

Air Quality Issues For Cities

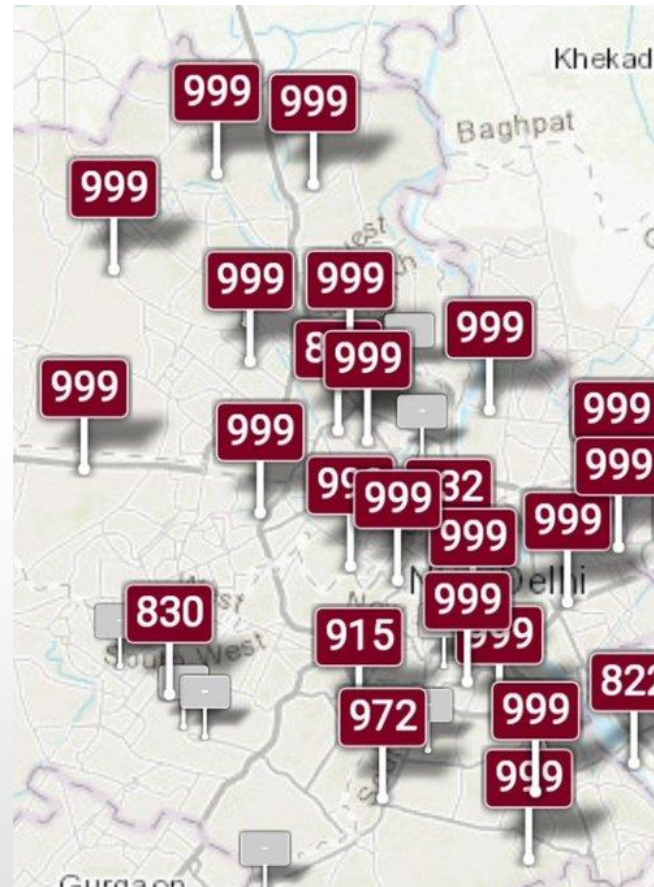
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Introduction

- A World Perspective
- A European Perspective
- Air Quality Problems In The UK
- Options for Resolution
- Challenges for Southampton
- Where Are We Now?

A World Perspective: 1

- Delhi is the most air polluted city in the world
 - Air quality level index soared to 1200 (max 'safe' level is 50)
 - Flights are re-routed
 - The Taj Mahal (150 miles away) has deployed industrial air purifiers to protect the marble from air pollution erosion



A World Perspective: 2

- At a T20 International Cricket match between India and Bangladesh in Delhi (Nov 3rd 2019) the Bangladesh team trained in smog masks
- After the game Russell Domingo, the Bangladesh coach said “We obviously have some scratchy eyes, some sore throats, but it’s been OK. Nobody is sick or dying”.
- Not true Russell, during the game (which lasted c5 hours over 700 Indian citizens died across the country as a result of air pollution)
- Breathing Delhi’s air is equivalent to smoking 50 cigarettes a day
- Air pollution killed 1,240,000 Indian citizens in 2017 (12% of total deaths that year)



A European Perspective: 1

- In Europe vehicle emissions are seen as the key air polluter.
- The air-quality pollutant emissions from petrol, diesel, and alternative-fuel engines are:
 - carbon monoxide
 - oxides of nitrogen
 - un-burnt hydrocarbons and;
 - particulate matter
- Emissions of these pollutants are regulated by Euro emissions standards.

A European Perspective: 2

- The European Union Ambient Air Quality Directive sets maximum permissible levels for roadside concentrations of pollutants thought to be harmful to human health and the environment.
- The UK government is committed to meeting those standards in as short as time as possible.
- “Achieving the air quality standards for nitrogen dioxide and fine particles presents the greatest challenge, especially in urban areas.”
(Vehicle Certification Agency - VCA).

A European Perspective: 3

- Air quality pollutant emissions from road vehicles have been reduced by improving fuel quality and by setting increasingly stringent emission limits for new vehicles.
- It would take 50 new cars to produce the same quantity of air quality pollutant emissions per km as a vehicle made in 1970.
- Over the last 20+ years increasingly tight emission limits have been set at a European level, starting with the "Euro1" (1993).
- From September 2015 all new cars currently have to meet the Euro 6 standard. Since 1st January 2011 all models sold must meet Euro 5.

A European Perspective: 4

- The average new car emitted 120.1g/km CO₂ in 2016, down 1.1% on 2015's performance and 33.6% below that of 2000.
- This was supported by a 22.2% rise in registrations of alternatively-fuelled vehicles, which tend to have CO₂ emissions on average 40% below the market average.
- However, for the UK independently to achieve the pan European target of 95g/km by 2021 there would need to be a significant increase in the rate of progress, to 4.6% per annum (SMMT Report 2017).

Air Quality Problems In The UK: 1

- Fine particles have an adverse effect on human health, particularly among those with existing respiratory disorders.
- Particulate matter is associated with respiratory and cardiovascular problems. Over 29,000 deaths a year in the UK are attributable to fine particulate pollution.
- Worse still, over 9000 premature deaths in London alone are attributable to air pollution.
- Nitrogen dioxide emissions from diesel traffic cause 23,500 of the 40,000 premature deaths from air pollution each year, according to figures from the Department for Environment, Food and Rural Affairs (2016).

Air Quality Problems In The UK: 2

• Using 2017 government sourced data on emission levels in the UK research by Greenpeace and The Guardian found:

- 2,091 schools, nurseries, further education centres and after school clubs are within 150 metres of a road emitting illegal levels of nitrogen dioxide (NO₂).
- There are 1,013 nurseries looking after children from six months to five years old within 150m of illegal NO₂ levels.
- Five of the 10 areas with the worst exposed nurseries outside London were in the West Midlands.
- Towns as far afield as Plymouth, Poole and Hull all had nurseries and schools in areas above legal NO₂ limits.
- 15 London boroughs had at least a quarter of nurseries in an illegal No₂ hotspot (the highest of which was 118.19µg/m³ – almost three times the legal limit - at a nursery in Tower Hamlets, east London)

Air Quality Problems In The UK: 3

- A lot of air quality information is widely available to evaluate and assess
- Patterns on emissions can be accurately identified
- BUT some can be easily estimated – notably “which week (in the UK) is usually ‘the worst’ for air quality?”

Weather
Paul Simons

elsewhere with showers likely. Max 13C (55F), min -4C (25F)

Weather Eye
Paul Simons

Tonight is when fireworks and bonfires light up the sky, although many Guy Fawkes events were held at the weekend. But fireworks and bonfires have a darker side to them because they can cause serious air pollution. November 5, and the days around it, can be the most polluted time of the year in the UK.

Last year Guy Fawkes events caused five days of particle pollution problems. On the weekend before Bonfire Night the pollution was particularly bad on Saturday, November 3 across the eastern half of England, including London. The next night, fireworks smoke was measured across much of the Midlands and northern England. On Bonfire Night particle pollution reached the highest level of ten on the UK air pollution scale in many northern cities, and lingered to cause further problems the next day.

Bonfires and fireworks generate dense smoke plumes that reduce visibility, in addition to other air pollutants. These typically include nitrogen dioxide, sulphur dioxide and carbon monoxide. The pollution includes microscopic particles of soot, known as PM2.5 and PM10, which are especially dangerous because they can cause serious health issues, such as heart and breathing problems.

Air pollution is monitored by national and local government and often shows upsurges in the days around Bonfire Night, with particularly large increases in the levels of the PM2.5 and PM10 particulate matter. The air pollution can even be detected from satellite observations.

Smoke from fireworks and bonfires is so bad that it can create a shroud of smog reminiscent of the old coal smoke smogs of decades ago. A University of Birmingham study discovered that visibility dropped by 25 per cent on average on Bonfire Night, and can last for up to two days. The problem was particularly bad in humid weather, when smoke particles tend to absorb moisture from the air.

Speak directly to one

Titles

City	1000h	1400h	1800h
London	10.5	11.5	12.5
Birmingham	12.5	13.5	14.5
Manchester	11.5	12.5	13.5
Cardiff	10.5	11.5	12.5
Edinburgh	10.5	11.5	12.5
Belfast	10.5	11.5	12.5
London (Heathrow)	10.5	11.5	12.5
London (Gatwick)	10.5	11.5	12.5
London (Stansted)	10.5	11.5	12.5
London (Luton)	10.5	11.5	12.5
London (City)	10.5	11.5	12.5
London (Heathrow)	10.5	11.5	12.5
London (Gatwick)	10.5	11.5	12.5
London (Stansted)	10.5	11.5	12.5
London (Luton)	10.5	11.5	12.5
London (City)	10.5	11.5	12.5

Synoptic situation
Highs and lows
Hours of darkness

Options For Resolution: 1

- The issue is recognized by all UK local authority areas, who have been tasked by central government with coming forward with solutions that meet the needs of their local areas.
- Clear options to address excess vehicle emissions exist across the policy spectrum.
- Different areas have considered different approaches.

Options For Resolution: 2

- Policy tools exist to address this challenge.
- Different approaches will be necessary in different circumstances.
- Social, economic and environmental considerations must be evaluated.



Options For Resolution: 3

- Discounted parking charges for low emission vehicles (Derby)
- Workplace parking charges (Nottingham)
- New incentives for electric vehicles (Birmingham)
- Banning non-electric vehicles from areas – Zero Emission Zone (ZEZ – Oxford 2020)

CONTINUED FROM PAGE 1
Oxford bans non-electric cars

sufficiently developed to allow this to be practical". An official said that there were questions over the availability of electric buses and lorries.

Air pollution in the centre of Oxford is well above the legal limit. Average nitrogen dioxide levels fell by 18.9 per cent from 2011-2013 but by only 3.9 per cent from 2014-2016.

John Tanner, the city council's Labour cabinet member for the environment, said that the authorities had considered and rejected the system being introduced on October 23 in London of a £10 daily charge for pre-2006 cars to enter an ultra-low emission zone.

"We don't think it's a good idea to allow people to pay their way to pollute our city," he said. "All of us who drive or use petrol or diesel vehicles through Oxford are contributing to the city's toxic air. Everyone needs to do their bit — from national government and local authorities to businesses and residents — to end this public health emergency."

Mr Tanner said that the plans would accelerate the transition to electric cars in Oxford, which has a population of about 160,000, and help to support the car plant at Cowley, where an electric version of the Mini will go into production in 2019. "We want to get behind the local car factory and it will mean people can buy a locally built electric car and drive it in the centre of Oxford," he said.

Drivers in other parts of Oxford also face restrictions, with Oxfordshire county council considering a congestion charge and "workplace parking levy". Taxi drivers will be among those hardest hit by the new zone, with the

Zero emission zone proposals

Proposals to clear the air

Nottingham The city council charges employers a £334 workplace parking levy for each space they provide. Since 2009, £9 million has been raised to help to improve public transport.

Derby Drivers who switch to ultra-low emission vehicles are offered discounted parking and access to bus lanes along key routes.

Birmingham The council has been awarded £2.9 million from the Department for Transport to implement a network of electric taxi charging points.

City of Oxford Licensed Taxicab Association saying that many would have to buy zero-emission vehicles costing £60,000.

Oxford city council is installing 19 electric charging points exclusively for cabs and 100 for residents, with the help of £1.3 million in government funding.

Options for Resolution: 4

- Declaring low emission zones in sensitive areas and enforcing them accordingly
- Extending existing approaches “T(oxicity) Charge” in Central London (23/10/2017)
- Higher charges for older more polluting vehicles (pre 2005)



Challenges for Southampton: 1

- Southampton has been recorded as having consistently high levels of air pollution in the UK.
- The city is among more than 40 places across the UK named by the World Health Organisation (WHO) for breaching air pollution safety levels.
- It is regularly included in lists of the most-polluted cities in the UK by the WHO.
- Public Health England figures revealed that the percentage of adult deaths in the city due to air pollution in 2011 was 6.3% – the highest in the South East.
- Southampton was one of five named cities in the UK required to introduce new low emission zones by 2020.

Challenges for Southampton: 2



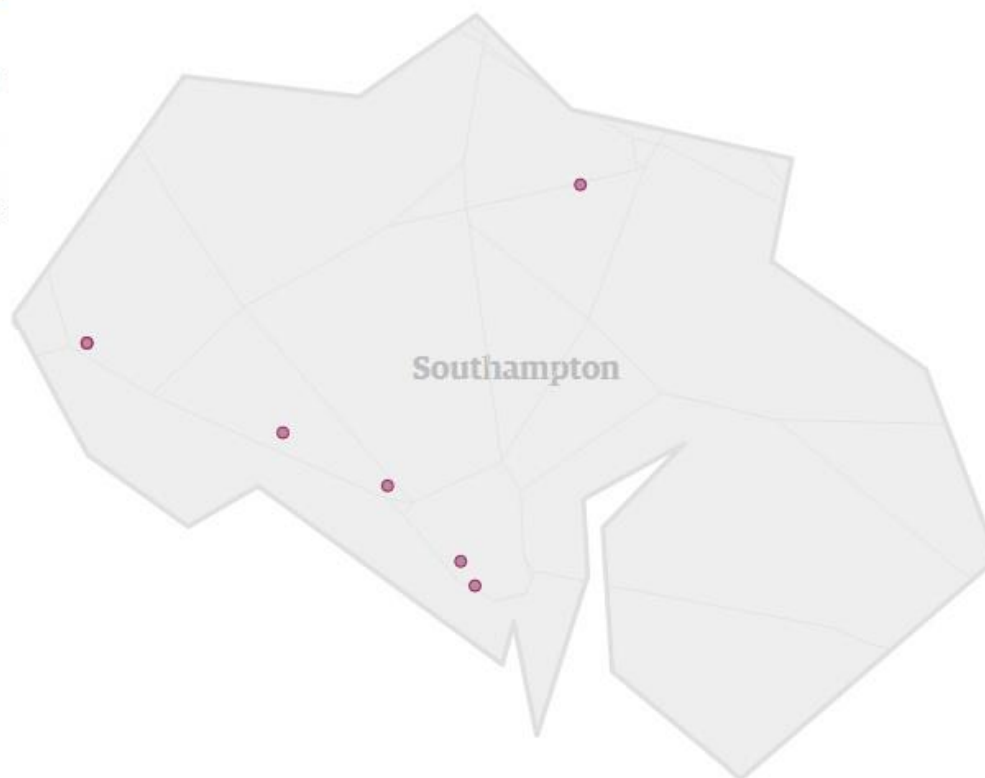
Challenges for Southampton: 3

Check your child's school

so17 3sx

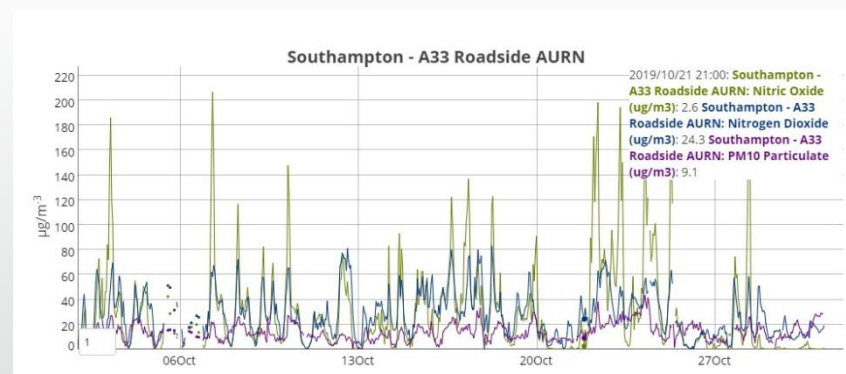


7 out of 245 nurseries, schools, further education centres and after school clubs in Southampton are within 150 metres of a road where the level of nitrogen dioxide from diesel traffic exceeds the legal limit of $40.0\mu\text{g}/\text{m}^3$.



Challenges for Southampton: 4

- Dynamic monitoring enables the city to assess air quality on an hourly basis
- Analysis has highlighted clear patterns in emission levels
- The data can be used in policy proposal definition



Challenges for Southampton: 5

- A review of Air Quality in Southampton in 2015 by the local authority showed:
 - the port is believed to contribute between seven and 23 per cent of the air pollution
 - cars contribute 18 per cent and
 - HGVs 12 per cent
- In response the council is implementing a Clean Air Strategy to meet national goals

Where Are We Now?: 1

- 25/1/2019 – ‘Green City Charter’ to combat air pollution was published, including:
 - Shoreside power and preferential charging of the port HGV booking scheme.
 - Offering opportunities for businesses to assess and trial freight consolidation, thereby removing HGV trips in the city, and an accreditation scheme for HGV operators so businesses can identify those operators that are least polluting.
 - Introduction of a Traffic Regulation Condition that will ensure all operating buses meet the highest emission standard.
 - Revising taxi licensing conditions to remove the most polluting vehicles, expanding the existing low emission taxi scheme to support more operators, and offering a ‘try before you buy scheme’ for operators to experience the benefits of an electric taxi for up to 3 months.

Where Are We Now?: 2

- BUT.....
 - The local authority decided against introducing a vehicle charge following a consultation.
 - This ‘u-turn’ on private vehicles was criticised by clean air campaigners in the city.
 - Liz Batten of the clean air campaign group Clean Air Southampton told *AirQualityNews.com* that the council are not addressing the risk to health that air pollution poses, and are ‘very concerned’ that the measures proposed don’t go far enough.
 - ‘This despite the fact that 80% of vehicles passing the one point of exceedance in the city are private diesel cars and diesel vans,’ she added.

Where Are We Now?: 3

- Last month (October 22nd 2019) Portsmouth City Council announced a Clean Air Zone on the western part of Portsea Island
- Whilst smaller in size than the original proposal (initially the whole of Portsea Island) the scheme means buses and lorries not meeting emission standards would be charged £50 per day, while taxis would pay £10 per day
- Owners of older vehicles registered before 2006 or diesel vehicles registered before 2015 would also be charged to drive into the zone
- The council has been warned by the government that a congestion charge zone will be imposed if it fails to improve air quality



Where Are We Now?: 4

- Earlier this month (November 5th) Bristol City Council announced it was banning all diesel cars vehicles from parts of the city centre
- The scheme, which needs government approval, is due to start in 2021
- The central ban zone, where privately owned diesel cars will be banned between 07:00 and 15:00, includes part of the M32, the old city and the Harbourside
- Taxis and vans will pay a daily charge of £9 and buses and HGVs £100
- Vehicles, with the exception of taxis and emergency services, will incur fines if they stray into the area

