



Climate School 180

Air Quality

Who is this information for?

This guidance document is for the person leading your CS180 project and for those involved in prioritising any changes to your school grounds.

It provides an overview of the problem of air pollution and how your school grounds can be part of your strategy to manage air quality across your school site and buildings. The follow-on resource, [Planting to Reduce Pollution](#), will help you decide the best solution for your setting. This refers you to the 'how to guides' and other sources to enable you to make the changes.



Introduction

Most, if not all, schools have roads running alongside at least one of their boundaries. Some may also have industrial areas near to them that produce high levels of pollution. Some schools also have their own source of pollution on site from heating systems.

Whilst air pollution impacts everyone in the school, children are physiologically more vulnerable to air pollution as their brains, lungs and other organs are still developing according to the [British Medical Journal](#). You will already be aware of how pollution can affect children with asthma, but you may not be aware of some of the other impacts of air pollution on children and young people. These include reduced lung function, respiratory infections and allergies in children and adolescents, as well as increased risks of adult chronic diseases. According to the [European Environment Agency](#), improving air quality around schools can help reduce children and young people's exposure to pollutants.

Air pollution and climate change are interlinked. Whilst climate change can affect air quality, certain pollutants can also increase the impacts of climate change. The good news is that nature-based solutions can play a significant role in reducing the impact of nearby, polluting traffic on your school.



If you have identified air quality as an issue that needs addressing through your school grounds survey this guidance will help you to consider the change you can make. At the end of this document, you will find information on the relevant 'how to' guides which will support you in putting these principles into practice.

How does air pollution affect your school?

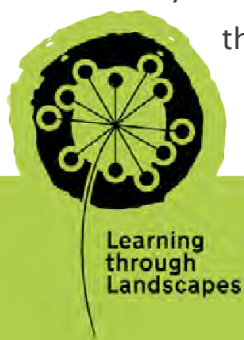
The most common form of air pollution affecting schools is from traffic.

Petrol and diesel vehicles create emissions that include particulates and noxious gases, both of which can make their way into your grounds and even into your buildings. These pollutants include carbon monoxide, oxides of nitrogen, organic compounds and particulate matter. Additional pollution from traffic, including electric cars, comes in the form of particulates from tyres. Air pollution can reach up to 300m from the road, and the closer you are to a main road the greater the impact is going to be. (Richard Baldauf, Senior Research Engineer at US Environmental Protection Agency).

Some schools also have significant sources from nearby industries. Together with the prevailing wind, this can bring significant pollution into the site. It is worth considering what air pollution sources there are nearby, and whether they pose an issue. Contact your local council clean air officer to advise you and to establish if this is an issue.

Working through the Learning through Landscapes (LtL) process of change

This simple process of change is a structure LtL encourages schools, and those who work with them, to use. It helps to ensure that schools properly consider their needs before making changes to practice or their grounds. We are using this process as we look at air quality in school grounds and buildings. Use the introductory resource, [Engaging your pupils from start to finish to](#) help you plan how your pupils, and others, can get involved in this process of change.





Stage 1: Where are we now?

The first thing to establish is whether pollution is a problem on your school estate, and then, if there are specific areas of your grounds that are particularly badly affected. Your school grounds climate survey will help you decide if this is one of your priorities.

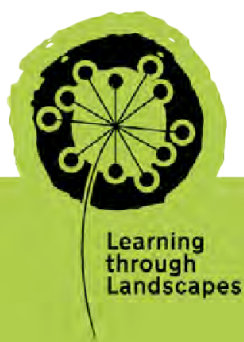
There are a range of techniques you can use to gather information about pollution in your grounds. Some of these require more technical equipment than others. The Field Studies Council and Imperial College London both have resources for schools using the following low-tech methods and are easy to find online:

- Using sticky tape to capture particulates:
[Method for Air Pollution – Field Studies Council](#)
[S Peels poster – Imperial College](#)
- Using lichens as bio-indicators of air:
[Lichen based index to nitrogen air quality guide – Field Studies Council](#)
[OPAL Air Survey – Imperial College](#)

Whilst some schools may be able to use more accurate methods for testing levels of pollution information, these methods will give you an indication of where the pollution problem is greatest in your school grounds. Combine this with simple observation and you will have a starting point from which you can plan change.

Below are some questions you will need to ask:

- How close are you to the source of pollution?
- What barriers (walls, trees, hedges etc) are there between the source of the pollution and the school, or particular areas of the school grounds? (We will look at the impact of different barriers later)
- Is there a time of day or year when pollution is the greatest?
- Is there a reason for this e.g. rush-hour traffic?





Stage 2: Where do you want to be?

If your school grounds survey has prioritised air quality as one of your key issues, the answer to this question is likely to be ‘to improve air quality’.

However, you may also have discovered specific areas of your grounds where you want to focus your attention. This could be where the pollution is greatest, or where pupils spend most of their time. You know your site best so can prioritise where you want to change first.



Stage 3: How can we get there?

This is the problem-solving stage, so you will need to explore what changes are achievable and will have the greatest impact. Creating a buffer of some form between the road and your school grounds will help reduce pollution if designed well. Any buffer should be as close to the source of pollution as possible to have the greatest impact. However, you may also wish to add extra planting and a layer of vegetation around specific areas in your grounds or in front of classrooms to help filter out pollutants.



See '[Planting to Reduce Pollution](#)' document, for technical information to support the use of plants in your school grounds for this purpose.



As you wait for these measures to be put in place or to grow, look at where in your grounds you have the best quality of air now, as well as where and when the poorest air quality develops in your grounds. Focus outdoor learning and play in the clean air areas, especially on days when you know pollution levels are likely to be the highest.



These clean air areas could be where you add seating and meeting spaces, or other features to your grounds, to encourage pupils and staff to use these areas more.



Stage 4: Making the changes



In several cities in the UK there are projects to help schools add planting to their boundaries to help reduce pollution levels in their grounds. [Trees for Cities](https://www.treesforcities.org/) is one organisation helping schools with these schemes. The availability of these schemes is likely to change over time, so contact your local authority to see what is possible where you are.



Then back to: Stage 1: Where are we now?

As your project matures, make sure you continue to monitor the quality of air in your school grounds and classrooms. This will help you find out whether the spaces with the cleanest air are changing across your site. It is difficult to accurately evaluate the impact of the changes you make as other factors need to be considered, such as electric cars becoming more common. However, with all the other co-benefits of increasing natural features in your school grounds, the changes you make will benefit your pupils, staff and the local community regardless.

Planning for the future

Any changes you make will have maintenance implications, so start to plan for this as soon as possible. Creating a management plan can be a useful way to do this and the [Polli:Nation Maintenance Guide](#) will support you.

References

This information sheet was informed by:

The Green Schoolyards America Schoolyard Forest Design Lecture, '[Addressing Air Quality Impacts on Schoolyards](#)'

For all other climate change resources, please visit www.ltl.org.uk/climate

