

# Clean Air Schools Toolkit

**PRIMARY**



# Table of Contents

Introduction to Toolkit

Lesson Plans

Clean Air Introductory Lesson KS1

Clean Air Introductory Lesson KS2

Clean Air – Year 6 Transition Lesson

Campaign Plans

Fit and Fun Ways to Travel

Parking

Engine Switch-Off

Clean School Deliveries

Quieter Routes

Clean Air School Action Plan

School Calendar

Air Quality Fact Sheet (Student)

Air Quality Fact Sheet (Teacher)



# Introduction to Toolkit

In Greater Manchester, we need to clean up the air we all breathe.

Dirty air from road transport can seriously damage our health and plays a part in thousands of deaths every year.

Children are some of the most vulnerable to the impacts of air pollution in our society. Because children's lungs are still developing, air pollution can have a bigger impact on their health than it does on adults. There is a strong link between air pollution, the worsening of asthma symptoms and more frequent cases of coughs and bronchitis.

It is for this reason that we believe schools should help take a stand against air pollution and ensure their students have cleaner air to breathe.

We have therefore decided to put together a toolkit to help your school take action against air pollution.





How to use the toolkit:

## 1. Set up a team

This could be a new group of interested students, an eco-team or a whole class group.



## 2. Complete the introductory lesson

Use the lesson screens, lesson plan and lesson plan resources to help you.



## 3. Choose your first campaign

With your team, select one of the following - Fit and Fun Ways to Travel, Parking, Engine Switch-Off, Clean School Deliveries or Quieter Routes. We recommend you print the campaign plans themselves in A3 format.



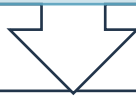
## 4. Start planning your campaign

Use the Clean Air School Action Planning Sheet and the Campaign Plan Resources to help you.



## 5. Take action!

Involve your school community in your campaign activities, and you can even invite your wider local community to take part.



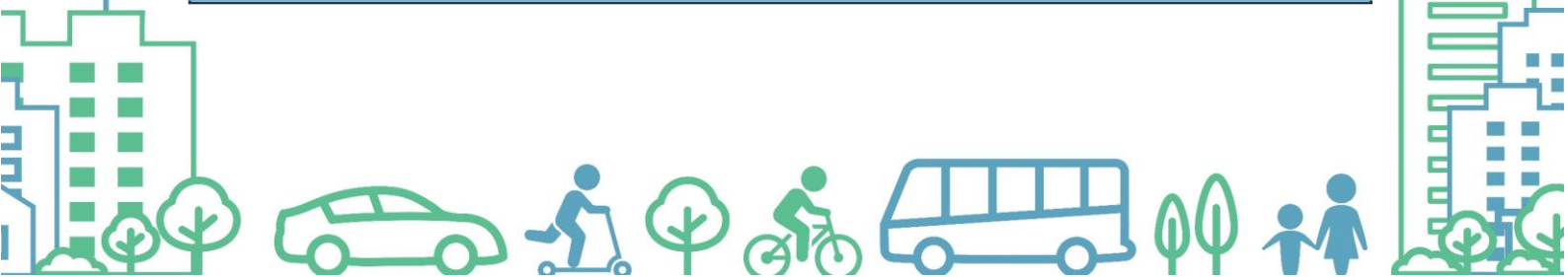
## 6. Celebrate your success

Use the Air Quality Monitoring Guide to measure the impact of your campaign activities and then share these achievements with the whole school!



## 7. Take further action

Return to the campaign plans and decide which one you're going to tackle next!





You will also find the following at the back of the toolkit:

- **Clean Air School Action Plan:** this guide helps school leaders to significantly improve air quality around a school and can be used in conjunction with the campaign plans.
- **School Calendar:** you can use this calendar to help you plan when to complete your campaigns and see what else is happening across the UK.
- **Air Quality Fact Sheet (Student):** share this document with your students for reference.
- **Air Quality Fact Sheet (Teacher):** this document contains extra information that may help you with your lessons and campaigns.



# Clean Air Introductory Lesson

Key Stage 1: 60-75 mins

## EXPLORE

**Sit in a Talking Circle. Show the jar of 'clean air' and pass it round the circle.**

**ASK: Do you think you have a right to clean air?**

Explain that when we say something is a 'right', it means that we think everybody should have it, no matter who they are. Encourage students to give their opinion by moving to stand in front of the yes/no/unsure signposts placed around the room. They can hold the jar in front of them if they want to speak and explain their position. They are free to change their minds and move at any point.

**What is polluting your air?**

Do students know what makes our air dirty? Show images of vehicles producing dirty air – explain that we can't always see when air is dirty but our pictures are showing the different types of dirty air so that students can see where it comes from. Highlight nitrogen dioxide and particulate matter coming out from the vehicles.

**What does it feel like to breathe in dirty air?**

Air pollution is often invisible, but you might taste it or feel it in your lungs when you breathe. Explain that we are going to conduct a simple straw experiment so that students can experience what it can feel like to have a shortness of breath.

**What does air pollution do to our bodies?**

Look at the slide showing the possible risks for young people who are exposed to air pollution e.g. asthma. Discuss why schools can have high exposure rates.

Watch the St Ambrose campaign film about the effects of being in a school by a busy road.

**ASK: How do you travel to school?**

Encourage students to share how they travel to school and think about why they travel in this way. Think about who decides how they travel. Do all of the students have a choice? Or are there some journeys that can only be travelled in a certain way?

**Activity:** Which journey to school do you think makes you breathe in the most polluted air?

In groups of 6, take a card each. Follow the way on your card and role-play your journey to school (move one way around the classroom). Red light! STOP... Get back in your groups, order yourselves from cleanest to dirtiest air breathed on the journey.

Reveal actual order using diagram on screens and discuss exposure levels.

## National Curriculum Subject Links:

**Science** - planning and carrying out scientific investigations; gathering, analysing and evaluating evidence.

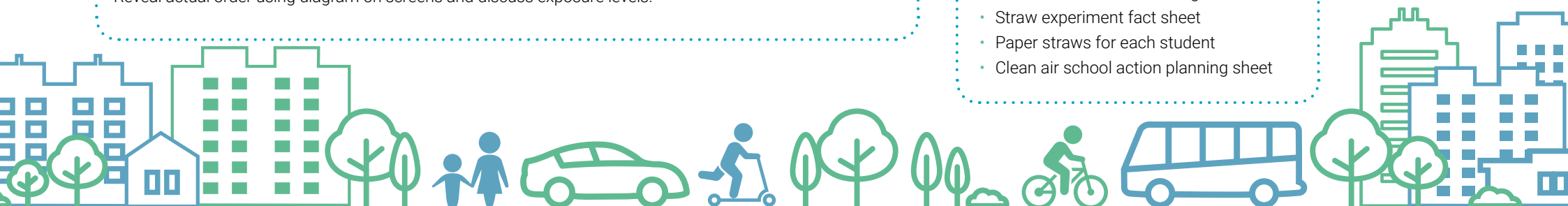
**Geography** - recognising how people can improve or damage the environment; identifying opportunities for their own involvement in managing environments sustainably.

**English** - planning, predicting, debating, and communicating to the wider community in the context of an issue which is real, relevant and motivating.

**PSHE** - recognising that individual choices and behaviour can affect issues; playing an active role as citizens, choosing a healthier lifestyle.

## You will need:

- PowerPoint – Lesson screens
- Yes/no/unsure signs
- Journey image cards
- Video - St Ambrose campaign film
- Russell Scott Primary PCSO case study
- Russell Scott Primary PCSO guidance
- Jar of clean air
- Clean Air Ambassador badges
- Straw experiment fact sheet
- Paper straws for each student
- Clean air school action planning sheet



# Clean Air Introductory Lesson

## ACTION

**Sit back in your Talking Circle. Explain to students that they are going to be acting as the Clean Air Ambassadors for our school. Share the Clean Air Ambassador badges with the students.**

### **ASK: How can we help lower the air pollution around our school?**

As a group, have an open discussion. Children hold the clean air jar when they want to share their ideas. Some prompts:

- What difference do we want to make?
- Who might we need to persuade to join in?
- What actions might we make?

Explain to students that they will be working together to take action and that we will create a plan together to help us.

Learn from others – share the case study and guidance from Russell Scott Primary School with the students.

Picking out key points: creating their team of Junior PCSOs, warning drivers when they saw negative behaviour,

thanking drivers when they saw good behaviour.

Look at the five topics for the campaigns.

### **Which campaign would work best with your school community?**

Select one to run either using a vote or tease out in an open discussion.

## Your Impact

- Class questionnaire – complete this questionnaire as a class. It will help you to understand how and why people are travelling to school in different ways.
- Family questionnaire – send this home and make sure you collect the results. It will help you with your campaign planning.

## Air Quality Monitoring

Use the air quality monitoring guide to help you start conducting your own practical testing OR if already set-up, collect this term's sample and compare for changes.



# Clean Air Introductory Lesson

Key Stage 2: 60-90 mins

## EXPLORE

Sit in a Talking Circle. Show jar of clean air and pass it round the circle.

### ASK: Do you think you have a right to clean air?

Explain that when we say something is a 'right', it means that we think everybody should have it, no matter who they are. Encourage students to give their opinion by moving to stand in front of the yes/no/unsure signposts placed around the room. They can hold the jar in front of them if they want to speak and explain their position. They are free to change their minds and move at any point.

### What is polluting your air?

Do students know what makes our air dirty? Show images of vehicles producing dirty air – explain that we can't always see when air is dirty but our pictures are showing the different types of dirty air so that students can see where it comes from. Learn about NO<sub>2</sub> and PM<sub>10</sub> as key components of air pollution and look at where air pollution hotspots are in Greater Manchester.

### What does it feel like to breathe in dirty air?

Air pollution is often invisible, but you might taste it or feel it in your lungs when you breathe. Explain that we are going to conduct a simple straw experiment so that students can experience what it can feel like to have a shortness of breath.

### What is the impact of air pollution on your health?

Review the slide showing the possible risks for young people who are exposed to air pollution e.g. asthma. Discuss why schools can have high exposure rates.

Watch the St Ambrose campaign film about the effects of being by a busy road.

### ASK: How do you travel to school?

Encourage students to share how they travel to school and think about why they travel in this way? Think about who decides how they travel. Do all of the students have a choice? Or are there some journeys that can only be travelled in a certain way?

**Activity:** Which journey to school do you think has the highest exposure to air pollution?

**Activity:** In groups of 6 children hold image of modes of transport and busy/quiet routes and order themselves highest-lowest.

Reveal actual order using diagram on screens and discuss exposure levels.

## National Curriculum Subject Links:

**Science** - planning and carrying out scientific investigations; gathering, analysing and evaluating evidence.

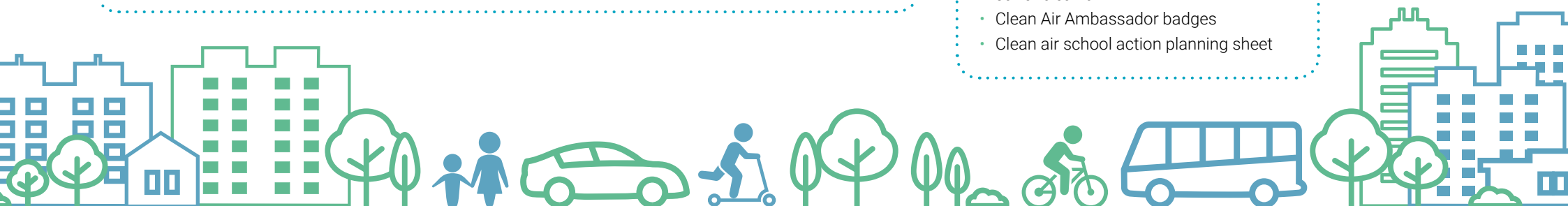
**Geography** - recognising how people can improve or damage the environment; identifying opportunities for their own involvement in managing environments sustainably.

**English** - planning, predicting, debating, and communicating to the wider community in the context of an issue which is real, relevant and motivating.

**PSHE** - recognising that individual choices and behaviour can affect issues; playing an active role as citizens, choosing a healthier lifestyle.

## You will need:

- PowerPoint – Lesson screens
- Straw experiment fact sheet
- Paper straws for each child
- Journey image cards
- Video - St Ambrose campaign film
- Russell Scott Primary PCSO case study
- Russell Scott Primary PCSO guidance
- Jar of clean air
- Clean Air Ambassador badges
- Clean air school action planning sheet





# Clean Air Introductory Lesson

## ACTION

**Sit back in your Talking Circle. Explain to students that they are going to be acting as the Clean Air Ambassadors for our school. Share the Clean Air Ambassador badges with the students.**

### **Have you learned any surprising facts about air pollution today?**

Open talk recapping today's learning. Children hold the clean air jar when they want to share their ideas.

### **How can we reduce our own exposure to air pollution?**

Discuss in Talk Trios - think of 3 ways and feedback.

### **How can we help reduce the production of air pollution around our school?**

Discuss in Talk Trios - think of 3 ways and feedback.

Explain to students that they will be working together to take action and that we will create a plan together to help us.

Share campaign plan headings. Discuss what will happen at each stage.

1. Issue - What is the problem?
2. Research - Why?
3. Action - What can we DO to solve it?
4. Reflect, Celebrate and Share - How did it go?

Learn from others – share the case study and guidance from Russell Scott Primary School with the students. Picking out key points: creating their team of Junior PCSOs, warning drivers when they saw negative behaviour, thanking drivers when they saw good behaviour.

Review the 5 clean air campaigns.

### **Which campaign would work best with your school community?**

Select one to run either using a vote or tease out in an open discussion. Close of lesson - Arrange when to meet again to start campaign planning.

## Your Impact

- Class questionnaire – complete this questionnaire as a class. It will help you to understand how and why people are travelling to school in different ways.
- Family questionnaire – send this home and make sure you collect the results. It will help you with your campaign planning.

## Air Quality Monitoring

Use the air quality monitoring guide to help you start conducting your own practical testing OR if already set-up, collect this term's sample and compare for changes.





# Clean Air - Year 6 Transition Lesson

## EXPLORE

### What is air pollution?

Recap what air pollution is, what causes it and how being exposed can impact our health. Focus on vehicle emissions on school run.

### How would YOU like to travel to your new secondary school?

Pupils consider a range of travel options signposted around the room and stand near the one they would probably take. Class discuss their choices. Which journeys would cause the most air pollution? Which would cause the most exposure to air pollution?

Class review list of journeys in order from highest to lowest exposure and discuss. Show class map of local area. Let's try to plan all journeys to school to see which might work best for you and the environment.

### As a whole class or in groups, consider the following questions:

- Are you able to walk to your new school?
- Can you catch public transport to your new school?
- Can you plan a park and stride journey to your new school?
- Can you share a car ride with others to your new school?
- Can you safely ride a bike to your new school?

Using local maps, mark out possible routes using different coloured pens for each type of journey. Is it realistic? Where are the tricky spots? Mark these in red (e.g. difficult crossing, lack of path etc.). How can they be overcome? Are there any other types of issues you could face on your journey? (e.g. losing your bus pass, a friend being late etc.). Discuss these problems and their possible solutions in your groups.

**Which journey would you like to try over the summer? Is there a classmate you can team up with to try out a few different journeys?**

Year 6: 60-90 mins

## National Curriculum Subject links:

**Geography** - identifying opportunities for their own involvement in managing environments sustainably.

**English** - planning, predicting, debating, in the context of an issue which is real, relevant and motivating.

**PSHE** - recognising that individual choices and behaviour can affect issues; playing an active role as citizens, choosing a healthier lifestyle.

## You will need:

- Transition lesson screens
- Travel options signs
- Top tips for using journey planners
- Map of local area
- Coloured pens
- Access to Map My Walk or similar online tool
- Google Maps



### Air Quality Monitoring

Use the air quality monitoring guide to help you start conducting your own practical testing OR if it's already set-up, collect this term's sample and compare for changes.

**Issue:** Too many of us are travelling to school by car

### Research:



- Research the impact of air pollution on school children in Greater Manchester or your own school (e.g. rates of asthma).
- Research the health benefits (both physical and mental) of active travel.
- Find examples of powerful children's speeches as a method of social action e.g. Greta Thunberg speech.
- Review the results of the family questionnaire to establish viable alternative travel options that parents might agree to.
- Source the most efficient local public transport options ready to publish in a leaflet or on the school website for parents/carers. This could be carried out in teams e.g. tram, train, bus etc.

### Resources:

- Fundraising pack
- Global alternative travel screens to inspire alternative ways to travel to school – to open discussions and engage children/parents
- Flyer template
- Flyer examples
- Ignite talk tips

### Useful links:

- Leaflet samples
- Greta Thunberg speech
- UNICEF film – Just a Kid 2019
- Greater Manchester campaign film
- Free step counting apps – here are 10 to choose from!

# Fit & Fun Ways To Travel



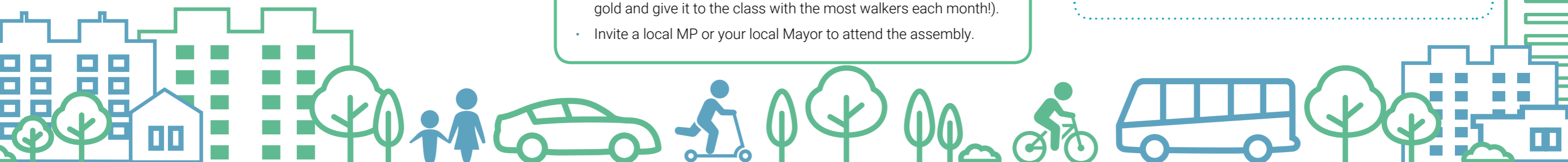
### Reflect Celebrate Share

- Hold a whole-school assembly run by school Clean Air Ambassadors to celebrate the new travel methods adopted by children, staff and parents/carers.
- Trial a 'Golden Wellie' award for walkers (spray a wellington boot gold and give it to the class with the most walkers each month!).
- Invite a local MP or your local Mayor to attend the assembly.

### Action



- Use your research to publish a flyer promoting alternative travel options to parents/carers or run a school social media campaign promoting these routes and the health benefits of active travel.
- Consult the fundraising pack for fun ideas to raise money for scooter park, bike rack, high vis jackers for walking bus or walking route signs.
- Create a family step counting competition (use a free step counter app to track steps walked).
- Use the questionnaire results to set up a working group that represents your school community (e.g. parents/governors/children/staff/local business) to implement the most popular change (e.g. walking bus, park and stride etc).
- Students to present a 3-5 minute 'ignite talk' to their parents/carers to persuade them to adopt a new method of travel. Siblings can join in too! The aim is to ignite parents to take action!
- Set a teachers' challenge for them to adopt new and more sustainable ways of travelling to school.
- Hold a no car day to show the impact of fewer cars (e.g. more spaces to play and safer, cleaner air) and encourage everyone to try new ways to travel together (e.g. car sharing, public transport, led group cycle etc.).



### Air Quality Monitoring

Use the air quality monitoring guide to help you start conducting your own practical testing OR if it's already set-up, collect this term's sample and compare for changes.

## Issue: Too much anti-social parking around our school

### Research:



- Consult the family questionnaire results to find out distances travelled by pupils. Is it walkable? Or do you need another solution?
- Find out the school community's needs and opinions. Invite the whole school community to vote for a clean air parking campaign that works for everyone (see Russell Scott PCSO guidance for tips on how they ran their meeting).
- Review Russell Scott Primary PCSO case study and guidance or research some of your own, for example: Atswood Bank Primary walking bus campaign or Beaumont and St Georges park and stride campaign. Identify successful methods other schools have used that might work for you.
- Use the parking tally sheet to record parking behaviour outside the school gates (numbers of cars, how and where they park etc) at drop off and pick-up.

# Parking



### Reflect Celebrate Share

- Send a questionnaire to neighbouring residents to identify if there have been any improvements.
- Run an online survey to record the number of car share families and gather feedback on trial results.
- Place thank you notes on safely parked cars.
- Write thank you cards to supporting businesses who helped provide safe parking and share in school newsletter.

### Action



- Select and run a student PCSO team to promote safe parking around school (see Russell Scott Primary PCSO guidance). Use the parking tally results to use as evidence for your work.
- Form a working party to run a park and stride campaign (see LivingStreets.com tips) or walking bus campaign (see Atswood Bank Primary film).
- Create a 5 minute walking zone around your school (with supervision, in pairs, children can walk 5 minutes away from the school in all directions and mark out area on a map).
- Liaise with local businesses to identify a safe free parking area or zone for parents to park and either walk into school from or connect with the walking bus.
- Liaise with your school's parents and friends association to create a car share social media group or sign up as a school to a free school journey sharing scheme (app or online).
- Ask parents to commit to and sign a parents' parking charter that makes a promise to safe parking away from the school gates.
- Create school posters/banners/painted placards/thank you notes promoting safe and social parking around school.
- Create bumper stickers for cars promoting park and stride or safe parking.

### Resources:

- Russell Scott Primary PCSO case study
- Russell Scott Primary PCSO guidance
- Greater Manchester Parents' Healthier and Safer Parking Charter template
- Thank you note template
- Poster template
- Parking tally sheet

### Useful links:

- Atswood Bank Primary School walking bus
- Atswood Bank Primary walking bus tips
- Park and stride tips
- Crocodile app helps to facilitate walking buses to school



## Issue: Too many idling cars outside our school gates

### Research:



- Use the idling survey to monitor idling vehicles near the school gates at pick-up for 5 days (to include school buses).
- Find local primary school case studies (e.g. Leigh Central Primary School anti-idling campaign) and identify successful methods other schools have used that might work for you.
- Find out how idling cars and school buses increase air pollution around your school and the myths that drivers believe about needing to leave their engines running.

### Resources:

- Idle-free school pack
- Ignite talk tips

### Useful links:

- Leigh Central Primary School anti idling campaign
- Anti idling film
- Avenue Primary School, Leicester



# Engine Switch-Off



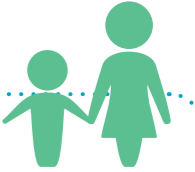
## Reflect Celebrate Share

- Repeat the idling survey – what impact did you have?
- Share your news to parents in your school newsletter and congratulate and thank them.
- Share your campaign tips with a neighbouring school.

### Air Quality Monitoring

Use the air quality monitoring guide to help you start conducting your own practical testing OR if it's already set-up, collect this term's sample and compare for changes.

### Action



- Consult with local school bus drivers/company to request engine-switch off if idling outside school gates for more than 10 seconds.
- Use idling survey to identify who to target with engine switch-off request slips.
- Form a Junior PSCO team to be outside the school gates monitoring drop-off times and handing out warnings/reminder slips.
- Each child presents a 3-5 minute ignite talk to their parents/carers to persuade them to switch-off their engines instead of idling. The aim of the talks is to ignite them into action!
- Hold a driver-contact event where school parents in cars around the school gates are approached and informed about your anti-idling campaign and informative idling tickets are handed out (see idle free school pack).
- Ask parent's to sign idle free pledges (see idle-free school pack). The class with the most pledges gets a prize! Encourage parents to share their pledges on social media #pledgeonething.





### Air Quality Monitoring

Use the air quality monitoring guide to help you start conducting your own practical testing OR if it's already set-up, collect this term's sample and compare for changes.

## Issue: School delivery vans polluting school environment

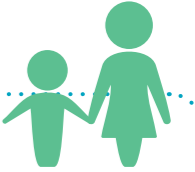
### Research:



- Find out the delivery schedule for your school.
- Use the delivery vehicle monitoring sheet to monitor school deliveries for 5 days (*size of vehicles, number of deliveries, time of day, time spent unloading, idling time, area parked etc.*).
- Look for local sustainable alternatives to standard delivery vans (*e.g. peddle bike deliveries, cargo/e-cargo bikes, consolidated deliveries with other schools etc.*).

# Clean School Deliveries

### Action



- Contact your delivery providers to alert them to your 'clean delivery' time slots (before or after school or when children are inside the building).
- Write a no idle policy for delivery vehicles and school buses.
- Coordinate and consolidate deliveries with other local schools to reduce distance travelled.
- Improve or expand storage facilities to allow for greater capacity, requiring less frequent deliveries.
- Request last mile delivery (e.g. using peddle bike, cargo/e-cargo bike, for smaller items) to company via email, letter or phone call.
- Allocate clean unloading zones where trucks have time to turn their engine off and park safely.

### Resources:

- Delivery vehicle monitoring sheet
- No idle policy template

### Useful links:

- Last mile delivery Manchester



### Reflect Celebrate Share

- Give thank you cards to delivery drivers who have made changes.
- Write thank you letters to company HQs, encouraging them to make changes for other schools.
- Share successes with other local schools.





**Issue:** Too many families driving on the same busy roads on their journey to school

### Research:



- Discover the quietest routes for walking, scooting and biking from areas less than a mile away and time them (e.g. routes away from busy main roads, through green spaces or with safe crossings and wide pavements).
- Investigate a suitable quieter route to use for a walking bus or wellbeing walk (e.g. back roads with less traffic, wide pavement that can fit children walking in pairs, limited crossings that are safe).
- Research the benefit of using quieter routes (e.g. Guardian article side streets).

### Resources:

- Walking bus guidance



### Useful links:

- Article –Side street routes to avoid city pollution can cut exposure by half
- Map my Walk
- Wellbeing Walk
- Real-time air quality index

# Quieter routes



### Reflect Celebrate Share

- Conduct a questionnaire to establish who is using quieter routes.
- Send thank you postcards to families using quieter routes.
- Publicise successful quieter routes on school website for new parents to see and offer tips to each other.

### Air Quality Monitoring

Use the air quality monitoring guide to help you start conducting your own practical testing OR if it's already set-up, collect this term's sample and compare for changes.

### Action



- Present quieter route options with visible timings to parents and carers (webpage/presentation/film/animation). TfL research shows that 60 per cent of primary school parents would only be willing to take alternative routes to avoid pollution if it added less than five minutes to the journey.
- Establish a wellbeing walk (like at Kings Cross) that leads to the school with nature notices and footprints to follow.
- Find and promote alternative quiet routes for those who must travel by car. Incorporate a park and stride initiative or a no-driving pledge (to not drive one day a week or month) in order to discourage driving down quieter routes and instead to promote walking, cycling and scooting.
- Create map showing quiet routes for walking, scooting and cycling with timings attached. Use Map my Walk to find alternative quiet routes. Ensure your walking bus is using one of these recommended quiet routes.
- Make signposts to signal the quiet, less polluted routes to school.



# Clean Air School Action Plan

Because every child should be able to breathe clean air, this guide helps school leaders to significantly improve air quality around a school. Together, a few hundred school leaders can protect the health of many thousands of children in Greater Manchester.

Spare time to complete such a plan may be scarce, so this Clean Air Plan is designed to make tackling air pollution straightforward. Just follow these three steps:

1. Review the 13 clean air actions in the tables below and select 2 to 4 actions that are appropriate for your school to focus on over the next year.
2. Complete the Action Plan grid to map out how to implement those actions. Don't forget to involve governors, staff and students in the team for implementing these actions.
3. Celebrate your achievements! Keep track of the progress your actions have made and celebrate them with the school community. Have more students started cycling to school? Has there been a reduction in idling vehicles? Let everyone know!

Please consult the campaign plans for help with implementing each of the individual 13 actions.

## Ways of reducing air pollution at the school entrance:

1. Stop vehicles from idling near the school entrance.
2. Establish a suitable drop off point away from the main walking route.
3. Set an active travel challenge for families to promote cycling, scooting and walking.
4. Improve your school's bicycle and scooter storage to support cycling and scooting
5. Encourage car sharing for those who need to drive.
6. Hold a no car day to trigger people to try a new way to get to school.







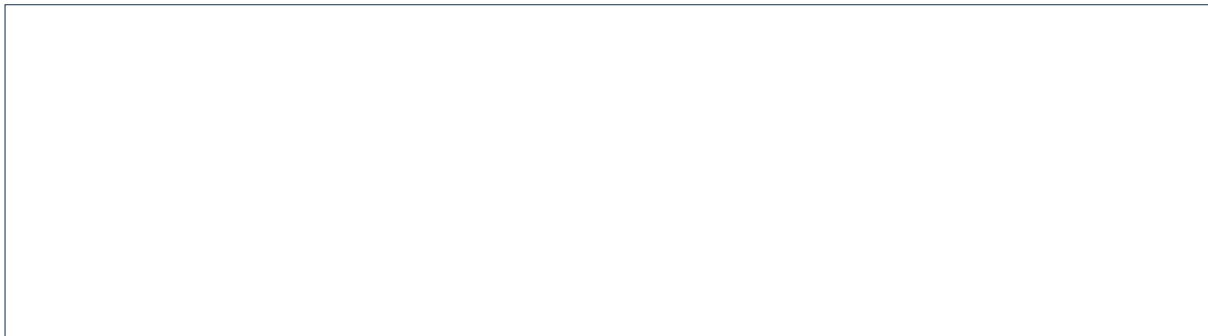
Ways of reducing air pollution on school grounds:

1. Reduce the number of deliveries to school and make sure they arrive at quiet times.
2. Have a no idling policy on school grounds – especially for school buses.
3. Create a low emission zone around school to remind the wider community of the need to avoid the area or to drive cleaner.
4. Close the school road and hold a street party to show the impact of a car-free zone.

Ways of reducing students' exposure to air pollution:

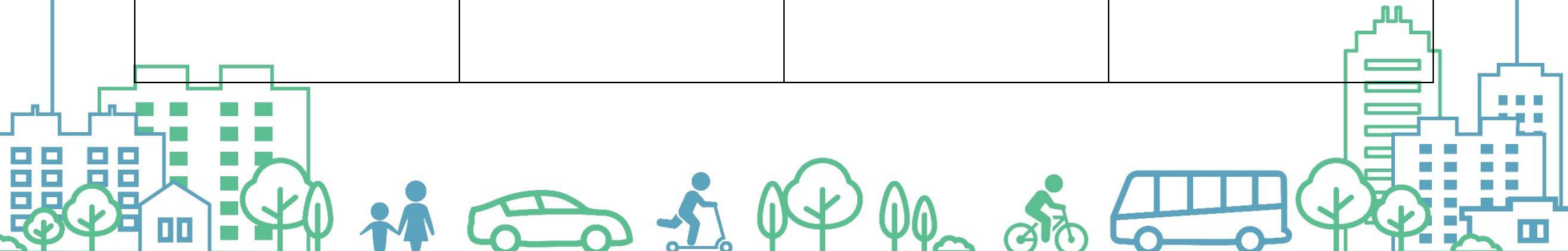
1. Train staff and families on the risks of air pollution and how best to avoid it. Share this knowledge through lessons and assemblies.
2. Share quieter routes to school with students and families so they know the least polluted ways to travel in.
3. Promote walking, cycling or scooting to school instead of driving as this reduces exposure to emissions (especially on quieter routes)

Selected actions for our school:



Action Plan:

ACTION	TIMELINE	RESPONSIBLE	FUTURE ACTION/ EMBEDDING
e.g. Reduce number of stationery deliveries from weekly to fortnightly	Starting from September	School business manager	Add to school procurement policy



# School Calendar

Together we can help tackle air pollution! You can use this calendar to help you plan when to complete your campaigns and see what else is happening across the UK.

Term 1	
Public Campaigns	Your team's campaigns
<ul style="list-style-type: none"><li>• Make your own Bike to School Week</li><li>• Campaign for School Streets (Friends of the Earth)</li></ul>	<ul style="list-style-type: none"><li>• Fit and Fun Ways to Travel</li></ul>
Term 2	
Public Campaigns	Your team's campaigns
<ul style="list-style-type: none"><li>• Sustrans Big Pedal (March/April)</li></ul>	<ul style="list-style-type: none"><li>• Engine switch off</li><li>• Clean school deliveries</li></ul>
Term 3	
Public Campaigns	Your team's campaigns
<ul style="list-style-type: none"><li>• Clean Air Day (20th June 2019)</li><li>• Walk to School Week (Living Streets: 20th-24th May 2019)</li></ul>	<ul style="list-style-type: none"><li>• Parking</li><li>• Quieter routes</li></ul>



# Air Quality Fact Sheet

Human activity is a major cause of air pollution, especially in large cities: human air pollution is caused by things such as factories, power plants, cars, airplanes, chemicals, fumes from spray cans, and methane gas from landfills.



Air pollution has a negative effect on the environment: it causes global warming (carbon dioxide), damages the ozone layer (methane gas and CFCs), and causes acid rain (sulphur dioxide).



Cycling or walking to school can expose you to less air pollution than driving to school.



Turning the engine off, rather than idling, when waiting in your car can reduce air pollution by 20-30%.



You can avoid high emission levels on a high pollution day by staying away from busy roads with lots of traffic when you walk to school.



Diesel vehicles are the main source of road-based nitrogen oxide emissions in Greater Manchester.



Air pollution can cause headaches, dizziness, nausea and shortness of breath. In children, it often causes more coughs and bronchitis.



Because children's lungs are still developing, air pollution can have a bigger impact on children's health than it does on adults.



# Air Quality Fact Sheet

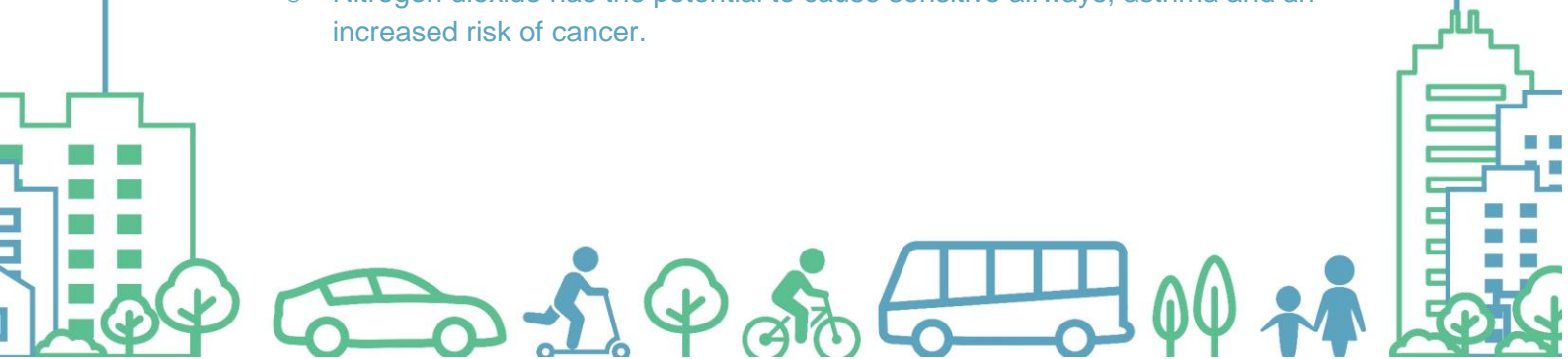
This fact sheet contains some extra information that may help you with your lessons and campaigns.

## General:

- Air pollution comes from a range of sources, including some nearby, like vehicles, and some further afield.
- Pollution levels depend on a number of factors, including weather, location and time of day.
- Air pollution can be split into two categories: gases and particulate matter (PM).
  - Gases include nitrogen oxide, benzene, carbon monoxide, carbon dioxide and ozone.
  - PM are particulates of dust and liquid droplets suspended in the air.
- PM<sub>10</sub> and PM<sub>2.5</sub> are particles that come from road traffic (metal, rubber, dust from road surfaces) or from building and industry, wind-blown dust, sea salt, pollens and soil particles – these particles cannot usually be seen with the naked eye.
- PM<sub>10</sub> are particles with a diameter of 10 micrometres or less and PM<sub>2.5</sub> are particles with a diameter of 2.5 micrometres or less.
- On very high pollution days, it is best that children do not take part in strenuous outdoor activities – these days are very rare!
- Greening a space is a great idea to keep air pollution away from your school, but be aware that some types of trees and shrubs actually produce polluting compounds and could in fact contribute to air pollution!

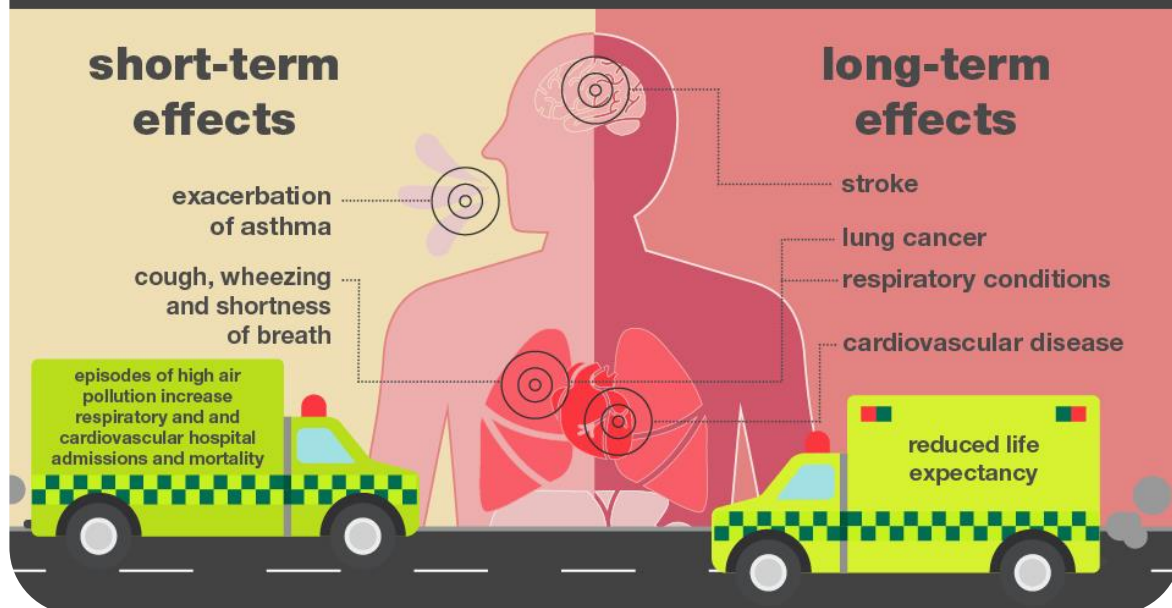
## Health:

- Air pollution contributes to the equivalent of 1,200 deaths a year in Greater Manchester.
- Air pollution is the largest environmental risk to public health linked to deaths in Greater Manchester.
- Air pollution has the most impact on young children, as well as on the elderly and people with existing lung and heart conditions.
- If we tackle the air pollution pumped out by vehicles, our children could live six months longer.
- The impact of air pollution on our bodies:
  - Nitrogen dioxide has the potential to cause sensitive airways, asthma and an increased risk of cancer.



- Because children's lungs are still developing, air pollution can have a bigger impact on their health than it does on adults. There is a strong link between air pollution and the worsening of asthma symptoms, and it may even cause asthma in some people.
- Exposure to air pollution is also linked to more coughs and bronchitis.
- From an interview with Dr Colin Wallis (Great Ormond Street Hospital):
  - Lungs are not designed to breathe in pollutants – some of the small particle pollutants penetrate deep into the lungs and then cause an inflammatory response.
  - Lungs are sensitive – they cannot be repaired easily, and we cannot grow a new set, so the impact of pollutants on a child's lungs can lead to long term problems in adulthood.
- Air pollution in Greater Manchester increases hospital admissions and trips to A&E.
- According to the World Health Organisation (WHO), 4.2 million people die each year from air pollution.

## Health effects of air pollution

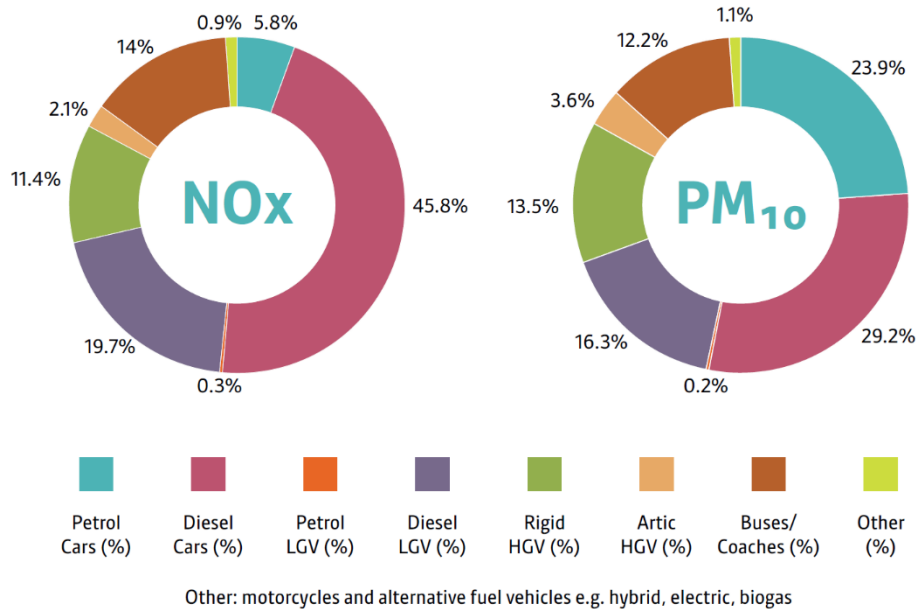


## Campaign-relevant Facts:

### Fit and Fun Ways to Travel:

- A combination of still air (low dispersal) and the morning rush hour (high emissions) mean the highest pollution levels are often in the morning – the afternoon rush hour is more spread out, leading to a more spread out peak of pollution levels and therefore overall lower levels of air pollution.
- Air pollution is usually lower at the weekend than on weekdays.
- Evidence shows that cyclists are actually often exposed to less air pollution than people travelling by car, taxi or bus.
- Diesel vehicles are the main source of road-based nitrogen oxide emissions in Greater Manchester:
  - Cars (46%)
  - Vans and light goods vehicles (20%)
  - Buses and coaches (14%)
  - Heavy goods vehicles (11%)

Proportions of NO<sub>x</sub> (NO and NO<sub>2</sub>) and PM<sub>10</sub> emissions from road sources (GM Air Quality Action Plan 2016)



### Engine Switch Off:

- Turning off your engine makes a difference! In a study done by King's College London, no-idling action (i.e. turning off your engine when not driving) resulted in reducing air pollution peak concentrations by as much as 20-30% in high pollution areas. See the study [here](#).

### Clean School Deliveries:

- Transport is the single largest contributor to air pollution in most cities. There are 4 million vans on UK roads, and vans are the fastest growing vehicle type: 96% of these vans are diesel fuelled.
- When it comes to harmful pollutants one van emits about five times more NO<sub>x</sub> and over three times more PM<sub>2.5</sub> particles per year than a car, mainly because of higher annual mileages and pollutant emissions rates for each kilometre travelled.

### Green Routes:

- You can avoid high emission levels on a high pollution day by staying away from busy roads with lots of traffic when you walk to school.
- Diesel vehicles are the main source of road-based nitrogen oxide emissions in Greater Manchester:
  - Cars (46%)
  - Vans and light goods vehicles (20%)
  - Buses and coaches (14%)
  - Heavy goods vehicles (11%)





Created by Global Action Plan for Clean Air Greater Manchester.



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