**Submission No 144**

# INQUIRY INTO PLANNING AND DELIVERY OF SCHOOL INFRASTRUCTURE IN NEW SOUTH WALES

**Organisation:** Covid Safe Schools Inc

**Date Received:** 7 September 2022

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NSW Parliamentary Inquiry

Planning and delivery of school infrastructure in New South Wales

Submission by Covid Safe Schools Inc 7th Sept 2022



## About Covid Safe Schools Inc.

1. Covid Safe Schools Inc. (CSS) is an association of Australian parents, teachers, and school staff advocating for safe education during the Covid-19 pandemic through air-testing, filtering, and other mitigations.
2. We make this submission in response to the invitation from Portfolio Committee No. 3, Education, to participate in the inquiry "established on 14 October 2021 to inquire into and report on the planning and delivery of school infrastructure in New South Wales".

## Supporting documents

3. All documents referenced in this submission as "Annexures" are contained in a pdf which can be downloaded from the link in this endnote[1].

## Misleading the public regarding adequacy of school ventilation

4. CSS alleges misconduct by the Premier, the Minister for Education and the Department of Education (DoE), and Infrastructure NSW but for convenience we will refer to them collectively as the DoE.

5. The DoE has made statements to the effect that based on the best possible expert advice, classrooms are COVID-safe because they are sufficiently ventilated to ensure any virus in the air is quickly dispersed. Examples include:

    a) On 17th October 2021 the Premier and the Minister for Education and Early Childhood Learning issued a press release[2] saying:

    *"Minister for Education Sarah Mitchell said parents should have confidence in sending their children back to school….*

    *'Thanks to the individual ventilation audit reports, Principals know exactly how to use their spaces in a COVID-safe way – and any issues identified by the audit are being fixed in real-time,' Ms Mitchell said.*

    *"The advice from experts is that maximising natural ventilation is the most effective method of minimising the spread of COVID-19 and our classroom ventilation strategy supports our implementation of this advice."*

    b) School Infrastructure NSW (SINSW) "Fact Sheet Ventilation Audit"[3] says:

    *"We are confident that the vast majority of spaces in schools can be adequately ventilated through natural and mechanically assisted ventilation."*

    c) SINSW Ventilation in NSW schools[4]:

    *"students and teachers can occupy their school safely in accordance with their individual COVID-19 Safety Plan… our community, parents, teachers and students can have confidence their school has the required natural ventilation."*

    d) The DoE advice for families[5] says that:

    *"This advice tells us that maximising natural ventilation in our learning spaces is the most effective method for minimising the spread of COVID-19 as it is a very effective way to disperse particles in the air. This can be best achieved by opening doors and windows.*

6. The statements above (in 5.) are deceptive because natural ventilation is not "the most effective method for minimising the spread of COVID-19" because it requires good building design and relies on the weather. The expert advice confirms that:

    *"**sufficient natural ventilation cannot be guaranteed at all times**… Mechanical ventilation systems can ensure a continuous air exchange throughout the year"*[6] (emphasis added).

7. DoE's Principal information pack – Ventilation in NSW schools[7] says:

> *"The approach to ventilation in NSW is nation leading. No other jurisdiction has the in-depth knowledge of the ventilation status of their schools, including individual data for each learning space such as the number of students that can safely be accommodated at any one time."*

This statement is deceptive because the DoE does not have "…*in-depth knowledge of the ventilation status of their schools, including individual data for each learning space such as the number of students that can safely be accommodated at any one time*." The DoE has not published any information about this alleged "in-depth knowledge" or "individual data for each learning space".

The DoE also states in their advice for families that:[8]

> *"The department has conducted a statewide review of all windows, fans and ventilation systems in more than 150,000 spaces across our more than 2200 public schools, including preschools, to ensure our schools can operate them as intended"*

It is not plausible that such data exists given the claim that this involved "150,000 spaces across our more than 2200 public schools". CSS asked for this information in January 2022 and nothing was produced. This statement is unsupported by evidence and it appears that the DoE have incorrectly and negligently decided that classrooms can safely accommodate 1 student per 2 square metres floor area, and other rooms 1 person per 4 square metres. This is based on theoretical air exchange rates of average classrooms, calculated using flawed assumptions as discussed in detail below.

a) The audit reports issued to each school on 9th October 2021 (see example annexures p 71) simply provide a plan of the school and lists the area of each room and the occupancy based on that area – square metres divided by 2. This is contrary to the claim of "in-depth knowledge".

b) The audit reports categorised all spaces as either Category A or Category B. Although not stated in the audit reports, all classrooms are listed as Category A and all other rooms as Category B. That is, an arbitrary decision has been made that classrooms can safely accommodate one person per 2 square metres and other rooms one person per 4 square metres. CSS spot checked 100 audits and discovered this was consistent in all audits, corroborating the absence of measurement data characterising ventilation.

c) Some teachers have reported to CSS that they complained to their Principal that the "audits" for their classroom did not permit the number of students in their class. Others asked what they should do when they had to combine classes due to teacher absences. The result of these queries what that new ventilation audits[9] were issued on the 29th Oct 2021. These V2 audits increase the safe capacity of many classrooms, in cases doubling or tripling of capacity. For example, the V2 audit at page 77 of the annexures shows Sick Bay (13.57 SQM) increasing from 6 in V1 to 19 in V2, and room R0024 (55.4 SQM) increasing from 25 to 154.

## Failure to follow health advice regarding ventilation

8. The "Guidelines from the World Health Organisation (WHO)" given in the WHO document "Roadmap to improve and ensure good indoor ventilation in the context of COVID-19" have

not been followed. The fundamental principle of this advice is the "Minimum recommended ventilation rate of 10 L/s/person"[10]

9. The 10 litres per second fresh air per student requirement adopted by the WHO originates from the Federation of European Heating, Ventilation and Air Conditioning Association (REHVA) COVID-19 guidance[8]. This guidance also says natural ventilation is not sufficient to guarantee required air exchange (as it relies on the weather):

   *"sufficient natural ventilation cannot be guaranteed at all times… Mechanical ventilation systems can ensure a continuous air exchange throughout the year."*

10. The DoE has not only ignored this advice, it has stated[11] the opposite:

    *"This advice tells us that maximising natural ventilation in our learning spaces is the most effective method for minimising the spread of COVID-19 as it is a very effective way to disperse particles in the air."*

## Failure to conduct safety audits through $CO_2$ monitoring

11. Since long before COVID-19, $CO_2$ monitoring has been widely accepted as a practical and effective way to measure indoor air quality and ventilation performance. $CO_2$ monitors are simple and inexpensive.

12. No measurements of $CO_2$ levels in naturally ventilated classrooms were taken once classes were in operation. This was an obvious and necessary step to verify their theoretical assumptions and it was negligent of the DoE to fail to do so.

## Failure to follow health advice regarding $CO_2$ surveillance

*13.* REHVA COVID-19 guidance (on which the WHO Roadmap relies) says if there is no mechanical ventilation, $CO_2$ monitors should be installed, with "red light" setting at 1000 ppm:[12]

*"4.13 IAQ monitoring. The risk of indoor cross-contamination via aerosols is very high when rooms are not ventilated well. If ventilation control needs actions by occupants (hybrid or natural ventilation systems) or there is no dedicated ventilation system in the building, it is recommended to **install $CO_2$ sensors** at the occupied zone that warn against underventilation especially in spaces that are often used for one hour or more by groups of people, such as classrooms…"*

14. Worse still, the DoE has actively discouraged and even blocked parents and schools from using $CO_2$ monitors, for example:[13]

    *"The department does not encourage P&Cs to purchase their own CO2 monitors. To work effectively, CO2 monitors need to be calibrated correctly to take accurate readings, factoring in considerations in the setting such as where they are positioned, if windows are open, and how many occupants are in the room. There is also a great variety in monitors that are available, and these also vary greatly in quality with many unable to be calibrated to take a reliable reading."*

15. It goes without saying that poor quality $CO_2$ monitors should not be used, however the DoE could nominate one or more suitable models. One assumes Infrastructure NSW can readily make suitable recommendations. More worrying is the DoE's incorrect statement above that calibration should factor in "*if windows are open, and how many occupants are in the room".* That statement betrays a disturbing ignorance of the operation of $CO_2$ monitors. The whole

purpose is to measure air quality in a given ventilation and occupancy scenario. That has nothing to do with calibration, it is what must be measured.

16. The DoE says[14]:

    *"The department is piloting the use of carbon dioxide monitors in a number of public schools across metro, regional and rural NSW to continue to assess indoor air quality and will use existing systems installed as part of the Cooler Classrooms program."*

    It appears from this that $CO_2$ monitoring will be restricted to the schools that are air conditioned.

17. The DoE Q&A says: [15]

    *"Will we be getting carbon dioxide (CO2) monitors in the classroom?*

    *Not at this time. CO2 monitors tell us when we need to open the windows to refresh the air. Our guidance and individualised audit reports already identify the need to open windows and doors to maximise the fresh air in our classrooms."*

    While admitting that $CO_2$ monitors are a good warning device, the DoE is saying by analogy "we won't install smoke alarms because we have told everyone not to start any fires".

    The "guidance" to open windows and doors does not help teachers know whether or not there is sufficient ventilation.

18. At a webinar hosted by the P&C on 21st Oct 2021, Chief Executive - School Infrastructure NSW Anthony Manning said the Department is collecting data on classroom $CO_2$ levels through the Cooler Classrooms Project and that "We're happy to make that data available". Several requests by CSS for that data since that webinar have been completely ignored.

19. CSS is of the view that the DoE is resisting use of $CO_2$ monitors and not releasing the data they have collected because measurement would reveal how often classrooms are not adequately ventilated.

## Failure to properly measure ventilation

20. As well as negligently accepting that natural ventilation is the most effective method for minimising the spread of COVID-19, the DoE failed to take reasonable steps to ensure that the level of ventilation they adopted as being the safe minimum was in fact likely to be achieved in practice.

21. In concluding that classrooms have sufficient natural ventilation, the DoE has relied entirely on "Independent peer reviewed expert advice from building services consultants Steensen Varming"(SV)[16]. Reliance on this advice was negligent because:

    a) SV is a building services consultant. They do not have expertise in ventilation, industrial hygiene or building science.

    b) The brief was entirely inappropriate. It is restricted to "advice on air quality in schools, in particular naturally ventilated classrooms and measures to achieve this…. In particular the number of air changes and external opening areas required to meet the recommendations."[17]

c) The advice is accordingly very simplistic, saying nothing more than if classrooms comply with the National Construction Code (NCC), there should be enough window and door openings to achieve the recommended minimum 10 l/s per student.

d) SV made a serious mistake which was identified[18] in Nov 2021 by Geoff Hanmer, Adjunct Professor of Architecture and Member of International Code Council (ICC) NEHA Pandemic Taskforce. SV worked from the premise that the NCC requires ventilation openings equivalent to 5% of the floor area, which leads them to wrongly conclude:

*"For the purpose of this guidance note, based on a typical classroom size of 65m² this equates to a minimum free openable area of 3.25m² excluding obstructions such as flyscreens. Note the free area is not the frame size of the opening but the area available when the opening is fully open less any obstructions."*

*e)* SV's error flows from a misunderstanding of the term "ventilating area" used by the NCC[19]. The NCC does not use the term "free openable area" quoted by SV, it uses "ventilating area". The "ventilating area" in the NCC is not "the area available when the opening is fully open less any obstructions" as SV claims. This is confirmed by the Explanatory Information to 3.8.5.2 of the NCC and clearly illustrated by the Australian Building Codes Board advisory note and drawings (below) concerning this aspect of the NCC[20]. The orange area in the drawing shows the area assumed by the NCC, demonstrating that SV's statement above is simply wrong:

**Figure 2a Correct area**

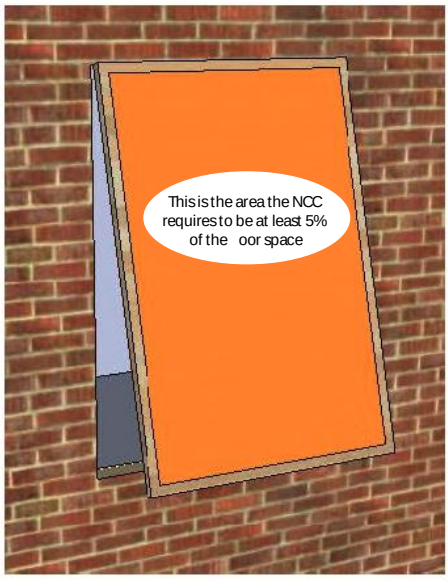
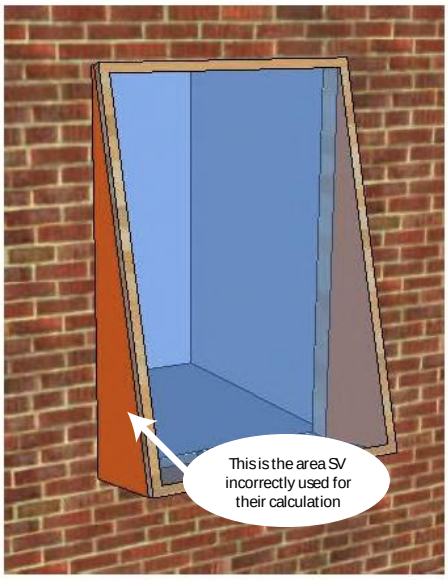



**Figure 2b Incorrect area**




This means that even if a classroom complies with the NCC, the area through which air can flow could be a small fraction of the 5% of floor area on which SV relies to "prove" that classrooms are adequately ventilated.

f) In confirming sufficient ventilation from wind, SV has assumed wind of 10.8 km/h blowing towards the window. This is highly location dependent and at best would only occur on some days. Where safety is involved, compliance even most of the time is not good enough. SV have also used wind data taken 10 m above ground, while the speed at ground level is typically much less.

g) In confirming sufficient ventilation in the absence of wind from buoyancy effect (air flow caused by inside/outside temperature differential), a temperature differential of at least 2 degrees is assumed. This will not apply all day, as there will be periods where inside or outside temperatures will be the same. It has long been accepted that as little as a few minutes of exposure to COVID-19 laden air is sufficient for infection.

h) In confirming sufficient ventilation from windows on only one side of the room, rather than cross-ventilation, SV has calculated air flow at the windows only. People who are not near the windows will have little benefit from that air flow. When dealing with health and safety it is not acceptable that some or even most occupants are safe, all should be protected by good ventilation.

22. CSS Inc. invited SV to comment on allegations that their advice is flawed. They declined the opportunity. Mr Hanmer also advised CSS Inc. that he had received no feedback on his critique since it was published.

23. CSS also wrote to ARUP, the company Infrastructure NSW says peer reviewed the SV study, asking them to comment on the alleged flaws. They did not reply.

24. Compounding their negligence in adopting SV's flawed assumptions, the DoE failed to conduct any tests or audits to confirm the prediction that classrooms do actually have sufficient ventilation. The "audit" of windows etc. was limited to checking operability. No measurements of actual opening sizes were made.

25. It is difficult to understand why SV was chosen to provide this guidance. CSS notes that Barry Tam, who develops engineering guidelines for School Infrastructure NSW[21], was for many years previously the Managing Director of SV[22]. There is at least an appearance of lack of independence.

## Mechanical ventilation infrastructure is flawed

26. At a P&C webinar on 27th July 2022, Suzie Matthews, Executive Director, DoE COVID-19 Taskforce, referred to a $500 million Cooler Classroom program that will provide ventilation for 950 schools, and a $100 million air quality assurance program that will provide ventilation to over 10,000 teaching spaces.

27. CSS has studied the specification of the Cooler Classrooms equipment and notes that the fresh air supply fans are designed to stop if the temperature is outside 18-28 degrees. This is presumably required to enable the split-system air conditioner component of the system to achieve thermal comfort. This is obviously a grave safety issue as the ventilation shuts down, by design, when conditions are most likely to result in windows and doors being closed.

28. On 20th April 2022 "Minister for Education Sarah Mitchell said the $100 million Air Quality Assurance Program was focused on delivering permanent improvements to natural ventilation in classrooms, based on evidence and expert advice."[23] CSS emailed Infrastructure NSW Directors Anthony Manning and Glenn Downie asking "Could you please provide details of these systems? In particular if they are fans, how will they be controlled to ensure they operate when required for safety?" There was no response.

## Failure to follow health advice regarding air purifiers

29. Recognised experts including WHO[24] recommend air purifiers be installed as a short-term solution if there is insufficient ventilation.

30. The DoE has forbidden concerned parents from supplying air purifiers –

    *"The department does not encourage P&Cs to purchase their own air purifiers. If there is a need to install air purifiers in a school, they will be provided by the department."*[25]

31. Unfortunately there is no way of knowing if there is a need for air purifiers because the DoE is conducting no ventilation monitoring and forbidding others to do so.

32. The DoE has also been negligent by failing to monitor every classroom and install air purifiers where necessary. They should certainly not be preventing others from conducting such testing and amelioration.

33. Some air purifiers have been supplied to schools but CSS has been told by teachers that the allocation appears to be random. Principals have expressed surprise that air purifiers have appeared at their school without being requested and without any instruction on their deployment.

34. Teachers have reported that they have had no instruction on placement of air purifiers, when to use them, what settings to use etc.

35. Parents report that air purifiers are frequently not turned on, or are set to low speed because of their noise, or are set to "automatic" which turns them on only when particulate matter is detected in the air, making them useless for mitigation of airborne pathogens.

## Failure to properly brief staff on safety

36. Having adopted natural ventilation as the preferred strategy, the DoE failed to adequately instruct or train staff to ensure windows and doors remain open. They say:

    *"Asset Services Officers provided advice to schools on how to maximise natural ventilation in each classroom…. This may have included to … Consider if it is appropriate for windows and doors to remain open to outside areas"*[26].

    *"Our advice is to open windows and external doors either an hour before school or an hour after school, and to leave them open in between lessons to allow fresh air flow. If your classroom has an external door, you could also open it to increase the area available for air to flow through"*[27].

37. The above "advice" was published on 29th Oct 2021 on the DoE staff-only web portal, at the time of return to classroom teaching. It is not acceptable that teachers were "advised" to open windows. They should have been directed to do so and to leave them open at all times.

38. This advice is also consistent with CSS Inc. having heard from many parents and teachers that teachers have not received training or been directed to keep windows and doors open. It seems that it has been left to principals to decide how, if at all, ventilation policy will be implemented and enforced. That is clearly unsatisfactory when children's and teachers' health are at risk in case of poor compliance.

## Failure of Safework NSW to enforce school infrastructure safety

39. Parents have complained to Safework about the obvious danger arising from the DoE's ventilation audits permitting up to three children per square metres in many school spaces.

40. On at least one occasion of which CSS is aware, an inspector was sent to investigate a complaint that a school sick bay of 13.57 SQM had been audited as safely accommodating 19 students.[28]

41. Safework saw no safety issue with putting more than one child per square metre into a school sick bay and the complaints was dismissed. The inspector said "*I cannot provide comment on the development of the actual audit as SafeWork NSW was not part of the audit development process*"[29].

42. It is profoundly disturbing that there is apparently no point at which the State's regulator of workplace safety draws a line and says that usage of a school space is unsafe if Infrastructure NSW or some other NSW government instrumentality says it's safe.

## NSW Ombusdman's complicity

43. CSS complained to the NSW Ombudsman about the issues raised in this submission. The complaint was dismissed.

44. The Ombudsman said that "It is not unusual for there to be different health or other expert advice, including in relation to building design or ventilation, regarding how the risks of COVID-19 should best be managed. Such advice would be based on different contexts and competing subject-matter and public policy considerations."

45. The Ombudsman did not address the specific allegations of dishonesty and negligence made by CSS at all. For example, the serious allegation that the Premier, Minister and Department executive has said that ventilation had been audited when such an audit had not been conducted should have been tested. Instead, the Ombudsman simply accepted the DoE's assertion.

## Conclusion

46. It is not mere speculation that schools are not safe places to learn or work. The DoE's own data[30] show that over 31,000 NSW teachers have contracted COVID this year. This is 1 in 2 teachers. About 1% of all NSW teachers have been sufficiently ill with COVID to make workers compensation claims in the past 8 months. SIRA would not be allowing these claims if the virus had not been caught in the workplace.

47. DoE has removed all COVID safety measures. They do however still claim that schools have safe levels of ventilation, yet when asked at a recent webinar[31], the head of DoE's COVID taskforce did not know whether or not the Department's policy requires the ventilation audits to be referred to by staff to know how many children can safely occupy each learning space. CSS has been attempting get an answer to this ever since. If the head of DoE's COVID taskforce does not know, school staff have obviously not been updated and are left to guess what's safe and what is not. This is clearly a dangerous situation for all NSW students and teachers.

48. The three NSW government instrumentalities that are meant to ensure that the schools our children attend are as safe as possible continue to act in concert to support the government's political agenda to the peril of teachers, children and their family.

49. The complaint mechanism is accessible only to the most determined and capable parents, and when it is invoked, the government controlled bodies close ranks to frustrate complainants until they give up.

50. CSS urges this inquiry to make the NSW public servants who have failed to make schools as safe as possible accountable to the people they are meant to serve.

51. This Inquiry should at a minimum:

    a) Call on the DoE to substantiate its claims that ventilation audits were conducted as claimed, and if so, whether the results are still relevant.

    b) Satisfy itself that the expenditure of $600 million on improving ventilation is technically sound and will achieve the claimed infection resilience

    c) Recommend that the NSW DoE establish a user-friendly complaints mechanism charged with providing parents and students a voice, transparency and prompt dispute resolution.

Peter Vogel,
For Covid Safe Schools Inc.
7th Sept 2022

Endnotes

[1] Annexures can be downloaded here: https://www.dropbox.com/s/3m3225vgr9qbtfa/220907%20%20Annexures%20to%20Parliamentary%20enquiry%20into%20school%20infrastructure%20V2.pdf?dl=0

[2] nsw.gov.au/media-releases/additional-investment-to-future-proof-indoor-air-quality-nsw-schools Published: 17 Oct 2021

[3] https://www.schoolinfrastructure.nsw.gov.au/content/dam/infrastructure/general/documents/SINSW_Fact_Sheet_Ventilation_Audit.pdf

[4] https://www.schoolinfrastructure.nsw.gov.au/what-we-do/we-look-after-our-schools/ventilation-in-nsw-schools.html

[5] https://education.nsw.gov.au/covid-19/advice-for-families/ventilation

[6] Annexures p 118 REHVA COVID-19 guidance document April 15, 2021 V4, p151

[7] Annexures p 12

[8] Annexures p 166

[9] Annexures p 75

[10] WHO Roadmap to improve and ensure good indoor ventilation in the context of COVID-19, Annexure page 79 and 101

[11] Annexures p 166

[12] Annexures p133

[13] Annexures p 170

[14] Annexures p 10

[15] Annexure p 170

[16] Annexures page 1

[17] Annexures page 21 Executive Summary

[18] Annexures p 64 "Schools need to know classrooms' air quality to protect against COVID. But governments aren't measuring it properly", The Conversation Nov 8 2021

[19] 3.8.5.2. of NCC Volume two, annexures p 14 and F4.6 of NCC Volume 1, annexures p 13

[20] ABCB Advisory Note, Annexures p 16-17, https://www.abcb.gov.au/sites/default/files/resources/2020//Advisory_Note_Protection_of_openable_windows.pdf

[21] https://covid19evidence.net.au/wp-content/uploads/NC19CET_IPC-Panel_Bios_-2021_v1.pdf

[22] https://www.linkedin.com/in/barry-tam-4b33aa27/

[23] https://education.nsw.gov.au/news/latest-news/more-natural-air-ventilation-systems-for-schools

[24] Annexures p 102

[25] Annexures p 171

[26] Annexures p 8

[27] Annexures p 171

[28] Annexures page 77

[29] Email from Jason Painter, Safework NSW 27th Feb 2022

[30] Dianne van Berlo, Executive Director Health, Safety and Staff Wellbeing · NSW Department of Education, NSW Legislative Council Budget Estimates 23 August 2022 https://www.parliament.nsw.gov.au/lcdocs/transcripts/2972/Transcript%20-%20PC%203%20-%20Education%20and%20Early%20Learning%20-%2023%20August%202022%20-%20UNCORRECTED.pdf

[31] 27-07-2022 Suzie Matthews, Executive Director, COVID-19 & Crisis Taskforce, NSW Department of Education at 28m:30s into this webinar: https://www.youtube.com/watch?v=pSFZ-7Sqpug