



Climate Ready School Grounds Technical Area: Air Quality

Changes to our climate and weather have some less obvious impacts. One of them is around air quality, with particular issues around poor air quality on hot and calm days or in areas with less rainfall. Obviously, the most common cause of poor air quality – road vehicles and building heating systems – also contribute to carbon emissions and therefore compound the problem further.

This guidance focusses on the outdoor air quality particularly, with an approach based in developing passive green infrastructure. There is further work to be done on actively reducing emissions, and the toolkits linked at the end of this document offer advice on campaigning.

Why would you prioritise air quality?

Many schools are located alongside roads or in built up areas. This means that the air quality is significantly impacted by the vehicle emissions on the road and, of course, those emissions are at child height.

In addition, some schools are downwind of further sources of air pollution. This could be anything from domestic gas boilers or woodburning stoves to a larger heating system for an office or factory. You can discover if your school is in an area of poor air quality by using [this tool created by the World Air Quality Project](#).

What site do you have?

It is worth surveying your site to discover where the sources of pollution are, where the prevailing wind is from, and what (if any) barriers you already face. Surveying is important, as getting this wrong can trap pollution within the school grounds, making the situation worse.

You may also need to survey the area between the pollution sources and where pupils spend time outdoors, because installing green infrastructure as close to the source as possible is preferable. For example, planting shrubs right next to a road is more effective than a few metres away within the school grounds. If you are unsure, your local council will have an Air Quality Officer who can advise.



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Solutions

The solutions this guidance refers to focus on the outdoor area, protecting children and adults as they play and learn. We recommend that you use the [Arup Air Quality in Schools toolkit](#) to also explore changes to behaviour around sources of pollution.

For example images to inspire changes in your own school grounds, [visit our technical areas page](#).

	Cost	Benefit
Roadside green screens: This is low to mid-level planting of shrubs and plants next to the source of pollution. This is likely an opportunity for pupils to learn how to research and campaign for change. Note that these roadside screens can increase pollution on the road itself.	££	****
School boundary green screens: These are most effective when situated between a pollution source and where the pupils spend time. These can vary from planted barriers such as hedges, shrubs, and climbers, to fences or plastic additions to slow air flow and catch particles. We would suggest that the nature-based solutions tend to have wider benefits and therefore are preferable. These boundary screens can increase pollution on the side of the source. This is worth considering if that is a main walking or cycling route to school.	££	***
School grounds hedges and shrubs: Creating more places where particles can be removed from the air on leaves of plants is generally a good thing. Planting can create smaller spaces which are cleaner than the wider spaces, particularly if children spend a lot of time in them such as a nursery garden.	£	**
School grounds trees: Trees also capture some pollution and can create 'wind shadows' which reduce the particles and pollution.	£	*



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Bamboo, willow rods, or rushes: These alternatives to shrubs or hedges are worth considering for a quick alternative. Do be careful about whether you can manage them – some are rather vigorous and require trimming.	£	*
Living/green walls: These can help capture pollutants and particles, as well as slow down wind speeds. They can be of significant size, or ‘pocket planters’ hung on walls or fences.	£££ - £	*
Climbing plants: A quick and cheap way to cover existing metal fences with a green barrier. You can also install trellis to encourage climbers in many places. Do be aware of maintenance and that some climbers can damage buildings long term.	£	**
Fences: Built well, a fence can slow windspeeds down considerably, creating a ‘wind shadow’ of lower pollution and particles.	£££	**
Green gateway: Creating entrances to the school which highlight the role of green infrastructure for visitors.	££	*

More resources and information

[Arup Air Quality in Schools: An Intervention Toolkit](#)

[Groundwork Air Quality & Green Infrastructure: A Toolkit for Schools](#)