a ceiling mounted cassette DX air conditioning unit that cools and heats the classroom. It is suspected that a dedicated outside air fan unit is interlocked with each air conditioning unit, and supplies outside air to the classrooms through a ceiling diffuser when the air conditioning unit is running. It was noted that HVAC systems were not running in both classrooms.

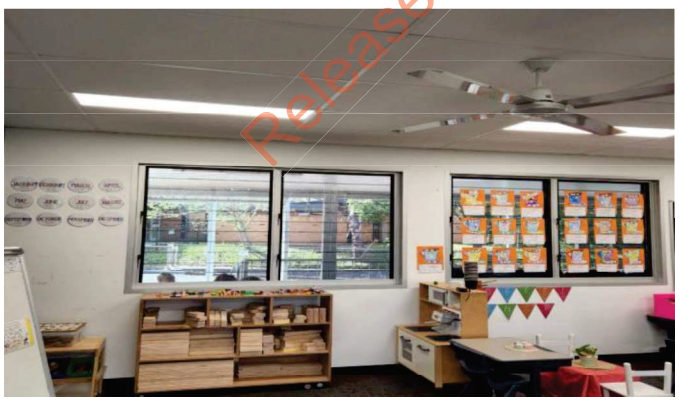

Figure 12 – Prep C External Windows

Figure 13 – Prep D HVAC System

A CO_2 level over 800 ppm was observed in Prep C with a level of 1056 ppm. Although the external door was opened, it was unable to provide sufficient outside air to promote adequate air movement in the classroom. It is suspect that the lack of natural and mechanical ventilation at the time of inspection contributed to the high CO_2 level observed.

4. Recommendations

In general, classrooms had suitable windows and doors to promote adequate cross ventilation. This was reflected in the low CO_2 levels observed in occupied classrooms where windows and/or doors remained opened. However, at the time of inspection, windows and doors remained closed in most classrooms due to the health and safety of the children.

It is recommended that at least some classroom windows, and where feasible the classroom doors, are kept open during lessons in order to promote cross ventilation. If low level windows are not opened due to the safety of the students, it is recommended that high-level windows be used where required.

Air-conditioning should also be used where fresh air fans are installed to ensure they are running during lessons. At least one window or louvre opposite the fresh air fans should be left partially open to improve the efficiency of the fan and promote adequate cross ventilation of the room. It is further recommended that all fresh air fan filters are cleaned to ensure optimum performance of all fan units.

5. References

[1] OzSAGE, “Protecting children from COVID-19 and making schools and childcare safer,” OzSAGE, 2021.

[2] Cardiffair, “Cardiffair Australia,” 2009. [Online]. Available: https://www.cardiffair.com.au/. [Accessed May 2022].

Appendices

Appendix A

Inspection Data

Classroom Ventilation Survey

BuildingName	EQIdentifier1	RoomName	EQIdentifier2	LocalRoomName	CrossVentilationavailable	CrossVentilationused	Whatpercentageofwindowswereopen	CO2Level	CO2Comments
A BLOCK		1_Classroom5	R100A05		Yes	Yes	0%	890	Partition Door to classroom Closed. Door Open Classroom opens up to Verandah / Breezeway
A BLOCK	1552-CA1-S-000A	1_Classroom7	R100A07		Yes	Yes	50%	575	Classroom opens up to Verandah / Breezeway
A BLOCK		G_Classroom9	RG00A09		Yes	No	0%	1285	Partition Door to classroom Opened - opened to RG00A08
A BLOCK		1_Classroom6	R100A06		Yes	No	0%	920	Partition Door to classroom Closed
A BLOCK		New		LVL 1 hallway	Yes	No	0%	535	3 Internal doors.
A BLOCK		G_Classroom8	RG00A08		Yes	No	0%	1295	Partition Door to classroom Opened - opened to RG00A09
B BLOCK	1552-CA1-S-000B	1_Classroom	New Room 1		Yes	No	0%	1020	Partition Door to classroom Opened - opened to R100B11
B BLOCK		1_Kitchen Wet Area (Old Library	R10B12A		Yes	No	0%	1100	Open to New Room 1
B BLOCK		1_Verandah	R1000BV		No	No	30	625	
B BLOCK		1_Classroom (Old Resources Room)	R100B11		Yes	No	0%	1045	Partition Door to classroom Opened - opened to New Room 1
C BLOCK		1_Verandah	R1000CV		No	No	5%	755	
C BLOCK		1_Classroom7	R100C17		Yes	No	0%	875	
C BLOCK	1552-CA1-S-000C	1_Classroom4	R100C14		Yes	Yes	10%	1210	Partition Door to classroom Opened - opened to R100C15
C BLOCK		1_Classroom6	R100C16		Yes	No	25%	980	
C BLOCK		1_Classroom5	R100C15		Yes	No	20%	1160	Partition Door to classroom Opened - opened to R100C14. No FA fan
D BLOCK	1552-CA1-S-000D	1_Classroom	R100D18		Yes	No	0%	1520	
E BLOCK	1552-CA1-S-000E	G_Classroom2	RG000E2		Yes	No	0%	870	Partition Door to classroom Closed from Prep. and climbing
E BLOCK		G_Classroom1	RG000E1		Yes	Yes	10%	735	
F BLOCK		G_Prep Room	RG000F3		Yes	No	0%	632	CV available. Partition are opened fomr Prep. Reading taken within 5 minutes of them entering in
F BLOCK		G_Classroom2	RG000F2		Yes	No	0%	685	class had come back in. Reading taken within 5 minutes of them coming back and coming
F BLOCK	1552-CA1-S-000F	G_Classroom1	RG000F1		Yes	Yes	10%	742	Ceiling fans on. class came back in. reading taken within 5 minutes of them coming back
G BLOCK	RG000G1				Yes	No	10%	755	Ceiling fans on.
H BLOCK	RG000H1				Yes	No	0%	898	
PREP BLOCK	RG0PRE1				Yes	No	10%	705	
PREP BLOCK	1552-CA1-S-0PRE		RG0PRE2		Yes	No	0%	995	
RESOURCE CENTRE		G_Library Classroom	RG00J08		Yes	No	0%	1348	
RESOURCE CENTRE	1552-CA1-S-000J	G_Library Computer Lab	RG00J07		Yes	No	0%	995	

Classroom Ventilation Survey Air Conditioning

BuildingName	EQIdentifier1	RoomName	RoomNameNew	EQIdentifier2	NumberofstudentsTimeofrecording	NumberofstaffTimeofrecording	CrossVentilationavailable	CrossVentilationused	Whatpercentageofwindowswereopen	CO2Level
B BLOCK		1_Classroom		R10B101	19	1	Yes	No		660
B BLOCK	1637-CA1-S-000B	1_Classroom A		R1B101A	22	1	Yes	Yes	15%	530
C BLOCK	1637-CA1-S-000C	1_Classroom		R10C102	20	1	Yes	Yes	15%	630
D BLOCK/ADMIN GROUND FLOOR	1637-CA1-S-000D	1_Classroom		R10D101	22	1	Yes	Yes	10%	668
D BLOCK/ADMIN GROUND FLOOR		2_Cyber Centre		R20D206	22	1	Yes	No	0%	1068
E BLOCK		New	Year 2A Classroom	Year 2A Classroc	16	1	No	No	0%	960
E BLOCK		New	Year 2C Classroom	Year 2C Classroc	20	1	Yes	No	0%	1352
E BLOCK		New	Year 1C Classroom	Year 1C Classroc	20	2	No	No	0%	1375
E BLOCK		New	Year 1A Classroom	Year 1A Classroc	13	1	No	No	0%	1015
E BLOCK	1637-CA1-S-000E	New	Year 1C Classroom	Year 1C Classroc	16	1	Yes	Yes	0%	782
E BLOCK		New	Zen room	Zen room	3	1	Yes	Yes	0%	548
F BLOCK		1_Classroom6		R10F106	18	1	Yes	Yes	5%	640
F BLOCK		1_Classroom2		R10F102	23	1	Yes	Yes	25%	560
F BLOCK		1_Classroom4		R10F104	18	3	Yes	Yes	5%	720
F BLOCK	1637-CA1-S-000F	G_Art Room		RG0F003	18	1	Yes	Yes	15%	595
H BLOCK	1637-CA1-S-000H	New	H001 RHS	H001 RHS	14	1	Yes	Yes	10%	705
H BLOCK		New	H001 LHS	H001 LHS	18	1	Yes	Yes	5%	791
H BLOCK		New	H003 RHS	H003 RHS	19	2	Yes	Yes	20%	740
J BLOCK - HALL	1637-CA1-S-000J	1_Music Classroom		R10J101	21	1	Yes	No	80%	1375
J BLOCK - HALL		G_Hall - Foyer		RG0J002			Yes	Yes		661
J BLOCK - HALL		1_Keyboard Classroc		R10J103	4	1	Yes	Yes	85%	910
LIBRARY/ G BLOCK	1637-CA1-S-000G	1_Library		R10G101	9	2	Yes	Yes	0%	565
N BLOCK- PREP	1637-CA1-S-000N	New	prep c	prep c	16	1	Yes	No	0%	1056
N BLOCK- PREP		New	prep D	prep D	20	2	Yes	Yes	20%	560
PREP 2 UNIT	1637-CA1-S-PRE2	G_Foyer		New Room 3			Yes	Yes	0%	
PREP 2 UNIT	1637-CA1-S-PRE2	G_Prep Unit 2		RG0P200	23	3	Yes	Yes	20%	580
PREP UNIT 1	1637-CA1-S-PREP	G_Prep Unit 1		RG0P100	23	2	Yes	Yes	5%	669

Classroom Ventilation Survey Doors

BuildingName	RoomName	RoomNameNew	EQIdentifier2	Widthmm	Heightmm	Wasthedooropen1	Widthmm1	Heightmm1	Wasthecooropen2	Widthmm2	Heightmm2	Wasthedooropen3	Widthmm3	Heightmm3	Wasthedooropen4	Widthmm4	Heightmm4	Wasthedooropen5
B BLOCK	1_Classroom		R10B101	1040	2060	No	1040	2060	Yes									
B BLOCK	1_Classroom A		R1B101A	1040	2060	Yes	1040	2060	Yes	1040	2060	No						
C BLOCK	1_Classroom		R10C102	1020	2060	Yes	1020	2060	No									
D BLOCK/ADMIN GROUND FLOO	2_Cyber Centre		R20D206	1030	2170	Yes	1030	2170	No									
D BLOCK/ADMIN GROUND FLOO	1_Classroom		R10D101	1030	2170	Yes	1030	2170	No									
E BLOCK	New	Year 1B Classroom	Year 1B Classroom	1080	2040	Yes												
E BLOCK	New	Year 2C Classroom	Year 2C Classroom	1080	2040	No												
E BLOCK	New	Zen room	Zen room	920	2020	Yes	1550	2330	Yes	1550	2330	No						
E BLOCK	New	Year 1B Classroom	Year 1B Classroom	1080	2040	Yes												
E BLOCK	New	Year 2A Classroom	Year 2A Classroom	1080	2040	Yes												
E BLOCK	New	Year 1C Classroom	Year 1C Classroom	900	2020	Yes												
F BLOCK	1_Classroom2		R10F102	1120	2360	Yes	1120	2360	Yes									
F BLOCK	G_Art Room		RG0F003	1660	1980	Yes	1660	1980	No	1660	1980	No	1660	1980	No	1800	2030	No
F BLOCK	1_Classroom4		R10F104	1120	2360	Yes												
F BLOCK	1_Classroom6		R10F106	1120	2360	Yes												
H BLOCK	New	H003 RHS	H003 RHS	1260	2000	Yes												
H BLOCK	New	H001 LHS	H001 LHS	1260	2000	Yes												
H BLOCK	New	H001 RHS	H001 RHS	1260	2000	Yes												
J BLOCK - HALL	1_Keyboard Classroc		R10J103	1270	2040	No												
J BLOCK - HALL	1_Music Classroom		R10J101	1270	2040	No												
LIBRARY/ G BLOCK	1_Library		R10G101	1800	2300	Yes	1800	2300	No	1660	2300	Yes						
N BLOCK- PREP	New	prep c	prep c	920	2020	Yes												
N BLOCK- PREP	New	prep D	prep D	920	2020	Yes												
PREP 2 UNIT	G_Foyer		New Room 3	770	202	Yes												
PREP 2 UNIT	G_Prep Unit 2		RG0P200	1720	2530	No	1700	1940	Yes	1700	1940	Yes						
PREP UNIT 1	G_Prep Unit 1		RG0P100	1720	2530	No	1700	1940	Yes	1700	1940	Yes						

Classroom Ventilation Survey Fans

BuildingName	RoomName	RoomNameNew	EQIdentifier2	Widthmm	Heightmm	Depthmm	FanState	Widthmm1	Heightmm1	Depthmm1	FanState1
D BLOCK/ADMIN GROUND FLOO	2_Cyber Centre		R20D206	480	480	60	Operation could not be verified				
D BLOCK/ADMIN GROUND FLOO	1_Classroom		R10D101	480	480	60	Operation could not be verified				
N BLOCK- PREP	New	prep C	prep C	600	600	10	Operation could not be verified				
N BLOCK- PREP	New	prep D	prep D	600	600	10	Operation could not be verified				
PREP 2 UNIT	G_Prep Unit 2		RG0P200	300	300	10	Operation could not be verified	300	300	10	Operation could not be verified
PREP UNIT 1	G_Prep Unit 1		RG0P100	300	300	10	Operation could not be verified	300	300	10	Operation could not be verified

Classroom Ventilation Survey Windows

BuildingName	RoomName	RoomNameNew	EQIdentifier2	Whatpercentsqofwindowswer	Widthmm	Heightmm	Quantity	Widthmm1	Heightmm1	Quantity1	Widthmm2	Heightmm2	Quantity2	Widthmm3	Heightmm3	Quantity3	Widthmm4	Heightmm4	Quantity4	Widthmm5	Heightmm5	Quantity5	Widthmm6	Heightmm6	Quantity6	Widthmm7	Heightmm7	Quantity7
B BLOCK	1_Classroom A		R1B101A		880	1140	12	880	620	21																	
B BLOCK	1_Classroom		R10B101		880	1140	8	880	620	214																	
C BLOCK	1_Classroom		R10C102	15%	890	630	8	290	620	22	1070	630	12														
D BLOCK/ADMIN GROUND FL(	2_Cyber Centre		R20D206	0%	1020	680	10	1020	730	32	1020	680	12														
D BLOCK/ADMIN GROUND FL(	1_Classroom		R10D101	0%	1020	680	10	1020	730	32	1020	680	12														
E BLOCK	New	Zen room	Zen room	0%	1120	520	1	1120	580	1	1020	300	1	1140	300	2	320	300	1								
E BLOCK	New	Year 2A Classroom	Year 2A Classroom	0%	1120	1120	2	1120	560	1	1120	300	5	1080	300	1	1060	300	1								
E BLOCK	New	Year 1C Classroom	Year 1C Classroom	0%	1120	1120	2	1120	560	1	1120	300	5	1080	300	1	1060	300	1								
E BLOCK	New	Year 1B Classroom	Year 1B Classroom	0%	1120	1120	2	1120	560	1	1120	300	5	1080	300	1	1060	300	1								
E BLOCK	New	Year 2C Classroom	Year 2C Classroom	0%	1120	1120	1	1120	560	2	560	300	2	1120	300	10	1080	300	2	1060	300	1					
E BLOCK	New	Year 1A Classroom	Year 1A Classroom	0%	1120	1120	1	1120	480	2	1120	480	1	1120	300	10	1060	300	1	380	300	1	640	300	2	300	300	1
F BLOCK	1_Classroom4		R10F104	5%	1060	1340	8	1060	580	8	1030	1120	9														
F BLOCK	1_Classroom6		R10F106	5%	1060	1340	8	1060	580	8	1030	1120	12														
F BLOCK	G_Art Room		RG0F003		800	750	8																				
F BLOCK	1_Classroom2		R10F102	25%	1060	1340	8	1060	580	8	1030	1120	9														
H BLOCK	New	H001 LHS	H001 LHS	5%	580	1170	6	1120	300	3	580	640	7														
H BLOCK	New	H001 RHS	H001 RHS	10%	580	1170	6	1120	300	18	580	640	11														
H BLOCK	New	H003 RHS	H003 RHS	20%	580	1170	6	1120	300	3	580	640	7														
J BLOCK - HALL	1_Music Classroom		R10J101		840	790	3																				
J BLOCK - HALL	1_Keyboard Classro		R10J103	85%	840	790	3																				
J BLOCK - HALL	G_Hall - Foyer		RG0J002																								
LIBRARY/ G BLOCK	1_Library		R10G101	0%	850	600	26	760	820	20	880	500	10														
N BLOCK- PREP	New	Prep C	prep C	0%	880	1320	8																				
N BLOCK- PREP	New	Prep D	prep D	20%	880	1320	8																				
PREP 2 UNIT	G_Prep Unit 2		RG0P200	20%	620	1280	3	850	620	6	800	620	8	570	370	1											
PREP UNIT 1	G_Prep Unit 1		RG0P100	5%	620	1280	3	850	620	6	800	620	8														

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The Power of Commitment