**Signage and Ventilation Measures to Support the Working Safely on Campus during COVID 19 Document – Revision 4**

**Signage**

It is not felt appropriate to completely remove signage at this phase of the return to campus due to the risk of social distancing or local measures being required in future. Therefore the following actions should be followed for all existing signage that is in place across campus.

* Floor signage is to remain in place for Semester 1. The signage will be reviewed thereafter as to whether it is likely to be required and if not it will be removed.

* Lift and toilet capacity signage is to be removed across campus by Estates & Facilities. This signage will be kept should its redeployment be required in future.
* In locations where wall mounted signage (room capacity, directional signage, one way systems etc.) is mounted to metal or glass or where its removal is not likely to cause damage these signs should be removed and stored. In locations where the removal of the sign may cause damage e.g. on painted walls, a suitably sized sheet of white paper should be stuck over the top to hide the message from view. Faculties are expecting to carry out these actions in their areas of responsibility and Estates & Facilities will carry this out in all communal areas.

 **Ventilation**

Due to the age and diversity of the estate there are differing ventilation strategies in place including both naturally ventilated spaces and mechanically ventilated spaces. Estates & Facilities are programming mechanical ventilation systems in line with HSE guidance and therefore ventilation is expected to be adequate for these spaces.

Naturally ventilated spaces rely on opening windows therefore colleagues are asked to open windows on first occupying these spaces and to ensure they remain open for the duration of their occupation. HSE guidance advises that windows and doors should remain open even during colder days as even relatively small openings can assist with the provision of fresh air to the space whilst balancing thermal comfort of the occupants. In any locations where defective windows are identified colleagues are asked to report this via the E&F Helpdesk on 0191 208 7171 or via email to ess-helpdesk@ncl.ac.uk.

Monitoring of CO2 levels is the HSE’s recommended methodology for assessing the suitability of ventilation. Estates & Facilities are currently in the process of deploying 93 CO2 sensors to naturally ventilated rooms across campus, and are also continually developing the University Building Management System (BMS) by adding additional sensors to a number of mechanically ventilated spaces. A list of spaces receiving permanent CO2 sensors with traffic light indication can be found in Appendix 1. The traffic light indication will work in line with table 1 overleaf, and will be logged to allow interrogation of trends, an example of such a trend is shown in Appendix 2.

To further assist with assessment of ventilation performance an additional 40 portable CO2 loggers (without traffic light indication) are deployed to other ventilated spaces upon request via the Estates and Facilities Helpdesk. These loggers are being deployed to provide a wide sample of spaces and will be monitored for up to a week, in order to capture typical teaching patterns and to assess average performance across the occupied period. Because every space differs, with a variety of ventilation systems and highly variable utilisation patterns, this assessment can only usefully commence once spaces are occupied. The data from the loggers will be downloaded and analysed by E&F to determine whether any further actions are required in line with Table 1. Twice weekly review meetings will commence from w/c 27/09/21, with regular liaison with Faculties.

CO2 levels increase gradually during the occupation of a space, in adequately ventilated rooms the introduction of external fresh air, either via windows or mechanical systems, will assist in stabilising CO2 levels within the < 1500ppm range. The HSE recommend that in locations where the average CO2 levels over the occupied period consistently exceed 1500ppm further action should be taken. A red indicator on a CO2 traffic light is therefore not necessarily an indicator of a significant issue within the space as it is the average value which is significant. Nevertheless, as the traffic light indication on CO2 monitors works on an instantaneous value basis, teaching may be paused if the 1500ppm ‘Red’ level is indicated. Any teaching session cancelled due to a red CO2 traffic light indication should be reported to the E&F helpdesk as soon as possible on 0191 208 7171 or via email to ess-helpdesk@ncl.ac.uk and further investigation will then follow.

Where rooms are recorded as having elevated CO2 levels, including spaces where the average CO2 during the occupied period is consistently at the higher end of the amber range, E&F will explore whether any further measures can be implemented to improve the ventilation further. Where this is not feasible Timetabling will be contacted to discuss the reduction in occupancy or frequency of the rooms use. If either of these actions are taken the deployment of the CO2 sensor will remain so that the impact of these actions can be assessed. In the event that CO2 levels remain high the space in question would be recommended for removal from the timetable.

Some of our mechanically ventilated spaces already have CO2 sensors installed that are linked to our Building Management System (BMS), these will also be monitored as above.

As outlined in the Health & Safety Executive (HSE) guidance we are adopting a simple traffic light (RAG) system to assist in identifying the ventilation performance of our estate. See table below:

|  |  |  |
| --- | --- | --- |
|  | **CO2 Reading** | **Action** |
|  | 0 – 800ppm | No action required |
|  | 800ppm – 1500ppm | Rooms are considered safe but the space to be closely monitored and additional works/ventilation modifications considered. |
|  | An average of 1500ppm over occupied period | Improve ventilation, reduce room occupancy or frequency of use. Rooms to be taken out of use if ventilation issues cannot be resolved. |

Table 1: CO2 levels and corresponding action

HSE guidance suggests that if a space feel or smells “stuffy” it is likely the ventilation is not adequate, any such areas identified should be reported to Estates & Facilities using the contact details noted above so that appropriate action can be taken e.g. deployment of a CO2 logger.

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**Appendix 1: Locations for fixed CO2 sensor installation**

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| --- | --- | --- | --- |
| **Building** | **Rooms** | **No of sensors to be installed** | **Installation date** |
| Architecture | G08, G13, 1.05, 1.06, 1.07, 1.12, 2.24 7 2.27 | 8 | To be complete by end of w/c 6/12/21 |
| Armstrong Building | G.01, G.08, G.11, G15, G.17, 1.03, 1.04, 1.05, 1.48, 1.64, 2.09, 2.13, 2.49, 2.50, 2.90, 3.38, 3.39 & 3.41 | 18 | To be complete by end of w/c 3/1/22 |
| Bedson | B30, G33, G34, G36, 1.46, 1.48, 2.39, 2.41, 2.41A, 2.51 & 3.31 | 11 | To be complete by end of w/c 18/10/21 |
| Building Science | M01, 1.01, 2.09, 2.11 & 3.03 | 5 | To be complete by end of w/c 18/10/21 |
| Cassie | 2.30, 3.16 & 3.25 | 3 | To be complete by end of w/c 8/11/21 |
| Drummond | 3.11 & 4.03 | 2 | To be complete by end of w/c 18/10/21 |
| Henry Daysh Building | 6.19, 9.01, 9.02 & 9.03 | 4 | To be complete by end of w/c 18/10/21 |
| KEVII | 3.28 | 1 | To be complete by end of w/c 15/11/21 |
| KGVI | 1.11, 1.12, 1.36B, 1.36C, 1.43, 1.43A, 1.43B, 1.47, 1.69, 1.71, 1.71A, 1.71B, 2.14, 2.33, 2.37 & 2.63 | 16 | Complete24/09/21 |
| Merz | 4.12 & 9.62 | 2 | To be complete by end of w/c 1/11/21 |
| NUSU | 600, 601 & 628 | 3 | To be complete by end of w/c 8/11/21 |
| Old Library Building | 2.01, 2.03, 2.30, 5.16, 5,21 & 6.02 | 6 | To be complete by end of w/c 25/10/21 |
| Percy Building | G09, G10, G20 1.04 & 1.05 | 5 | To be complete by end of w/c 29/11/21 |
| Ridley Building | 2.04, 2.04A & 4.72 | 3 | To be complete by end of w/c 25/10/21 |
| Windsor Terrace | G12 & G13 (18-20 Windsor Terrace), G01, G02, G03 & G07 Law School | 6 | To be complete by end of w/c 22/11/21 |
|  |  | 93 |  |

**Appendix 2: Example CO2 Trend from an existing hardwired CO2 sensor (Ridley2, LT 1.65)**

