

Yapp, Phillip

From: Mitchell, BethL
Sent: Wednesday, 22 September 2021 12:07 PM
To: Parkinson, Andrew; Yapp, Phillip
Cc: Hunter, Stuart; ICW EBM Office; Ryan, JohnW
Subject: Funding requirements included
Attachments: FILE20214472 Attachment A-Summary of College Ventilation v2.docx

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Funding included in table 2. Have additional table with further details if required

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From: Parkinson, Andrew <Andrew.Parkinson@act.gov.au>
Sent: Tuesday, 21 September 2021 8:22 AM
To: Mitchell, BethL <BethL.Mitchell@act.gov.au>; Yapp, Phillip <Phillip.Yapp@act.gov.au>
Cc: Hunter, Stuart <Stuart.Hunter@act.gov.au>; ICW EBM Office <ICWEBMOffice@act.gov.au>
Subject: College ventilation
Importance: High

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Beth & Phil

The attached document contains a table that notes “other ventilation” at Narrabundah and Lake G colleges as TBC. (copied below)

Site	CO2 Monitoring	Other Ventilation (e.g. operable windows or manual increase to mechanical ventilation)	Comments
Narrabundah College	No	TBC	School building and transportable classrooms have operable windows.
UC Lake Ginninderra College	No	TBC	Parts of B Block have CO ² sensors, remainder of college would require additional sensors to allow management of ventilation.

The comments suggest that we already know that windows can be opened at Narrabundah so that could be changed to a YES.

What about Lake G?

We need to urgent update these two lines this morning before a meeting between ministers this afternoon.

Andrew Parkinson | Executive Branch Manager
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Dhawura nguna, dhawura Ngunnawal

INDOOR AIR QUALITY PLAN FOR COLLEGES – COVID-19 RESPONSE

The purpose of the Indoor Air Quality Plan for Colleges is to reduce the level of recycled air in classrooms to comply with COVID-19 public health orders and mitigate the risk of virus transmission.

BACKGROUND

An assessment of mechanical and manual ventilation systems (windows) across Canberra Public College's commenced on 13th September 2021. Colleges have been prioritised for action, with these schools to return to classroom learning on the 6th of October 2021.

ACTIONS	NO. SITES	RESPONSIBILITY	TIMEFRAME
A1.0 COLLEGES	9 SITES		
A1.1 Assess ventilation systems at all college campuses	9 sites	ICW	27/9/2021
A1.2 Install CO ₂ sensors where required to measure and monitor sites with building management systems	3 sites	ICW	TBC
A1.3 Automate/manually* set building management systems to introduce 100 percent outdoor air	5 sites / 8 sites	ACTPG	6/10/2021
A1.4 Manually open non-automated dampers/windows	1 site#	Schools	6/10/2021
A1.5 Provide IAQ guidelines for Colleges	9 Sites	ICW	29/9/2021

*Manual opening of mechanical systems will only be undertaken as a short-term solution where automated systems are not operational. This will include the three sites where CO₂ sensors are to be installed where these are not operational by commencement of Term 4.

UC Lake Ginninderra College does not have a building management system capable of reading CO₂ sensors to regulate outdoor air.

OTHER SCHOOLS

Preliminary investigations have commenced at other schools. It is anticipated the same actions can be completed for other public schools, however as Infrastructure and Capital Works has limited staff resources, it is recommended that the capture of non-technical site-specific data be coordinated through the Directors of School Improvement and school staff, specifically BSO's. As there are 80 other school sites this process will require a much longer lead time.

SUMMARY OF PROGRESS AT COLLEGE SITES

Table 1. Progress updated in the below table in red.

Site	CO ₂ Monitoring	Other Ventilation (e.g. operable windows or	Comments/Progress

		manual increase to mechanical ventilation)	
Canberra College	Yes	Not required	All air handling units in the main building have CO ² control of outside air / ventilation. <i>School Network Officer to check windows in remainder of College for operability.</i>
Gungahlin College	Yes	Not required	100% outside air in Learning Hubs and Performing Arts.
Lake Tuggeranong College	Yes	Not required	All air handling units have CO ² control of outside air / ventilation.
Erindale College	Yes	Not required	Erindale College has CO ² sensors throughout, except Hall, Pool and Active Fitness area. <i>ICW have has requested connection to remote access to enable monitoring.</i>
Dickson College	No	Yes	School has operable windows. <i>Some second floor has recently installed window actuators and extraction fans for night purge.</i> <i>ACTPG contractor to check ventilation status and locations for CO² sensors/network officer to confirm operability of windows</i>
Hawker College	No	Yes	Temporary manual increase of economy cycle (outside air) dampers can increase fresh air up to 100%. School has operable windows. <i>CO² sensors are being procured to enable system monitoring and automation of ventilation.</i>
Melba Copland College	No	Yes	Temporary manual increase of economy cycle (outside air) dampers can increase fresh air up to 100%. <i>CO² sensors are being procured to enable system monitoring and automation of ventilation.</i>
Narrabundah College	No	Check in progress	School building and transportable classrooms have operable windows. <i>Network officer to check window operability.</i>
UC Lake Ginninderra College	No	Check in progress	Parts of B Block have CO ² sensors, remainder of college would require additional sensors to allow management of ventilation. <i>ICW to assess ventilation and network officer to check window operability.</i>

FINANCIAL IMPLICATIONS

Interim measures to manually increase ventilation can be implemented until the identified works can be completed and commissioned. However, these measures are not recommended long-term due to their potential negative effect on internal comfort conditions, additional cost in utilities and reduced CO₂ ventilation monitoring capability.

To enable appropriate monitoring and management of indoor air quality through the use of CO₂ monitors and building control systems, the following actions and costs are provided.

Budget estimates have taken into account available information on the condition and capabilities of the exiting BMS, existing control strategies for ventilation, asset registers for mechanical air handling units and ventilation, and industry experience. Costing has been developed in consultation with ACT Property Group and BMS service providers across the college portfolio.

Budget estimates may vary significantly to final prices for implementation due to latent conditions around condition of aged HVAC plant, retrofit installation in existing buildings, and lead paint and asbestos management.

Scope of works across colleges generally includes:

- upgrading or expanding the BMS to a new open protocol BACNET system with functionality to allow monitoring and control of ventilation across the entire college,
- integrating newer open protocol BMS's to the Education Directorate's central BMS reporting server to allow better reporting of CO₂ and ventilation levels,
- an allowance for a service and minor modification to existing air handling units (air distribution systems) to allow ventilation strategies to be implemented
- an allowance for expansion of CO₂ sensors to additional learning areas throughout the colleges.

A summary of each college, scope of works, budget allowance and timeframe for procurement and installation is provided at Table 2.

Table 2. Funding requirements for upgrade of ventilation capability at schools.

Site	Scope	Budget	Timeframe for Installation
Canberra College	Current BMS is new throughout. Expand CO ₂ monitoring to AHUs in Performing Arts Centre.	\$ 37,000.00	1-2 Months
Dickson College	Current BMS is mix of new and end-of-life/non-functional. Expand Reliable Controls BMS to remainder of site and integrate existing Innotech and Airtek BMS in gym/hall and library. Install CO ₂ sensors and service and commission AHUs for CO ₂ control.	\$ 152,400.00	2-3 months
Erindale College	Current BMS is new Trend brand with CO ₂ sensors throughout. Clarify operation of BMS programme and improve	\$ 22,000.00	1 month

Site	Scope	Budget	Timeframe for Installation
	reporting functionality through connection to central BMS server.		
Gungahlin College	<p>Current BMS is Delta Building Automation with good functionality with remote access.</p> <p>Majority of site is full outside air negating need for CO2 sensors. Improve reporting functionality by integrating existing Delta BMS into central BMS server.</p>	\$ 25,000.00	1 month
Hawker College	<p>Current BMS is new Reliable Controls throughout.</p> <p>Expand functionality to include CO2 sensors, recommission AHUs and program CO2 ventilation strategy.</p>	\$ 79,600.00	1-2 months
Lake Tuggeranong College	<p>Current BMS is new Reliable Controls throughout.</p> <p>Expand CO2 monitoring to remaining ~6 AHUs throughout college. Service and commission AHUs to control ventilation from CO2. Set up reporting functionality.</p>	\$ 73,400.00	1 month
Melba Copland College	<p>Current BMS is mix of new Reliable Controls, and old Carrier system with limited functionality and visibility.</p> <p>Upgrade existing BMS to remaining 7 AHUs, install CO2 sensors and service and commission AHUs for CO2 ventilation control.</p>	\$ 190,000.00	2-3 months
Narrabundah College	<p>Current BMS is partial new Reliable Controls, and old Carrier system with limited functionality and visibility.</p> <p>Expand BMS to remainder of school and install CO2 sensors for monitoring. HVAC equipment is FCU based and does not control outside air directly.</p>	\$ 170,000.00	2-3 months
UC Lake Ginninderra College	<p>Majority of site (90%) has no BMS to allow control of sensors.</p> <p>Install BMS to remainder of school. Connect, service and commission approximately 12 remaining AHUs to control ventilation based on CO2 levels.</p>	\$ 282,600.00	3-4 months
		\$ 1,032,000.00	

Education Directorate

To: Minister for Education and Youth Affairs Tracking No.: FILE2021/4472

Date: 10/09/2021

CC: Lockdown Response Lead

Executive Group Manager, Business Services

From: Director-General

Subject: Ventilation Status of ACT Public Schools

Critical Date: ASAP

Critical Reason: Requested by the Minister in response to COVID-19 risk management

- DDG 11/9/21

Recommendations

That you:

1. Note the information on the ventilation status of ACT public schools, particularly colleges, contained in this brief;

Noted / Please Discuss

Yvette Berry MLA

.24./9/21

Minister's Office Feedback

Background

1. Adequate ventilation in classrooms has been identified as a key strategy in managing the risk of COVID-19 transmission in schools.
2. Ventilation in schools is provided by heating, ventilation and air conditioning (HVAC) systems and/or operable windows.
3. The level of CO² in internal spaces is used as a surrogate for ventilation/indoor air quality (IAQ). The Education Directorate (EDU) commenced a program to install CO² sensors in 2018 to enable management of indoor air quality in classrooms while also managing energy efficiency. When connected to HVAC control systems the sensors can be programmed to either increase or decrease outdoor air intake (for example to exclude bushfire smoke).
4. Across the ACT public School portfolio 35 schools have CO² sensors installed in key areas of the buildings including libraries, classrooms, halls and gyms.
5. In response to the current COVID-19 outbreak, EDU is preparing an Indoor Air Quality plan to further assess the ventilation status and needs of all public schools, commencing with ACT public colleges.
6. This plan will identify short and longer-term steps to monitor and manage fresh air coming into buildings and will include the identification of technological solutions to neutralise airborne viruses and improve air quality.
7. A further 80 CO² sensors are on order and will be installed at approximately 30 ACT public schools with suitable building management systems over the coming weeks. This will mean 65 of 89 schools will be able to monitor and manage CO². Standalone CO² monitors can also be made available to schools without a suitable building management system.
8. There are nine public colleges in the ACT, four of which have CO² monitors installed and three with other ventilation solutions, such as the ability to manually increase fresh air by up to 100 per cent. The remaining two colleges are yet to be assessed. A summary of college ventilation systems is provided at [Attachment A](#).

Issues

9. EDU is confident that fresh air flow can be adjusted in ALL public schools to improve ventilation.
10. Individual classrooms may require physical work to achieve ventilation requirements, for example windows that have been fixed shut for safety or other reasons may need to be made operable, while some internal rooms (with no operable external windows) may require additional supplemental mechanical ventilation and have their use minimised until that work is undertaken.

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11. Manually operable windows may increase the incidence of vandalism as they are prone to being left open. Security mesh may be required to reduce this risk.
12. In early 2020, 400 Dyson air purifiers were distributed to all public schools (88 at the time) for use in classrooms and other spaces to provide relief from smoke effects. These Dyson air purifiers have a HEPA filter contained within the unit. Filters require active management and replacement to ensure they don't have unintended consequences such as spreading mould spores.
13. An initial review of appropriate technologies to neutralise viruses indicates that High Efficiency Particulate Air (HEPA) filters are intended to filter particulate matter and not able to neutralise or remove viruses or bacteria. EDU has sought advice from the Office of the Chief Health Officer on the suitability of HEPA filters in minimising the risk of COVID-19.

Financial Implications

14. Increasing the level of outdoor air during periods of high heating and or cooling requirement will increase energy costs (as an increased volume of air will need to be conditioned). These costs will be incurred by schools.
15. Where windows need to be made operable, there is a high likelihood that windows' age, condition, or the presence of hazardous materials including lead paint and asbestos will necessitate window replacement. These costs will impact repairs and maintenance funding and defer other works.
16. Other programs may be delayed as staff are reallocated to implement ventilation upgrades.

ConsultationInternal

17. The School Infrastructure Management, Asset Strategies and Sustainability and Environment teams within ICW and trade experts with ACTPG are working on ventilation matters within schools.

Cross Directorate

18. Nil

External

19. The matter of ventilation in schools is being discussed as part of the COVID-19 education officials' network, which includes representatives from all Australian State and Territories, and is hosted by the Australian Government Department of Education, Skills and Employment.
20. Information is being shared via this network and the Directorate will continue to discuss approaches by other jurisdictions to inform the ACT Government response.

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Work Health and Safety

21. All works will need to be carried out under COVID-19 restrictions consistent with the public health orders at the time of implementation.

Benefits/Sensitivities

22. COVID-19 restrictions and supply chain limitations may impact the timeframe in which capital upgrade requirements can be completed (for example, window replacements or ventilation technology upgrades).

Communications, media and engagement implications

23. Schools will need to be informed of and potentially engaged in the assessment of ventilation requirements and adjustments required at their school.
24. A communication plan will need to be developed to ensure that schools and the broader community are aware of the actions put in place and their alignment with public health orders.

Signatory Name: Andrew Parkinson Phone: 6205 4593

Action Officer: Beth Mitchell Phone: 6207 8364

Attachments

Attachment	TRIM #	Title
Attachment A	FILE2021/4472	Summary of College Ventilation Systems

Attachment A. Summary of College ventilation systems

Site	CO2 Monitoring	Other Ventilation (e.g. operable windows or manual increase to mechanical ventilation)	Comments
Canberra College	Yes	Not required	All air handling units have CO ² control of outside air / ventilation.
Gungahlin College	Yes	Not required	100% outside air in LearningHubs and Performing Arts
Lake Tuggeranong College	Yes	Not required	All air handling units have CO ² control of outside air / ventilation.
Erindale College	Yes	Not required	Erindale College has CO ² sensors throughout, except Hall, Pool and Active Fitness area.
Dickson College	No	Yes	CO ² sensors could be installed relatively easily for a permanent solution. School has operable windows.
Hawker College	No	Yes	CO ² sensors could be installed relatively easily for a permanent solution. Temporary manual increase of economy cycle (outside air) dampers would increase fresh air up to 100%. School has operable windows.
Melba Copland College	No	Yes	CO ² sensors could be installed relatively easily for a permanent solution. Temporary manual increase of economy cycle (outside air) dampers would increase fresh air up to 100%.
Narrabundah College	No	TBC	School building and transportable classrooms have operable windows.
UC Lake Ginninderra College	No	TBC	Parts of B Block have CO ² sensors, remainder of college would require additional sensors to allow management of ventilation.

Protecting children from COVID-19 and making schools and childcare safer.

1 October 2021

Working group:

Prof Nancy Baxter, Prof Brendan Crabb, Mrs Kate Cole, Ms Anna Davidson , Prof Lisa Jackson Pulver, Ms Jayne Flanagan, Prof Geoff Hanmer, Prof Richard Holden, Mr Jeremy Howard, Dr Zoe Hyde, Prof Anne Kavanagh, Dr Greg Kelly, A/Prof Kamalini Lokuge, Prof Guy Marks, Prof Jason Monty, A/Prof Julie McEniery, Dr Kat McLean, Dr Katy McAlpine, Prof Lidia Morawska, Prof Kerry Phelps, A/Prof Robyn Schofield, Dr Karina Powers, A/Prof Holly Seale, Dr Benjamin Veness.

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Summary

During a pandemic of an airborne disease like COVID-19, nearly all unvaccinated individuals will eventually be infected. Most children in Australia are currently unvaccinated. If they are not protected, 1-3% of unvaccinated Australian children may become hospitalised with COVID-19, and more may suffer from ongoing symptoms lasting for a year or more. Paediatric wards, hospitals and health systems may become overwhelmed. School closures and educational disruption are likely.

We still do not know enough about the long-term risks posed by COVID-19 to children, but given what is currently known, and based on the precautionary principle, we should do what we can to protect children. [San Francisco](#) is an example where children have been [successfully protected](#), whilst keeping schools open.

Protecting children requires vaccinating children when possible, ensuring access to safe air through ventilation, and, where there is community transmission, using high quality masks, letting families make their own decisions about attending in-person school, and protecting children's mental health.

Risks to children from COVID-19

An approach to assessing risk

To protect children from COVID-19, we first need to consider what risks they face. There are three types of risk we will consider:

- Short-term infection impacts, such as hospitalisation or death
- Longer-term infection impacts ("long COVID")
- Indirect impacts of infections, such as disrupted education

In order to assess these risks, we need to understand **how many children** may be infected, and what the **impact on each infected child** may be. Assessing risk does not mean predicting the single most likely outcome – but rather it means understanding what range of outcomes are possible, given the level of uncertainty.

How many children could be infected?

It is well known that in an unprotected population, [all, or nearly all](#), unvaccinated individuals will be infected in a pandemic. The speed at which this happens depends on the effective reproduction number of the virus. This can be estimated using modelling, or by looking at comparative international data. Modelling by the Doherty Institute suggests that over 300,000 children will get symptomatic COVID-19 and over 1.4 million kids will be infected in the next 6 months if restrictions are reduced when 70% of adults (56% of all persons) are vaccinated. The predictions of this model are supported by data from England, where within two weeks of schools reopening without vaccines or masks, [8% of children](#) were absent with confirmed or suspected COVID-19.

In general, when assessing risk, we need to consider the range of possible outcomes; if we simply assume that the lowest estimated impact will happen, then we are not actually fully understanding the risk. For risk assessment, we should consider the projections of modelling that indicate millions of Australian children could become infected with COVID-19 within a few months, if they are not protected.

What are the short-term risks of child infections?

During the second wave in England, approximately [1 out of every 100 children](#) who tested positive required admission to hospital. This year in Australia, [3% of children](#) who tested positive for COVID-

19 have been hospitalised, although some of these admissions were due to social factors, such as parents being temporarily unable to care for their children due to their own hospitalisation for COVID-19. If there were 1.4 million infections in children as projected, a 1-3% hospitalization rate would result in tens of thousands of child hospitalisations in Australia.

It is estimated that between [1 in 20,000](#) and [1 in 50,000](#) infections in children are fatal. Australia does not have any experience of large numbers of paediatric hospitalisations due to COVID-19; the impact on child mortality in a setting of uncontrolled infection may be significant. In the setting of health system stress an [increase in mortality](#) has been demonstrated.

What are the long-term risks of child infections?

It is unclear if COVID-19 has any long-term consequences for children's health. Adults who contract COVID-19 can experience [persistent symptoms](#), which include shortness of breath, fatigue, and memory and concentration problems. This syndrome is known as long COVID. Emerging research indicates that children can also experience long COVID, although the precise incidence and duration of symptoms is unclear. Different studies estimate the incidence of long COVID at 2-14%, but these studies have substantial limitations which make determining the true incidence difficult. A [small study](#) of very young children (median age 3 years) from Melbourne who mostly had mild COVID-19, found that 8% had persistent symptoms lasting up to 8 weeks, although all eventually recovered.

In contrast, [a study](#) conducted by the UK's Office for National Statistics found that 7-8% of children and adolescents experienced persistent symptoms lasting at least 12 weeks. They estimate that [11,000](#) children and adolescents have been living with self-reported long COVID for at least 12 months, and that two thirds of those with long COVID find it significantly impacts their day-to-day life. As noted previously, if many Australian children are infected, we can expect the number of children affected by long COVID to be large in absolute terms, even if the proportion who develop long COVID-19 is small.

The National Health Service in England has recently opened [15 clinics](#) to care for children and adolescents experiencing long COVID. US Congress provided [US\\$1.15 billion in funding](#) to support research into the prolonged health consequences of SARS-CoV-2 infection. Until we know more about the long-term effects of COVID-19, it would be prudent to follow the precautionary principle and safeguard children from infection.

What are the impacts of child infections on families and the wider community?

Research conducted in England found that adults living with children had an [increased risk of testing positive](#) and of being hospitalised with COVID-19 during the second wave (but not during the first wave when schools were closed). Older adults living with children during the second wave were at an increased risk of death from COVID-19. Even very young children can transmit the virus to their household members. A recent study from Canada found that [toddlers were more likely to infect their household members than teenagers](#), probably reflecting the close contact that parents have with young children. Outbreaks in [childcare centres](#) have led to [parents being hospitalised](#) after children brought the virus home. A [report](#) into the current outbreak in NSW found that children who caught COVID-19 at school or a childcare centre often passed it on to their household contacts. Transmission of the Delta variant in schools, childcare centres, and households is about five times higher than that seen in NSW in the first year of the pandemic. Unless mitigation measures are put in place to safeguard schools and childcare centres, there will be ongoing transmission in these settings and the wider community.

What are the impacts of child infections on schooling?

Children are also impacted by infections due to school closures and absenteeism. For instance, in Florida, where children were sent to school with little protection, whole school districts have been [forced to close](#). Singapore primary schools had to [shift to online learning](#), despite a very high adult vaccination rate. During periods of high community transmission in England, one-fifth of secondary school children were not attending school due to quarantine requirements. In England, concerns have been raised regarding the impact on children being unwell with COVID-19 around the time of exams, when being unwell for 2 weeks and the anxiety associated with missing exams may have significant impact on the child's education and well-being.

To ensure the safe operation of schools and avoid disruption to children's education, it is crucial to keep community transmission at low levels, while putting mitigation measures in place to reduce the risk of in-school transmission.

What are the risks of child infections on mental health?

What is good for our physical health is also good for our mental wellbeing, as mental and physical health are interdependent. By protecting staff and students within the school setting we are investing in better mental health both directly (for example, decreased anxiety about infection) and indirectly (for example, avoidance of traumatic loss of family members to COVID-19). A range of measures and risk mitigations can be taken that will depend on the circumstances of the school and its community at any particular point in time; the options are broader than having schools 'open' or 'closed'.

We need to be careful not to pre-emptively link any reduction in wellbeing during a pandemic (which might arise from a multitude of factors) to the public health interventions which are used to reduce transmission of disease and loss of life. Rather, it must be recognised that harms are at least partially offset, and possibly outweighed, by the benefits of preventing trauma secondary to COVID-19 morbidity and mortality within family units.

Protecting children from COVID-19

Can we protect children?

There are jurisdictions where schools have successfully reopened without significant outbreaks. We know therefore, that it is possible to protect children from COVID-19 and keep schools open.

The experience of San Francisco provides a useful model of successful reopening. In that city, 90% of children aged 12+ are fully vaccinated, all children aged 2+ are [required to wear masks](#) in schools at all times (except lunch, which is eaten outside), and following a ventilation audit, High Efficiency Particulate Air (HEPA) grade [air purifiers were purchased](#) for classrooms with inadequate ventilation. Despite over 100 daily COVID-19 cases in the community, only [seven instances](#) of in-school transmission have been identified in San Francisco schools since schools reopened in April 2021.

Should we protect children?

If we fail to protect children there is a significant risk that tens of thousands of children will be hospitalised (which may overwhelm children's hospitals and affect routine care for other diseases, such as cancer), and many more could develop long COVID, negatively impacting their day-to-day life. School closures and a high level of absenteeism are likely, as well as negative mental health impacts. It seems clear that we should endeavour to protect children, in order to avoid the potentially catastrophic outcomes of not doing so.

To put this in context, we work hard to protect children from many illnesses that are mild in most cases. For instance, polio is mild or asymptomatic in 99% of children. At the peak of [polio](#) in Australia, we had 357 deaths in 1951. Now, 70 years later, we still protect children against polio. From 1956-1975 we had 356 deaths from [measles](#) in Australia. That is less than 20 deaths a year, and we think it is worth protecting children from measles. There were 290 deaths a year between 1910 and 1942 from [whooping cough](#). To be consistent with the high value we place on protecting the health of children against other infections, we must do what we can to protect the children who are going back to school unvaccinated against COVID-19.

Pandemics exacerbate [existing societal inequalities](#). Some control measures may have unexpected or unseen complications, particularly for disadvantaged communities. A fair and just society must consider the ethics of leaving some sectors of the community behind in pursuit of a perceived greater good.

The aim of these recommendations is to allow us as a society to better maintain continuity in education and social connections while minimising restrictions with a considered balancing of the risks and benefits of a broad range of options.

How can we protect children?

In the second half of this document, we provide detailed recommendations and steps to help protect children. In this current section we give a short summary of the key approaches.

Protecting children with vaccines

The Australian Technical Advisory Group on Immunisation (ATAGI) has [recommended full vaccination](#) for adolescents aged 12 years and older. There is now rapid uptake in this age group, although there are still many unvaccinated. No vaccine has yet been approved for younger children. Results from clinical trials are very promising, and vaccines for younger children may be available [before the end of 2021](#). In adults, the Pfizer vaccine clinical trials showed that severe cases were ten times more likely in the single-dose group compared to the double-dose group. Based on these results, it is likely that younger children will require full vaccination as well.

Since vaccines have been highly effective against severe disease, and reduce [the risk of long COVID](#), it is important that children are given the opportunity to get vaccinated. If mitigation measures are not put in place in schools and childcare centres, then the virus will primarily circulate in this age group and COVID-19 will become a pandemic of the young.

It will be important to ensure that teachers and childcare staff are prioritised for vaccination. However, it is important to note that vaccination doesn't completely prevent transmission, so vaccinating adults around children is not sufficient on its own to fully protect children or other staff. It is vitally important that all adults that come into contact with school aged children are vaccinated for their own protection, and to reduce incursions of disease into schools.

Change in our understanding of COVID-19 transmission

There have been major changes in the understanding of how COVID-19 is transmitted. At the beginning of the COVID-19 pandemic, the main emphasis was on cleaning surfaces and the sanitisation of hands. We now know that the focus must urgently shift to safer indoor air.

Most transmission of COVID-19 occurs indoors, and transmission has a relationship to indoor ambient aerosols. These are very small particles that can linger in the air and are produced by coughing, speaking, and even normal breathing. Our recommendations for protecting children are

based on this understanding of COVID-19 transmission, including improving indoor air quality through ventilation, along with the careful and appropriate use of face masks.

Protecting children through safer indoor air

OzSAGE's [advice on Safe Indoor Air](#) states:

“We know how important clean water is – with COVID-19 we need to be just as fussy about the air we breathe, and ventilation is key. In this context, ventilation means provision of safe, clean indoor air... Respiratory aerosols from breathing and speaking accumulate in indoor spaces, much like cigarette smoke but invisible.... Good ventilation is one of the most effective ways to reduce the risk of COVID-19 infection”

The first step to ensuring safer air is testing; [using a carbon dioxide \(CO₂\) monitor](#) to measure ventilation. This provides an indicator of how much of other people's exhaled breath is in the air that you may be inhaling. Ideally the CO₂ concentration should be as close to outdoor air values as possible (400-420 ppm). In spaces without HEPA filtration, if CO₂ is greater than 800ppm, use the recommendations in the second half of this document and in the OzSAGE advice on Safe Indoor Air to improve ventilation. If immediate ventilation improvements are impractical, ameliorate conditions using HEPA purifying devices. The state of Victoria has purchased over 50,000 HEPA filter [air purifying devices](#) for use in schools for this purpose.

HEPA filters have been successfully deployed in universities and hospitals to reduce airborne transmission risks and have the added benefits of reducing bushfire smoke, mould, and pollen, all of which is protective for the school community.

Internationally, the incidence of COVID-19 has been [significantly reduced](#) when masks were worn, and further reduced when ventilation was improved.

Protecting children through face masks

[Scientists have found](#) that using better masks is vital to decreasing viral transmission in a classroom setting. They showed that if all teachers and students wear masks with good fit and filtration, transmission is reduced. It has been reported that schools without universal masking had outbreaks of COVID-19 [at a rate of more than 3.5 times those without](#). Further, there have been [documented increases](#) in paediatric COVID-19 case rates in school districts that have not had mask requirements. International experience shows that school children are able to wear masks. For instance, all children over two years of age in San Francisco and [New York City](#) are required to wear masks at school. We recommend that masks should be mandated for primary and high school students and staff. [Implementing mask](#) requirements in schools, in combination with other strategies, was noted to lower cases of COVID-19 in school-aged children.

We strongly recommend well-fitted face masks be worn by everyone aged five years or older who can do so, along with 2- to 5-year-old children where developmentally appropriate, in line with [recommendations of the American Academy of Pediatrics](#) and the [Centers for Disease Control and Prevention \(CDC\)](#). It is important to acknowledge that there are some people who [cannot wear a mask, or cannot safely wear a mask](#), due to reasons including disability. While masks with good fit for children are not widely available in Australia at present, investment in importing and locally manufacturing effective children's masks is paramount.

Supporting children to wear a mask helps them learn community responsibility, and reflects a desire not only to help protect your child, but also help protect other children and adults. To support mask use, ensure the mask is comfortable and use behavioural techniques such as modelling and reinforcing desired behaviours to help students with adjusting to the transition of using masks at school. For some children, there may be a benefit in using picture schedules or visual cues. Schools should provide masks to students and staff that need them for any reason such as difficulty affording masks, or if the mask has been forgotten.

Protecting children by giving families options

Existing research on the mental health effects of the pandemic on children, adolescents and families is limited and often reaches [contradictory conclusions](#). The impact of not attending school differs among individual children and adolescents. While the benefits for social development and learning of face-to-face school environments are acknowledged, an inability to attend in-person does not affect all children in the same way: some children need and benefit from school interactions, some have less anxiety and dysphoria learning from home, and some adapt to both environments.

Although the indoor classroom setting is the education system's standard mode of delivery, social development and academic learning can also occur via a range of other activities. The risk-benefit analysis of the classroom setting for children with differing health and mental health risks, and differing risks related to transmission to family members, is complicated. Individual families may be best-placed to make decisions for their children in the setting of widespread COVID-19 transmission, particularly when insufficient risk mitigations are in place. For some children, even repeated and prolonged home learning may be preferable to severe illness or bereavement due to the death of a significant attachment figure or figures from COVID-19.

The health and wellbeing of children is also dependent on interrelated impacts of the pandemic on their primary attachment figures, families and communities.

Protecting schools with testing

RT-PCR (reverse transcriptase polymerase chain reaction) of a nasopharyngeal and throat swab is the reference standard test at this time, and is the test used most frequently in Australia for the diagnosis of COVID-19. RT-PCR tests may take several days to return results however, because of the need to ship samples to centralised laboratories, during which time an infectious individual in the school environment can spread disease. Also, RT-PCR tests usually require the supervision of a healthcare provider to administer, in addition to expensive instrumentation, making them more expensive and logistically challenging to scale across large numbers of facilities/ schools. Pooled testing may be used to scale up RT-PCR testing, but this also then requires time to narrow down the positive case if a batch is positive.

To overcome these challenges rapid antigen testing (RAT) kits were developed and will be available for use by untrained people (including home use) from November 1, 2021 in Australia. RATs are faster than the RT-PCR tests. RATs can give results in as little as [15 minutes](#), and can be done at home, subject to TGA approval of kits for home use.

Rapid tests have both [advantages](#) and [disadvantages](#):

- + Frequent rapid testing uniquely complements other strategies
- + RATs can more readily be used frequently and work best when people are most infectious
- + Universal access to low-cost RATs is crucial for promoting equity
- + Self-testing is effective when performed properly
- + There is some evidence that RATs may reduce transmission

- Logistics could be challenging, given the scale and required frequency
- Completing the tests correctly may not be possible for smaller children
- If tests need to be done at home, compliance may be a problem
- It can give people a false sense of security
- There is still [much uncertainty](#) about how best to use this tool, including the effectiveness of approaches such as “test to stay” (TTS)

Protect children’s mental health

Studies have emphasised the need for [practical financial, psychological, and social support](#) for parents and caregivers to enable them to better-support the emotional needs of their children during the pandemic. The parent/primary caregiver role is [central](#) in regulating and supporting the [wellbeing](#) of children. Hence the importance of supporting the mental health of parents and caregivers.

The Australian Institute of Health and Welfare (AIHW) [reports](#) that suicide rates have remained stable during the COVID-19 pandemic. However, the proportion of the community experiencing psychological distress has increased. This reinforces the importance of improving access to, and support for, [mental health and early intervention services](#) in addition to addressing broader social determinants of health.

Impacts are likely to be greater for children and adolescents who have previously experienced adverse childhood experiences (ACEs). Those with pre-existing barriers to accessing care are also at increased risk; for example, Aboriginal and Torres Strait Islander people, families for whom there may be cultural or language barriers, low socio-economic status households, children with underlying medical conditions or disability, and children exposed to family violence. Mental health impacts of the pandemic, resulting from additional adverse experiences and/or loss of life, may [take time](#) to surface and be recognised.

Strategies for assisting with mental health

Young people and parents are primary stakeholders in their own mental health, and should be consulted directly, with care taken to include a diverse range of voices.

It is important that children and adolescents receive developmentally appropriate, factual information about COVID-19 as it becomes available. Children, even at a young age, have the capacity to understand health information and how to keep themselves safe. Information and support for parents around how to discuss health and safety with children and educational material and support for schools and teachers should be developed as an urgent priority. Resources should meet language, literacy, and cultural considerations.

We can emphasise to children and adolescents that we, as adults, are also learning and adapting to what is a dynamic situation, and are interested in their ideas, suggestions, and feelings. These conversations have been found to be [protective against anxiety and depression](#).

Younger children in particular use play and drawings as a strategy to process their emotions. Resources can model to parents to show interest, ask non-judgemental questions, following the lead of their child in play and joining in. Programs such as the UK’s [Fading Rainbows](#), using art, history, and stories to help young people to articulate and process their feelings provide a useful model.

General practitioners, maternal and child health nurses, and child health services are valuable partners in supporting health messaging. Telehealth services should continue to be supported and promoted.

Educators play a [crucial role](#) in supporting students to navigate distress and complex emotions, particularly for vulnerable children. A taskforce to develop programs in partnership with mental health and education sectors would support [training](#), increased capacity and resources to benefit children's mental health and safe return to school.

Equality and access to education and safe workplaces

COVID-19 poses unique challenges that vary according to the needs of children and staff working in educational settings. Where possible, each section of this strategy document has adaptations recommended for special circumstances that have been brought to the attention of OzSAGE. Staff unable to be vaccinated for medical reasons may be referred by the employer to an Occupational Physician (medical specialists in workplace safety) if assistance is required to review vaccination concerns with workers and support safer placement if necessary.

It must be recognised that schools are workplaces. There are specific workplace health and safety legislative duties of those who engage workers to provide that safe working environment including a duty of care, a duty to exercise due diligence, and a duty to ensure the health and safety of workers so far as is reasonably practicable. While employers may not be able to control or otherwise affect the conduct of persons that workers interface with, the employer is able to directly control and dictate the measures which should properly be made in preparing and equipping workers to perform duties which are of such a nature that will ensure the health and safety of those workers and keep safe those they serve.

Feasibility of the strategy

The measures required to make schools and childcare centres safer are not complex and are relatively inexpensive to implement. Although throughout this document schools and day-cares are referenced, much of the strategy can be applied to anywhere that children interact in groups, particularly indoors. A safer-schools strategy is best implemented as a package of layered interventions. Effectiveness will be diminished if only some parts of the strategy are used.

Audit

Opening schools during an outbreak of airborne viral disease cannot be made risk free. The effectiveness of risk mitigations should be under constant review. If there is evidence to indicate that the mitigations are failing, a switch should be made to remote or hybrid learning until a more detailed assessment can be made, and any breaches in protocol/engineering failures are identified. Occupational and environmental medical professionals, mechanical engineers, aerosol scientists, or occupational hygienists can review the worksite and assist if needed to provide advice and building-specific strategies to keep students and staff safe.

Data transparency is key to school safety. Data should be made available (for example on a school or centralised dashboard) of incursions of COVID-19 into the school environment and any subsequent in-school transmission. Each school should be assigned a named public health officer that undertakes case identification, contact tracing and isolation work. Close partnership between schools and public health officials should be maintained throughout, facilitating timely communications.

Disclaimer

This position statement has been written with the best available evidence and was last updated on the date shown on the title page. No liability is accepted for the outcomes associated with the implementation of the advice contained herein. OzSAGE strongly recommends continuous quality assurance activities and ongoing adaptation to the circumstances.

Recommendations

Control COVID-19 in the community

- Controlling disease in the area from which the school draws staff and students significantly reduces the risk of in-school transmission.
- Reopening of schools should be prioritised above other venues, and the relaxation of public health measures should be balanced carefully against the threat posed to the feasibility of face-to-face learning.
- Guided by the Australian pandemic plans, clear signals to guide school responses should be established. The catchment area of students and staff should be considered in the risk assessment for schools as well as consideration of any ring-fencing that may be in place.
 - Green:
 - No cases of COVID-19 known outside of border quarantine
 - No unexpected positive sewage detection
 - Amber:
 - Case identified
 - Source of case known
 - No sustained community transmission suspected or all known contacts in isolation for the duration of the infectious period
 - Red:
 - Case identified
 - Source of case unknown
 - Unexplained sewage positive detection
 - Sustained community transmission
 - Black
 - Exponential community transmission ($R>1$)
 - Healthcare systems unable to maintain normal services

Alternatives to face-to-face learning

- Develop flexible learning models that can quickly adapt to changing circumstances so that children isolating can continue to participate in learning, and to allow for school closures in event of a disaster.
 - Use of online learning, provision of IT equipment and internet access to students
 - Where possible structure lesson plans that can be delivered online and face-to-face simultaneously.
- Outdoor learning whenever circumstances allow.
- Online learning when the community the school is a part of is experiencing exponential community transmission ($R>1$) and where an individual school is an identified cluster.
- Reduce the number of people onsite in schools during outbreaks.

Engineering Controls and Physical Environment

(See also paper [“Safe Indoor Air \(Ventilation\) Recommendations”](#))

Optimisation and ongoing quality assurance/audit of:

- Air
- Sewage
- General cleaning

Air

- Source control (see PPE and source control section)
- Ventilation (see document “Safe Indoor Air (Ventilation) Recommendations”)
- Filtration (HEPA)
- Humidification
- (UV no recommendations currently. Remains under review)

Warning:

- Do not open windows or external/fire doors to improve air quality in buildings with mechanical ventilation systems (HVAC) unless checked with a mechanical engineer.
- Do not operate fans for longer than they are designed to run to avoid the risk of overheating fan motors. Purchase of more than one device or devices made specifically for continuous use may be required if extended hours of run time are needed.

Resources:

- Functional windows
- CO₂ monitor
- Fan(s)
- Tape measure
- HEPA filter(s)
- Humidifier
- Outdoor spaces



Safer Indoor Air for Kids



To be used with masks as part of a complete strategy.



- schools
- out of hours care
- day-care
- youth groups
- clubs
- anywhere kids get together

Mechanically
OR
Naturally
Ventilated?

CO2 Monitors

- LOW RELATIVE RISK**
- Below 800ppm
- MODERATE RELATIVE RISK**
- 800-1500 ppm
 - work to improve indoor air quality to low relative risk range
- HIGH RELATIVE RISK**
- Above 1500 ppm
 - moderate risk reading not improving
 - Leave room until air quality improved.
 - Increase ventilation bringing outdoor air indoors.
 - Use HEPA filters with ventilation to assist if occurs repeatedly.
 - Reduce occupancy or cease activity causing high risk air quality.

Portable HEPA filters

- Use filtration to clean the air, do not add anything to the air.
- Use the right size and avoid low flow settings.
- CADR = clean air delivery rate
- Aim for an equivalent of minimum 6 air changes per hour (ACHe)
- $ACHe \times \text{Room volume} = \text{CADR needed}$
- Use of more filters may allow for less noise.
- HEPA filters will not lower the CO2 reading on the monitor.

*Fans, if used, must be placed to direct indoor air outside & encourage cross ventilation. Take care not to recirculate, including avoiding the use of split system air-conditioning.

For more detailed advice & warnings please see OzSAGE document for Safer Indoor Air.

Mechanically
Ventilated



Call a mechanical engineer to review the HVAC system.



Complete the recommended work to increase outdoor air intake.



Once the building is in use, monitor the ventilation with CO2 monitors.



Use Portable HEPA filters if ventilation is not enough.

Naturally
Ventilated



Open windows and doors where it is safe to do so.



Work to create a cross breeze of fresh air. On still days may use a child safe fan.*



While the building is in use monitor the ventilation with CO2 monitors.



Use Portable HEPA filters if ventilation is not enough, outdoor air is polluted or bad weather



Outdoor spaces as classrooms

- Whenever possible, use outdoor spaces for learning.
- Avoid if extremes of weather or heavy air pollution (e.g., bushfires, traffic, dust storms).
- Ensure children are dressed appropriately for the weather. Supply warm clothing, hats, sunscreen and long shirts if required.
- Maintain hydration, particularly in warmer weather.
- Avoid setting up near flowering plants, flowering trees and long grasses. Be mindful of allergies and special needs regarding this.
- Shelter from the sun, however avoid constructing outdoor marquees with enclosed sides. These do not offer sufficient disease control advantage and require CO₂ monitoring.
- Maintain masks when outdoors in a group.
- Maintain physical distancing during outdoor lessons.

Perspex screens

- Avoid Perspex screens. Generally, these trap air and may cause more harm than good.
- Usually only recommended in situations where one person may interact with many people at close range, such as a school reception. However, if installed to take care to consider ventilation effectiveness.

Fans

- Can be used to expel air out of the classroom into outdoor spaces, or to draw fresh air in from outdoors, particularly if there is not much of a breeze.
- Must think about where the air is being expelled to. Avoid discharging into areas where people may be directly exposed (e.g., straight at the tuck shop queue).
- Must be placed in such a way to optimise whole of classroom ventilation with fresh air and to avoid recirculation of air (see example diagrams below) as this will increase disease transmission.
- Fans must not be used for longer periods than they are designed for. More than one fan may need to be used to prevent motor overheating.

Split system air conditioning

- Does not filter the air like a HEPA filter.
- Causes recirculation of aerosol-containing air and has been shown to direct the path of transmission.
- May be needed for thermal comfort, however strongly recommend adequate HEPA filtering of air in addition.

CO₂ monitors

- Help estimate the relative risk of infection in addition to outdoor air-changes-per-hour.
- May be affected by sources of combustion (e.g., Bunsen burners) or placement.
- Place on a wall away from open windows, sources of combustion, not within 1m of a student or teacher, at about “breathing level”. CO₂ is usually well mixed over time in a classroom. Place in as many spaces as possible, including shared areas such as halls.
- Recommend CO₂ consistently maintained below 800 parts-per-million (ppm) and preferably less than 600 ppm to indicate low relative risk of infection.
- Refer to OzSAGE’s [advice on Safe Indoor Air](#) for detailed advice.

HEPA filters

- HEPA filtration traps aerosols from the air passing through it. Due to the high demand for true HEPA, there are a number of inferior products entering the market. These should be avoided. They include products that include filters called 'HEPA like' or use electrostatic precipitators or ion generation in addition to a filter. These should not be used as the addition of free radicals, or ozone etc. can aggravate respiratory conditions. Further, they provide no additional benefit to a HEPA filter.
- Use when mechanical and natural ventilation is insufficient or unknown.
- Ideally there should always be some fresh air supply to all indoor spaces, in addition to HEPA filtration.
- HEPA filters need to be turned on prior to the start of the day to clear the air and left on after the room is emptied.
- The effectiveness of an air cleaner is described by its Clean-Air-Delivery-Rate (CADR) - (the rate at which air is cleaned/has 100% of particles of a given size removed).
- DIY Corsi-box filters have been tested for safety, CADR, and effectiveness in classrooms in other countries, but cannot be recommended at this time in Australia due to materials required being unavailable, and any adaptations being untested. Recommendations may change in future.
- Several smaller HEPA filters in a space will be quieter, an important consideration in a learning environment.
- Do not run the HEPA filter on low air flow settings as this may not provide adequate air cleaning and may leave dead spaces of air that are not cleaned.
- Check and remain within the maximum continuous run time for the HEPA filter to prevent overheating through prolonged use.
- ACHe means equivalent air change, as with HEPA filter the air is cleaned rather than exchanged. Aim for at least six equivalent air changes per hour.
- Measure the room in the same units as the CADR (clean air delivery rate) of the HEPA filter (m^3 or ft^3) to keep calculations simple. Many online calculators available to assist in conversions. For example, calculation to size a HEPA filter for a classroom. Measure the length, width, and height (average height is 2.5m) of the room.
- HEPA filtration should be sized to be adequate for the room occupancy independent of potential fresh air intake to ensure a minimum safety standard is always met.

Humidifiers

- Prevention of low humidity conditions assists in the prevention of COVID-19 transmission.
- A humidifier is an option to maintain humidity between 40-60% (steady state) when conditions are very dry.
- If used, monitor visually for development of any damp, and adjust the humidity or ventilate accordingly.

Indoor Air Specialists

Engineers, occupational hygienists, and indoor air quality specialists can be engaged prior to return to full attendance face-to-face learning/care if needed and can help to accelerate the response and ensure safety standards are met by:

- Developing guidelines to reduce aerosol-mediated disease transmission and updating guidelines as new evidence emerges.
- Developing standardized testing protocols for HEPA devices.

- Developing guidance to standardize the process for optimizing indoor air safety.
- Investigating further the role of UVC/URUVGI and setting standards for the same.
- Identifying high risk areas prior to occupancy.
- Working with school staff to prioritise areas to be made safe so that immediate needs of children and staff can be met.
- Adjust and improve filtration of and fresh air supply to HVAC systems (reduce re-circulation) and assess feasibility of delivering continuous airflow.

Government

OzSAGE has published "[Safe Indoor Air \(Ventilation\) Recommendations](#)" which provide overarching principles and general principles dependant on whether a building is naturally or mechanically ventilated. Departments of Health and Education and private providers should:

- Immediately embark on a process of measuring ventilation levels at every school and take action where required in line with the "[Safe Indoor Air \(Ventilation\) Recommendations](#)".
- Improve ventilation starting from the areas that are in use/need to be in use and of highest risk, in line with the [advice](#).
- Develop regulations to ensure the delivery of effective safety standards based on the implementation of scientific advice recommended and update these regulations in a timely manner.
- Introduction of continuous mandatory CO₂ monitoring with maximum safe levels.
- Mandate HEPA filtration if fresh air intake is inadequate.

Sewage

SARS-CoV-2 has been shown to persist with very few symptoms in the gastrointestinal system. The virus retains the ability to infect and is shed in stools for many weeks post infection. Therefore toilets, changing rooms and assisted bathrooms require mitigation against the hazard of faecal aerosol.

- Close the lid to flush (may not be possible in accessible toilets).
- No touch equipment recommended where possible (taps/soap dispensers).
- Avoid the use of toilets that share air with changing rooms, or avoid the use of those changing rooms if possible.
- Wear a well-fitting mask or respirator when entering toilets.
- Maximise ventilation in toilets.
- Upgrade capacity of extractor fans so that they can run continuously throughout the school day and for some time after.
- Air filtration may help, but only if can be safely placed (avoid risk of electrocution and trip hazards).
- UV sanitation under review. Recommendations cannot be given at this time.
- Addition of slow-release disinfectant to water in toilet cisterns (may cause corrosion over long term).
- Ensure all water traps are functional and all pipes are sealed/not leaking.
- Use respiratory protection when assisting with toileting all children, including changing nappies or processing commodes.

General cleaning

Given SARS-CoV-2 is primarily transmitted by aerosols, the airborne route of transmission is the most important when prioritising risk mitigations. [According to the CDC](#), "each contact with a

contaminated surface has less than a 1 in 10,000 chance of causing an infection” therefore the risk of infection via the fomite transmission route is low.

- Make sure rooms are well ventilated and/or filtered and unoccupied for a minimum of 30 minutes prior to commencing cleaning
- P2/N95 respirators are recommended (ideally fit-tested) to be worn by cleaners, particularly if cleaning areas with higher aerosol load such as toilets.
- Standard contact precautions including hand hygiene to be maintained.
- A list of suitable disinfectant products can be obtained from the Therapeutic Goods Administration (TGA).
- Cleaning of high touch surfaces may be reduced by keeping seating the same during the day.

Administration and workflow controls

During outbreaks, people without symptoms can still spread COVID-19. A layering of controls will decrease risk of spread and are essential.

School Community and Liaison with public health

- Each school should assign a public health liaison. Each school should have a named contact at the local public health unit.
- School to maintain records of known cases that have attended school and to inform Public Health. Parents and guardians can be encouraged to let school management know if they have a person in their household with a positive test confirmation.
- Online reporting of school incursions and transmissions recommended to be maintained by public health and accessible to the school community.
- Audit of transmissions to occur including, where applicable, root cause analysis of recurrent or large in-school transmissions followed by remedial action. Occupational physicians, occupational nurses and occupational hygienists can assist in this process in conjunction with public health and identify where controls can be strengthened.
- Public health to inform school of any exposure sites or hotspots, so that school management may consider which of their staff is at risk (and estimate level of risk with public health assistance). The school may then provide hybrid learning opportunities for students if needed.

Vaccination

- Vaccinate all teachers as a priority.
- Vaccinate all children for whom there is an approved vaccine and consent can be obtained.
- Anticipate the need to supply vaccines for teachers and children and plan ahead for boosters to minimize the disruption to education.
- Schools to be included as a point of delivery for vaccination of children.

Testing Staff and Students

- The best implementation plan needs to be identified urgently. RATs may be a useful complement to, but not substitute for, other measures.

Education and signage

- Use updated signage to remind persons of COVID-safe actions including how to stay safe from aerosol transmission.
- Provide the school community with regular bulletins regarding:

- Reminders not to attend school while sick with any symptoms (including a list of COVID-19 symptoms and notation that symptoms are widely varied and may be subtle).
- Links to government websites for information on common symptoms, which may vary from person to person and change over time depending on variants.

Sick leave and isolation periods

- Support staff sick leave and isolation periods financially such that there should be no temptation to come to work unwell.
- Support student absences with a dedicated home education officer and a curriculum that is structured so that it can be delivered both on-line and in person.

Welfare of the school community

Support children and families to make risk assessments based on their own needs. Support needs will vary.

- Clinically vulnerable families may feel the need to switch to online learning whenever community status is amber/red/black and should be able to access education.
- Clinically vulnerable children should have an individual health plan to assist schools and Public Health Units to understand and mitigate risks.
- Provide options for counselling and support groups for children who have not been able to attend school.
- Socially/educationally vulnerable children may need continuous access to face-to-face learning even during large outbreaks.
- School to continue to provide non-educational contact points such as welfare check phone calls, vaccination reminders and free meals.
- Consider the provision of information technology equipment for students that would otherwise be unable to access online learning and support for troubleshooting.

Staff

- Recommend all staff are vaccinated.
- Recommend all staff have priority access to vaccination and boosters.
- Recommend consider completing a voluntary personal risk assessment indicating whether they have a particular vulnerability to COVID-19 to be held with OHS. Occupational Physicians can take referrals, if required, to assist with safer placement including but not limited to staff that are:
 - Unvaccinated
 - Unable to wear airborne level PPE
 - Have underlying health conditions
- Recommend all staff have priority access to PCR testing.
- Use centralised IT systems to be aware of LGA's that staff pool is drawn from and anticipate incursions.
- Staff to be supported financially for testing and isolation periods if unwell. This should be at a level that removes any motivation to attend work while unwell and include casual staff and visiting staff.
- Private contractors must have in place an equivalent support package, or to have access to support packages available to regular staff.

- Staff rest areas to be available near all work areas as usual. However, no consumption of food and drink in these but rather in outdoor, sheltered but open dining space to be provided with clearly marked physically distanced seating.
- To not speak while mask is removed for eating and drinking unless emergency.
- To not share food.

Academic support

- Number of days of isolation, days not able to access face-to-face learning, and bereavement should be recorded for each student and considered when assessing academic progress.
- Children that are bereaved to be provided access to mental health services/grief counselling being mindful that the child may not be able to verbalise this need, and therefore changes in behaviour indicating possible distress should be carefully observed and acted upon.
- Plan for catch-up days or summer schools to assist education if disruption has been severe.
- Tailored and individualised access to face-to-face learning for students for whom a need has been identified.

Children

Getting to and from school during community green/amber/red/black status

- Where possible walk or cycle to school.
- Mandatory, well-fitted, respirator or medical mask use on public transport.
- School buses and public transport to be ventilated with open windows, air recirculation switched off.
- School bus users to register route used with school administration to facilitate contact tracing.
- Avoid mingling at school gates, no parents/visitors on school site.
- Stagger start and finish times to reduce crowding on public transport and on school grounds to assist with maintaining physical distancing, particularly at the bus bays area.

School business during green status

- All school activities as per normal.
- Recommend ongoing efforts to reduce crowding. Where possible, consider increasing staffing to reduce class sizes.
- Measure CO₂ levels of all areas of the school, including gyms, classrooms, halls (at full capacity / usage) to establish the baseline CO₂ readings for future reference and control improvements if required.

The learning environment during amber/red/black community status

- Avoid the use of environments where it is known to be difficult to mitigate risks.
- Maintain physical distancing at all times.
- Reduce crowding.
 - Use CO₂ monitors to assist decision making in regard to reducing numbers, improvements in ventilation, and HEPA filtering.
 - Mark out physically distanced spacing for furniture.
 - Reduce numbers in class.
 - Half attendance.
 - Half days.

- Physical distancing of 2 meters may be effective to mitigate close range aerosol transmission. However, it does not mitigate long range aerosol transmission due to poor ventilation. During an outbreak, consider hybrid learning to allow for physical distancing.
- Avoid large assemblies and congregating.
- Maintain small “bubbles”. Everyone that shares indoor air is in one bubble and it is imperative to set up the orderly flow of the school traffic to avoid cross contamination of bubbles. If there is a positive case identified, the whole bubble should be isolated.
- Lunch
 - Whenever possible, lunch should be staggered and eaten outdoors.
 - Eat in small groups / bubbles / cohorts.
 - Maintain physical distancing.
 - Sanitise hands.
 - Remove mask.
 - Sanitise hands.
 - Eat and drink quietly.
 - Wear mask (replace with a fresh mask if possible).
 - Leave the lunch area to have a break/talk with friends.
- Specialist subjects:
 - Sport
 - All sport to be played outdoors. Some indoor gymnasiums may be suitable, however due to the high-risk nature of this activity, no indoor gym should be used for sport until it has been assessed.
 - Sport to be timed to take advantage of cooler times of the day and lower UV levels.
 - Choose sports that allow distancing to be maintained.
 - Avoid the use of changing rooms, wear kit from home on relevant day. If changing rooms are used, masks must remain on, and changing clothes should be done quietly (avoid loud vocalizations), shower at home.
 - Cease sports at the school during community red/black status.
 - Music
 - Singing and use of wind instruments add to transmission risk, so should not occur indoors. After risk assessment, it may be possible to sing or play wind instruments outdoors with reduced numbers and generous physical distancing to further lower risk. Consider masking the wind instrument itself where air exits the instrument.
 - Physical distancing to be ensured.
 - Masks to be worn.
 - Consider online musical collaborations.
 - Switch to online music lessons during community red/black status.
 - Drama
 - Masks to be worn.
 - Avoid loud vocalizations.
 - Maintain physical distance.
 - Perform outdoors whenever possible.
 - Online collaborations and performances.

Personal protective equipment, source control and general etiquette.

Masks are the only means by which close-range aerosol transmission can be reduced. This is what makes them essential to the strategy. Ventilation cannot prevent the direct jet of aerosol released with a person breathes, speaks, coughs or sneezes from reaching any person that may be nearby. Masks also reduce the amount of aerosol released into the air in general, and this increases the ability for ventilation and filtration strategies to deliver safer air to reduce long-range transmission.

Mask use/technique does not have to be perfect to reduce risk.

Masks

- Masks are recommended to be mandatory in all schools from kindergarten to year 12 for children.
- Masks are recommended to be mandatory for all staff and to be worn prior to entering the building.
- Masks are recommended in 2- to 5-year-old children where developmentally appropriate.
- Masks should be quick release or ear loop style to reduce strangulation hazard.
- Masks should only be removed when outdoors while eating or drinking.
- Children should be taught in school how to wear and remove a mask, and this information should also be provided to parents.
- Mask should be comfortable for the child. Pressure areas should be checked for across the nose, under the chin and behind the ears.
- Mask should fit snugly, but not tightly on the face. Improve mask fit by moulding any nose piece across the nose and have adjustable straps/ear loops. Nose and mouth should be completely covered at all times.
- Masks should be sized correctly for the child. Buy child sized masks where possible. A very large mask will not provide much protection at all.
- P2/N95 respirators, the knot and tuck technique, or double masking may offer greater protection.
- Masks must be changed if they feel difficult to breathe through.
- Schools should provide masks to those children that do not have access to supplies from home.

When the child cannot wear a mask

- It is important to increase the protection around the child, as the child is unable to protect themselves and may transmit to other vulnerable students.
- Usually, the issue of not being able to wear a mask is accompanied by other conditions that increase the susceptibility of the child to COVID-19 and disease severity.
- The child should be prioritised for vaccination as soon as one is approved for their age group.
- All members of the child's close contact circle, including family and staff ideally:
 - are vaccinated
 - engage in community and school testing programs
 - reduce other social interactions in high-risk settings (where possible choose outdoor interactions over indoor)
 - be trained to use and provided with reusable P2/N95 respirators as soon as possible.
 - Family to use these whenever they leave home for any reason such as going to work.
 - Staff to use respirators at work.

Communication and masks / respirators

- Exploration of transparent mask options, microphones, sign language and written mediums to help communication during an outbreak is worthwhile.
- Increase awareness and plan for children who may have undiagnosed hearing impairment, who may rely upon lip reading, where mask wearing might increase language and learning difficulties.
- Train educators in recognising children who may have an undiagnosed hearing impairment to look for signs such as being more distracted than usual and set up pathways for referral for hearing assessment.

Handwashing

- Provide hand sanitizing stations and hand sanitizer at multiple points.
- Set up laminated signs showing the WHO/CDC handwashing method in easy visual distance of the sanitation materials.

Further reading

- Gurdasani D, et al. [School reopening without robust COVID-19 mitigation risks accelerating the pandemic](#). Lancet 2021;397(10280):1177-1178.
- Gurdasani D, et al. [Vaccinating adolescents against SARS-CoV-2 in England: a risk-benefit analysis](#). J R Soc Med. 2021; in press.
- Hyde Z. [COVID-19, children and schools: overlooked and at risk](#). Med J Aust. 2020;213(10):444-446.e1.
- Hyde Z, et al. [Australia must act to prevent airborne transmission of SARS-CoV-2](#). Med J Aust 2021;215(1):7-9.e1.
- Lessler J, et al. [Household COVID-19 risk and in-person schooling](#). Science. 2021;372(6546):1092-1097.
- [School Ventilation: A Vital Tool to Reduce COVID-19 Spread](#). Johns Hopkins Center for Health Security
- [Reopening: Guidance for Schools](#). AIHA
- Harvard Healthy Buildings - Schools for Health. [5 Step Guide to Checking Ventilation Rates in Classrooms](#).
- New Zealand Ministry of Education. [Designing quality learning spaces, Indoor air quality and thermal comfort](#).

From: [Parkinson, Andrew](#)
To: [Mitchell, BethL](#); [Yapp, Phillip](#); [Hunter, Stuart](#)
Cc: [ICW EBM Office](#)
Subject: Ventilation talking points
Date: Tuesday, 5 October 2021 11:51:13 AM

OFFICIAL

I did so quick dot points about ventilation for SEMC this morning. Most of this is previous text so hope it's all good:

- An important part of the ACT Public Schools return to on campus learning in Term 4, 2021 is to ensure that there is proper ventilation in line with Health advice for managing COVID-19.
- The CHO, AHPPC, World Health Organisation and Safe Work Australia all recommend ensuring fresh air ventilation is optimised in all settings, including through adjusting mechanical systems to increase fresh (external) air supply and reduce air recirculation, and use of natural ventilation such as opening windows and doors.
- The Education Directorate is currently undertaking a room by room infrastructure assessment of public schools, to further plan and undertake required modifications to ventilation including a school ventilation checklist to optimise fresh air flow. There are 3500 learning areas in public schools in the ACT (including approx. 3000 classrooms).
- We know there are easy and quick changes we can make to improve ventilation and fresh air intake. These include the reopening of windows that had previously been fixed shut.
- Many of our schools have Building Management Systems with CO2 sensors which provides a proxy for ventilation in a room. CO2 monitoring will commence once students and staff have fully returned on-site in Term 4.
- Every school will have an Indoor Air Quality Plan completed by the time students go back to school for the return to on-campus learning – this includes a list of actions already undertaken by the Directorate (examples e.g. HVAC systems change) and actions for schools to undertake each day (including opening windows to promote natural ventilation and turning on exhaust fans). These school actions will be carried out by non-teaching staff like our Building Service Officers.
- All colleges received their completed Indoor Air Quality Plan last week.
- Longer term, the Directorate will look to introduce additional mechanical ventilation in spaces that require it. This may include installation of new building management systems with CO2 sensors that can remotely control HVAC systems and windows and well as installing supplemental ventilation such as fans.
- With this focus on ventilation a number of new technological solutions to neutralise airborne viruses and improve air quality are coming into the market. We'll continue to monitor studies on their effectiveness and pilot suitable technologies in our schools.

Andrew Parkinson | Executive Branch Manager

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Dhawura nguna, dhawura Ngunnawal

13 October 2021

Ventilation and air quality Frequently Asked Questions for staff

Q: Why do we need to ventilate learning spaces?

ACT Health has advised schools to optimise fresh air circulation to reduce the risk of COVID-19 transmission. The risk of transmission is higher in crowded and poorly ventilated spaces where people spend long periods of time together in close proximity. Good ventilation is one part of a suite of measures to minimise transmission in schools, like vaccination, physical distancing, good hygiene, cleaning and mask use.

Q: What's the evidence that it reduces risk?

The Chief Health Officer, the [Australian Health Protection Principal Committee](#), [World Health Organisation](#) and [Safe Work Australia](#) all recommend good indoor air quality to reduce the chance of COVID-19 transmission.

Q: How can my school optimise fresh air circulation?

We know there are easy and quick changes we can make to improve ventilation and fresh air circulation. The simplest of these is opening windows in classrooms and turning on the exhaust fans in rooms that have them. Other actions include opening windows that had previously been either mechanically fixed or painted shut - where it's safe to do so.

We've been undertaking detailed investigations of colleges including technical assessment of HVAC systems and our ability to control fresh air. As a result the Education Directorate knows that fresh air flow can be adjusted in ALL public schools to improve ventilation.

Q: What's the Indoor Air Quality framework and how is that different from the Air Quality Plan?

The Directorate has developed an Indoor Air Quality (IAQ) framework to assess the IAQ of all 3,500 public school learning spaces. It includes a checklist, which needs to be completed promptly by schools.

By the time students return, every school will have its own Indoor Air Quality Plan. This will include a list of actions already undertaken by the Directorate (examples e.g. HVAC systems change) and actions for schools to undertake each day (including opening windows to promote natural ventilation and turning on exhaust fans).

Q: Who's going to be adjusting ventilation in schools?

Actions in your school's Air Quality Plan will be carried out by non-teaching staff like your Building Service Officers.

Q: Won't rooms be less comfortable for students and staff?

Cooler classroom temperatures during cool weather and warmer classroom temperatures during hotter weather are expected to result from increasing fresh air to learning environments.

Q: Is there an estimation of what will happen to electricity bills?

Higher energy bills are anticipated to result from the increase in fresh air as a greater volume of air needs to be heated or cooled.

Q: What about CO2 sensors?

Many of our schools have Building Management Systems with CO2 sensors which provide a proxy for ventilation in a room. CO2 monitoring will commence in those schools once students and staff have fully returned on-site in Term 4.

Q: My school doesn't have CO2 sensors. Will it be receiving them?

Longer term, the Directorate will look to introduce additional mechanical ventilation in spaces that require it. This may include installation of new building management systems with CO2 sensors that can remotely control HVAC systems and windows.

The focus on ventilation is seeing new technological solutions to neutralise airborne viruses and improve air quality coming into the market. We'll continue to monitor studies on their effectiveness and pilot suitable technologies in our schools.

The Directorate is monitoring air quality in learning spaces to further refine the strategy to provide the best ventilation for ACT public schools.

From: [Yapp, Phillip](#)
To: [Mitchell, BethL](#)
Cc: [Flint, Katrina](#)
Subject: College Ventilation Upgrade - Project Plan Draft
Date: Wednesday, 13 October 2021 3:22:00 PM
Attachments: [Project Plan for College Ventilation Upgrades - Draft V1.docx](#)

Hi Beth

Project plan draft for colleges.

Phil

Phil Yapp | Assistant Director – Asset Strategies, Sustainability and Environment

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Project Plan for College Indoor Air Quality and Ventilation Upgrades



Prepared by Asset Strategies
13/10/2021

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Purpose

The projects outlined in this document aim to improve college Indoor Air Quality (IAQ) via increasing ventilation to minimise risk of COVID-19 transmission in a sustainable manner.

This project plan is intended to outline the rationale behind the recommendations, the required scope of works to achieve this at each site, estimates of required funding and recommended procurement methodologies giving consideration to existing infrastructure and short timeframes for project implementation.

Strategy in line with WHO/AIRAH guidelines

The World Health Organisation (WHO) and AIRAH have recommended a number of HVAC related measures to assist in a safe reopening of schools. The main control measures recommended include:

- Increase supply of outside air ventilation to the occupied spaces (up to 100%)
- Operate HVAC 2 hours before and after occupancy
- Utilise CO2 levels as a proxy for occupancy and ensure levels are maintained below recommended thresholds
- Provide archiving and reporting of system performance and ventilation levels

This project aims to provide the appropriate infrastructure and HVAC/BMS controls to facilitate these recommendations, manage all ventilation systems from a central location, and provide reporting functionality to demonstrate compliance with the recommendations.

Smart BMS infrastructure is required to achieve these outcomes in the Canberra climate, as it is unsustainable to maintain increased outside air rates up to 100% in the long term. It will also have an

Funding

Budgets and Procurement Methodology

Individual projects under this package of works includes works expected to range in value from ~\$5,000 for minor BMS modifications or repairs to existing ventilation systems, up to \$165,000 for a full BMS upgrade at UC Lake Ginninderra College.

Budgets have been calculated through consideration of existing systems on site, extent of work such as number of AHUs/dampers/points to be controlled by a BMS, and previous experience in implementing HVAC and BMS upgrade projects.

A 12% ACTPG management fee has been included, as well as a 20% contingency due to uncertainty in costs due to COVID restriction and the short timeframe available in putting together the business case.

Summary Budgets

Site	Building Management System	Air Handling Unit Ventilation/Outside Air Damper Allowance	Expansion of CO2 Sensors	Total Budget
Canberra College	\$12,000	\$5,000	\$20,000	\$37,000

Dickson College	\$100,000	\$30,000	\$22,400	\$152,400
Erindale College	\$10,000	\$0	\$12,000	\$22,000
Gungahlin College	\$25,000	\$0	\$0	\$25,000
Hawker College	\$30,000	\$30,000	\$19,600	\$79,600
Lake Tuggeranong College	\$25,000	\$30,000	\$18,400	\$73,400
Melba Copland College	\$150,000	\$21,000	\$19,000	\$190,000
Narrabundah College	\$130,000	\$20,000	\$20,000	\$170,000
UC Lake Ginninderra College	\$225,000	\$36,000	\$21,600	\$282,600
TOTAL	\$707,000	\$172,000	\$153,000	\$1,032,000

Required Performance Outcomes

The program has the following main performance outcomes:

- Connect 100% of college HVAC systems with mechanical ventilation to site Building Management System (BMS).
- Connect all site BMS' to Reliable Controls RC-WebView and RC-Reporter central monitoring system.
- Develop ongoing reporting capability of ventilation and CO2 levels throughout schools via RC-Reporter.

Integration of mechanical ventilation to BMS

Strategy is to ensure connection of any AHU/FCU with variable outside air to be connected to the site BMS (stay with current vendor).

AHUs shall have CO2 sensor installed to return air plenum to allow monitoring and control of the fresh air ventilation at the equipment level.

HVAC units (eg PAC, ACU, ducted) with fixed outside air to be connected to BMS as well, to allow pre-purge and

Connection to RC-WebView

All BACNET Building Management Systems are to be connected to Reliable Controls (RC) RC-WebView, a centralised BMS access and reporting software deployed across ~60 schools.

New BMS infrastructure does not need to be Reliable Controls brand, however does need to be native BACNET and able to integrate with the Reliable Controls server.

Where possible, BMS infrastructure shall be maintained as a single vendor system across individual sites, to ensure fully integrated and consistent systems, and better maintenance outcomes.

Reporting Capability through RC-Reporter

All colleges are to have a comprehensive report set up from available data on HVAC operation and CO2 levels. Reports are to be accessible via online portal and emailed out in PDF format each week.

Site Specific Project Plans

Canberra College

Budget:

Site	Building Management System	Air Handling Unit Ventilation/Outside Air Damper Allowance	Expansion of CO2 Sensors	Total Budget
Canberra College	\$12,000	\$5,000	\$20,000	\$37,000

Existing Systems:

- Reliable Controls throughout main building and performing arts centre. Delta BACNET BMS in the CC Cares building.

Scope of Work:

- Install 3x CO2 sensors to performing arts centre. Dance, drama and music rooms.
- Create graphics for CC Cares BMS on the RC Web-View.
- Review operation of all AHU mechanical systems, dampers etc.
- Update BMS Functional Description for new operation.
- Ensure all points are archived to monitor system performance at 15-minute intervals.

Procurement Methodology:

- Single quote for BMS work via Innovative Electrical Solutions.
- Single quote from Nube IO for expansion of CO2 sensors to individual classrooms.

Timeframe:

- Expected timeframe for procurement and installation is 2 weeks.

Equipment List

AHP101	AHU	AHU	CC PAC - Theatre
AHP102	AHU	AHU	CC PAC - Foyer
AHP103	AHU	AHU	CC PAC - Music Room
AHP104	AHU	AHU	CC PAC - Dance Studio
AHP105	AHU	AHU	CC PAC - Drama Studio
AHP014	AHU	AHU-1	Maths supply fan 1
AHP015	AHU	AHU-2	Special Education
AHP016	AHU	AHU-3	Library supply fan 3
AHP017	AHU	AHU-6	Gymnasium supply fan 6
AHP018	AHU	AHU-5	Cafeteria supply fan 5

AHP019	AHU	AHU-4	Administration supply fan 4
AHP003	AHU	AHU-7	Info Tech / Business supply fan 7
AHP004	AHU	AHU-8	Science North supply fan 8
AHP049	AHU	AHU-14	Art Food supply fan 14
AHP005	AHU	AHU-10	Science South supply fan 10
AHP006	AHU	AHU-9	Drama / English supply fan 9
AHP060	AHU	AHU-13	Technology supply fan 13
AHP007	AHU	AHU-12	A401 The Garret supply fan 12
AHP008	AHU	AHU-11	Multi Purpose Hall supply fan 11
FCU001	FCU	FCU x5 (1-5)	CC PAC

Dickson College

Site	Building Management System	Air Handling Unit Ventilation/Outside Air Damper Allowance	Expansion of CO2 Sensors	Total Budget
Dickson College	\$100,000	\$30,000	\$22,400	\$152,400

Existing Systems:

- Innotech controls throughout half the school, Airtek controls throughout the library.
- Innotech BMS is connected to RC-WebView, Airtek is not.

Scope of Work:

- Connect 2x Gym AHUs to the Innotech BMS, install CO2 sensors and programme new ventilation control strategies. Repair gym AHU dampers which have been fixed shut.
- Integrate Home Science AHUs and remaining FCUs to the Innotech BMS and programme.
- Connect Airtek BMS to the RC-WebView system
- Review operation of all AHU mechanical systems, dampers etc.
- Update BMS Functional Description for new operation.

Procurement Methodology:

- Single quote for BMS work via Innovative Electrical Solutions for gym. (COMPLETE)
- Single quote from Nube IO for expansion of wireless LoRaWAN CO2 sensors to selected individual classrooms. Integrate into BMS for reporting.
- **Select tender** to multiple BMS providers to expand Innotech system.

Timeframe:

- Procurement via select tender, 4 weeks.
- Supply, installation and commissioning, 4 weeks.

Equipment List

AHP001	AHU	Air Handling Unit	Gym
AHP002	AHU	Air Handling Unit	Hall
AHP003	AHU	Air handling Unit	Home Science
AHP004	AHU	Air handling Unit	Home Science

FCU012	FCU	Hot water coil fan unit	Science Block
FCU013	FCU	Hot water coil fan unit	Metal Work
FCU014	FCU	Hot water coil fan unit	Metal Work
FCU015	FCU	Hot water coil fan unit	Metal Work
FCU016	FCU	Hot water coil fan unit	Car Mechanic Workshop
FCU017	FCU	Hot water coil fan unit	Car Mechanic Workshop
FCU018	FCU	Hot water coil fan unit	Car Mechanic Workshop
FCU019	FCU	Hot water coil fan unit	Car Mechanic Workshop
FCU020	FCU	Hot water coil fan unit	Wood Work
FCU021	FCU	Hot water coil fan unit	Wood Work
FCU022	FCU	Hot water coil fan unit	Wood Work
FCU023	FCU	Hot water coil fan unit	Wood Work
FCU024	FCU	Hot water coil fan unit	Technologies

Erindale College

Site	Building Management System	Air Handling Unit Ventilation/Outside Air Damper Allowance	Expansion of CO2 Sensors	Total Budget
Erindale College	\$10,000	\$0	\$12,000	\$22,000

Existing Systems:

- Erindale College has a new Trend BACNET BMS installed throughout, circa 2019.
- All AHUs throughout college and library have mechanical ventilation with CO2/temperature sensors in the occupied space

Scope of Work:

- Modify BMS program to modulate outside air ventilation based on occupancy
- Connect BMS to RC-WebView
- Review operation of all AHU mechanical systems, dampers etc.
- Update BMS Functional Description for new operation.
- Set up ventilation report through BMS.

Procurement Methodology:

- Single quote for BMS program work via Hirotec (HVAC contractor)
- Single quote from IES to integrate Trend BMS to RC-WebView
- Engage SSICT to facilitate connection of BMS to the ACTGOV network
- AHU/Outside Air damper allowance TBC with HVAC contractor as required.

Timeframe:

- Procurement via single quote, 1 week.
- Supply, installation and commissioning, 3 weeks.

Equipment List

AHP012	AHU	Administration (WS3)	Principals Office L2 Admin Office L2
AHP010	AHU	Ancillary Hall (WS1)	Ancillary Hall L2

AHP016	AHU	Conference	Drama area
AHP015	AHU	East Lecture and cafeteria	East Lecture Cafeteria
AHP008	AHU	East Level 3 (ES2)	College East L3 South College East L3 North
AHP017	AHU	FCU 1 Dance studio	Dance studio Ceiling space
AHP018	AHU	FCU 2 Dance studio	Dance studio Ceiling space
AHP009	AHU	Library	Computer Area Open Area 1 Open Area 2 Room I2.09
AHP014	AHU	Music Suite (WS5)	Music Suite L3
AHP011	AHU	West Level 2 (WS2)	College West L2 Centre College West L2 North
AHP013	AHU	West Level 3 (WS4)	College West L3 Centre College West L3 North College West Lecture Theatre College West L3 Drama

Gungahlin College

Site	Building Management System	Air Handling Unit Ventilation/Outside Air Damper Allowance	Expansion of CO2 Sensors	Total Budget
Gungahlin College	\$25,000	\$0	\$0	\$25,000

Existing Systems:

- Gungahlin College has a modern Delta Building Automation BMS throughout with remote access.
- HVAC system in general is full fresh air and does not require CO2 sensors to increase ventilation in school areas
- CIT/Library systems are not full fresh air and will require upgrades

Scope of Work:

- Install CO2 sensors to Delta BMS in library and CIT AHUs
- Integrate BMS into RC-WebView
- Review operation of all AHU mechanical systems, dampers etc.
- Update BMS Functional Description for new operation.
- Set up ventilation reports through BMS.

Procurement Methodology:

- Single quote for CO2 sensors and BMS program work via Delta (BMS provider)
- Single quote from IES to integrate Delta BMS to RC-WebView and archive relevant data points
- Engage SSICT to facilitate connection of BMS to the ACTGOV network
- AHU/Outside Air damper allowance TBC with HVAC contractor as required.

Timeframe:

- Procurement via single quote, 1 week.
- Supply, installation and commissioning, 3 weeks.

Equipment List

AHU L-LL-02	AHU	AHP	LIBRARY/CIT
AHU L-LL-03	AHU	AHP	LIBRARY
AHU L-LL-01	AHU	AHP	LIBRARY/CIT Lower Level

Hawker College

Site	Building Management System	Air Handling Unit Ventilation/Outside Air Damper Allowance	Expansion of CO2 Sensors	Total Budget
Hawker College	\$30,000	\$30,000	\$19,600	\$79,600

Existing Systems:

- Hawker College has a newly upgraded Reliable Controls BMS throughout the school.
- AHUs throughout provide a fixed minimum volume of outside air ventilation, but have the capacity to increase this via economy cycle dampers.

Scope of Work:

- Install CO2 sensors to 11x central AHUs throughout the school.
- Review operation of all AHU mechanical systems, dampers etc.
- Update BMS Functional Description for new operation.

Procurement Methodology:

- A quote for ~\$35,000 has been received for these works, and a Single Select PPM approved.
- AHU/Outside Air damper allowance TBC with HVAC contractor as required.

Timeframe:

- Supply, installation and commissioning, 3 weeks.

AHP022	AHU	AHP	Airhandling unit 1 - Library
AHP025	AHU	AHP	Airhandling unit 2 - Science
AHP040	AHU	AHP	Airhandling Unit 3 - Workshop/Art
AHP058	AHU	AHP	Airhandling unit 4 - Food Studies
AHP068	AHU	AHP	Airhandling unit 5 - Café
AHP072	AHU	AHP	Airhandling unit 6 -Maths
AHP076	AHU	AHP	Airhandling unit 7 -English
AHP081	AHU	AHP	Airhandling unit 8 -Administration
AHP087	AHU	AHP	Airhandling unit 10 - Green Room
AHP088	AHU	AHP	Airhandling unit 11 - Theatre
AHP097	AHU	AHP	Airhandling unit 9 -Gym/Art Commons

Lake Tuggeranong College

Site	Building Management System	Air Handling Unit Ventilation/Outside Air Damper Allowance	Expansion of CO2 Sensors	Total Budget
Lake Tuggeranong College	\$25,000	\$30,000	\$18,400	\$73,400

Existing Systems:

- Lake Tuggeranong College has a modern Reliable Controls BMS throughout with remote access.
- One Pavilion has BACNET Airtex BMS.
- The majority of AHUs have CO2 sensors connected to the BMS

Scope of Work:

- Install CO2 sensors to remaining AHUs throughout the college.
- Integrate Airtex BMS into RC-WebView.
- Set up ventilation reports through BMS.
- Review operation of all AHU mechanical systems, dampers etc.
- Update BMS Functional Description for new operation.

Procurement Methodology:

- Single quote for CO2 sensors and BMS program work via IES (BMS provider)
- Single quote from IES to integrate Delta BMS to RC-WebView and archive relevant data points
- Engage SSICT to facilitate connection of BMS to the ACTGOV network
- AHU/Outside Air damper allowance TBC with HVAC contractor as required.

Timeframe:

- Procurement via single quote, 1 week.
- Supply, installation and commissioning, 3 weeks.

Equipment List

AHP030	AHU	AHU 2.3	plant room
AHP015	AHU	AHU 1.1	Science Plant Room
AHP012	AHU	AHU 1.2	Maths Plant Room
AHP026	AHU	AHU 2.1	Gym Plant Room
AHP027	AHU	AHU 2.2	Gym Plant Room
AHP044	AHU	AHU 2.4	plant room
AHP041	AHU	AHU 3.1	plant room
AHP057	AHU	AHU 4.1	Art / Photography Plant Room
AHP065	AHU	AHU 5.1	Theatre Plant Room
AHP066	AHU	AHU 5.2	Theatre Plant Room
AHP071	AHU	AHU 6.1	plant room
AHP072	AHU	AHU 6.2	plant room
AHP001	AHU	AHU 6.3	plant room
AHP073	AHU	AHU	Woodtech

Melba Copland College

Site	Building Management System	Air Handling Unit Ventilation/Outside Air Damper Allowance	Expansion of CO2 Sensors	Total Budget
Melba Copland College	\$150,000	\$21,000	\$19,000	\$190,000

Existing Systems:

- Melba Copland College currently has an aged non-BACNET Carrier 6400 BMS throughout the school, with one newer BACNET controller. BMS is considered end-of-life and should be upgraded to expand functionality.
- Majority of AHUs have ventilation but no CO2 sensors.

Scope of Work:

- Scope requirements for full BMS upgrade to new BACNET system.
- Include installation of CO2 sensors to all AHUs and programme ventilation strategies.
- Integrate new BMS into RC-WebView and Reporter.
- Review operation of all AHU mechanical systems, dampers etc.
- Update BMS Functional Description for new operation.

Procurement Methodology:

- Select Tender (25-200k) for design, supply and installation of a new BMS.
- Single quote from IES to integrate Delta BMS to RC-WebView and archive relevant data points
- Engage SSICT to facilitate connection of BMS to the ACTGOV network

Timeframe:

- Procurement via select tender, 4 weeks.
- Supply, installation and commissioning, 6 weeks. (over Christmas school holidays)

Equipment List

AHU002	AHU	AHU - Admin	admin and offices
AHU007	AHU	AHU - Café	canteen
AHU005	AHU	AHU - Language	Humanties and langage area
AHU011	AHU	AHU - Science	Science
AHU006	AHU	ahu 4	Music drama
AHU008	AHU	Hall and Gym	hall and gym
AHU010	AHU	Industrial arts unit 12	
AHU004	AHU	Information, advice centre, Tech,computers E learning AHU 9	Information, advice centre, Tech, computers E learning
AHU003	AHU	libaray unit	library area
AHU009	AHU	Maths AHU	Maths
AHU001	AHU	unit 5	multiurpose hall

Narrabundah College

Site	Building Management System	Air Handling Unit Ventilation/Outside Air Damper Allowance	Expansion of CO2 Sensors	Total Budget
Narrabundah College	\$130,000	\$20,000	\$20,000	\$170,000

Existing Systems:

- Narrabundah College has a mix of a new Reliable Controls BACNET BMS and a non-BACNET aged Carrier BMS.
- Majority of school is served by Fan Coil Units with limited mechanical outside air provision.

Scope of Work:

- Scope options for most suitable ventilation upgrades to site based on available infrastructure. E.g. automated window actuators, provision of fresh air ventilation system.
- Scope requirements for BMS upgrade to new BACNET system.
- Review operation of all FCU/AHU mechanical systems, dampers etc.
- Update BMS Functional Description for new operation.

Procurement Methodology:

- Single quote to mechanical engineer to review site infrastructure and develop scope of works for ventilation upgrades.
- Select Tender or Single Select (25-200k) for design, supply and installation recommended works. Single select to maintain Reliable Controls consistently throughout site would allow a faster deployment and integration with existing BACNET system.

Timeframe:

- Procurement via select tender or single select, 2 weeks.
- Supply, installation and commissioning, 4-6 weeks (during Term 4).

Equipment List

- 63x Fan Coil Units throughout school.

UC Lake Ginninderra College

Site	Building Management System	Air Handling Unit Ventilation/Outside Air Damper Allowance	Expansion of CO2 Sensors	Total Budget
UC Lake Ginninderra College	\$225,000	\$36,000	\$21,600	\$282,600

Existing Systems:

- UC Lake Ginninderra College has all non-DDC/BMS Landys and Gyr local controls. One block contains new Reliable Controls controllers for 3 units, however this would not necessitate their upgrading the entire BMS.
- These provide no central oversight or ability to manage ventilation rates throughout the school.
- Ventilation is provided by a series of heating only AHUs, which will be adequate with additional controls during winter.
- Ventilation during summer will be via operable windows, or running the heating only AHUs in ventilation mode.

Scope of Work:

- Develop Statement of Requirements for BMS upgrade to new BACNET system, incorporating control of all ventilation systems.
- Review operation of all FCU/AHU mechanical systems, dampers etc.
- Update BMS Functional Description for new operation.

Procurement Methodology:

- Select Tender or Single Select (25-200k) for design, supply and installation recommended works. Single select to maintain Reliable Controls consistently throughout site would allow a faster deployment and integration with existing BACNET system.

Timeframe:

- Procurement via select tender or single select, 3-4 weeks.
- Supply, installation and commissioning, 4-6 weeks (during Term 4, into January school holidays).

Equipment List

AHP023	AHU	AHP	Theatre airhandling unit F3
AHP016	AHU	AHP	Airhandling unit B1
AHP019	AHU	AHP	Food / Textiles airhandling unit
AHP024	AHU	AHP	Offices airhandling unit F4
AHP029	AHU	AHP	A Block airhandling unit 1
AHP030	AHU	AHP	A Block airhandling unit 2
AHP039	AHU	AHP	F Block airhandling unit F1
AHP040	AHU	AHP	F Block airhandling unit 2
AHP053	AHU	AHP	E Block airhandling unit E1
AHP058	AHU	AHP	D Block airhandling unit D1
AHP068	AHU	AHP	C Block airhandling unit C1

AHP069	AHU	AHP	C Block airhandling unit C2
AHP079	AHU	AHP	Gym Staff airhandling unit 1
AHP080	AHU	AHP	Main Gym airhandling unit 2
AHP008	AHU	AHP	Airhandling unit B2

Flint, Katrina

From: Yapp, Phillip
Sent: Wednesday, 13 October 2021 3:39 PM
To: Mitchell, BethL
Cc: Flint, Katrina
Subject: FW: ACT Education: Nube IO for LoRaWan CO2/temp sensor integration to local BMS
Attachments: CO2 Solution.pdf

For discussion.

Phil Yapp | Assistant Director – Asset Strategies, Sustainability and Environment

Phone: +61 2 6207 9190 | M: 0435 655 176 | Email: phillip.yapp@act.gov.au
 Infrastructure and Capital Works | Education | ACT Government
 Level 4 220 London Circuit | GPO Box 158 Canberra ACT 2601 | www.det.act.gov.au

From: tfy@nube-io.com <tfy@nube-io.com>
Sent: Wednesday, 13 October 2021 9:50 AM
To: Yapp, Phillip <Phillip.Yapp@act.gov.au>
Subject: RE: ACT Education: Nube IO for LoRaWan CO2/temp sensor integration to local BMS

CAUTION: This email originated from outside of the ACT Government. Do not click links or open attachments unless you recognise the sender and know the content is safe.

Hi Phil,
 Thanks again for your interest in the Nube products.
 I look forward to discussing the CO2 monitoring further.
 I have attached the Nube solution for the environment monitoring including CO2.
 I will call again today to discuss.
 Kind regards
 Tom

Tom Fyfe

E: tfy@nube-io.com
W: <https://nube-io.com/>
P: 0412 449 592



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----- Forwarded message -----

From: Yapp, Phillip <Phillip.Yapp@act.gov.au>
Date: Tue, Oct 12, 2021 at 3:46 PM
Subject: ACT Education: Nube IO for LoRaWan CO2/temp sensor integration to local BMS
To: info@nube-io.com <info@nube-io.com>

Hi There

Hoping to get some information, indicative pricing and availability for the Nube IO systems. The Education Directorate in ACT is looking at options for safe return of schools, and considering trialling a roll out of LoRaWan CO2/temp sensors throughout some of our schools with integration into existing local Building Management Systems via BACNET. Most of our BMS' are BACNET Automated Logic, Carrier, Delta, Innotech, Reliable Controls or Siemens and already have remote access. Obviously the benefits of wireless would be ease of deployment and no cable runs with a large number of schools and classrooms.

I believe we do have a couple of units in Amaroo and Fadden schools through the Uni of Wollongong but would like to look at roll out either in-house or direct through local HVAC/BMS contractors in the long term.

Some questions on the Nube IO system:

- Would the Rubix IO or Compute be most suited with the existing BMS'?
- It's able to integrate locally via BACNET, I understand with the RUBIX WIRES program we'd be able to program the device and wireless sensors and map over to the BMS without any additional costs? Assume we could do this ourselves/via BMS contractor with the user guide.
- Do you have prices available on a per unit basis for the recommended model? Options for purchase may be 1-5, 5-10, or 10-20 at this stage?
- What is the current stock/lead time on supply?
- What is the typical range/coverage, would multiple wireless Access Points be required for a large school/college?
- Are there any other points/considerations you think are relevant?

Would be great to discuss when possible, or any questions please let me know.

Regards

Phil

Phil Yapp | Assistant Director – Asset Strategies, Sustainability and Environment

Phone: +61 2 6207 9190 | M: 0435 655 176 | Email: phillip.yapp@act.gov.au

Infrastructure and Capital Works | Education | ACT Government

Level 4 220 London Circuit | GPO Box 158 Canberra ACT 2601 | www.det.act.gov.au

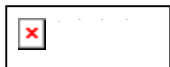
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Regards,

Matthew Cady



Chief Operating Officer
E: m.cady@nube-io.com
W: <https://nube-io.com>
P: +61 423 219 747

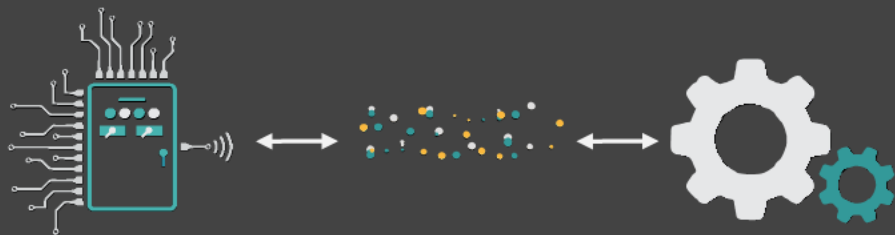


This email has been checked for viruses by AVG antivirus software.
www.avg.com



RECORD 17

NUBE i0



Environment Solution – C02

March 2021

4 of 16



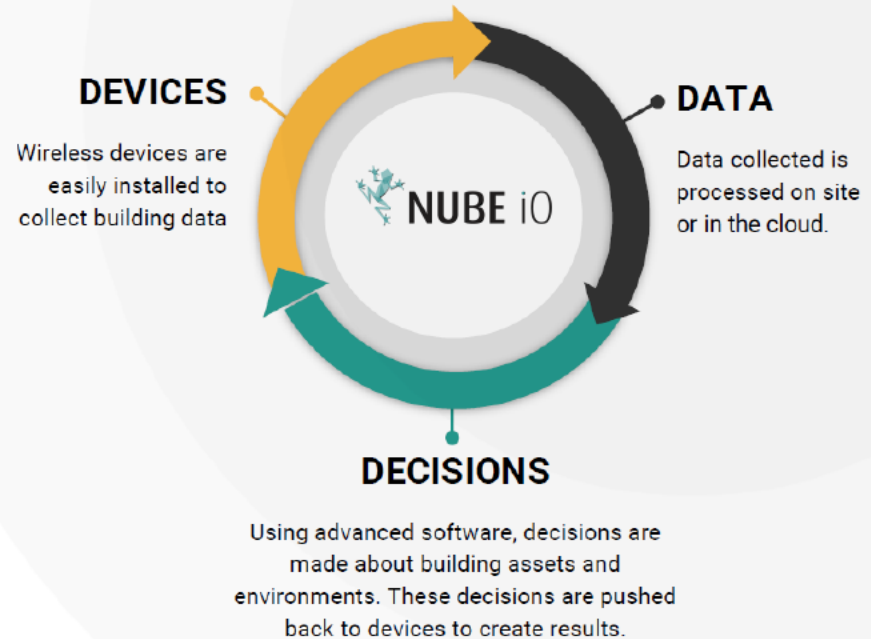
NUBE iO

Nube iO is a cutting edge IoT provider of integrated hardware and software in the thriving and growing PropTech (Property Technology) market

Our special design of backward and forward integration of data into existing systems gives us a unique competitive advantage offering clients the ability to access new and existing data to offer visibility of building environment, client occupancy, reduce maintenance costs and have greater access and visibility of compliance information and utility data

We provide a turnkey solution that can be used as a standalone SMART Building solution or integrated with existing equipment to give you a full and complete digital twin building

RECORD 17



WHY AN IOT SOLUTION WITH NUBE

Nube iO provides an end-to-end IoT solution that provides remote monitoring and control of building assets and environments.

- **Data extraction** and **integration** specialists
- Scalable and economic building automation solution using **modern IoT & wireless** technologies
- Provides a **data pipe** from the building to the cloud

Wireless, IoT ready devices **vs.** lengthy cabling

Fast installation out of hours **vs.** facility downtime, infrastructure damage & expensive retrofits

Enhanced fault diagnosis & detailed alerting **vs.** limited remote understanding of problems

Predictive fault detection = predictive maintenance **vs.** proactive or reactive maintenance

**Remotely Control
and monitor**



**Reduce Utility
Bills**



**Reduce Trade
Service Calls**



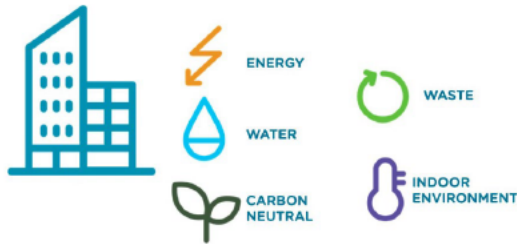
WELLNESS RATING ENVIRONMENT – NABERS / WELLS

RECORD 17



NABERS was introduced as a standard for building owners and facility managers to benchmark and reduce their carbon footprint to comply with National and International carbon reduction targets

OFFICES, SCHOOLS, HOSPITAL, RETAIL



WELLS ratings is a three tier rating system for indoor air quality, environmental conditions and water, to assess the quality of the spaces provided by the building owner

Air Quality sensors monitoring;

Indoor smoke particle	Outdoor smoke particle
Carbon Dioxide	Carbon Monoxide
Volatile Compounds	OZONE
Water quality	Sound
Humidity	Temperature



Nube's solution is designed to capture all data relating to NABERS and WELLS, from energy to water and all indoor environment related points

This can all be done at a fraction of the cost of traditional methods with additions to allows client and building managers to monitor building performance real time

Unique combination of sensors, gateway edge computing, cloud based AI and applications providing real time data and control of physical assets that is:

- Real-time intelligence from devices to data and decisions, utilising wireless sensing and control
- Adaptable, scalable solution for asset owners to digitise their assets
- Visualise the operation of multiple buildings over a large geographical area

Full integration of systems and sensors – true SMART Building solution



ENVIRONMENT



OCCUPANCY



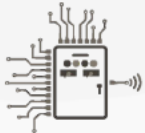
GAS / WATER / POWER



SITE EQUIPMENT - HVAC



LIGHTING



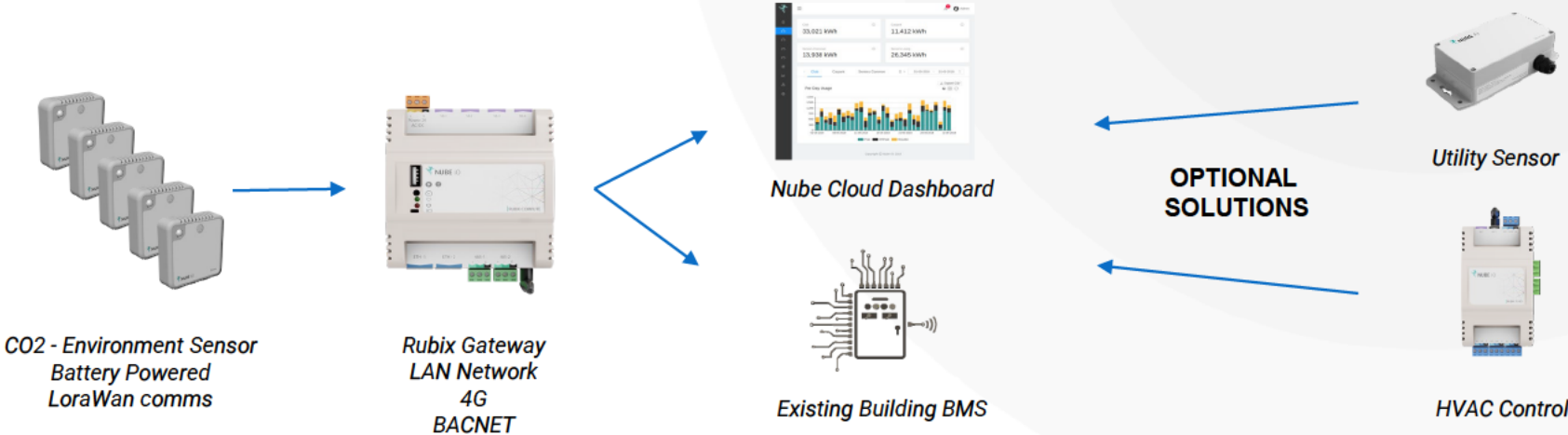
BUILDING BMS

NUBE CO2 SOLUTION

CO2 is being measured as an alert mechanism for adequate ventilation in schools and businesses to ensure a safe environment for students and staff.

Nube's IoT solutions offer easy CO2 monitoring via battery powered, non evasive, easy to install sensors, connected through the Rubix gateway and display real time for accurate monitoring and alerts.

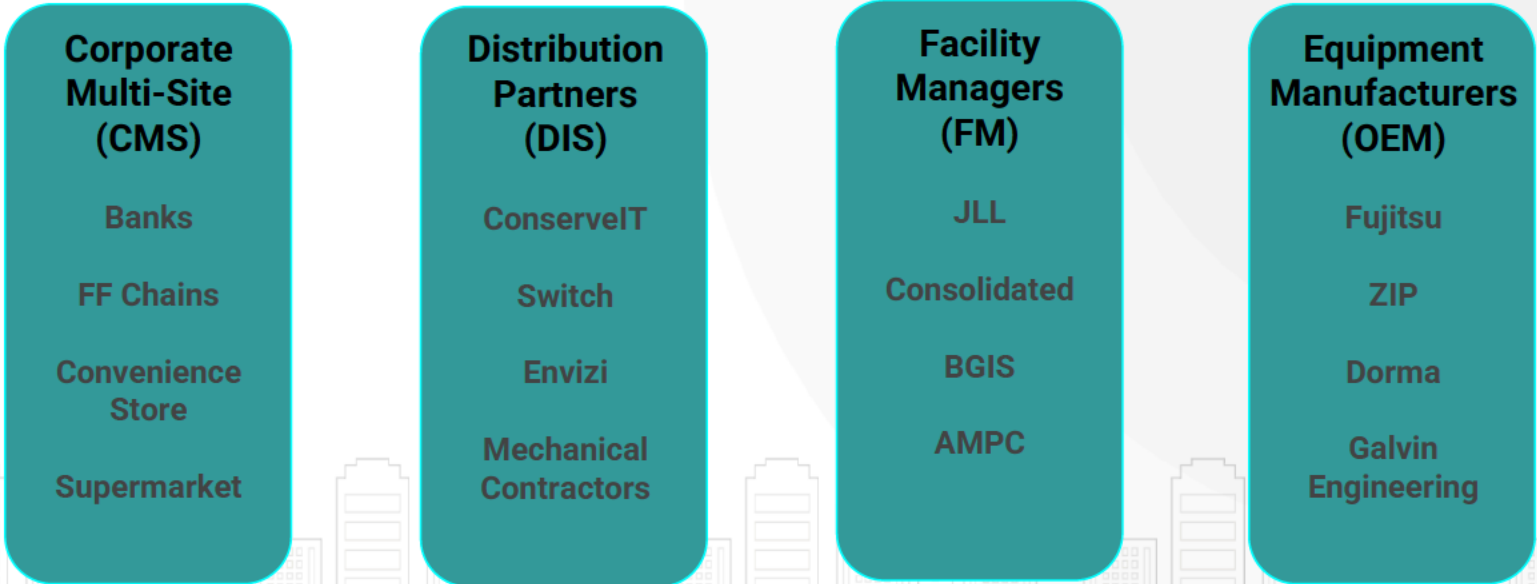
Unlike other CO2 systems, Nube's Rubix platform allows you to control ventilation and HVAC to act on the monitoring and allows for additional sensors to deploy a full smart building solution.



NUBE CURRENT CLIENT BASE

Nube has seen the success in various industries where we have both a product and knowledge advantage over any competitor, leading the strategy we have today

Nube is focused on four key pillars of business that include:



Geographical Market - Australia & NZ - UK & EU - Asia



Confidential

Bank branch integrated data and building system – 1,100 Branches

Problem: No visibility of branch operations and remote control of equipment

Solutions: Integrated system providing -
Occupancy
Lighting
Environment – Indoor and Outdoor
Door movement
ZIP Hot water monitoring
Air conditioning monitoring

Benefit: Reduction in annual maintenance costs by 27% by reducing number of maintenance contractor call outs. Reducing carbon footprint across the business committing to Paris Agreement.





Property NSW - JLL

Fully integrated solution of environment sensing and BMS integration

Problem: No data from old existing BMS – no compliance with NABER and WELL

Solutions: Integrated system providing -
Environment – Indoor and Outdoor
Occupancy
HVAC Monitoring
Water monitoring

Benefit: Providing data and visualisation for building environmental metrics for NABERS & WELLs compliance.



Consolidated Property Services

SMART Bathroom solution and integrated building solution for clients:

Problem: No data for EOT or bathrooms cleaning statistics

Solutions: Integrated system providing -

- Occupancy

- Lighting

- Environment – Indoor and Outdoor

- Door movement – Showers / Toilets

- Water monitoring

- Waste monitoring

- Opportunity for full client integration for building occupancy

Benefit: Visibility of usage and efficiency of facility cleaning.
Technological advantage over competitors.

Current rollouts – 101 Collins St, 130 Lonsdale St, 200 George St





AMP Capital - Retail

Water Meter Monitoring for Retail Operations with BMS integration and sub tenancy metering

Problem: No water data live for all retail sites – No integration of data to BMS, No visibility of clients water useage.

Solutions: Integrated system providing -
Site water monitoring
Sub-tenancy water metering
Integration of data to existing BMS over BACNET
Data push to analytics platforms
Dashboard visualisation

Benefit: True visualisation of water usage at all retail sites.

Current Rollouts – Casula Mall, Malvern Central, Northbridge Plaza, Pacific Fair

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CONTACT

ABN: 18 629 763 177
1/17 Cemetery Road, Helensburgh, NSW, 2508

www.nube-io.com

Contact: tfy@nube-io.com

TOM FYFE - 0412 449 592

Flint, Katrina

From: Yapp, Phillip
Sent: Friday, 15 October 2021 12:27 PM
To: Mitchell, BethL; Kidman, Fiona
Cc: Flint, Katrina
Subject: College Ventilation Upgrade Documents
Attachments: IAQ008-CollegeVentilationUpgrades.docx; PPM - College Building Management System and Ventilation Upgrades - Select Tender.docx; Project Plan for College Ventilation Upgrades - Draft V1.docx

Hi Fiona and Beth

Please find attached:

- COVID Ventilation Project Document
- Project Plan for 9 college upgrades program
- PPM for the select tender projects

We will need to discuss who the delegate is, the evaluation team, and how this gets delivered by ACTPG.


Cheers
Phil

Phil Yapp | Assistant Director – Asset Strategies, Sustainability and Environment

Phone: +61 2 6207 9190 | M: 0435 655 176 | Email: phillip.yapp@act.gov.au
Infrastructure and Capital Works | Education | ACT Government
Level 4 220 London Circuit | GPO Box 158 Canberra ACT 2601 | www.det.act.gov.au

COVID-19 Ventilation Works

Project Reference	IAQ008
Project:	Upgrade of nine (9) college ventilation and Building Management Systems.
Delivery Location/s	<p>Colleges to receive upgraded ventilation, BMS controls or reporting functionality include:</p> <ul style="list-style-type: none"> - Canberra College - Dickson College - Erindale College - Gungahlin College - Hawker College - Lake Tuggeranong College - Melba Copland College - Narrabundah College - UC Lake Ginninderra College
Stakeholder engagement	<p>Asset Strategies have prepared the recommended scope of works with input from ACTPG HVAC managers, the school HVAC service providers and the BMS providers.</p> <p>R&M have been consulted on the package of works and expected outcomes, timeframes and rationale behind the project.</p>
Description:	<p>The World Health Organisation (WHO) and AIRAH have recommended a number of HVAC related measures to assist in a safe reopening of schools. The main control measures recommended include:</p> <ul style="list-style-type: none"> - Increase supply of outside air ventilation to the occupied spaces (up to 100%) - Operate HVAC 2 hours before and after occupancy - Utilise CO2 levels as a proxy for occupancy and ensure levels are maintained below recommended thresholds of 800ppm. - Provide archiving and reporting of system performance and ventilation levels <p>This project aims to provide the appropriate infrastructure and HVAC/BMS controls to facilitate these recommendations, manage all ventilation systems from a central location, and provide reporting functionality to demonstrate compliance with the recommendations.</p> <p>Smart BMS infrastructure is required to achieve these outcomes in the Canberra climate, as it is unsustainable to maintain increased outside air rates up to 100% in the long term.</p>
Procurement information:	<p><i>Procurement methodology will vary over the individual works in the program, including:</i></p> <ul style="list-style-type: none"> - <i>Select tender (3 quotes)</i> <ul style="list-style-type: none"> o <i>Where full site BMS upgrade is required, Narrabundah, Melba Copland and UC Lake Ginninderra Colleges</i> - <i>Single select</i> <ul style="list-style-type: none"> o <i>BMS upgrades where standardisation with existing BMS vendor is required</i> o <i>where new innovative technology with single suitable supplier within timeframe is required (wireless LoRaWan CO2 sensors and IoT hub).</i> - <i>Single quote <\$25k</i>

	<ul style="list-style-type: none"> ○ <i>Minor ventilation and controls program modifications</i> ○ <i>Minor repairs and maintenance on ventilation units, AHUs etc</i> <p><i>PPM attached for 3x select tender/quote \$25-200k projects.</i></p> <p><i>Individual PPMs to be provided for single select as required.</i></p>
Indicative Budget:	\$1,032,000 excluding GST, including ACTPG fee.
Sign-off:	<p>Name: Phil Yapp</p> <p>Title: Assistant Director Asset Strategies, Sustainability and Environment</p> <p>Signature: </p>
Delegate	<p>Name:</p> <p>Title:</p> <p>Signature:</p>

Procurement Plan Minute

PROCUREMENT OVERVIEW	
To	Andrew Parkinson Executive Branch Manager Infrastructure and Capital Works ACT Education Directorate
Name of Project	COVID-19 ventilation and BMS upgrades at three (3) colleges. <ul style="list-style-type: none"> • Melba Copland College • Narrabundah College • UC Lake Ginninderra College
Purpose	This minute seeks your agreement to undertake three (3) select tenders/written quote processes to engage suitably qualified contractors to supply and install upgraded Building Management Systems to colleges, to allow improvements of ventilation in line with WHO and health advice for safe return to schools.
Estimated value (\$)	The estimated value of this project is \$555,000 GST inclusive.
Timing/urgency	Delivery timeframe of completion during Term 4 2021 to allow safe return to school for students in an energy efficient manner as soon as practicable.
Tender Number	TBC
Is Government Procurement Board sign off required?	The Government Procurement Board is not required to sign off this procurement as the value is below the \$5 million threshold requirement.
Is ACT Government Solicitor consultation required?	No. The Territory will use template documents developed by the ACT Government Solicitor. If required, their services will be engaged for specific activities.

PROCUREMENT REQUIREMENTS	
Background	<p>To ensure college students and staff are able to return to on-site teaching in a COVID safe environment, the HVAC system needs to be able to control ventilation to increase fresh air, while also maintaining internal comfort conditions in an energy efficient manner.</p> <p>While a temporary fix is to manually open outside air ventilation dampers on the HVAC air handling units, this is an unsustainable option and will result in high energy costs, poor thermal comfort especially in winter, and won't provide an objective record of ventilation levels based on internal CO2 levels as a proxy for ventilation.</p>

<p>Objective or scope of works or services to be provided</p>	<p>The objective of this procurement is to supply and install a new Building Management System across the site, to allow monitoring and control of CO2 levels and ventilation throughout the college.</p> <p>Additional benefits will include better ongoing performance of the HVAC system, improved comfort conditions and reduced maintenance costs associated with the air conditioning systems.</p> <p>The project seeks industry solutions to achieve a functional and energy efficient Building Management System to control the college’s HVAC systems.</p> <p>A suitably qualified mechanical consultant will be engaged immediately to complete a site and equipment audit and document the required technical Scope of Works.</p> <p>This Scope of Works will form part of the tender documentation in conjunction with Education’s general Attachment A – Statement of Requirements.</p>
<p>Type</p>	<p>Goods and Services.</p>
<p>Funding</p>	<p>Funding will be provided through COVID-19 ventilation upgrade program:</p> <ul style="list-style-type: none"> • Melba Copland College: \$123,000 incl GST • Narrabundah College: \$106,000 incl GST • UC Lake Ginninderra College: \$184,000 incl GST • Contingencies (20%) and ACTPG Fee (12%): \$151,000 incl GST • Total: \$555,000 incl GST
<p>Site</p>	<ul style="list-style-type: none"> • Melba Copland College • Narrabundah College • UC Lake Ginninderra College
<p>Consultation (including pre-tender)</p>	<p>Internal stakeholders within ICW have been consulted and the Principal has agreed in writing to support the project.</p> <p>ACT Property Group as the delivery partner have been consulted</p> <p>The project budget was informed by discussions with the ACTPG HVAC maintenance team, and HVAC maintenance service providers.</p> <p>Indicative costing was informed through Asset Strategies’ previous experience with BMS upgrades considering the condition of existing schools and review of HVAC asset lists for indicative scope of works.</p>

<p>PROCUREMENT RISK</p>	
<p>Risk</p>	<p>The risk is identified as Medium</p>

	Refer to Attachment B - Risk Plan and Matrix.
PROCUREMENT METHODOLOGY	
Description of the procurement method to be used	Select tender from external suppliers with previous experience with ACT Government and Education Directorate.
Evaluation	Refer to Attachment C – Evaluation Plan.
Is this suitable to be a Social Procurement?	The Directorate has determined that this Procurement is not suitable to be a Social Procurement as a specialist service provider/s are required.

CONTRACT MANAGEMENT	
Number of contracts	A Contract will be awarded to the successful tenderer. The contract will be based on the Contract template as endorsed by the ACT Government Solicitor.
Contract management	The Contracts will be managed by ACT Property Group (ACTPG) as this agency has the skills and experience to carry out this role.
Period of contract(s)	The term of the supply and delivery of the contract will be 4 months (plus 12 month's DLP) to cover works, documentation, issues management and potential rectifications, with practical completion by Day 1 Term 1 2022.
AUSTRALIAN FREE TRADE AGREEMENTS (FTAs)	
Does the Australia – United States Free Trade (AUSFTA) apply?	No, the estimated value of the school contract is below the \$666,000 threshold level for goods and services procurement.
AUSTRALIAN GOVERNMENT FUNDING	
Is there Australian Government funding attached to the procurement?	No, there is no Australian Government funding attached to this procurement.

EXEMPTIONS	
Exemption Type	N/a
Reason for Exemption	N/a

DIRECTORATE ENDORSEMENT			
Name	Beth Mitchell	Phone Number	#78364
Position	Director Asset Strategies		
Signature		Date	/01/2021

EVALUATION TEAM			
Name	TBC ACTPG PM	Fiona Kidman	Phillip Yapp
Position	Chair	Member	Member
Agency	ACTPG	Education	Education
Statement on team composition	Members of the Tender Evaluation Team are subject matter experts. Members are experienced in undertaking procurement processes and contract negotiations.		

STRATEGIC PROCUREMENT ENDORSEMENT			
Name	Kristie Perrin	Phone Number	#50508
Position	Director Strategic Procurement		
Signature		Date	

DELEGATE			
Name	John Ryan / Andrew Parkinson		
Position	Senior Director, Public School Infrastructure Upgrades / Executive Branch Manager Infrastructure and Capital Works ACT Education Directorate		
Statement	(a) The Procurement Plan Minute and attachments are approved. (b) I am satisfied that a value of money assessment will be undertaken against the approved evaluation criteria.		
Signature		Date	



STATEMENT OF REQUIREMENTS (CONTRACTOR SERVICES)

ATTACHMENT A.

TITLE OF PROJECT

ACT Education Directorate – Building Management System Upgrade – Melba Copland College / Narrabundah College / UC Lake Ginninderra College.

BACKGROUND

To ensure college students and staff can return to on-site teaching in a COVID safe environment, the Heating, Ventilation and Air Conditioning (HVAC) system needs to be able to control ventilation to increase fresh air, while also maintaining internal comfort conditions in an energy efficient manner.

While a temporary control measure is to manually open outside air ventilation dampers on the HVAC air handling units, this is an unsustainable option and will result in high energy costs, poor thermal comfort especially in winter, and won't provide an objective record of ventilation levels based on internal CO2 levels as a proxy for ventilation.

THE SERVICES

The contractor is to supply and install a new native BACNET Building Management System to allow full automated control of all major HVAC equipment on site, outlined in **Appendix XX– BMS Detailed Scope of Works**. Works include the design, supply and installation, programming and commissioning of the new BMS. A 12-month DLP and ongoing tuning is also required.

...

...

...

The Contractor is to comply with all relevant Work Health and Safety legislation and provide, as required:

- Appropriate Personal Protective Equipment to its staff
- Relevant Workplace Health and Safety Certifications (i.e. working at heights) to ACTPG.
- Safe Work Methods Statements to ACTPG.

The Tenderer is to refer to the Conditions of Tender Specifications for the full requirements of the tender submission, including all threshold and weighted assessment criteria required. This includes the ACT Procurement requirements such as the Secure Local Jobs Code Certificate.

KEY DELIVERABLES

Deliverable	Due
Final Quotation due	28/10/2021
Quotation Accepted	04/11/2021
Works Commence on-site	18/11/2021
Installation finalised	21/12/2021
Inspection of installation approved	24/12/2021

REPORTING AND COMMUNICATIONS

1. The successful Contractor is required to communicate regularly (weekly written report, email acceptable) with the nominated Project Manager.
2. Issues which may affect the capacity to deliver the key outcomes within the specified timeframes are to be advised by phone immediately to the Project Manager with a follow up email.
3. ACTPG is to issue an e-report weekly to the EDU Project Lead (Phil Yapp) with an update of progress against the agreed schedule. The weekly report will include:
 - a) Each school's progress against their nominated schedule of works;
 - b) All issues (budget, schedule, school complaints etc) not resolved or ongoing;
 - c) All payments made to Contractors with nominated invoice and documentation;

SPECIFIED PERSONNEL AND OPERATIONAL REQUIREMENTS

- a. The Supplier must ensure that each of their Specified Personnel providing the Services hold the following at a minimum:
 1. A current and valid first aid certificate;
 2. A current and valid asbestos awareness card;
 3. A Working with Vulnerable People Card in accordance with Working with Vulnerable People Registration. Specified Personnel must have with them at all times during the provision of Services a valid Working with Vulnerable People card;
 4. All appropriate security and police checks as required by law and Territory requirements;
 5. The successful Tenderer will be required to ensure that all employees are adequately trained and qualified to ensure that all Services are delivered in accordance with the requirements of the contract, and any relevant legislation and Australian Standard.

6. The Supplier must effect and maintain for the Term, all insurances required to be effected by it by law and the following insurances in the amounts stated:
- Public Liability insurance with coverage in the amount of no less than \$10 million in respect of each occurrence.
 - For Supplies that include services, professional indemnity insurance with coverage in the amount of no less than \$10 million in the annual aggregate.
 - For Supplies that include goods, product liability insurance to a value of \$10 million in the annual aggregate.
 - The Supplier must provide evidence of the insurance if required by the Territory.

WORK HEALTH AND SAFETY REQUIREMENTS AND ONSITE CONDUCT

- 1.1 The Supplier will be required to ensure that its business and all employees operate, in the provision of the Services, in accordance with the Work Health and Safety Act 2011.
- 1.2 The Supplier will be required to ensure all employees have access to safety notices, hazardous material handling procedures, Safe Work Method Statements (SWMS) that are relevant to the Services. The successful Supplier will be required to provide SWMS to the project officer prior to commencing any work on site.
- 1.3 The Supplier will be required to provide a list of names, mobile numbers and National Police Check Certificates to be submitted to the Territory Contract Manager and School Business Manager for all their employees and sub-contracted employees that are working on-site, and/or inducted ready, to deliver the Services. This list shall be continually up-dated as required.
- 1.4 At no time shall individuals whose details have not been provided to the Territory Contract Manager and School Business Manager, be permitted to come on site during the hours of service delivery, or at any time after school business hours, including family members, friends, or replacements for listed personnel.

The Supplier at their cost, shall ensure that whenever its employees are on-site for the purpose of performing the Services, they are:

1. Complying with the ACT Government WHS Policies;
 2. Wearing a professional uniform containing the company identification;
 3. Carrying a photo identification badge;
- 1.5 The Supplier is to ensure all employees that perform the Services on the school premises are representatives of the Directorate. As such, the following requirements must be met at all times:
1. No smoking is allowed within the school buildings and boundaries, including grounds, carparks and entrances, in-line with the Directorate No Smoking Policy;

2. Personnel must not be intoxicated or under the influence of any alcohol or drug while performing the Services;
 3. Uniforms shall be clean, neat and presentable;
 4. Personnel must be courteous, professional and helpful when dealing with EDU staff, students and school visitors; and No Directorate equipment, desk-top papers, drawers or personal belongings shall be moved, used or tampered with in any way.
- 1.6 Parking: The Supplier employees must only park in the designated service areas as directed by the School Business Manager. At no time may their vehicles be parked across emergency access points, vehicle egress points, driveways or corridors, or in any way prevent the safe and efficient movement of personnel, equipment and vehicles to and from the Directorate Facilities.

QUOTATIONS

The Supplier is required to provide a detailed breakdown of all costs (ex GST) associated with delivering the contract as per the Tender requirements.

Quotation detail:

Quotations are to include details of the following:

1. Make and model of BMS controllers, sensors, actuators, and costings.
2. Any additional costs (i.e. labour, making good of walls/ceilings etc).
3. Cost of documenting network design, security protocols, points list and Functional Description.
4. Maintenance proposal including costs for 5 years quarterly maintenance as per DA19 service schedules.

The quotation should provide product technical specification sheets and supply lead times for all proposed components

A gaant chart is to be provided with a project timeline inclusive of product supply lead times.

The quotation is to include a risk management strategy to identify how service delivery will be met in face of border closures that may occur as a result of COVID-19 restrictions.



ACT Government Risk Matrix

		Consequence				
		Insignificant	Minor	Moderate	Major	Catastrophic
People	Injuries or ailments not requiring medical treatment.	Minor injury or First Aid Treatment Case.	Serious injury causing hospitalisation or multiple medical treatment cases.	Life threatening injury or multiple serious injuries causing hospitalisation.	Death or multiple life threatening injuries.	
Reputation & Image	Internal Review	Scrutiny required by internal committees or internal audit to prevent escalation.	Scrutiny required by external committees or ACT Auditor General's Office, or inquest, etc.	Intense public, political and media scrutiny. Eg: front page headlines, TV, etc.	Assembly inquiry or Commission of inquiry or adverse national media.	
Environmental	Limited effect to something of low significance	Transient, minor effects	Moderate, short-term environmental harm	Significant, medium-term environmental harm	Long term environmental harm	
Cultural & Heritage	Low-level repairable damage to commonplace structures	Mostly repairable damage	Permanent damage to items of cultural significance	Significant damage to structures or items of cultural significance	Irreparable damage to highly valued items of cultural significance	
Business Process & Systems	Minor errors in systems or processes requiring corrective action, or minor delay without impact on overall schedule.	Policy/procedural rule occasionally not met or services do not fully meet needs.	One or more key accountability requirements not met. Inconvenient but not client welfare threatening.	Strategies not consistent with Government's agenda. Trends show service is degraded.	Critical system failure, bad policy advice or ongoing non-compliance. Business severely affected.	
Financial	1% of Budget or <\$5K	2.5% of Budget or <\$50K	> 5% of Budget or <\$500K	> 10% of Budget or <\$5M	>25% of Budget or >\$5M	

		Frequency	Matrix	1	2	3	4	5		
Likelihood	Almost Certain	Is expected to occur in most	Once a quarter or more	>1 in 10	5	Medium	High	High	Extreme	Extreme
	Likely	Will probably occur	Once a year or more	1 in 10 - 100	4	Medium	Medium	High	High	Extreme
	Possible	Might occur at some time in the future	Once every 1 - 5 years	1 in 100 - 1,000	3	Low	Medium	Medium	High	Extreme
	Unlikely	Could occur but doubtful	Once every 5 - 20 years	1 in 1,000 - 10,000	2	Low	Medium	Medium	High	High
	Rare	May occur but only in exceptional circumstances	Once every 20 - 100 years	1 in 10,000 - 100,000	1	Low	Low	Medium	Medium	High

Risk Control Effectiveness

Control Effectiveness	Guide
Adequate	Nothing more to be done except review and monitor the existing controls. Controls are well designed for the risk, are largely preventative and address the root causes and Management believes that they are effective.
Room for improvement	Most Controls are designed correctly and are in place and effective however there are some controls that are either not correctly designed or are not very effective. There may be an over-reliance on reactive controls. Some more work to be done to improve operating.
Inadequate	Significant control gaps or no credible control. Either controls do not treat root causes or they do not operate effectively. Controls if they exist are just reactive. Management has no confidence that any degree of control is being achieved due to poor control design and/or very limited operational effectiveness.

Priority For Attention

Priority	Suggested Timing of Treatment	Authority for controlled tolerance of risk
Extreme	Short term – normally within one month Detailed action plan required	Director-General
High	Medium Term – normally within three months Needs senior management attention	Senior Executive
Medium	Normally within 1 year Specify management responsibility	Managers
Low	Ongoing control as part of a management system. Manage by routine procedures	All Staff

Priority for Attention - Action

Every care should be taken to act as soon as possible to implement risk control measures where ever possible or to take action to fix the problem. **Extreme Risks and High Risks especially where the risk relates to people & personal injury** require us to act immediately to take steps to fix the problem.

** The suggested timing of treatment does not mean that immediate action ought not be taken or that the timing can not be completed sooner than suggested.

Note:

When identifying, analysing and rating risk consideration should be given, but not necessarily limited to, the attached categories of risk and the suggested examples of frequency and consequences.

PROCUREMENT RISK MANAGEMENT PLAN

ATTACHMENT B.

Project Details			
Project	ACT Education Directorate – BMS Upgrade – UC Lake Ginninderra College / Melba Copland College		
Project Objectives	The objective of this procurement is to supply and install BMS throughout the college to support a COVID safe return to on-site education, and provide sustainability and operational improvements associated with a new BMS		
Contact Details:			
Directorate	Education Directorate	Business Unit	Asset Strategies
Name of Contact	Phil Yapp Assistant Director Asset Strategies, Environment and Sustainability		Phone no.
Name of Decision Maker / Authority Holder	John Ryan Education Directorate		

Created by: Phil Yapp Date: 15/10/2021 Reviewed by: Kristie Perrin Date:

Approved by: John Ryan Date: XX/XX/XX Signature: _____

Internal and External [Name and Agency/Organisation]	Level of Influence [Ability to influence project outcomes]	Level of Interest [Level of interest in the project outcome]
Education Directorate	Medium	Medium
Contractor	Medium	Medium

Risk Register

This risk register is consistent with AS/NZS ISO 31000:2009 risk management standard and the CMTEDD Risk Management Framework and Policy Statement; and Risk Management Policy.

Risk Ref. No.	Risk Description (source/cause) The risk event, source and cause What can happen (that will affect our ability to meet our objectives) and how it comes about.	Describe the consequence If what can happen does happen what is the impact or outcome? (In its most 'normal' form – not an extreme form)	Risk controls – what is in place to manage the risk. How are risks to be Managed? What ordinary policies, procedures and actions (BAU) are to be taken to manage the risk?	Risk Owner <i>(person or entity who manages the risk)</i>	Consequence	Likelihood	Current risk rating	Control effectiveness
1	School stakeholder does not support the project.	School withdraws from the project.	Agreement to participate in the project confirmed in writing with the school prior to project commencement.	Asst Director, Asset Strategies	Moderate	Unlikely	Medium	Adequate
2	School does not agree to take on the co-funding agreement.	Schools withdraw from the project. Loss of time spent on project by EDU and ACTPG staff. Financial cost to EDU beyond agreed co-contribution.	Written agreement to co-fund the project received from schools as part of project development and again once indicative costs were forecast. Loan repayment forecast to match or exceed projected savings to minimise financial impact. EDU co-contribution to reduce overall cost to school.	Asst Director, Asset Strategies	Moderate	Possible	Medium	Adequate

3	Education failure to provide sufficient funds to support the project.	<p>Scope of work reduced to fall within available budget.</p> <p>Performance outcomes reduced or negated.</p> <p>Poor relationship outcomes with the school.</p> <p>Poor public perception of sustainability initiatives and the directorate.</p>	<p>EDU funding available within COVID-19 ventilation cost centre.</p> <p>Stage 1 of project to have a suitably qualified consultant to develop tender documentation with regards to the available budget.</p> <p>All tenderers provided with Hazmat reports as part of tender documentation.</p> <p>10% contingency provided in cost estimate.</p>	Assistant Director, Asset Strategies	Moderate	Unlikely	Medium	Adequate
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4	<p>Failure to manage strong working relationships with the Contractor. Poor communication. Change in key staff.</p>	<p>Loss of cooperation by the Contractor. Delay/failure to service delivery. Poor relationship outcomes with the school. Poor public perception of sustainability initiatives and the directorate.</p>	<p>Contract/s clearly articulates expectations and schedules between ACTPG, Contractor and the Directorate. Tender issued to ACT Property group panel members and external companies known to the Directorate. Project control group meetings at agreed intervals to be held between the EDU, the Project Manager at ACTPG and Contractor. Communication and staffing protocols between ACTPG and EDU agreed at project commencement. Project folders in shared Drive will be maintained.</p>	<p>Project Manager, ACT Property Group Project Officer, Public School Infrastructure Upgrades</p>	Moderate	Unlikely	Medium	Adequate
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5	<p>The Contractor is non-compliant with the works obligations. Poor contract management. The Contractor fails to understand the obligations outlined in the purchase order.</p>	<p>Delivery of service and project timeframe not achieved. Additional costs incurred for rectification. Infrastructure fails to function as described.</p>	<p>Scope of Work and contract clearly articulate expectation and performance indicators. A high level of interaction will be maintained between ACTPG, Contractor and the Directorate. The Contractor/s has demonstrated experience in delivering the service. Contractor/s references to be obtained.</p>	<p>Project Manager, ACT Property Group Project Officer, Public School Infrastructure Upgrades</p>	Moderate	Unlikely	Medium	Adequate
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6	<p>The Contractor does not meet key delivery timeframes. Covid-19 restrictions impact key delivery timeframes.</p>	<p>The Contractor fails to meet the Schools expectations. Disruption to school operations.</p>	<p>The Contractor/s will have industry experience and expertise to ensure the delivery within the agreed dates. Gaant chart including product supply lead times to be included at tender. Project lead times and delivery times are realistic and scheduled and costed to minimise disruption to school operations. Covid-19 risk management strategy required and reviewed at tender.</p>	<p>Project Manager, ACTPG Project Officer, Public School Infrastructure Upgrades</p>	Minor	Possible	Medium	Adequate
8	<p>Product fails to achieve performance outcomes</p>	<p>Poor value for money. Poor public perception.</p>	<p>Specifications for all technical components and their supply lead times requested and reviewed at tender. The contract will require warranties for products and works and defect periods to ensure that the BMS upgrades function as described.</p>	<p>Project Manager, ACTPG</p>	Minor	Unlikely	Medium	Adequate

			<p>Electrical compliance certification will be required prior to handover.</p> <p>The new infrastructure to be supplied with Operations and Technical Manuals or equivalent. Manuals to be provided to ACTPG, EDU and the individual schools.</p> <p>CO2 levels post-installation will be monitored to evaluate the efficacy of the ventilation and controls upgrades.</p> <p>Electricity data will be monitored to verify savings through the whole of government utility data system (Envizi).</p>	Assistant Director, Asset Strategies				
9	Contractor disturbs volatile or hazardous building materials in school.	<p>Project is delayed, rescheduled or deferred.</p> <p>Poor public perception.</p> <p>Additional costs for rectification.</p>	<p>All tenderers will be supplied with HAZMAT documentation for all relevant school sites.</p> <p>R&M Senior Director to be updated on project and advised of any undocumented asbestos located during implementation.</p>	<p>Project Manager, ACTPG</p> <p>Project Officer, Public School Infrastructure Upgrades</p>	Moderate	Possible	Medium	Adequate

			<p>Project Contingency of 10% has been applied.</p> <p>All schools to provide Contractor and ACTPG with mandatory induction highlighting potential HAZMAT risks.</p>						
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ATTACHMENT C.

QUOTATION EVALUATION PLAN

1. EVALUATION PLAN – SELECT TENDER

This Quotation Evaluation Plan (EP) details the evaluation methodology and assessment criteria by which any Quotation submitted in response to the Request for Quotation (RFQ) for ACT Education Directorate – UC Lake Ginninderra College – BMS Upgrade / Melba Copland College – BMS Upgrade.

2. EVALUATION TEAM

The Quotation Evaluation Team (ET) has been formed to evaluate the Quotations submitted in response to the RFQ. All members of the ET will be made aware of their responsibilities, including the need to demonstrate impartiality and equitability in evaluation of any Quotation submitted. The details of members of the ET are set out in Table 1 below.

Table 1: Evaluation Team

QUOTATION EVALUATION TEAM (ET)			
Name	TBC Project Officer	Fiona Kidman	Phillip Yapp
Position	Chair	Member	Member
Agency	ACTPG	EDU ICW	Education ICW
Statement on ET composition	The ET has been carefully selected on the basis of their understanding and knowledge of the requirements set out in the Procurement Plan Minute as well as past experience in relevant programs. Team members have been personally appointed and will not be removed or replaced without approval from the Delegate.		

Members of the ET are personally appointed and will not be withdrawn or replaced without delegate approval.

The ET will be responsible for:

- a) adhering to probity principles;
- b) evaluating the Quotations in accordance with:
 - (i) the issued RFQ (including any addenda); and
 - (ii) the evaluation methodology set out in this EP;
- c) (if required) seeking specialist, probity and/or legal advice;
- d) documenting the Quotation evaluation process;
- e) (if required) contacting referees;

- f) preparing a Scoring and Evaluation Report for delegate approval;
- g) seeking delegate approval to negotiate with, and engage, the recommended Respondent confirmed through the Quotation evaluation process; and
- h) debriefing unsuccessful respondents.

3. CONFLICT OF INTEREST

The members of the ET are required by the [Probity and Ethical Behaviour Circular](#) (PC21) to disclose any actual or apparent conflict of interest and take steps to avoid that conflict. The responsibility lies with each member to promptly identify and disclose to the Chair, or delegate (as the case may be) any actual, perceived or potential conflicts of interest involving themselves, their immediate family or any other relevant relationship.

All disclosures of conflicts of interests will be fully documented. Members will be required to provide written acknowledgement of confidentiality and declaration of conflicts of interest prior to the commencement of the evaluation process using the appropriate form.

If a conflict of interest is identified, the conflict of interest must be appropriately managed (including seeking probity advice, if required).

4. PROBITY AND SPECIALIST ADVICE

The ET may seek and utilise specialist advice to assist in the Quotation evaluation process. The areas of expertise may include:

- a) probity advice;
- b) technical analysis/information;
- c) financial analysis; and
- d) administrative functions.

The ACT Government Solicitor (ACTGS) may be engaged as the probity and legal advisor for this procurement. The chair of the ET may seek legal or probity advice from the GS and must appropriately consider any such advice.

5. LATE QUOTATIONS

A late Quotation may be evaluated at the absolute discretion of the Territory.

6. EVALUATION CRITERIA

Consistent with Section 22A of the *Government Procurement Act 2001* (ACT), in evaluating the Quotations the Territory has as its objective the attainment of best 'value for money' and not necessarily a low price.

Value for money is a comprehensive assessment that takes into account cost represented by a price assessment and value represented by the technical assessment in the context of the risk profile presented by the Respondent and its Quotation.

The Territory will evaluate the Quotations in accordance with the provisions of the published RFQ and this EP. If there is any inconsistency between the requirements of the published RFQ and this EP, the published RFQ prevails to the extent of the inconsistency.

Each Quotation will be assessed for formal compliance with the requirements of the RFQ. Should the Quotation not meet the formal compliance requirements it may be deemed non compliant and not progressed to the evaluation of the assessment criteria.

Should a Quotation meet the formal compliance requirements of the RFQ it will then be evaluated against the assessable criteria set out in Table 2 below.

Table 2: Assessment Criteria

No.	Threshold Assessment Criteria	Yes/No
TC1	<p>Secure Local Jobs Code Certificate</p> <p>The Tenderer must hold a Secure Local Jobs Code Certificate as at the date of close of Tenders.</p> <p>You do not need to supply a copy of your Certificate; the Principal will verify your certification status when assessing this Tender</p> <p>* Note – Under the Secure Local Jobs Code any subcontractor it engages to perform “Territory Funded Work” (as defined in the Procurement Act) will also be required to hold a Secure Local Jobs Code Certificate. Tenderers are encouraged to note in their Tender the subcontractors it intends to engage for Territory Funded Work, and whether they hold current Secure Local Jobs Code Certificate, noting that commencement of work by those subcontractors will be conditional on holding a Secure Local Jobs Code Certificate.</p>	
TC2	<p>Labour Relations, Training and Workplace Equity Plan</p> <p>The Tenderer must submit Labour Relations, Training and Workplace Equity Plan with its Tender using the template available at https://www.procurement.act.gov.au/securelocaljobs</p>	
TC3	<p>Ethical Suppliers Declaration</p> <p>The Tenderer must submit an Ethical Suppliers Declaration – Tender in the form set out at Part 3A.</p> <p>The contents of the Declaration and, without limitation to any other part of the Tender, any other information made available to the Principal referable to the industrial relations and employment and work health and safety performance and record of the of the tenderer may be considered by the Principal as part of its assessment of Tenders.</p>	

ASSESSABLE CRITERIA	WEIGHTED CRITERIA
The Consultants are to detail and provide evidence against the below listed criteria:	
<p>Criterion 1 – Previous Experience & Capacity</p> <p>Provide and describe the following:</p> <ul style="list-style-type: none"> • Time performance and quality of workmanship – provide evidence of time and quality performance on completed similar projects in the past 5 years and contact details of referees. • Management structure and personnel including CVs of key personnel (down to level of Leading Hands) that will be engaged on this project, including backup personnel. • Provide information on the amount of any liquidated damages on previous projects. • Professional / technical capability of key personnel to meet the requirements of this project, including experience on active educational (or similar) environments. • Environmental management, safety, probity, and • Understanding of the requirements of the local authorities (such as ACTPLA) for this Project. 	20%
<p>Criterion 2 – Delivered Building Management System and Understanding of Ventilation and Sustainability</p> <p>Respondents must provide information on their proposed BMS upgrade, including, but not limited to:</p> <ul style="list-style-type: none"> • Proposed Building Management System network design and points list, • Detailed information on BMS compliance with native BACNET including BTL compliance certification, • Understanding of implementing BMS control strategies to modulate ventilation based on occupancy in an energy efficient manner, • Example of BMS graphics for central plant, • Example of a Functional Description of a similar BMS installation, • Ability to archive, trend and produce reports on historic BMS data. 	30%
<p>Criterion 3 – Proposed Delivery Methodology</p> <p>Proposed Delivery Methodology</p>	20%

<p>Respondents should provide information on their proposed methodology to deliver the lighting upgrade, including, but not limited to:</p> <ul style="list-style-type: none"> • Supply lead times; • Describe critical activities and methods of achieving project by completion date; • System commissioning; 	
<p>Criterion 4 – Demonstrated Work Health & Safety System to complete the project</p> <p>Provide and describe the following:</p> <p>Demonstrated ability (to the satisfaction of the Territory) to proactively manage Work Health Safety and Rehabilitation (WHS&R) requirements;</p> <ul style="list-style-type: none"> • Management • Planning • Risk & Hazard Management • Training, Competency & Supervision • High risk Construction work • Consultation • Reporting • Preliminary Risk Management Plan for this project; • Example WHS&R site management plan (from a similar project) suitable for implementation on this project; • Example Emergency Procedures (from a similar project) suitable for implementation on this project; • Evidence that personnel have experience in implementation of a WHS&R site management system; • Evidence of the effective operation of the WHS&R site management system, including past performance related to safety including Serious Claims, Incidence and Frequency Rate (serious claims per million hours worked) for the year immediately previous to the Tender issue date ; and • Records of any fines or other penalties (including Prohibition Notices) issued by WorkSafe ACT in the past 5 years. 	<p>30%</p>
<p>NON-WEIGHTED CRITERIA</p>	
<p>Criterion 6 – Funding</p>	<p>Acceptable / Unacceptable</p>

The Consultant is required to provide a detailed breakdown of all costs (inclusive of GST) associated with delivering the services.	
<p>Criterion 6 - Referees</p> <p>The Consultant is to provide names, addresses, phone numbers, and email addresses of two referees that are able to attest to the capacity of the Consultant against each of the assessment criteria. The evaluation panel may seek reports from referees.</p>	Acceptable / Unacceptable

The ACT Government is committed to providing regional Small to Medium Enterprises (SMEs) with opportunities to win business. Consideration will be made in the evaluation process to SME's and to suppliers who demonstrate that they will sub-contract to SMEs.

7. EVALUATION METHODOLOGY

The Evaluation Team has adopted a numerical scoring scale set out in Table 3 below against which each team member will assess the weighted evaluation criteria.

Table 3: Evaluation criteria

Descriptor	Response (Prompts)	Rating
<i>Outstanding</i>	<ul style="list-style-type: none"> ▪ Response to Weighted Assessment Criterion far exceeds all of the relevant SOR requirements and provides major additional value to the Territory. ▪ Response demonstrates an outstanding understanding of the requirements of the Weighted Assessment Criterion and presents a strategic view of the Goods and/or Service within the broader Territory context. ▪ Information provided is concise, extensive and offers some knowledge gain to the Territory. All claims are fully substantiated. 	10
<i>Excellent</i>	<ul style="list-style-type: none"> ▪ Response to Weighted Assessment Criterion exceeds all of the relevant SOR requirements such that the Territory will receive some additional value above the SOR. ▪ Response demonstrates an excellent understanding of the requirements of the Weighted Assessment Criterion. ▪ Information provided is comprehensive. All claims are fully substantiated. 	9
<i>Very Good</i>	<ul style="list-style-type: none"> ▪ Response to Weighted Assessment Criterion meets all of the relevant SOR requirements, and exceeds some relevant SOR requirements such that the Territory will receive minor value above the SOR for those. ▪ Response demonstrates a very good understanding of the requirements of the Weighted Assessment Criterion. ▪ All claims are soundly substantiated. Some minor omissions in substantiation may occur but the overall claim is well supported. 	8
<i>Good</i>	<ul style="list-style-type: none"> ▪ Response to Weighted Assessment Criterion meets all of the relevant SOR requirements and may marginally exceed some relevant SOR requirements. ▪ Response demonstrates a good understanding of the requirements of the Weighted Assessment Criterion. ▪ Some insignificant uncertainties occur but claims or documentation contains majority of the information expected of this Weighted Assessment Criterion. 	7
<i>Adequate</i>	<ul style="list-style-type: none"> ▪ Response to Weighted Assessment Criterion meets all of the relevant SOR requirements. ▪ Response demonstrates an adequate understanding of the requirements of the Weighted Assessment Criterion. ▪ Some minor uncertainties or information gaps occur but claims or documentation generally contains the information expected of this Weighted Assessment Criterion. 	6
<i>Reservations</i>	<ul style="list-style-type: none"> ▪ Response to Weighted Assessment Criterion meets most of the relevant SOR requirements. ▪ Response demonstrates a general understanding of the requirements of the Weighted Assessment Criterion but lacks detail in specific areas. ▪ Some uncertainties or information gaps occur in key requirements. 	5
<i>Poor</i>	<ul style="list-style-type: none"> ▪ Response to Weighted Assessment Criterion does not meet a minority of the relevant SOR requirements. ▪ Response demonstrates a poor understanding of the requirements of the Assessment Weighted Assessment Criterion with some shortcomings or deficiencies. ▪ Claims and documentation omit or are unable to substantiate key requirements of the Weighted Assessment Criterion. 	4
<i>Very Poor</i>	<ul style="list-style-type: none"> ▪ Response to Weighted Assessment Criterion does not meet a majority of the relevant SOR requirements. ▪ Response does not demonstrate an understanding of the requirements of the Weighted Assessment Criterion, through lack of provided detail or information. ▪ Claims and documentation omit or are unable to substantiate requirements of the Weighted Assessment Criterion. 	3
<i>Inadequate</i>	<ul style="list-style-type: none"> ▪ Response to Weighted Assessment Criterion meets only a negligible number of the relevant SOR requirements. ▪ Response demonstrates a minor misunderstanding of the requirements of the Weighted Assessment Criterion, containing significant flaws in approach. ▪ Claims and documentation are mostly unsubstantiated. 	2
<i>Not Acceptable</i>	<ul style="list-style-type: none"> ▪ Response to Weighted Assessment Criterion does not meet any of the relevant SOR requirements. ▪ Response demonstrates a major misunderstanding of the requirements of the Weighted Assessment Criterion, lacking fundamental details to address this Weighted Assessment Criterion. ▪ Claims and documentation are unsubstantiated and unreliable. 	1
<i>Not able to assess Response</i>	<ul style="list-style-type: none"> ▪ Response did not address this Weighted Assessment Criterion. (NOTE: There needs to be confirmed evidence of this circumstance). ▪ Response was not evaluated, as it did not provide any requested information. 	0

Evaluation Process

All Quotations will be assessed using the methodology outlined below:

- a) Quotations will be assessed for formal compliance with the requirements of the Request for Quotations (RFQ).
- b) Assessment for formal compliance will include the following factors:
 - a) receipt of a quote prior to the closing date and time; and
 - b) receipt of a completed Declaration by Respondents.
- c) A Quotation that is:
 - (i) at variance with or does not respond to or does not fully comply with any requirement of this RFQ;
 - (ii) unwilling to meet the Insurance requirements if successful;
 - (iii) contains erasures or is illegible; and

- (iv) may be deemed to be non-conforming.
- d) The Territory may, in respect of a Quotation that is nonconforming or which has been deemed by the Territory to be non-conforming:
 - (i) reject and not further consider the Quotation;
 - (ii) ignore any non-conformance in the Quotation; or
 - (iii) if possible without impacting on the probity of the procurement process allow the Respondent to correct the non-conformance in the form of a Request for Clarification or Notice of Important Information.
- e) The Weighted Criteria will be evaluated by individual evaluation team members and rated a score out of 5. The Evaluation Team will then meet and determine an average raw score for each Quotation against each evaluation criteria.
- f) The Evaluation Team will discuss and substantiate any discrepancies between the raw scores noting any issues or risks for further consideration including follow ups and reference checks.
- g) The agreed Evaluation Team scores will then be multiplied by the corresponding criteria weightings to obtain a weighted score against each criterion for each Quotation. The individual weighted scores against each criterion will then be summed to obtain a total weighted score for each Quotation.
- h) The Chair of the Evaluation Team may standardise a series of questions relevant to the Statement of Requirements, which will be asked of nominated referees to verify information supplied by shortlisted Respondents, if required.
- i) A risk assessment of each Quotation will be undertaken.
- j) The initial weighted score of Respondents may be adjusted to reflect risk and issues identified from referee reports.
- k) The Evaluation Team will prepare an evaluation report identifying the preferred Respondent based on the overall best value for money and acceptable risk to the Territory.

8. EVALUATION REPORT

The ET will prepare the following information for inclusion with the evaluation report.

- a) background to the process;
- b) the evaluation process, including comments and scores against each criteria;
- c) the order of preference of Responses;
- d) value for money;
- e) proposed methods for management of risks;
- f) identification of any issues which should be resolved by negotiation; and
- g) recommendations to the Director General or approving Delegate.

9. LETTER OF DECLINE/DEBRIEF

Unsuccessful Respondents will be advised of the outcome of the RFQ process through a letter of decline. Letters of decline and debriefings will comply with the requirements outlined in *Procurement Circular 2007/05 Debriefing Unsuccessful Respondents*. The letter of decline will include, at a minimum, the following information:

- a) a statement demonstrating the Territory's appreciation for the submission received;
- b) a statement demonstrating the Territory's regret that they were unsuccessful on this occasion;
- c) encouragement to submit offers in the future; and
- d) an offer to attend a debriefing session.

10. POST TENDER CLARIFICATIONS

The Evaluation Team may seek in writing clarification of Quotations received. All clarifications must be fully documented and appropriately filed. The Evaluation Team may request short listed Respondents to make a presentation in support of their Quotations. All results of the presentation will be fully documented and considered in the finalisation of the evaluation scoring process.

Flint, Katrina

From: Mitchell, BethL
Sent: Friday, 15 October 2021 5:21 PM
To: Yapp, Phillip; Flint, Katrina
Subject: FW: Ventilation - WHOG guidance
Attachments: ACTPS COVID-19 WHS resource principles for optimising ventilation in ACTPS workplaces.pdf; DRAFT ACTPS WHS resource for property teams ventilation.pdf

Follow Up Flag: Follow up
Flag Status: Completed

OFFICIAL

FYI

Beth Mitchell | Director – Asset Strategies, Sustainability and Environment

Phone: +61 2 6207 8364 | Fax: +61 2 6205 9333 | Email: bethl.mitchell@act.gov.au
 Infrastructure and Capital Works | Education | ACT Government
 Level 4 220 London Circuit | GPO Box 158 Canberra ACT 2601 | www.det.act.gov.au

From: Parkinson, Andrew <Andrew.Parkinson@act.gov.au>
Sent: Friday, 15 October 2021 10:37 AM
To: Mitchell, BethL <BethL.Mitchell@act.gov.au>
Subject: FW: Ventilation - WHOG guidance

OFFICIAL

Just FYI – the non-draft document has been around for a while but there's no date or version control on it

The draft document is new and needs work. I spoke about it earlier with DDG Jane and we both saw fans in windows as a major safety hazard. HEPA filters are going to be a point of contention. EDU comments will be strong.

Andrew Parkinson | Executive Branch Manager
Infrastructure & Capital Works | Education Directorate | **ACT Government**
 Phone 02 6205 4593 | **Mobile 0478 301 085**
 220 London Circuit, Civic | www.act.gov.au

Dhawura nguna, dhawura Ngunnawal

From: Oldfield, Meghan <Meghan.Oldfield@act.gov.au>
Sent: Thursday, 14 October 2021 9:09 PM
To: Parkinson, Andrew <Andrew.Parkinson@act.gov.au>; Simmons, Jane <Jane.Simmons@act.gov.au>; Steele, Peter <Peter.Steele@act.gov.au>; EDUCOVID <EDUCOVID@act.gov.au>
Subject: Fwd: Ventilation - WHOG guidance

OFFICIAL

Hi all

CMTEDD advice below and attached.

I haven't looked at all of the links (don't recall seeing Canada recommended before), but appears at a quick look to be generally in line with our approach.

We can discuss more at the 9:30.

Get [Outlook for iOS](#)

From: Parton, Rebecca <Rebecca.Parton@act.gov.au>
Sent: Thursday, October 14, 2021 5:21:25 PM
To: Oldfield, Meghan <Meghan.Oldfield@act.gov.au>
Cc: Young, Michael <Michael.Young@act.gov.au>
Subject: Ventilation - WHOG guidance

Dear Meghan

Michael mentioned that you were looking for the current whole of Government guidance regarding ventilation.

This is the information available:

- A. Current WHOG guidance is:
 - i. Principles for optimising ventilation in ACTPS workplaces - broad principles for consideration across all workplaces (attached)
 - ii. WHS Resource for Property teams ventilation - this is in draft and will be circulated shortly - and was developed to provide some guidance to Property teams about what to consider (attached)

B. Some good resources are:

i. OZ Sage report - [Protecting children from COVID-19 and making schools and childcare safer](#) - This document is listed as a resource. Page 12 has a great, easy to follow flow diagram / picture for Safe Air in school.

ii. WHO report - [Roadmap to improve and ensure good indoor ventilation in the context of COVID-19](#) - AHPPC is looking to bring out more ventilation advice and is mainly based on this roadmap. There are some good flow charts to consider re mechanical or natural air and what is needed.

There are a number of other resources listed but these two are probably the clearest in terms of the basis for the guidance.

Let me know if you would like any further information.

Kind regards

Rebecca

Rebecca Parton | Senior Director

02 6205 9482 | rebecca.parton@act.gov.au

Workplace Safety and Industrial Relations

Chief Minister, Treasury and Economic Development Directorate | ACT Government

WORK HEALTH, SAFETY AND WELLBEING -
WE ALL HAVE A ROLE



ACTPS COVID-19 WHS RESOURCE: PRINCIPLES FOR OPTIMISING VENTILATION IN ACTPS WORKPLACES



With the emergence of new COVID-19 variants of concern that are more transmissible and infectious, implementing multiple controls to reduce the risk is essential. Where people are together indoors, there is an increased risk of COVID-19 being transmitted. Improving ventilation is one way that the risk of COVID-19 in indoor workplaces can be reduced.

Increased ventilation is not a control measure on its own and all workplaces must continue to implement other COVID-safe measures such as physical distancing, hand and respiratory hygiene, contact tracing, staying home if unwell and cleaning, to reduce the risk.

In ACTPS workplaces, there are three principles to ensure effective ventilation systems to reduce the risk:

- > ensuring HVAC systems are maintained and optimised
- > implementing simple measures to improve ventilation, and
- > reinforcing measures for workers.

Maintaining and optimising HVAC systems

Heating, ventilation, air conditioning and cooling (HVAC) systems play a significant role in ventilating workplaces. Workplaces must already maintain HVAC systems as part of WHS obligations to ensure a safe and healthy workplace.

In light of COVID-19, workplaces must consider their level of risk, ensure systems are maintained and in good working order, that settings are appropriate for adequate ventilation, and engage a consultant if they need advice on optimising HVAC systems to improve ventilation in their workplace.

HVAC systems that are well maintained and operating effectively should generally be providing ventilation at adequate levels.

For more information on how to increase ventilation, the World Health Organisation (WHO) has [extensive guidance](#) and easy-to-follow flow charts outlining key considerations for improving natural and mechanical ventilation in buildings. Workplaces should consult suitably qualified HVAC consultants for targeted advice.

Implementing simple systems

In addition to HVAC maintenance and optimisation, workplaces can implement a range of simple, low-cost systems that will increase ventilation and reduce the likelihood of spread.

These simple considerations include:

- > Limiting occupancy in workplaces to reduce the number of overall people within a space.
- > Directing workers to ensure any personal desk fans or heaters are facing towards them and that oscillation settings are set to standstill.
- > Opening windows and doors, where reasonably practicable, including at short intervals in inclement weather.

- > Holding events or meetings outdoors, or in venues where increased outdoor ventilation is possible (such as rooms that have windows and doors that open to outside air).
- > Instructing workers not to undertake activities where increased spread of COVID-19 is possible, such as singing or shouting.

Reinforcing measures for workers

Workers can contribute to other COVID-safe practices that will help reduce the spread, regardless of ventilation within an ACTPS workplace. We all have a role in reducing the risk of COVID-19 at work and improving ventilation in workplaces is not a sufficient control on its own, without the continued implementation of other COVID-safe controls.

Workers can:

- > Wear a mask when in a setting that is crowded, indoors or stuffy.
- > Vacate or change locations where an indoor setting feels stuffy or crowded and ventilation cannot be increased.
- > Practise good hand and respiratory hygiene.
- > Reschedule or hold meetings using virtual or telephone modes.
- > Limit the use of personal heaters and fans in workplaces, or ensuring they are faced towards the worker and are set to remain stationary (not oscillating).
- > Not participate in any indoor activities where spread is more likely, such as singing or yelling.
- > Wear a mask when they feel that they need to, or are unsure if one is needed.
- > Keep physically distanced from others, particularly when indoors and in larger groups.

Resources and further reading

- > [Roadmap to ensure good ventilation in the context of COVID-19 \(WHO\)](#)
- > [COVID-19: improving indoor ventilation \(Government of Canada\)](#)
- > [COVID-19: guidance on indoor ventilation during the pandemic \(Government of Canada\)](#)
- > [COVID-19 guidance on ventilation \(NSW Health\)](#)
- > [HVAC systems \(SWA\)](#)

ACTPS WHS COVID-19 GUIDANCE: CONSIDERATIONS FOR PROPERTY TEAMS ON VENTILATION IN WORKPLACES



Workplaces must implement a range of measures to reduce the risk of COVID-19.

Indoor workplaces and enclosed spaces present a risk of transmission of COVID-19, where virus particles are more likely to concentrate. The risk is further increased where indoor, enclosed spaces are crowded and people are talking, singing, or shouting.

Ventilation and the hierarchy of controls

Ventilation is one way of reducing the risk.

Workplaces must implement the highest level of controls, where reasonably practicable. Only then can lower level controls be considered and implemented.

Ventilation is an engineering control that reduces the risk of transmission. In conjunction with both higher (e.g. elimination by directing staff not to attend work when they are unwell) and lower level controls (e.g. administrative controls by rostering staff to attend work at different times), ventilation can complement other COVID-safe approaches that reduce the risk to staff.

All other COVID-safe measures in workplaces must continue to be implemented in addition to any ventilation measures.

More information on the hierarchy of controls and COVID-19 is available from the [Department of Health and SafeWork Australia](#).

Ventilation considerations and checklist for workplaces

A range of potential options for increasing ventilation in ACTPS workplaces are listed in the table below. Workplaces should consider these options in conjunction with the workplace risk assessment to determine which are reasonably practicable, without introducing additional or unintended risks.

Ventilation can be impacted by other factors. Consultation with appropriately qualified technicians and/or specialists in indoor airflow and ventilation prior to changing ventilation settings in ACTPS workplaces is strongly encouraged.

Approach	Measures	Other considerations	Approach has been considered and/or implemented
Increase the introduction of outdoor air	Open outdoor air dampers beyond minimal settings to reduce or eliminate HVAC air recirculation Open windows and doors, weather permitting	Outside air quality (e.g. smoke) Occupant comfort Energy use and cost	<input type="checkbox"/>

HVAC settings	Run the HVAC at maximum outside airflow for 2 hours prior and after building occupation (non-residential buildings only) Ensure HVAC setting optimised for ventilation	Temperature/comfort of occupants on arrival Energy use increases Consult technician for further advice	<input type="checkbox"/>
Use fans to increase the effectiveness of open windows	Secure a fan in a window to exhaust room air outdoors Gable fans and roof ventilators	Fan placement (avoid increasing contaminated airflow)	<input type="checkbox"/>
Ensure ventilation systems operating properly	Acceptable indoor air quality being achieved for occupancy level	Consult HVAC technician where advice required	<input type="checkbox"/>
Rebalance/adjust HVAC systems	Increase total airflow to occupied spaces	Occupant comfort Energy use	<input type="checkbox"/>
Turn off any demand-controlled ventilation controls (DCV)	Turn off settings that reduce air supply based on occupancy or temperature during occupied hours Set the fan to "on" instead of auto, where fan operation is controlled at the thermostat	DCV may not be available in older workplaces Energy use and costs	<input type="checkbox"/>
Improve central air filtration	Increase air filtration to as high as possible without significantly reducing design airflow Ensure air filters are properly sized and within their service life Inspect filter housing and racks to ensure appropriate filter fit and minimise air flow around the filter	Consult with specialist technician if required Service frequency and cost Energy use and cost	<input type="checkbox"/>
Ensure restroom exhaust fans are functional	Operating at full capacity during building occupation hours	Maintain and service exhaust fans	<input type="checkbox"/>
Inspect and maintain exhaust ventilation systems	In areas such as kitchens, areas where cooking occurs Operate these fans when these spaces are occupied Operation when space not occupied will increase overall ventilation in building	Energy use and costs Noise Maintenance and servicing frequency with higher use	<input type="checkbox"/>
Use portable high-efficiency particulate air (HEPA) fan/filtration systems	Especially in high-risk areas that are likely to have COVID-19 or be at greater risk of getting COVID-19	Filter must be appropriately sized for the area Filters must be maintained and serviced according to	

		manufacturer instructions Location of filter Supply and installation	<input type="checkbox"/>
Generate clean-to-less clean air movement	Evaluate and reposition supply louvers, exhaust air grilles and/or damper settings	Directional airflow assessment	<input type="checkbox"/>
Tailored ventilation and filtration approaches based on the workplace risk assessment	Consider and evaluate other methods of ventilation and filtration appropriate for the workplace based on the: <ul style="list-style-type: none"> • Building design • Nature of work undertaken in the workplace • Risk of COVID-19 in workers and service users • Occupancy rates • Environmental, seasonal and climate factors • Whether the workplace is considered high-risk during the pandemic (e.g. correctional settings) 	Consult with appropriately qualified technician or specialists if considering further air filtration or ventilation methods in the workplace Cost, supply, installation and maintenance of other methods Risks and unintended consequences of other methods Efficacy of approach based on peer-reviewed research and expert body guidance	<input type="checkbox"/>

Resources

- > [Minimising the risk of infectious respiratory disease transmission in the context of COVID-19: the hierarchy of controls](#) (Department of Health)
- > [COVID-19 guidance on ventilation](#) (NSW Health)
- > [HVAC system strategies to airborne infectious outbreaks](#) (Health Technical Advice, Victoria)
- > [HVAC systems](#) (SafeWork Australia)
- > [COVID-19: ventilation and air conditioning](#) (WHO)
- > [Roadmap to improve and ensure good indoor ventilation in the context of COVID-19](#) (WHO)
- > [Protecting children from COVID-19 and making schools and childcare safer](#) (OzSAGE)
- > [Guidance for building operations during the COVID-19 pandemic](#) (CDC)
- > [Beware the air you share – advice on safe indoor air \(ventilation\) for Australia](#) (OzSAGE)
- > [Ventilation in buildings](#) (CDC)
- > [Ventilation in schools and childcare programs](#) (CDC)
- > [Ventilation during COVID-19](#) (ACTPS)
- > [Health and safety advice for all Victorian schools](#) (VIC Health)

From: [Oldfield, Meghan](#)
To: [REDACTED]
Cc: [EDU, EGMBSG](#)
Subject: RE: Dyson Air Purifiers
Date: Friday, 22 October 2021 1:17:44 PM
Attachments: [image001.png](#)
[image002.png](#)
[image003.png](#)
[image004.png](#)
[image005.png](#)

OFFICIAL

H [REDACTED]

I hope you are well.

The ACT Education directorate will not require any additional air purifiers at this time, but want to thank you for the information and offer you have provided.

Best regards
Meghan

Meghan Oldfield | A/Executive Group Manager, Business Services
Education Directorate | ACT Government
P 6207 5716 | M 0481 908 820 | Email: meghan.oldfield@act.gov.au
220 London Circuit, Canberra ACT 2601



The Education Directorate acknowledges the Ngunnawal Peoples as the Traditional Custodians of the ACT and region upon which we live and work.

From: [REDACTED]
Sent: Thursday, 14 October 2021 9:19 AM
To: Oldfield, Meghan <Meghan.Oldfield@act.gov.au>
Subject: RE: Dyson Air Purifiers

CAUTION: This email originated from outside of the ACT Government. Do not click links or open attachments unless you recognise the sender and know the content is safe.

Apologies Meghan. You may not have been able to view the last video I sent through. This attachment should now work for you.

Kind regards,

[REDACTED]

[REDACTED]

Suite 2, Level 22,
Tower 3, International Towers,
300 Barangaroo Avenue,
Barangaroo NSW 2000

[REDACTED]

dyson airblade

Fastest to dry hands hygienically
with HEPA-filtered air



www.dyson.com.au/forbusiness

From: [REDACTED]
Sent: Thursday, 14 October 2021 9:10 AM
To: Oldfield, Meghan <Meghan.Oldfield@act.gov.au>
Subject: RE: Dyson Air Purifiers

Hi Meghan,

Just touching base to see whether you needed any further information or were any closer to a decision and procuring purifiers for the classrooms? I have attached a short (20 second) video on the Dyson Air Purifier.

Kind regards,

[REDACTED]

Suite 2, Level 22,
Tower 3, International Towers,
300 Barangaroo Avenue,
Barangaroo NSW 2000

[REDACTED]

dyson airblade

Fastest to dry hands hygienically
with HEPA-filtered air



www.dyson.com.au/forbusiness

From: Oldfield, Meghan <Meghan.Oldfield@act.gov.au>
Sent: Tuesday, 12 October 2021 9:22 AM
To: [REDACTED] >
Cc: Oldfield, Meghan <Meghan.Oldfield@act.gov.au>
Subject: [EXTERNAL EMAIL] RE: Dyson Air Purifiers

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OFFICIAL

Hi [REDACTED]

Yes, thanks for the conversation yesterday and putting together this email and attachments. I appreciate your time.

I will come back to you soon.

Warm regards
Meghan

Meghan Oldfield | A/Executive Group Manager, Business Services
Education Directorate | ACT Government
P 6207 5716 | M 0481 908 820 | Email: meghan.oldfield@act.gov.au
220 London Circuit, Canberra ACT 2601



The Education Directorate acknowledges the Ngunnawal Peoples as the Traditional Custodians of the ACT and region upon which we live and work.

From: [REDACTED] >
Sent: Tuesday, 12 October 2021 8:55 AM
To: Oldfield, Meghan <Meghan.Oldfield@act.gov.au>
Subject: Dyson Air Purifiers

CAUTION: This email originated from outside of the ACT Government. Do not click links or open attachments unless you recognise the sender and know the content is safe.

Hi Meghan,

Thanks for your time on the phone yesterday.

As discussed, I've attached some information on the Dyson Purifier we discussed. I've also managed to find the offer that was put to Andrew Parkinson and David Matthews which is also attached below;



* Offer available to ACT Govt schools only

I am happy to honour the pricing from March 2020, however

Please do reach out on how I can assist with next steps. While I would be more than happy to organise a trial in a classroom, we have approximately 400 machines that were donated back in March 2020 that may already provide you with the confidence that the Dyson Purifiers are effective.

I look forward to hearing from you soon.

Kind regards,



Suite 2, Level 22,
Tower 3, International Towers,
300 Barangaroo Avenue,
Barangaroo NSW 2000



dyson airblade

Fastest to dry hands hygienically
with HEPA-filtered air



www.dyson.com.au/forbusiness

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