



**REPORT TO: EDUCATION, CHILDREN'S AND LEISURE SERVICES
COMMITTEE ON 9 MARCH 2022**

**SUBJECT: INFORMATION REPORT: UPDATE ON VENTILATION AND CO2
MONITORING IN SCHOOLS AND NURSERIES**

**BY: DEPUTE CHIEF EXECUTIVE (EDUCATION, COMMUNITIES AND
ORGANISATIONAL DEVELOPMENT)**

1. REASON FOR REPORT

- 1.1 The report provides an update to Committee on the ventilation and CO2 monitoring in schools and nurseries (including 3rd and private sector providers. A report was request at the reconvened ECLS Committee meeting on 2 February 2022 (para 23 of the minute refers).
- 1.2 This report is submitted to the Council in terms of Section III (D) (1) of the Council's Scheme of Administration relating to all the functions of the Council as an Education Authority.

2. BACKGROUND

- 2.1 Since the start of the pandemic the Council have followed the advice and guidance provided by Scottish Government on classroom and teaching space ventilation – which is viewed as an important factor (together with personal hygiene, symptom vigilance, enhanced cleaning and distancing controls) in managing the COVID risk in schools and nurseries.
- 2.2 Modelling of selected Moray school classrooms (Applegrove PS, Greenwards PS and Forres Academy) was completed by external engineering consultants in December 2020. The modelling focused on ventilation offered by current windows and provided guidance on how to ensure air quality through preventative intervention; essentially opening windows at specific times of the school day. The modelling also demonstrated that it was possible to maintain acceptable temperature conditions (at or above 17⁰C) with existing room heating systems. This was implemented across all schools and nurseries in early 2021.
- 2.3 The following general guidance to schools and nurseries on how to maintain good levels of ventilation was issued in early 2021:
- Increase ventilation, e.g. opening windows and doors (checking issues such as fire and security);

- Purge before and after each lesson by opening windows/doors fully;
 - Limit occupancy numbers where possible; and,
 - Move high level activities such as dance, music or physical activities to well ventilated spaces.
- 2.4 The most efficient method of determining inadequate ventilation is the level of CO₂ in the air and by inference this provides a proxy measure of COVID risk. The most recent scientific advice and research is that regularly used, multi-occupancy areas with CO₂ levels consistently at or above 1500ppm should be prioritised for improvement.
- 2.5 Between September 2021 and November 2021 CO₂ monitoring was undertaken across all schools in Scotland and data was reported via Scottish Futures Trust to the Scottish Government to determine the extent of any ventilation issues. In Moray, a number of minor issues with ventilation were identified in a small number of schools – the majority of these involved the ease of operation of external windows. There was no identified requirement for mechanical ventilation or ‘air cleaning devices’.
- 2.6 Updated guidance on ventilation in schools was issued by Scottish Government in January 2022. The advice reflected the experience in Moray and further stressed the importance of good classroom ventilation. In addition, further scientific advice and research was issued which indicated that indoor spaces where there is likely to be an enhanced aerosol generation rate (e.g. music, drama and indoor PE) should aim to ensure ventilation is sufficient to maintain CO₂ concentrations at a lower 800ppm threshold level.
- 2.7 The Scottish Government also directed in January 2022 that Local Authorities should assess the current CO₂ monitoring arrangements to ensure they had enough devices to allow every learning, teaching and play space to be assessed for a minimum of one full day per week under normal occupancy. To meet this requirement, as of 7 February 2022, Moray has increased the number of non-dispersive infrared (NDIR) CO₂ monitors in schools to over 360. An additional 30 monitors are on order to support a CO₂ monitor in every PE, music and drama area where the CO₂ threshold level is 800ppm. Further intervention guidance was also issued for these spaces. Consideration is also being given to further assessment, including modelling, for large volume, low occupancy halls and spaces.
- 2.8 Weekly local reporting is now in place and a monthly report submitted to the Scottish Government. The weekly report records completion of testing, specific breaches of the 1500ppm and 800ppm CO₂ levels, the intervention actions taken and their success and the temperature of the space at the time of breach and as a result of intervention action. Any issues of persistent CO₂ threshold levels will be further investigated and remedial action taken. This could take the form of:
- additional natural or mechanical ventilation;
 - reducing room occupancy or repurposing room; and
 - temporary use of air cleaning devices in exceptional circumstances where no other mitigation is achievable while continuing to work to achieve a more sustainable solution to increase ventilation.

- 2.9 A small number of Moray schools (Elgin Academy, Keith Primary and Linkwood Primary) have fixed CO2 monitors in all classrooms and teaching spaces linked to their Building Management System (BMS). Elgin Academy, Elgin High School and Linkwood Primary School have mechanical ventilation systems, providing direct clean air feed, with G4 pleat and bag filters. A G4 filter is designed to capture pollen, fog and coarse dust particles ($\geq 10\mu\text{m}$). It also captures leaves, insects, textile fibres, sand, ash, mist and hair and $0.4\mu\text{m}$ and larger particles such as mould & plant spores, pet dander, textile dust, skin flakes, yeast cells, insecticide dust and most bacteria.
- 2.10 Linkwood Primary School has an integrated mechanical ventilation system that is linked to and controlled by the BMS based on the real time CO2 monitor levels in the building
- 2.11 The Scottish Government have to date allocated to Moray capital and revenue funding to the total of £257K to support CO2 monitor procurement, technical consultancy and ventilation improvements. Moray have so far spent just under £40K in these areas, but are likely to spend more on monitors and are ready to undertake further remedial improvement works that may be identified over the coming months.
- 2.12 Over 30 Scottish Local Authorities have or plan to provide a CO2 monitor for every classroom and teaching space. Moray are currently considering the benefits of a 1:1 CO2 monitoring approach. This would require an additional 700+ monitors at a cost of around £80K. This would need to be funded through the allocated Scottish Government capital grant.
- 2.13 Officers will continue to engage with our colleagues in other Local Authority areas to share best practise in delivering improving ventilation in classrooms by safe and compliant means.
- 2.14 Council officers are in regular consultation with staff and trade unions to ensure there are clear plans for implementation of the local ventilation and CO2 monitoring strategies.
- 2.15 A similar approach to class, teaching and play space ventilation has been adopted in England based on the same data. In addition, the UK Health and Security Agency are overseeing a £1.85M investment by the UK Department of Health and Social Care to investigate the use of HEPA filters to remove viruses (such as COVID from the room air) and this should report in summer 2022.

3. SUMMARY OF IMPLICATIONS

(a) Corporate Plan and 10 Year Plan (Local Outcomes Improvement Plan (LOIP))

This report supports the LOIP outcomes:

Building a better future for children and young people in Moray

- A place where children and young people thrive;

- A place where they have a voice, have opportunities to learn and can get around;
- A place where they are able to reach their full potential.

and the Aims of the Corporate Plan to:

- Provide opportunities where young people can achieve the potential to be the best they can be.

(b) Policy and Legal

The Health and Safety Executive has provided clear guidance on ventilation and air conditioning during the pandemic, to supplement existing legislation on workplace air quality and temperature, which has been incorporated into Scottish Government policy and guidance for schools and nurseries. The local strategy implemented by Moray Council is fully aligned with this and will continue to be so.

(c) Financial implications

The Scottish Government have committed two tranches of funding to support improved school ventilation and CO2 monitoring:

- 14 October 2021 – £10M was committed, with Moray allocated up to £52K revenue, £114K capital for mainstream and £8k capital for private and third sector providers. £52K revenue and £85.9K has not been spent. SG have been approached to see if this can be carried across into FY22/23 to support further modelling and CO2 monitor procurement.
- 28 January 2022 – a further £5M was allocated of which Moray can receive up to £83,000. Moray are required to inform the Scottish Government of how much of this additional grant funding is required to support further improvements to ventilation and CO2 monitoring by end of March 2022.

An asset management revenue budget to sustain CO2 monitors long term still needs to be determined.

(d) Risk Implications

There is a risk that a number of persistent ventilation issues will be identified during the next phase of CO2 monitoring that will require capital works to mitigate that will cost in excess of the Scottish Government grant e.g mechanical ventilation. Previous CO2 monitoring data indicates a low likelihood of this, although further modelling of potential high CO2 level risk areas is under consideration.

(e) Staffing Implications

There are no staffing implications associated with this report.

(f) Property

There are no property implications other than those detailed in the report.

(g) Equalities/Socio Economic Impact

There are no equalities or socio economic implications associated with this report.

(h) Climate Change and Biodiversity Impacts

With the wider deployment of CO2 monitors across schools and nurseries together with the reduced 800ppm CO2 threshold level in PE, Music and Drama spaces it is anticipated that windows will be open more frequently and therefore there is a risk of greater heat loss than has been noted in previous years. Energy use within schools will be monitored over the next few months to see if this is the case and if so how much additional energy is used.

(i) Consultations

The Head of Education (Chief Education Officer), the Head of Education Resources and Communities, the Head of Housing and Property, Paul Connor, Principal Accountant, the Human Resources Manager, the Equal Opportunities Officer, the Legal Services Manager and Tracey Sutherland, Committee Services Officer have been consulted and are in agreement with this report as regards their respective responsibilities.

4. CONCLUSION

4.1 Committee is asked to consider and note the information contained in this report. A further update will provided should any changes to the approach be considered or if Scottish Government guidance on ventilation and CO2 monitoring change.

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Background Papers: None
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