

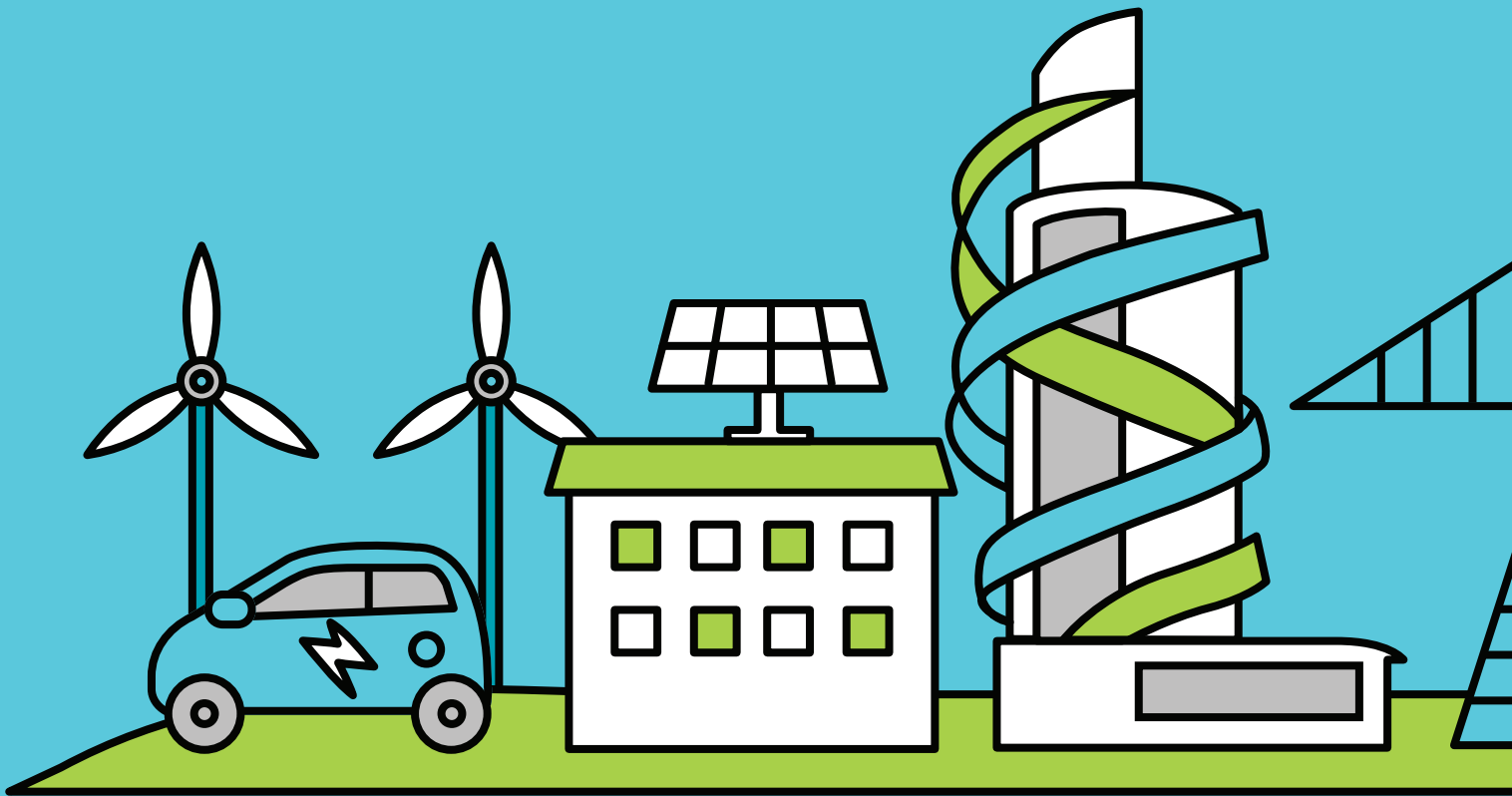
AIR QUALITY IN THE SOUTH TEES:

AS CLEAN AS IT CAN BE



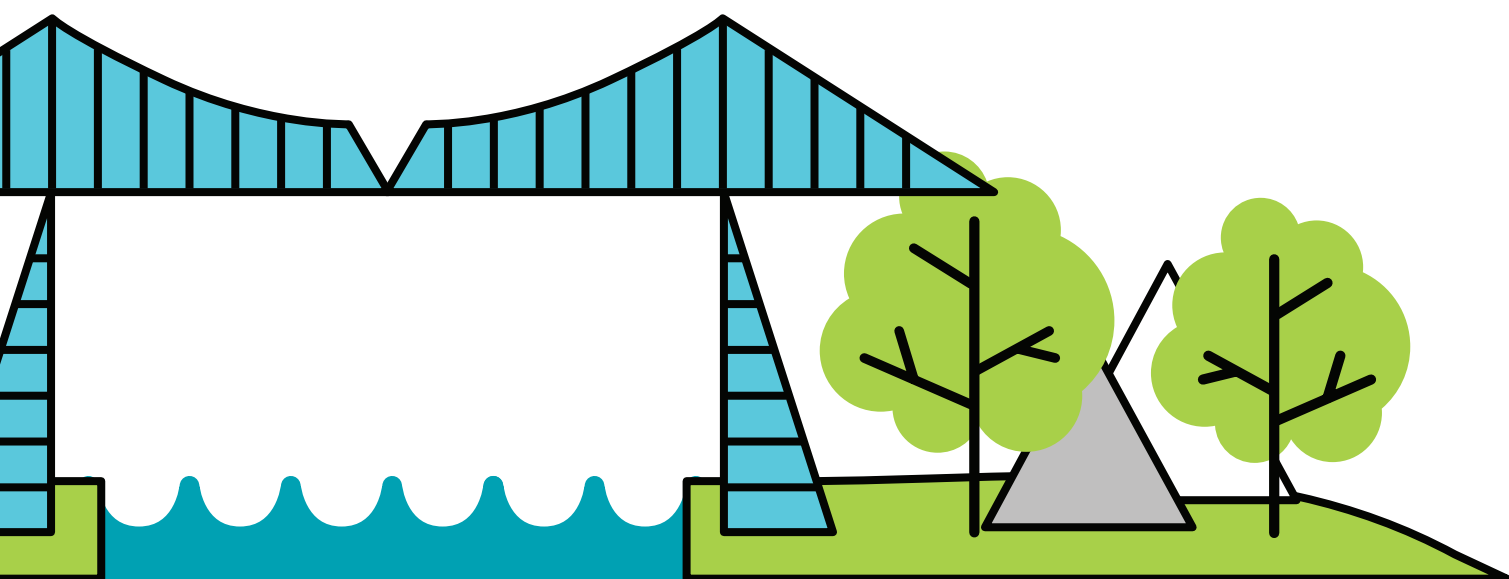
DIRECTOR OF PUBLIC HEALTH ANNUAL REPORT: 2019





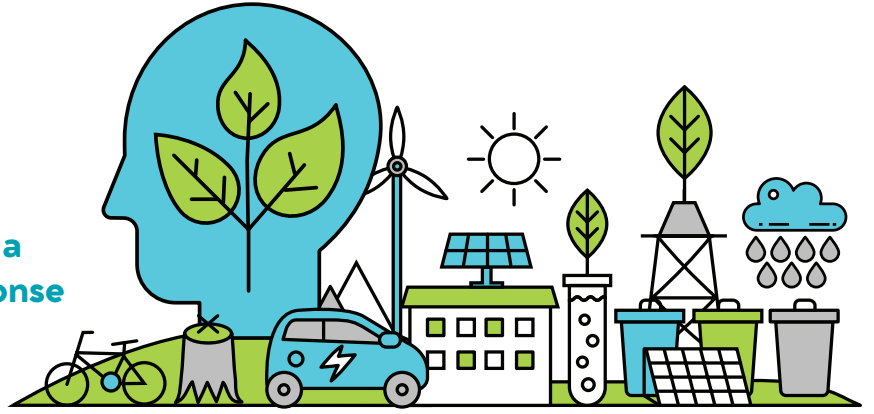
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FOREWORD

Air quality is one of the most challenging public health problems in the 21st century and it requires a system-wide and community response to tackle it.



Good air quality plays a key role in good health and it is therefore important that

we understand how air quality impacts on health, what contributes to worsening air quality and what action can be taken. While some of the factors which affect air quality impact at international and national levels, there is still a lot of things that can be done at local, community and individual levels to improve the air we breathe in our own neighbourhoods.

This report demonstrates that the air quality in the South Tees is good and meets the legal standards, however to protect the long term health of residents we are aiming to take all available steps to improve further.

Although we all breathe the same air, air pollution affects certain populations disproportionately - the very young, older adults, adults with pre-existing lung and heart conditions and disadvantaged communities. In this report we explore these differences showing how improving air quality is part of addressing the unfairness in health outcomes experienced in the South Tees.

The need for action on air pollution is strongly linked with action needed to tackle climate change and develop more sustainable ways of living. While air pollution can include both indoor and outdoor forms, a key challenge is to change our transport systems to reduce local road-related air pollution, and adopt new ways of getting about. Improving public transport, creating more green space and increasing walking and cycling as part of our daily lives is a key part of this, and will bring other benefits to both physical and mental health.

This report is a call to action to tackle the issue of air pollution in the South Tees. The recommendations set out how residents, communities, businesses and public sector services can work together to improve the air that we breathe. Councils in particular, with their roles in relation to transport, schools, and tobacco control are well placed to implement a variety of solutions with partners that can act to improve air quality. The development of the South Tees Clean Air Strategy is a key recommendation of the report and will bring together a partnership to drive its delivery.

The good news is that we know what we need to do to improve the air we breathe. I hope that this report is the beginning of a collective journey for South Tees residents, communities, businesses and public-sector services to make our air “as clean as it can be.”

Carole Wood

Interim Director of Public Health South Tees

CHAPTER 1.

Why is air quality important?

Air quality in the UK has significantly improved in the last 50 years but air pollution remains one of the biggest environmental risks to health in the South Tees and in England as a whole.

The Public Health England Strategy 2020-2025 has “cleaner air” as one of its top ten priorities.

Air pollution occurs when the amount of certain pollutants exceed recommended levels. There are national and European standards which are set in law for air pollution depending on how they affect human health. However, the International Agency for Research on Cancer (IARC) has classed outdoor air pollution as carcinogenic to humans (a Group 1 carcinogen) and causing lung cancer.

They have declared that there is no clear evidence of a safe level of exposure to air pollution. Therefore, our South Tees strategy is to not just to achieve the national standards for air pollution, it is to continue to reduce air pollution and reduce our resident’s exposure to it.

Air pollution is not a new problem to the UK. In 1952 the London smog, four day’s of severe air pollution, saw deaths in London increase by 12,000 and a further 100,000 were harmed. This poor air quality was caused by people burning extra fuel to keep warm during a period of cold and still weather. The Clean Air Acts were introduced soon after to prevent events of this scale happening again.

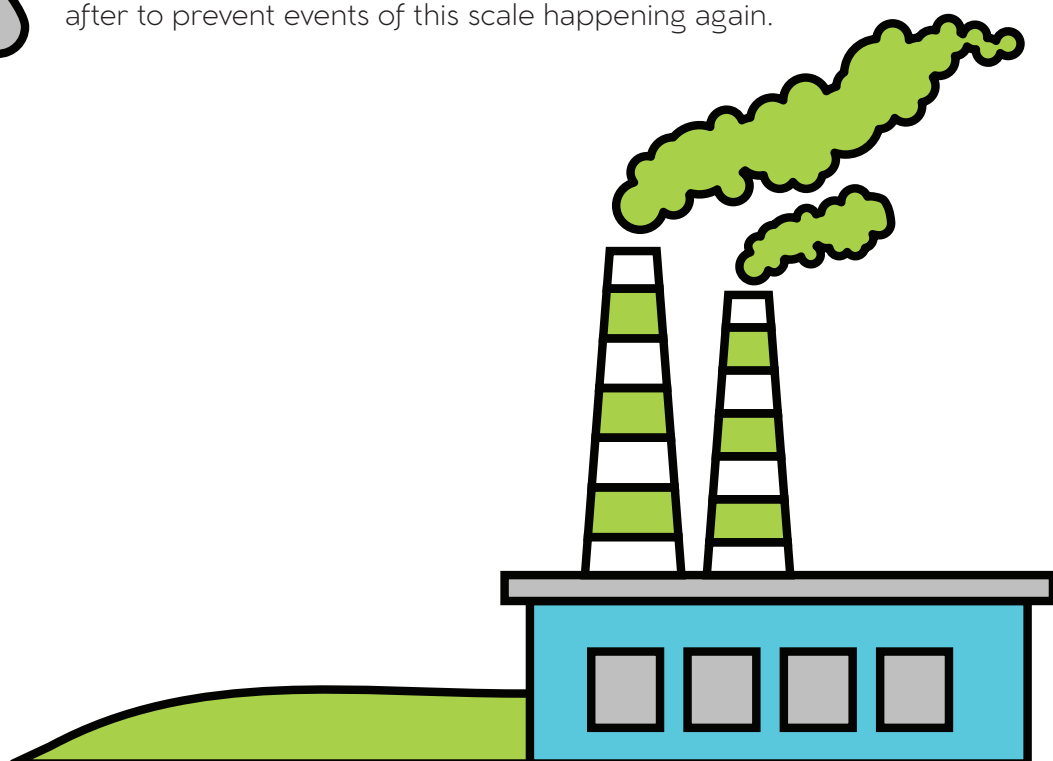
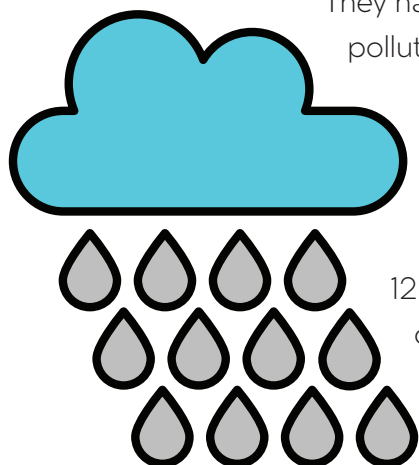
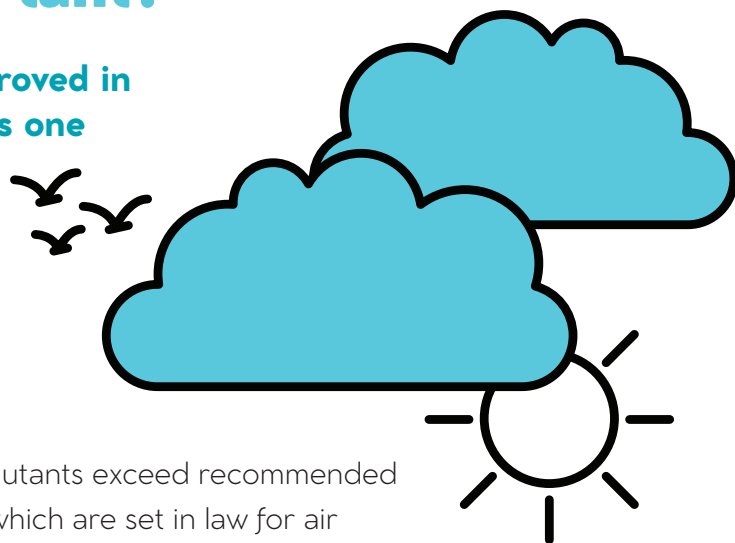
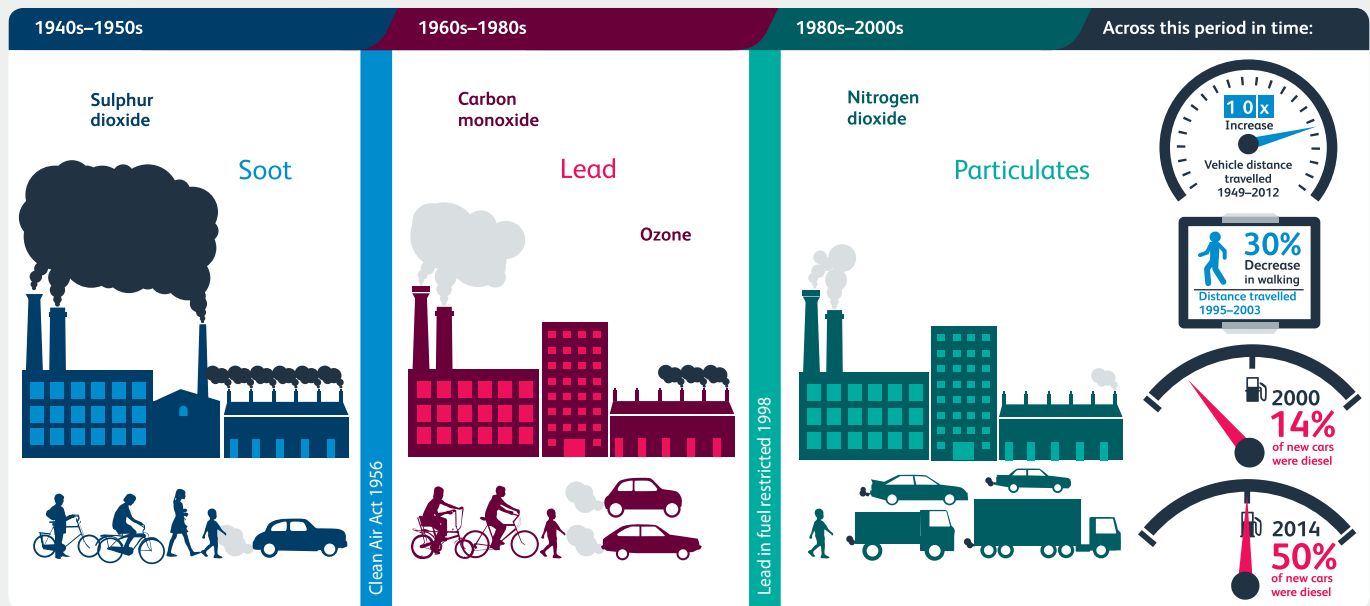


Figure 1: Exposure to pollutants over time



Source - Every Breath We Take: The Lifelong Impact Of Air Pollution. RCP, Feb 2016

Changes in the way we live, social, fuel and technology transitions have driven a huge change in air pollution and how the public exposure to air pollution is controlled. Life in the UK is very different from how it was in the 1950s.

Even though significant progress has been made in improving air quality over time, and the smog and soot of the industrial revolution have diminished, whilst the air may look clearer, further improvement is necessary. There is growing evidence that modern pollutants, such as nitric oxides (NO_x) and particulate matter (PM) are still a significant contributor to preventable ill health and early death.

The evidence of the impact of air pollutants on health shows a multitude of effects that are both wide ranging and long lasting. Every day an average adult takes 20,000 breaths, and moves approximately 11,000 litres of air in and out of their lungs, therefore it is not surprising that even low concentrations of pollutants can have health impacts over time.

Studies show that long-term exposure to air pollution (over years or lifetimes) reduces life expectancy, mainly due to cardiovascular and respiratory diseases and lung cancer. Short-term exposure (over hours or days) to elevated levels of air pollution can also cause a range of health impacts, including effects on lung function, exacerbation of asthma, increases in respiratory and cardiovascular hospital admissions and deaths.

This has led Public Health England (PHE) to identify poor air quality as the largest environmental threat to public health in the UK, contributing to up to 36,000 premature deaths a year.

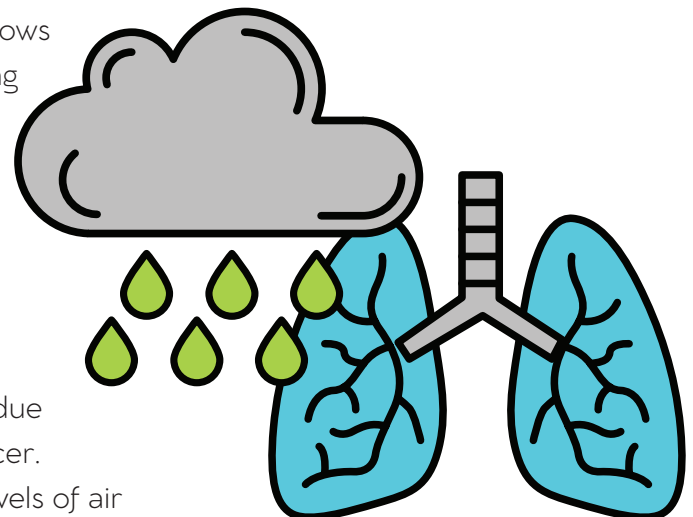
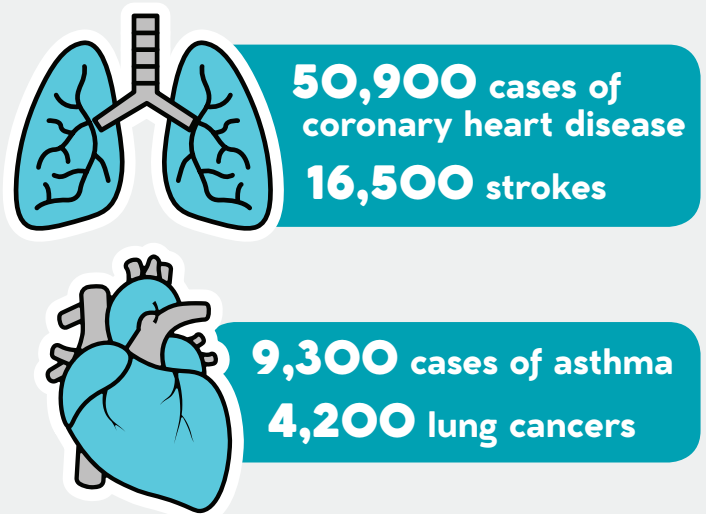


Figure 2: Scale of the problem

It is estimated that **long-term exposure to man-made air pollution in the UK** has an annual effect equivalent to:



Over the following 18 years a **1 µg/m³ reduction in fine particulate air pollution in England** could prevent around:



Source - Health Matters: air pollution. Public Health England, Nov 2018

As well as the personal cost to health, the resultant problems can have impacts on hospital admissions, school attendance, and business productivity, meaning that poor air quality is also associated with substantial financial and societal costs.

- In England, the total NHS and social care cost due to very small particles in the air (PM_{2.5}) in 2017 was estimated to be up to £76 million
- In England, the total cost to the NHS and social care due to nitrogen dioxide (NO₂) in 2017 was estimated to be £81 million
- A recent report from PHE estimated that the total NHS and social care cost due to very small particles in the air (PM_{2.5}) and nitrogen dioxide (NO₂) was £42.9 million in 2017, and this could rise to £5.3 billion by 2035

A study of the cost effective actions to reduce air pollution in Central London (2012) found that for every £100 spent on measures to improve air quality, there were £620 worth of benefit.

Amongst the measures which were found to be most cost beneficial were initiatives to encourage people to make more journeys by bike or foot.



What can be done at a local level to help improve air quality?

The sources of modern pollution range from transport and other everyday activities such as industrial processes, farming, heating and cleaning homes and generating electricity which also affect air quality. These activities are an essential part of our daily lives and economy and we can't stop them. However, we can make cost effective changes both locally and nationally to make cleaner cities and a greener economy.

The introduction of policies to improve air quality have the potential to reduce and alleviate the costs of poor air quality. Many of the measures which can contribute to improving air quality are also linked to tackling Climate Change and therefore delivered together can have far reaching overall benefits.

Alongside the national measures, local leadership is essential to achieve the changes to improve air quality. Local authorities are well placed to use local knowledge, to interact with communities, develop partnerships and understand the issues on the ground to decide on, develop and implement the appropriate solutions in relation to smoke control, planning and public health. They can also consider air quality in the design of new plans and programmes and when new development or regulatory consents are issued, approaches can be considered that have the greatest potential to benefit air quality and health.

The measures that improve air quality can also offer wider public health and wellbeing co-benefits, including an improvement in overall environmental quality, increased physical activity, reducing injuries and accidents, preventing social isolation, noise reduction, greater road safety and climate change mitigation. Multiple interventions, each producing a small benefit, can act cumulatively to produce significant overall benefits.

Many people living in poorer areas are often exposed to higher levels of air pollution, they may be more vulnerable to ill health and may suffer a greater negative impact. Therefore, general policies as well as interventions targeted to deprived communities to improve air quality will help to reduce health inequalities across the South Tees.



Key messages:

Air quality plays a significant role in health

The sources of pollution have changed over time

There is a cost for our health and social care systems as well as for individuals and communities due to air pollution

Measures to improve air quality are cost effective

Single interventions produce a small benefit, but added together they produce significant benefits

CHAPTER 2.

What is air pollution and where does it come from?

Air pollution is made up of gases, droplets and tiny solid particles which are considered to be harmful to health.

Air pollutants may be present outdoors or indoors and they come from a wide range of sources.

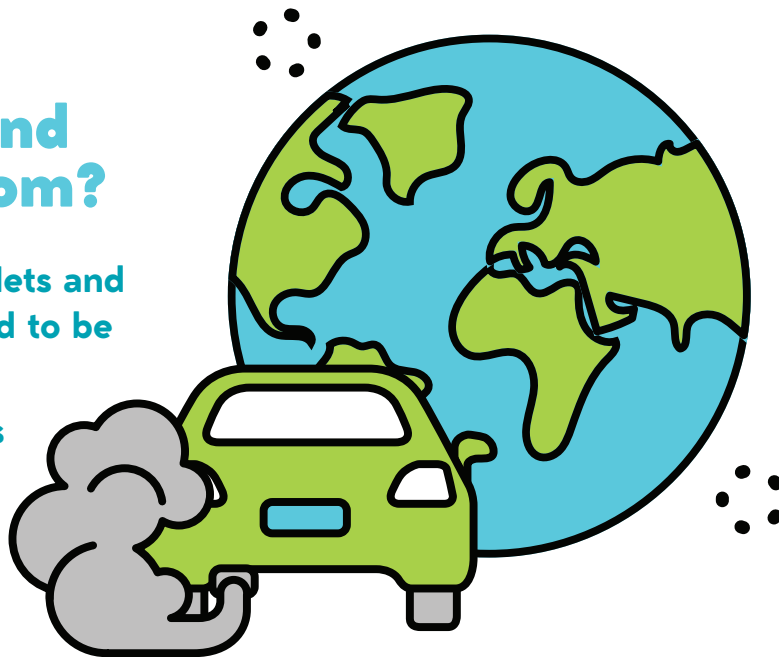
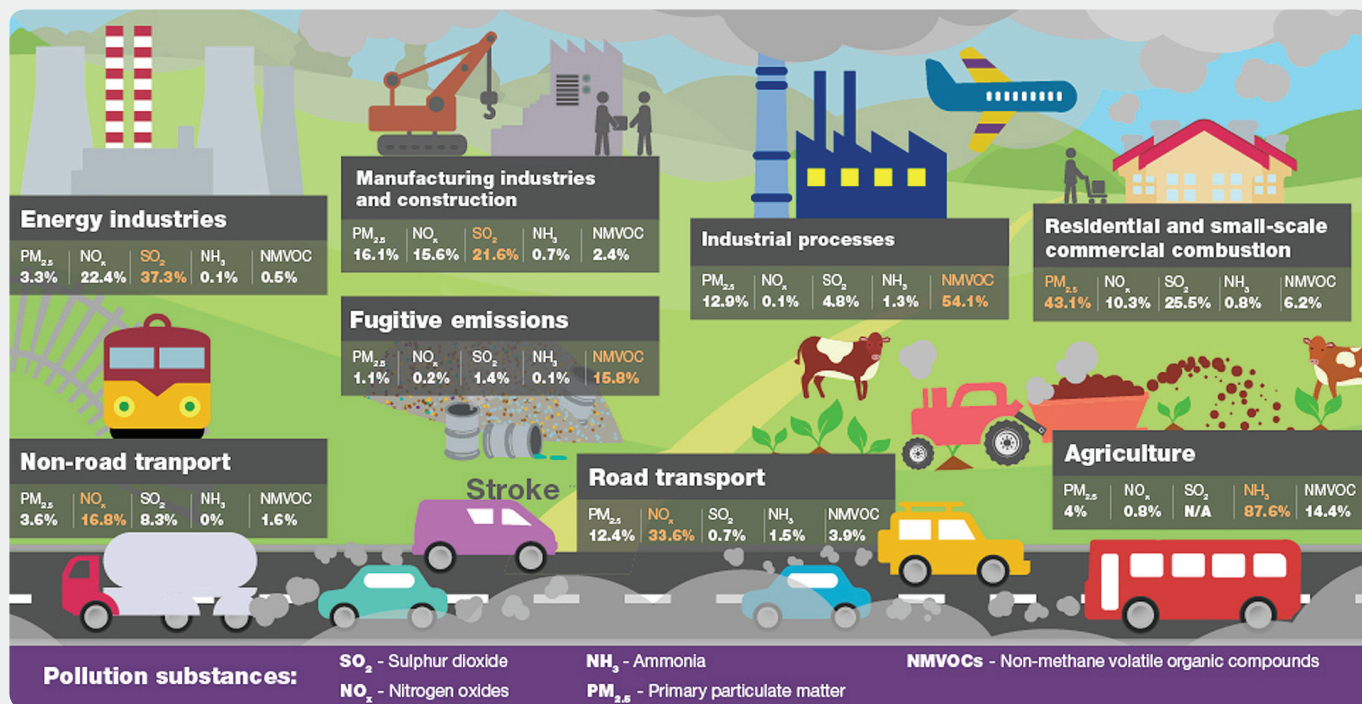


Figure 3: Sources of air pollution



Source - Health Matters: air pollution. Public Health England, Nov 2018

Pollutants monitored in the South Tees area

Historically, a wide range of pollutants were monitored in the South Tees. Air quality has improved over time, mainly due to the reduction in pollution from industrial sources along the River Tees estuary and the levels of all pollutants meet the legal standards.

Middlesbrough and Redcar & Cleveland Councils are required by law to review, monitor and assess air quality within their boroughs. Currently, in both areas there are three main pollutants which are at the core of the Local Air Quality Monitoring programme;

- Nitrogen dioxide (NO₂)
- Particulate matter (small particulate matter is PM₁₀, very small particulate matter is PM_{2.5})
- Sulphur dioxide (SO₂)

In addition, in Redcar & Cleveland, ozone (O₃) is closely monitored due to the coastal position of the authority. These pollutants are described in more detail below:

Particulate matter (PM)

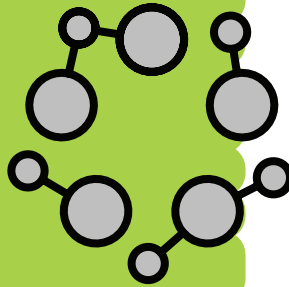
PM consists of finely divided solids or liquids such as dust, ash, soot, smoke, aerosols, fumes, mists and condensing vapours that can be suspended in the air.

PM is an urban background pollutant which often disperses over a large area. PM is naturally occurring, it is produced in different continents and countries and dispersed over vast areas, very much out of our control. In the UK only up to 55% of the total annual average PM_{2.5} levels is generated from within the country, the rest comes from other sources such as Europe and wider.

Particulate matter is defined by its size.

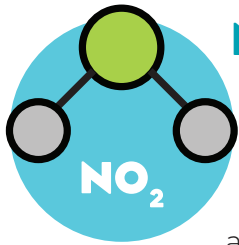
PM₁₀ refers to particles that are less than 10 microns in diameter (approximately 5 times smaller than a human hair).

PM_{2.5} refers to particles at least four times smaller than this.



In relation to the particulate matter which is man-made, in cities it is vehicle exhausts, particularly diesel, which are responsible for the majority of PM in the air. The particles are made up from part burnt diesel and petrol, bitumen, rubber and other waste matter from road surfaces. Other significant amounts of PM are created by construction work, engine and brakes wear and tear and domestic wood burners.

38% of PM is produced by UK households burning wood, coal and other solid fuels in open fires and stoves. The shift back towards using wood burning stoves is contributing to a higher proportion of PM_{2.5} levels.



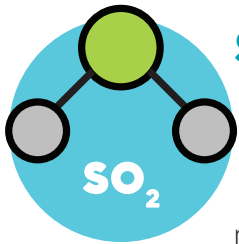
Nitrogen dioxide (NO₂)

Nitrogen dioxide (NO₂) is a gas that is often produced alongside nitric oxide (NO) by combustion processes. Together these are often referred to as oxides of nitrogen (NO_x).

In the UK, 80% are due to vehicle emissions, particularly diesel light duty vehicles (cars and vans). The number of these vehicles have increased significantly over the last ten years.

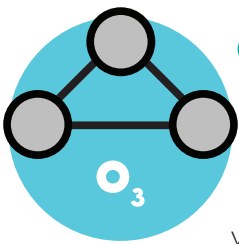
In addition the recent Volkswagen car emission scandal revealed that the emissions of many of these vehicles are higher than previously thought.

The UK Government has been taking action to reduce NO₂ levels in a number of towns and cities in the UK where levels have been found to be exceeding the air quality standards.



Sulphur dioxide (SO₂)

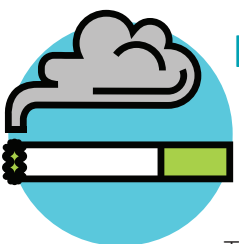
Sulphur dioxide is a gas produced by the burning of fossil fuels. Over the years the levels of SO₂ have reduced due to the reduction in the burning of coal and controls on industry processes for the release of pollutants into the air. Sulphur dioxide is a respiratory irritant - affecting people's breathing. People with asthma are most sensitive to this pollutant.



Ozone (O₃)

Ozone is produced from a combination of natural and human processes. It is not released from a single source, however it is made in the environment by the reactions between chemicals and other air pollutants in the presence of sunlight. During some weather conditions when air quality is poor, ozone can react with nitrogen dioxide and other pollutants which results in increased particulate matter (smog). Ozone levels cannot be controlled or managed locally, but it is monitored to alert the vulnerable if levels are high.

With respect to health issues, Ozone can irritate and inflame the lungs, irritate the eyes, nose and throat which can lead to cough and chest discomfort. Ozone at ground level is a harmful air pollutant. Ozone also causes distress to vegetation.



Indoor air quality

Most attention is focussed on poor outdoor air quality however, as we spend up to 90% of our time indoors, it is important to consider the quality of the indoor air we breathe and do all we can to keep it clean.

There are a number of indoor air pollutants which can be released from boilers or cleaning products, however, the most important indoor air pollutant, is second hand smoke (SHS). Second hand smoke is exhaled by smokers or given off by burning cigarettes, cigars, shisha pipes etc., which is then inhaled by others.

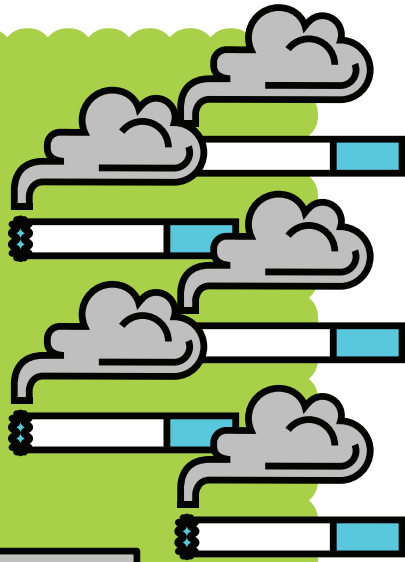
Whilst legislation has been put in place to control exposure in public places, we need to continue to educate people about controlling or reducing exposure to SHS in the home environment. This is particularly important to prevent the exposure of children, pregnant women and the unborn child to SHS.

The use of electronic cigarettes is increasing and whilst this is considered to be considerably less risky in terms of impact on health of the smoker and exposure to second hand smoke, the long term health impact of using electronic cigarettes is unknown.

Risks associated with smoking are generally well known.

Researchers in the Netherlands developed a method that expresses the health effects of air pollution as an equivalent number of daily passively smoked cigarettes.

Applying it to the yearly average PM_{2.5} levels of 10ug/m³ at a busy road (A66), shows that a person standing on a kerbside would have the same risk to long-term health as passively smoking 5.5 cigarettes a day.



Key messages:

There are a number of key pollutants that impact on air quality

The main contributors to outdoor air pollution include diesel vehicles and wood burning stoves

Indoor air quality is important too, the most harmful cause of indoor air pollution is smoking

CHAPTER 3.

How does air quality affect health?

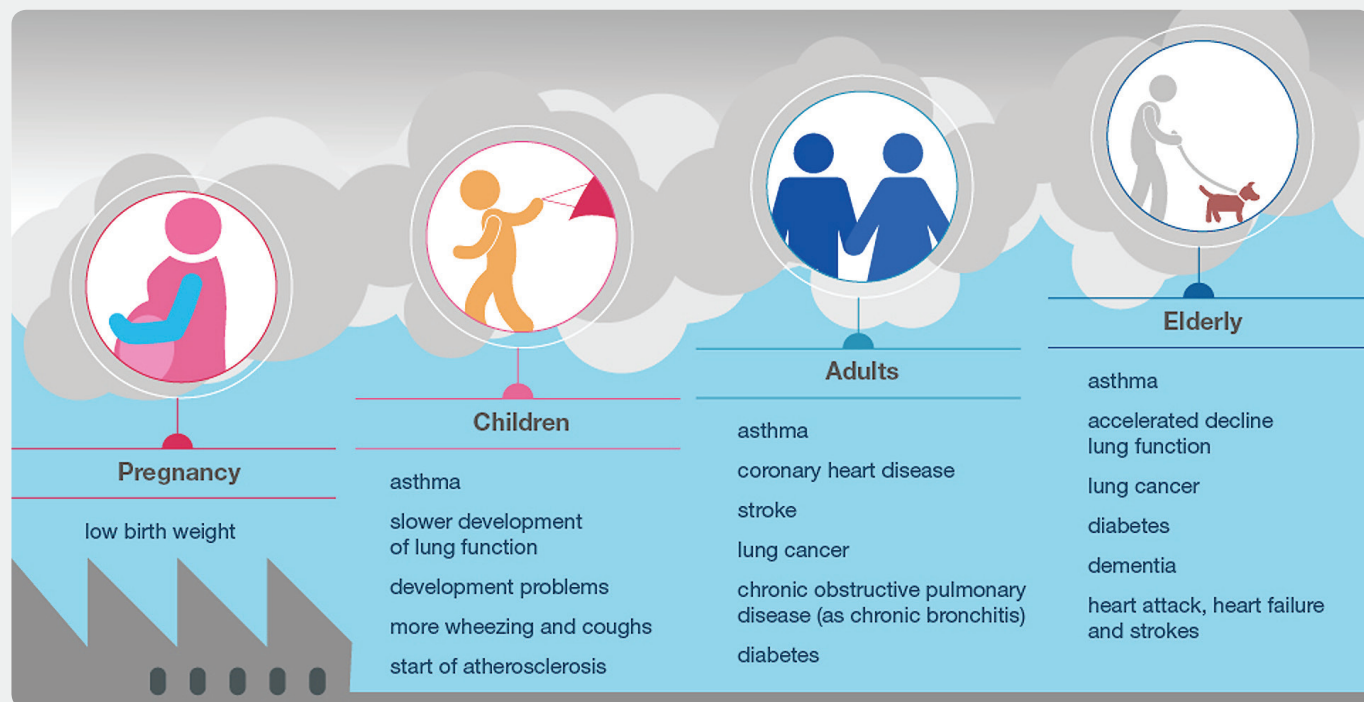
The risks of ill health to those people who are exposed to air pollution are dependent upon a range of factors; the health of the person, type of pollution, concentration and the length of time the person is exposed. The effects of air pollution can also be short-term or long-term.

Remember: Whilst there are national and European standards set for air pollution levels, which the South Tees meets, there is currently no clear evidence of a safe level of exposure to air pollutants.

The damage to health depends on the type of air pollutant that a person breathes. There are also some groups of people who are at greater risk from poor air quality i.e. babies and children including unborn babies, older people and those with existing medical conditions. It also depends on whether it is caused by exposure at home, at work or in the area in which they live, those who work outdoors or those who exercise frequently outside.



Figure 4: Air pollution affects people throughout their lifetime



Source - Health Matters: air pollution. Public Health England, Nov 2018

The air pollutants that are mainly responsible for affecting our health are nitrogen dioxide (NO₂) and particulate matter (PM).

How nitrogen dioxide (NO₂) affects health

Nitrogen dioxide causes irritation when it reaches the tissues in the airway. When concentrations are high a person may find that their eyes or nose may stream, they develop a new cough or an existing cough worsens. Those who have asthma may suffer from more severe symptoms and even trigger an attack. Those prone to chest infections may develop one.

Babies and children who live in areas with constant high levels on NO₂ are more likely to experience impaired lung development and are at a greater risk of developing breathing problems as an adult including the higher risk of developing asthma.

The NO₂ link to developing asthma is the most significant risk, whilst there is emerging evidence linking it to a cause of dementia, diabetes, lung cancer and low birth weight.

How particulate matter (PM) affects health

The human body provides natural protection against breathing in particulates in the air, however the fine and ultrafine types of particulate matter PM₁₀, PM_{2.5} and even smaller particulates can pass through the lungs and enter the body's circulatory systems, meaning they have the strongest link to damaging health.

Evidence suggests that breathing in PM_{2.5} increases the risk of developing heart disease, stroke, asthma and lung cancer.

Short-term - in high concentrations both NO₂ and PM can be a direct irritant to an individual. It can worsen breathing difficulties and irritates the eyes, nose and throat.

Poor air quality has also been associated with hospital admissions for asthma and chronic pulmonary disease (COPD).

Long-term effects of air pollution can accumulate during a person's lifetime leading to a variety of health problems or even death. In England, the Committee of the Medical Effects of Air Pollutants (COMEAP) estimated that NO_x and PM_{2.5} contribute to over 40,000 deaths per year.

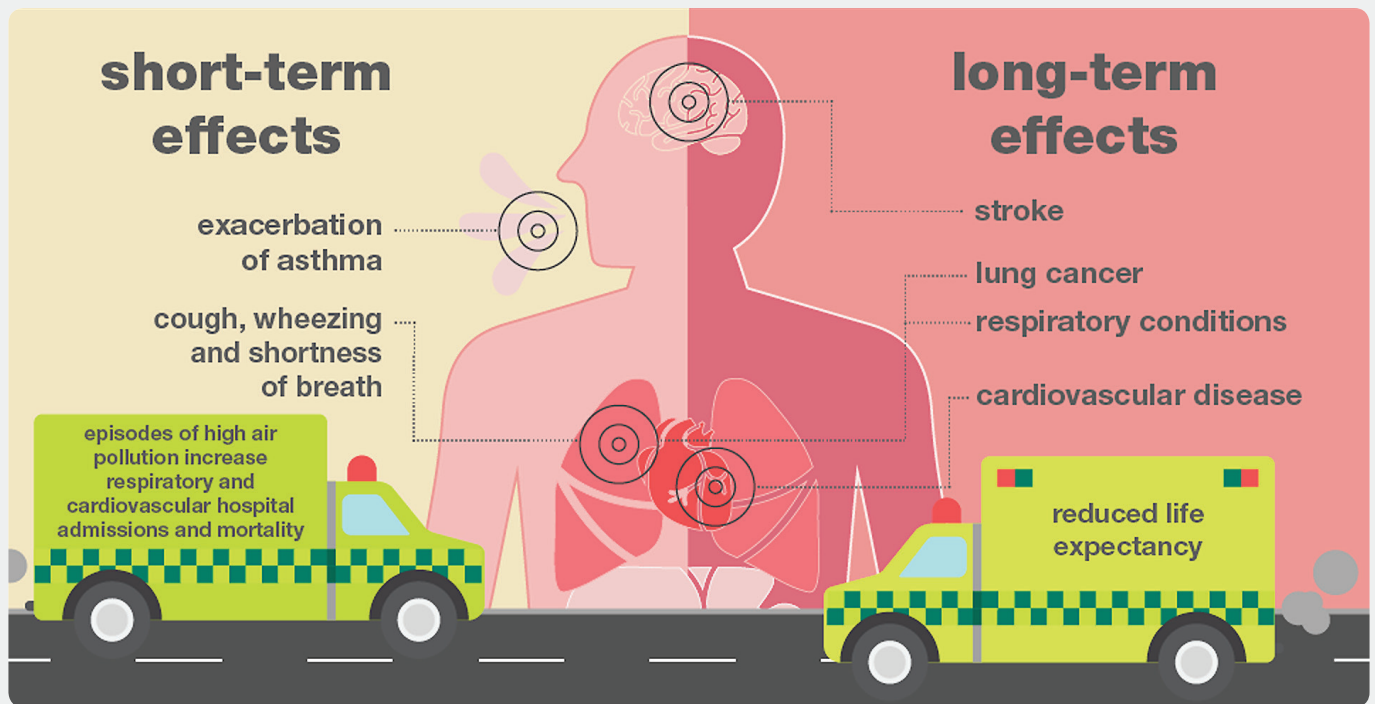
<https://www.gov.uk/government/groups/committee-on-the-medical-effects-of-air-pollutants-comeap>

Poor air quality does not just affect physical health but it can also be associated with affecting the emotional health and wellbeing of an individual. Long-term exposure to poor air quality can result in depression, anxiety and irritability. In turn this can affect the behaviour of a person, such as exercising and socialising.

When air quality worsens, there is an increased risk of stroke, heart disease, lung cancer, and chronic and acute respiratory diseases, including asthma increases for the people who live in those areas. When air quality improves, respiratory and cardiovascular-related illnesses decrease.

Concentrations of PM_{2.5} can vary due to seasonal variations in the weather conditions, bonfires, farming practices, moorland burning etc thereby affecting a population differently at different times of the year.

Figure 5: Health effects of air pollution



Source - Health Matters: air pollution. PHE, Nov 2018

How many deaths could be prevented in the South Tees if there was no air pollution?

Air pollution rarely kills people on its own, it contributes to and makes existing illnesses worse. Poor air quality shortens people's lives.

We can estimate the number of deaths that would be prevented in a population if the exposure (in this case air pollution) were removed. "Attributable mortality" is a tool which can be used to estimate this. Using this tool it is estimated that if there was no air pollution 127 deaths would be prevented.

Compared with England, Middlesbrough and Redcar & Cleveland's fraction of attributable mortality is lower (5.1%). How air quality contributes to mortality and morbidity has not previously been as recognised as other similar risk factors such as alcohol and communicable disease.

Key messages:

There is no safe level of exposure to air pollution

Some people are at greater risk than others from poor air quality

Air pollution can cause short and long term health effects

CHAPTER 4.

Health inequalities



People living on low incomes are more likely to live closer to busy roads and industry and therefore they may be exposed to higher levels of pollution.

Low income groups are also more likely to suffer from preventable long-term conditions such as heart disease, lung disease and cancer and these conditions can make them more susceptible to the harm caused by air pollution.

Therefore, the same level of exposure to air pollution will have a greater negative impact on the health of people living in disadvantaged areas than those who live in less disadvantaged areas.

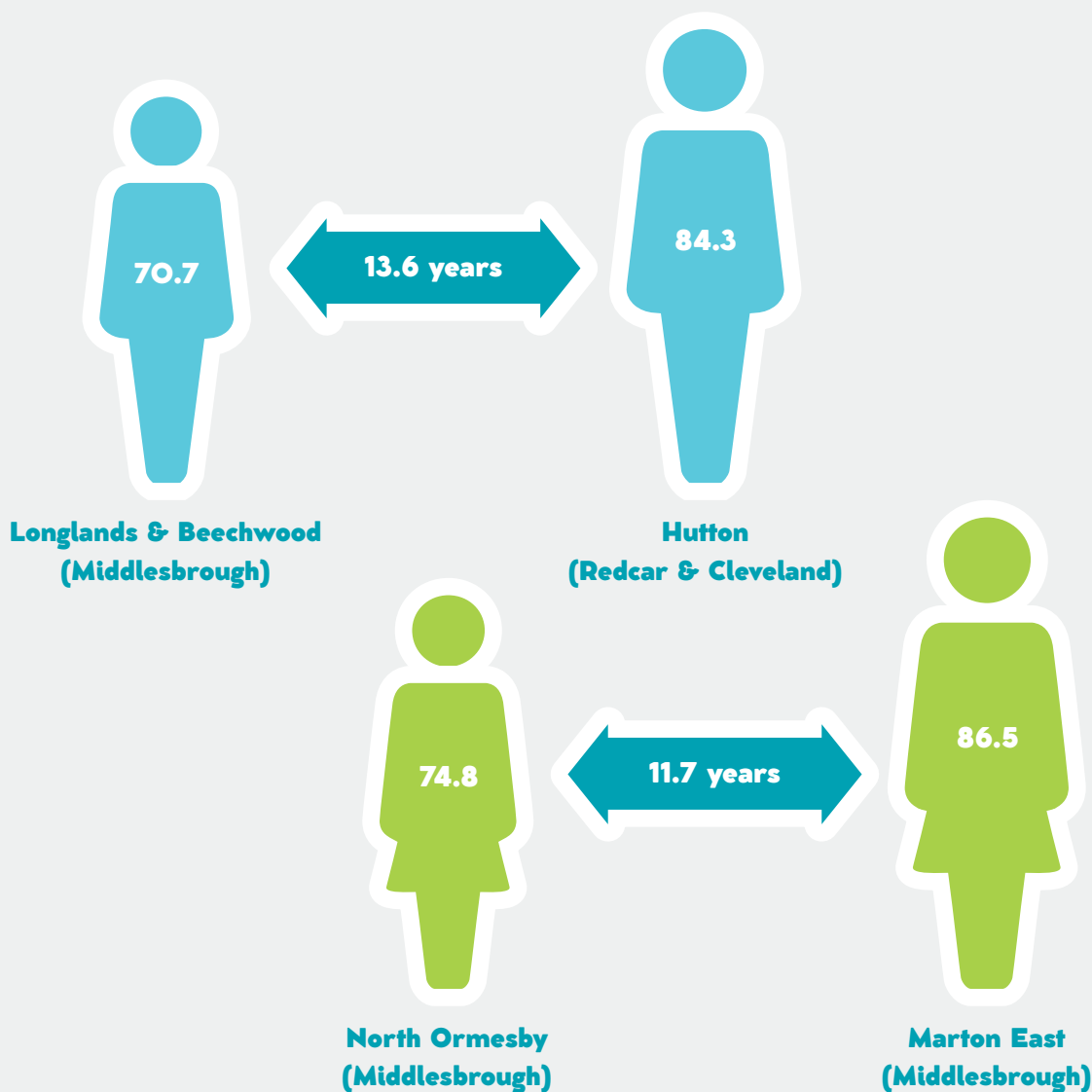
It is difficult to estimate the impact of poor air quality on the health of the population of the South Tees for the following reasons;

- There are no routine statistics which measure the combined health effects of the main air pollutants
- Air pollution is not currently recorded as a contributing cause of death on a person's death certificate
- The exposure to air pollution is a risk factor for a range of health problems, higher pollution over a longer period adds to the harm from other common risk factors such as smoking, alcohol intake, diet and obesity
- Air quality was worse in the past, some health problems seen today are attributed to the poorer air people lived or worked in many years ago and not current air quality

The health inequalities between men and women living in the South Tees

Healthy life expectancy is unequal between men and women, and between different areas in the South Tees. The health of some groups and life expectancy follows patterns of social advantage with a 13.6 year gap in life expectancy for males and 11.7 year gap for females between some of the most and least deprived wards in the South Tees.

Figure 6: Life expectancy at birth by Ward in the South Tees (2013-17)

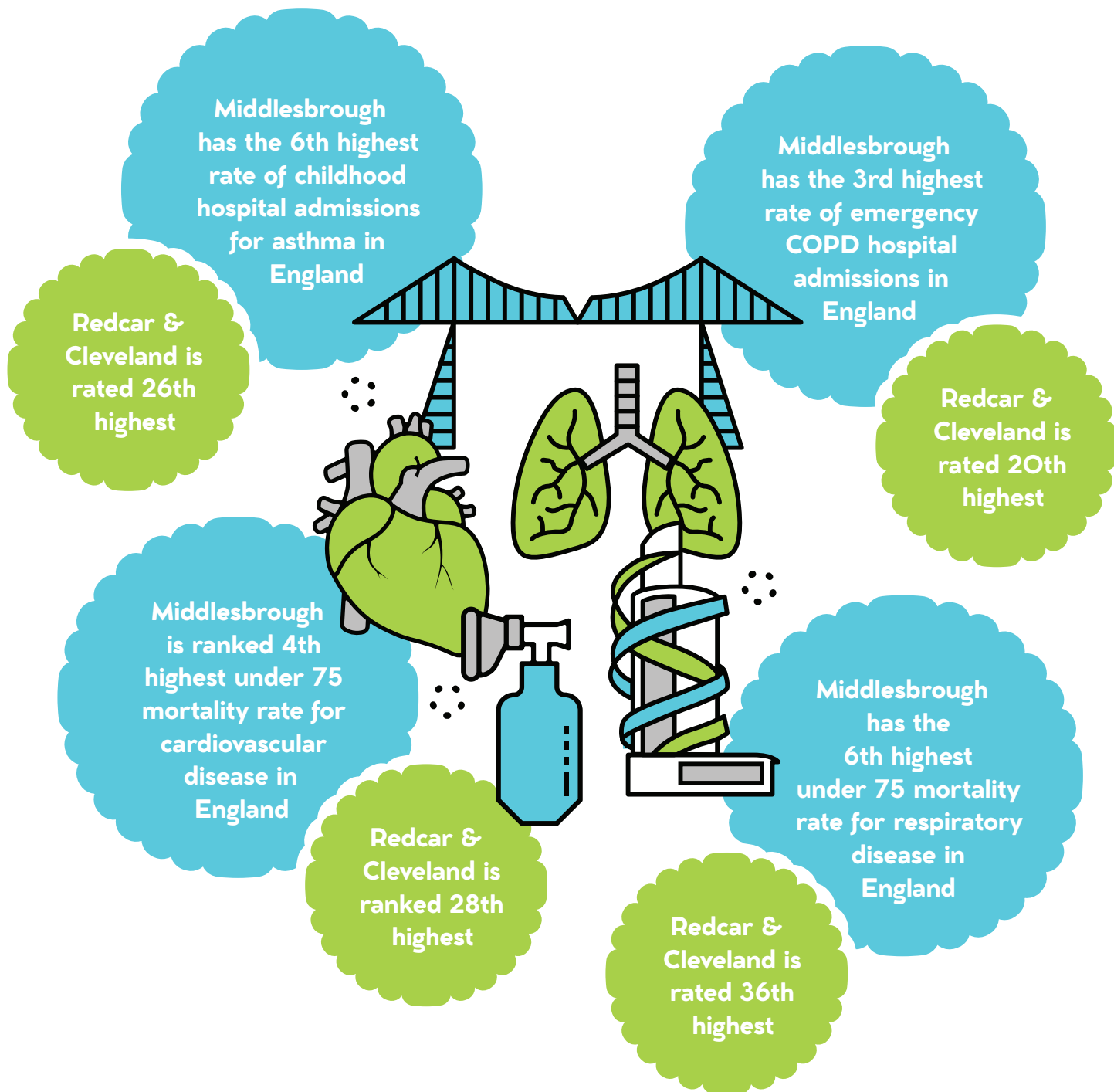


Source - Local Health, Public Health England

The health inequalities between different communities in the South Tees

In disadvantaged communities people are more likely to develop long-term health conditions and experience health problems earlier on in life. People in the most disadvantaged communities have a 60% higher prevalence than those in the least deprived areas. The main health conditions that people die from prematurely locally are cancer, circulatory diseases and respiratory diseases. Together these account for around 71% of premature deaths.

Health outcomes amongst some of the South Tees populations are poorer than average and people often have multiple health issues. These are reflected in some of our local health statistics:



It is likely that poor air quality contributes to these and a whole range of other health conditions.

Those at risk from air pollution varies considerably across the wards in the South Tees. The table below shows the rates of hospital admissions for COPD, heart disease and stroke and lung cancer incidence and comparisons against the England average. There are some wards where rates are more than four times higher than the national average and some wards where rates are significantly lower.

Figure 7: Hospital admissions due to conditions related to air quality in South Tees

Area	Emergency Hospital Admissions*			Lung Cancer Incidence **	Area	Emergency Hospital Admissions*			Lung Cancer Incidence **
	COPD	Heart Disease	Stroke			COPD	Heart Disease	Stroke	
England	100.0	100.0	100.0	100.0	England	100.0	100.0	100.0	100.0
Middlesbrough	211.8	110.3	129.0	169.5	Redcar & Cleveland	157.0	88.9	114.1	136.3
Acklam	58.3	64.5	94.6	90.9	Brotton	105.7	81.8	94.5	101.8
Ayresome	186.1	112.5	108.9	226.2	Coatham	188.4	109.1	144.4	198.3
Berwick Hills & Pallister	381.8	146.4	156.0	242.1	Dormanstown	185.7	101.2	112.0	162.6
Brambles & Thorntree	450.7	150.5	145.5	251.6	Eston	215.6	117.7	134.3	178.7
Central	328.0	197.5	193.1	241.0	Grangetown	481.5	105.0	187.6	234.3
Coulby Newham	166.9	84.9	135.0	148.9	Guisborough	225.0	70.2	110.8	135.3
Hemlington	173.4	105.2	114.6	144.6	Hutton	60.3	70.6	102.4	65.5
Kader	56.2	70.9	97.2	97.4	Kirkleatham	205.0	87.7	156.6	130.5
Ladgate	159.4	46.8	117.8	156.8	Lockwood	149.9	65.5	104.2	104.2
Linthorpe	140.9	128.6	123.2	136.0	Loftus	163.0	74.3	111.8	107.5
Longlands & Beechwood	369.2	144.9	158.8	211.5	Longbeck	110.4	92.5	88.5	121.0
Marlon East	62.8	78.0	110.7	109.1	Newcomen	159.5	89.9	124.8	183.8
Marlon West	55.2	67.7	117.0	78.7	Normanby	157.5	106.4	111.1	127.4
Newport	382.2	154.8	153.7	270.8	Ormesby	134.3	94.0	109.6	165.9
North Ormesby	451.1	162.2	154.0	251.6	Saltburn	83.4	87.1	96.9	124.3
Nunthorpe	62.8	78.0	110.7	109.1	Skelton	152.0	106.0	112.3	174.3
Park	152.0	108.1	132.9	166.7	South Bank	225.6	87.7	117.4	166.9
Park End & Beckfield	403.4	135.9	134.4	234.9	St Germain's	110.4	92.5	88.5	121.0
Stainton & Thornton	173.4	105.2	114.6	144.6	Teesville	262.8	105.4	137.9	191.4
Trimdon	71.5	82.1	121.3	108.7	West Dyke	92.2	70.7	102.1	96.8
					Westworth	89.3	59.9	105.9	86.7
					Zetland	119.7	81.9	114.7	125.8

* Standardised Admission Ratio (SAR) estimate of admission rates relative to the national pattern and takes into account differences in a population's age and sex

** Standardised Incidence Ratio (SIR)

Source - Local Health, Public Health England

Key messages:

Some groups are more likely to experience greater harm from pollution - e.g. it can worsen some health problems which are more common in our poorest areas

There are significant levels of inequality across communities in the South Tees

This scale of this harm is linked with deprivation, our more deprived communities would benefit the most from improved quality air

CHAPTER 5.

How good is the air in the South Tees?

The geography of Middlesbrough and Redcar & Cleveland local authority areas is very different. Middlesbrough is a compact urban area whilst Redcar & Cleveland covers a much wider rural landscape which also incorporates full coastal coverage across the east of the borough.

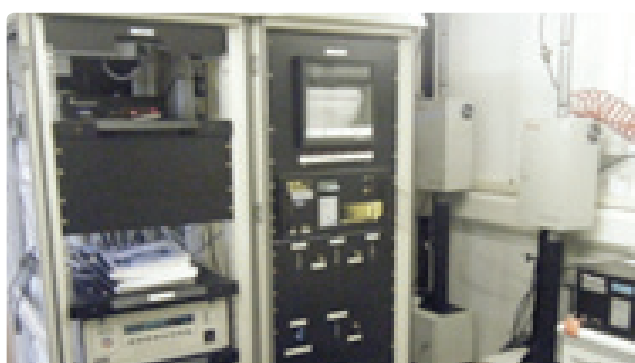
Although there are differences, there are common sources of air pollution arising from traffic utilising shared roadways which run through both authorities, domestic heating appliances and industrial chimney stack emissions. In both local authorities the primary source of air pollution is from traffic sources, however in Redcar & Cleveland, there are additional sources including the coastal influence which has the potential for high levels of naturally occurring particulates during times of strong north-easterly weather.

How is air pollution monitored in the South Tees?

Air pollution is monitored at three static monitoring stations. Two are located in Middlesbrough at Breckon Hill School and Macmillan College and one in Redcar & Cleveland located in Dormanstown. These stations measure particulate matter (PM_{10} and $PM_{2.5}$), oxides of nitrogen (NO_x), sulphur dioxide (SO_2) and ozone (O_3).

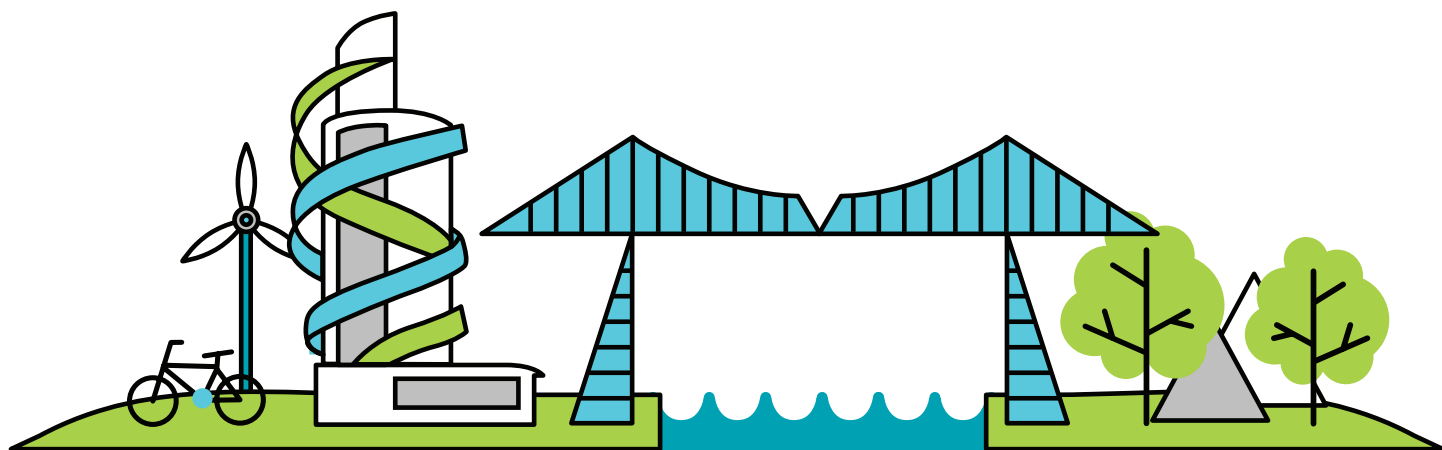
They are automatic monitoring stations which means that their data automatically feeds hourly and daily into a national monitoring network and is available to view on the Defra website uk-air.defra.gov.uk.

Examples of South Tees air quality monitoring equipment



In 2018, in addition to the automated monitoring a network of 43 diffusion tubes were located across the South Tees.

Diffusion tubes use simple technology to measure the levels of NO₂ in the air. Every month the tubes are swapped for new ones and the exposed tubes are sent away to a specialist laboratory to find out how much NO₂ was in the air during this period.



How good is the air in the South Tees?

The measurements from both the automated stations and the diffusion tubes show that the air quality in the South Tees area is good.

When local authorities find that air pollution is too high they are required to declare an Air Quality Management Area (AQMA) and have plans in place to reduce air pollution. Neither Middlesbrough or Redcar & Cleveland have been required to declare an AQMA. Every year both local authorities submit their Air Quality Annual Status Reports (ASR's) to Defra to provide assurance that the measurements undertaken and conclusions reached are acceptable for all sources and pollutants.

Particulate matter, nitrogen dioxide, sulphur dioxide, and ozone are the pollutants of the most concern from a health perspective, and are focussed on in these reports.

The ASR for 2019 and previous reports can be found at:

Middlesbrough:

<https://tinyurl.com/ASRmbro>

Redcar & Cleveland:

<https://tinyurl.com/ASRredcar>



Particulate matter (PM_{2.5} and PM₁₀) in the South Tees

The following graphs show the trend in the annual average levels of PM₁₀ and PM_{2.5} in the South Tees authorities.

Figure 8: The trend in levels of PM_{2.5} in Middlesbrough and Redcar & Cleveland

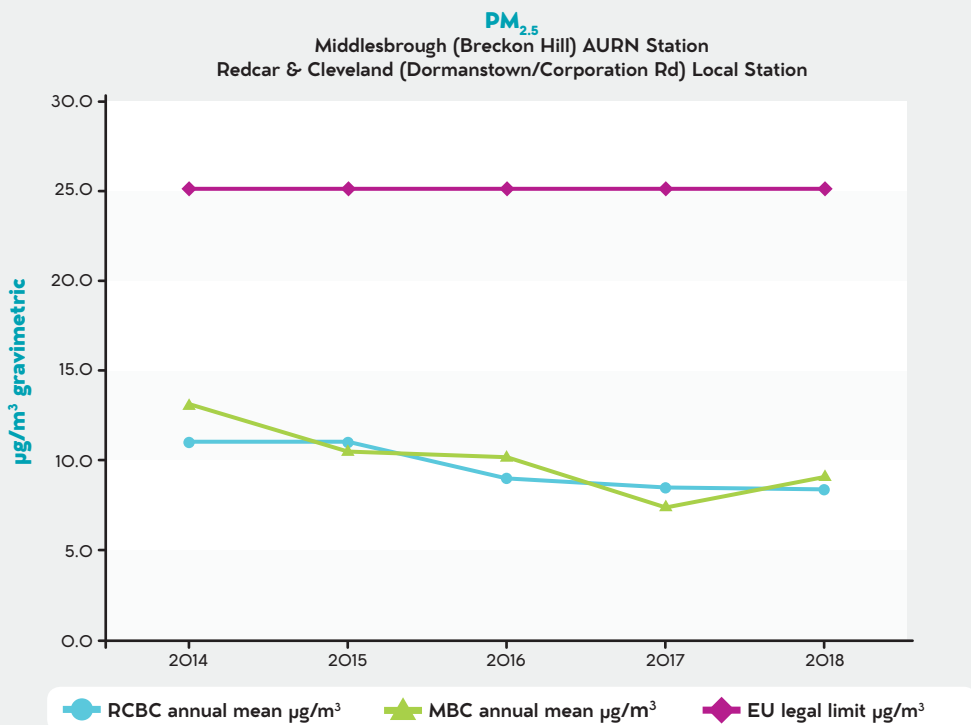
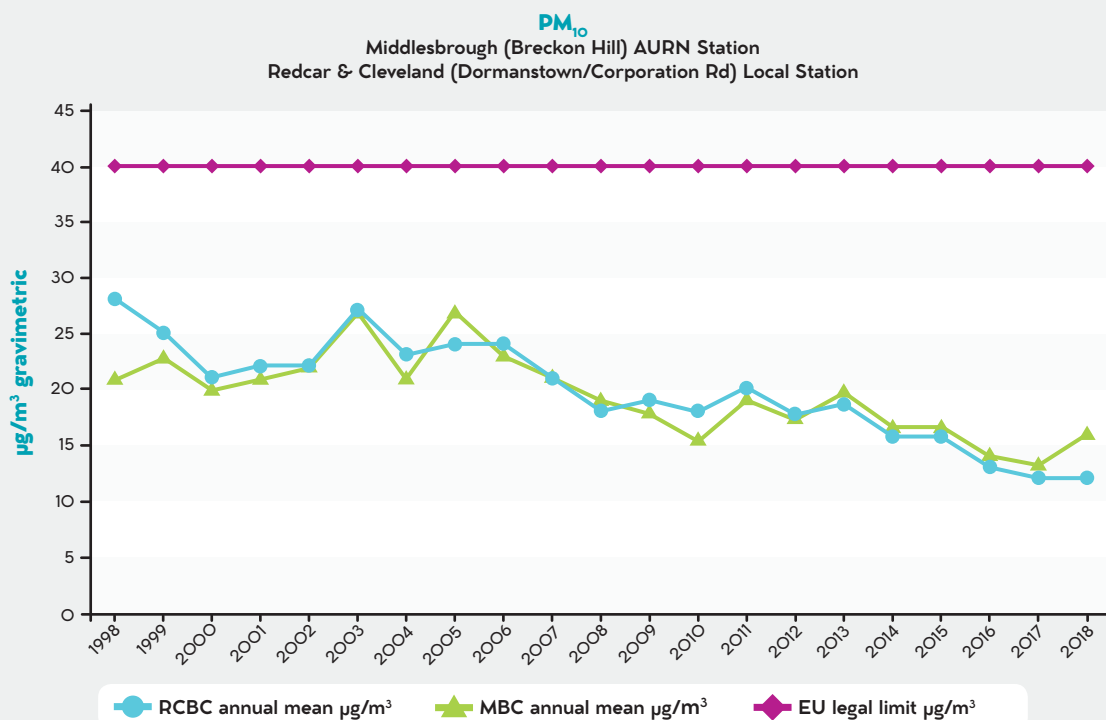


Figure 9: The trend in levels of PM₁₀ in Middlesbrough and Redcar & Cleveland



The level of µg/m³ shown on the graphs is the EU legal standard for PM_{2.5} and PM₁₀.

What does this information mean?

- These graphs show that the levels of particulate matter have been reducing over the years and they are well below the national legal standard in both Middlesbrough and Redcar & Cleveland
- In Middlesbrough, the PM_{10} average has fallen by 24% in the last 20 years
- In Redcar & Cleveland, the average PM_{10} has halved in the last 20 years

How do the levels of particulate matter across the South Tees compare with the rest of the United Kingdom?

Figure 10 and 11 show the levels of $PM_{2.5}$ and PM_{10} across the country and show that the South Tees have some of the lowest levels in the country.

Figure 10: Particulate matter (PM_{10}) national map, 2018

PM_{10} annual mean
 $\mu\text{g}/\text{m}^3$

- < 13
- 13 - 17
- 17 - 20
- 20 - 25
- 25 - 30
- 30 - 31.5
- 31.5 - 40
- > 40

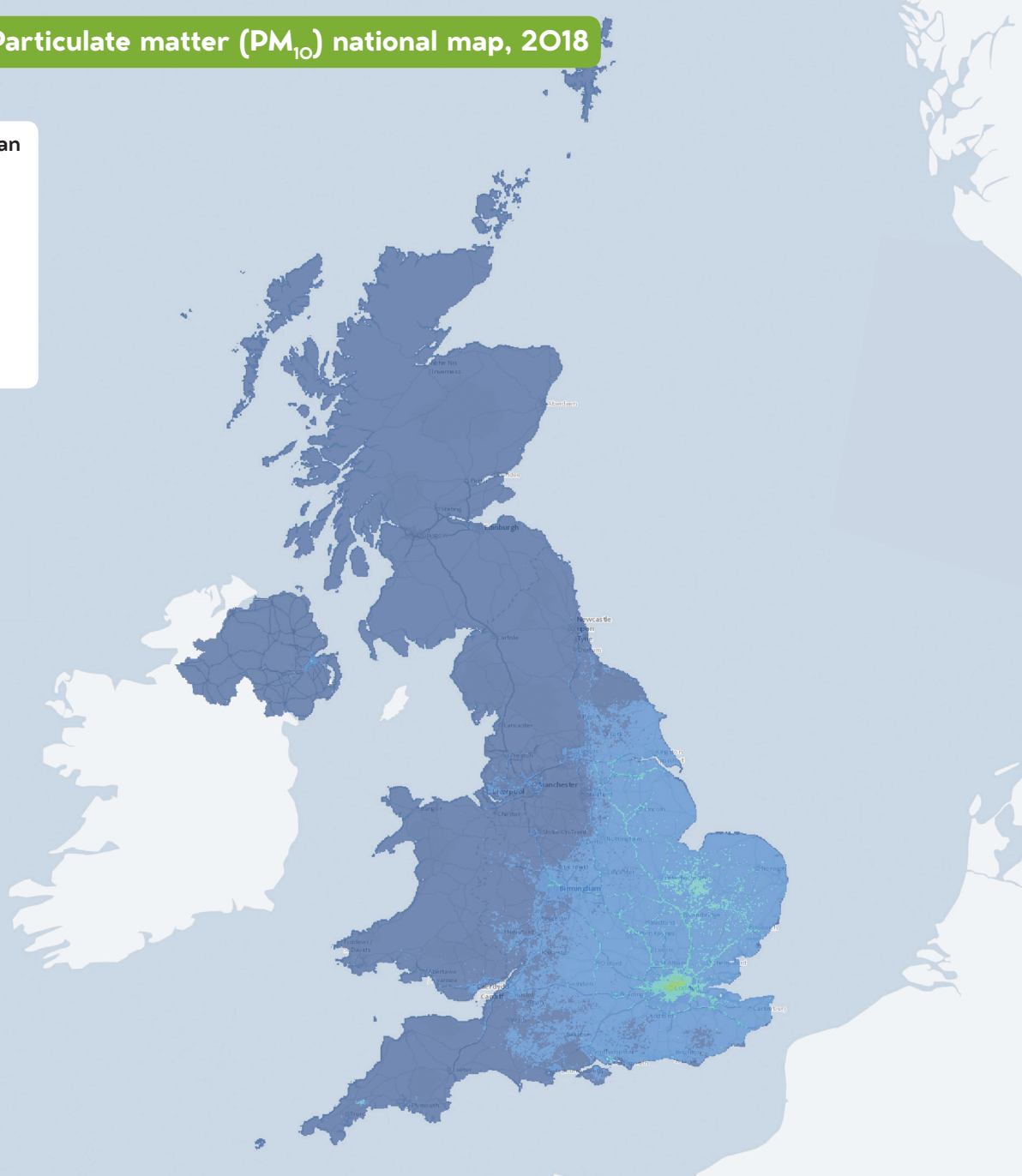
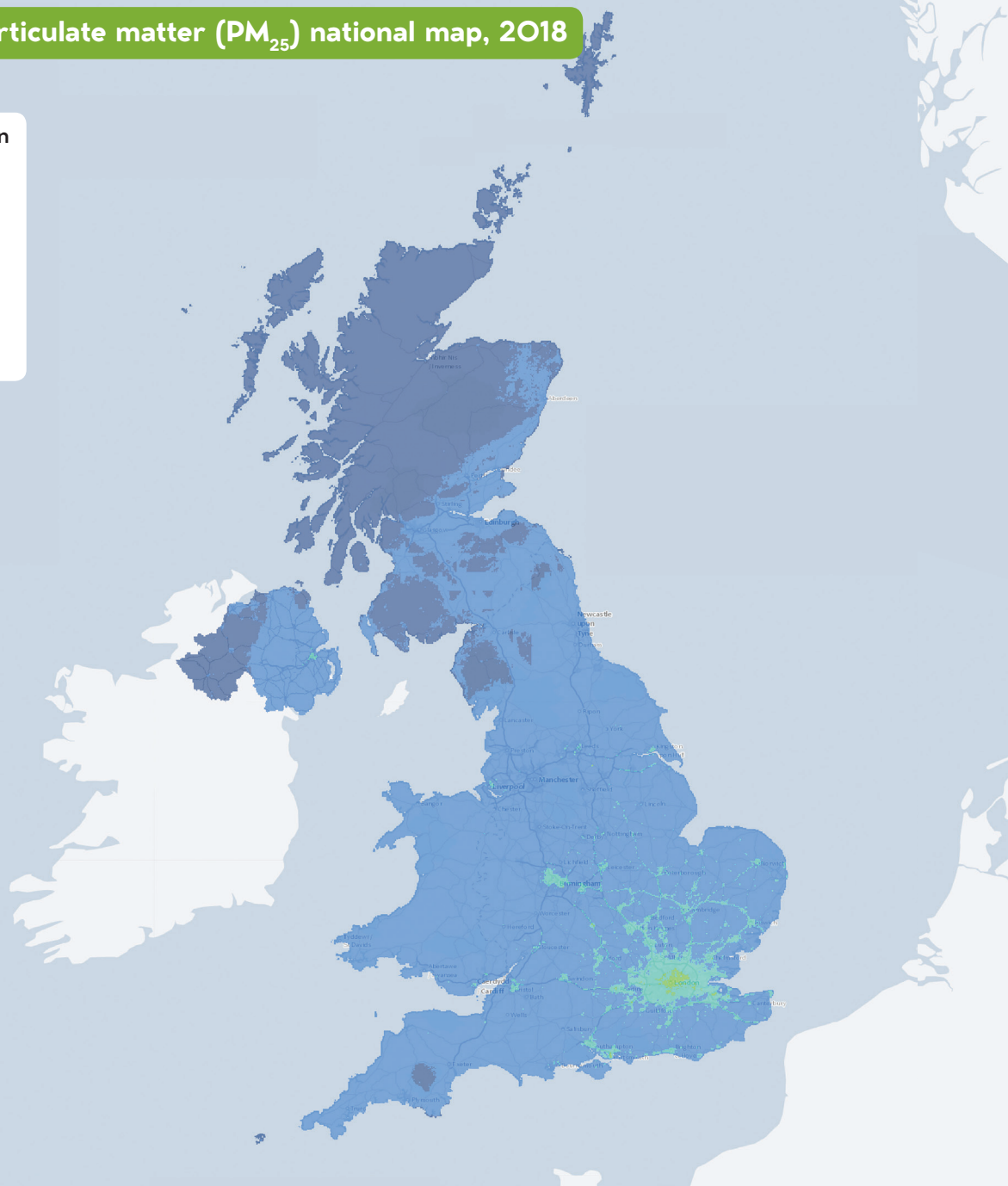


Figure 11: Particulate matter (PM₂₅) national map, 2018

PM₂₅ annual mean
µg/m³

- < 5
- 5 - 10
- 10 - 12.5
- 12.5 - 15
- 15 - 20
- 20 - 25
- 25 - 30
- > 30



However, as figure 12 and 13 show there is one occasion each year when the levels of PM rise significantly due to the higher than usual levels of open burning!

Figure 12: Particulate matter (PM₁₀) Bonfire Night peaks in Middlesbrough

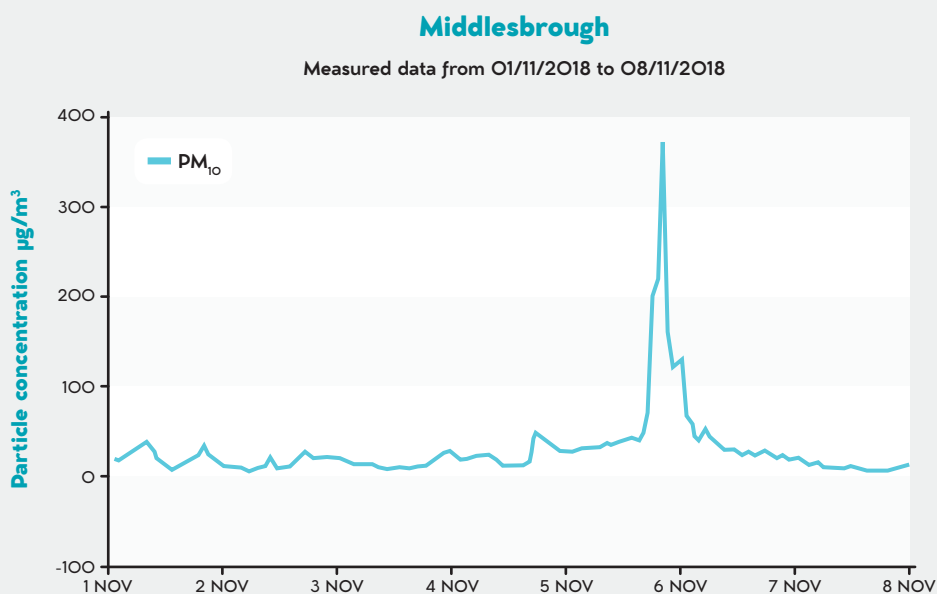
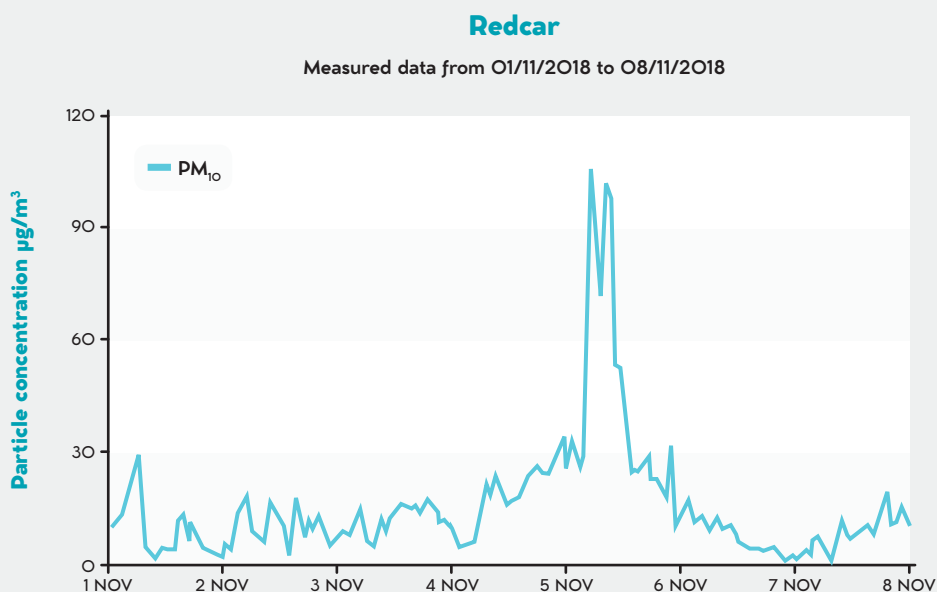


Figure 13: Particulate matter (PM₁₀) Bonfire Night peaks in Redcar & Cleveland

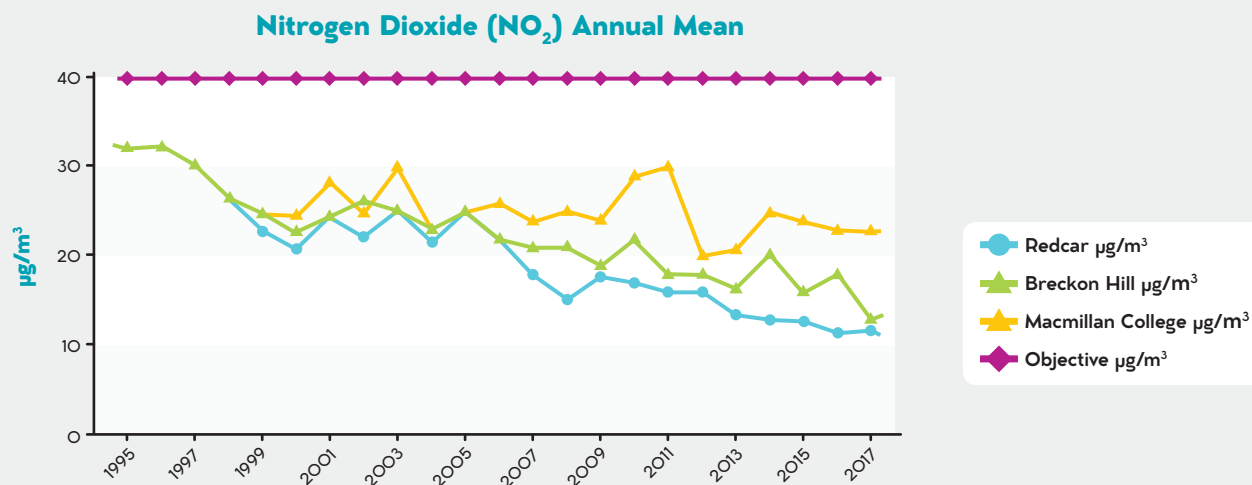


Although there has been a significant reduction in PM₁₀ levels across both authorities, due to the association with serious long term health problems, it is our priority to continue to reduce to even lower levels.

Nitrogen Dioxide (NO₂) in the South Tees

Figure 14 shows the trend in the average levels of NO₂ in Middlesbrough and Redcar & Cleveland measured at the automated sites. Middlesbrough has two sites where the levels of NO₂ are measured, and there is one site in Redcar & Cleveland.

Figure 14: Nitrogen dioxide levels in Middlesbrough and Redcar & Cleveland since 1995



The level of 40 µg/m³ shown on the graph is the legal UK standard for NO₂. The diffusion tubes located across the South Tees also provide measurements of the levels of NO₂ across the area.

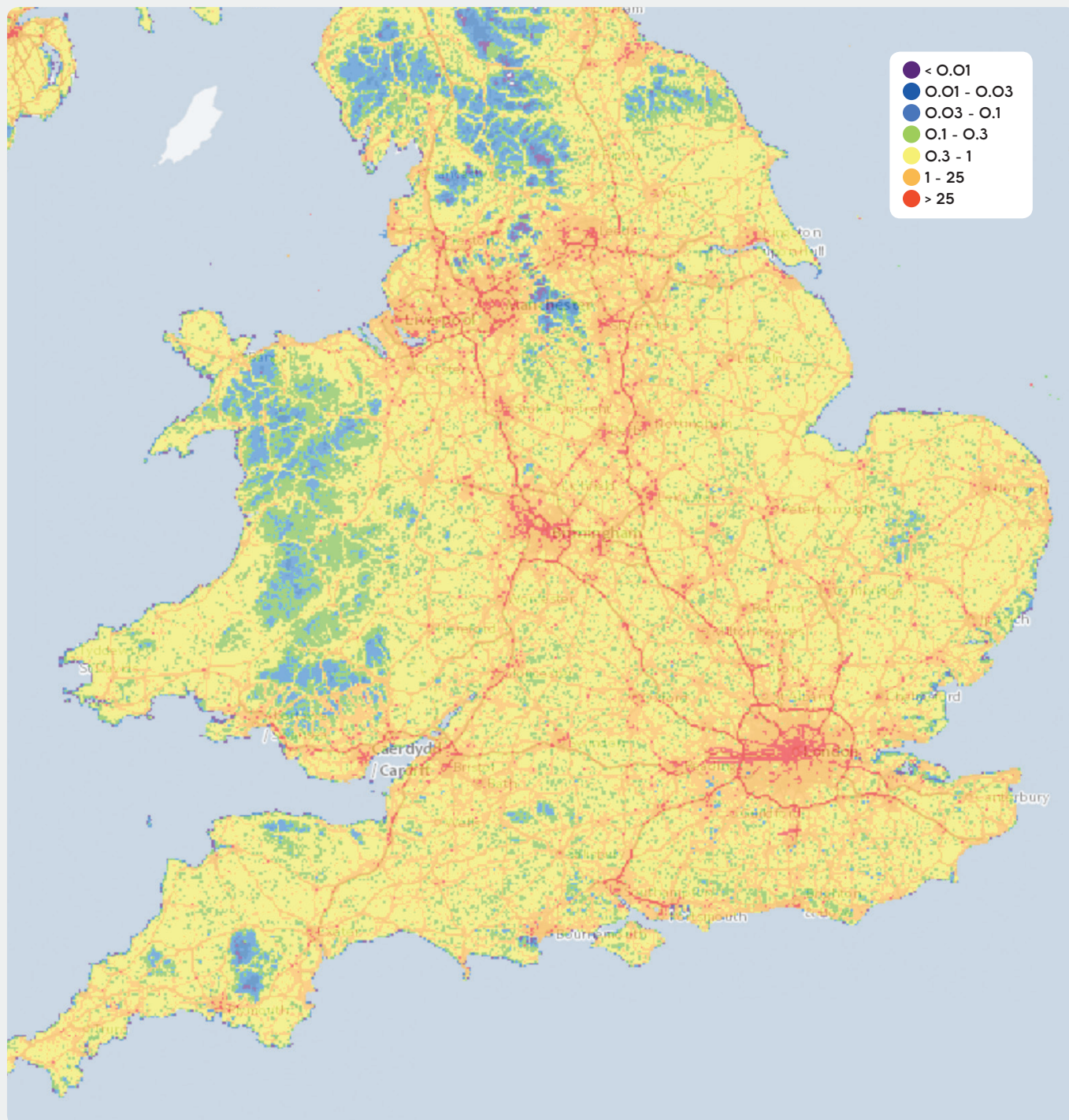
What does this information mean?

- These graphs show that the levels of nitrogen dioxide have been reducing over the years
- The annual average levels of NO₂ across the South Tees are well below the national standard

What are the NO₂ levels like in the rest of the UK?

Figure 15 shows the levels of NO₂ pollution measured on major road networks across the UK. It clearly shows the impact of transport on the levels of this pollutant and why London is so often in the headlines about its NO₂ levels.

Figure 15: NO₂ pollution across UK major road networks



Source: <https://naei.beis.gov.uk/emissionsapp>

In Middlesbrough in 2017, as part of the UK Government's Plan to tackle levels of NO₂ two main transport routes on the A66/A19 were identified as potentially exceeding the national standard for NO₂. In July 2017 the council started a process of local air quality modelling to establish the NO₂ levels and to develop a local NO₂ Air Quality Action Plan. In December 2018 the Secretary of State confirmed that the two locations in Middlesbrough met the air quality standard for NO₂ and that no further action was needed. Air quality monitoring is still required and it will continue at the two identified transport routes to ensure levels are within the standard.

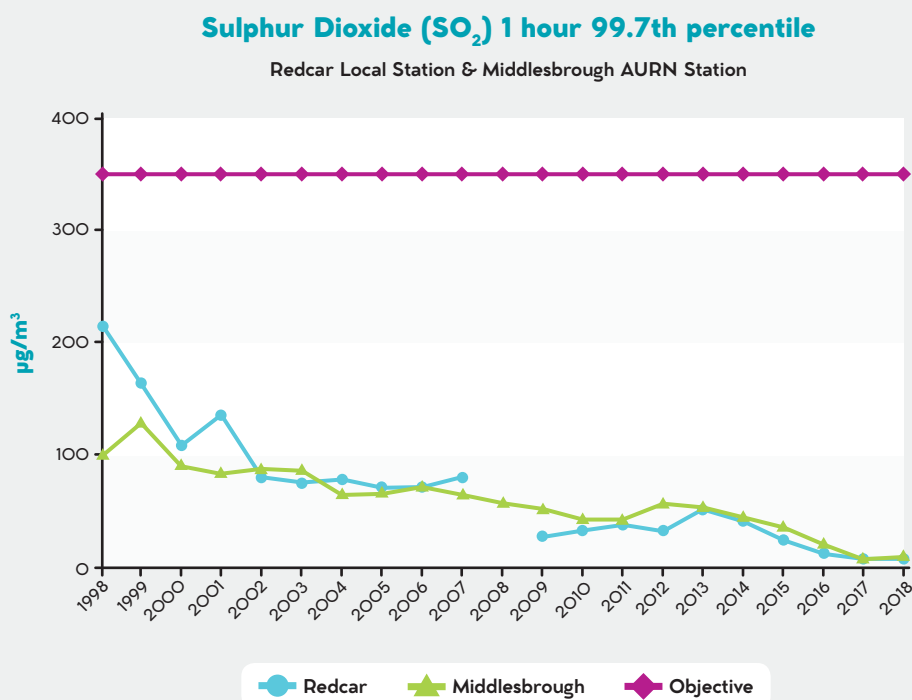
In Redcar & Cleveland prior to 2014, the data has not indicated any exceedances of the national standard for NO₂.

Sulphur Dioxide (SO₂)

Sulphur Dioxide (SO₂) concentrations have been measured across the South Tees since 1993.

Figure 16 shows the trend in average SO₂ concentrations in Middlesbrough and Redcar & Cleveland since 1998.

Figure 16: Trend in average SO₂ concentrations in Middlesbrough and Redcar & Cleveland since 1998



What does this information mean?

The levels meet the national standards and this trend will continue across the South Tees. There is no significant domestic coal burning and the main sources of SO₂ arise from the industrial chemical facilities and other industry located to the north and east. These emissions are now far lower than in previous years due to older plant closures and the requirement for lower sulphur fuels.

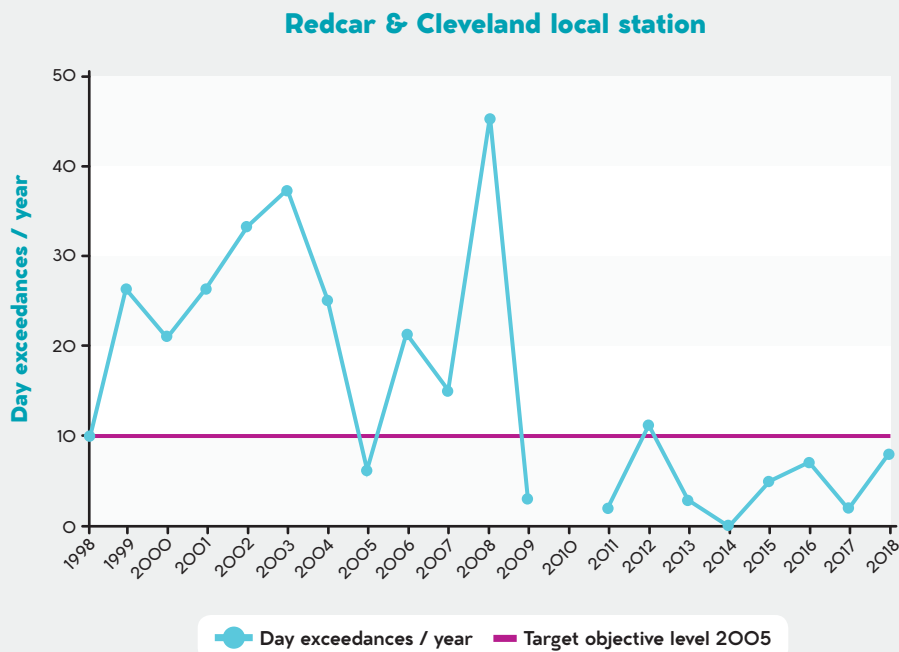
Ozone

Ozone (O_3) is a more complex pollutant, produced by the reaction between other pollutants in the air and sunlight. Therefore, ozone levels are the highest in the summer, can travel long distances and reach high concentrations far away from the original pollutant sources. There are long-term levels set for monitoring ozone level. These are not legal levels however it is still expected that all necessary measures should be taken to meet the target levels.

Ozone levels tend to be highest in coastal regions, due to the pollutants which are blown in from Europe. Therefore, as Middlesbrough is not a coastal authority ozone levels are not monitored.

Figure 17 shows the trend in the number of days each year when ozone levels have exceeded the target level in Redcar & Cleveland.

Figure 17: Ozone (O_3) day exceedances per year



What does this information mean?

- Ozone levels have fluctuated over the years however since 2012, Redcar & Cleveland has not exceeded the target objective of 10 days of exceedances per year
- Ozone is very spatially and seasonally dependent and levels are heavily influenced by prevailing coastal winds from Europe, therefore it is difficult to control the levels of ozone locally
- The pollutants from vehicles, industry, power plants, and products such as solvents and paints react in the atmosphere to form ozone. Keeping the levels of these other pollutants at a low level, which can be achieved locally, helps to keep ozone levels low

Controlling the pollution from industry and other processes in the South Tees

Some industries and businesses are required by law to monitor the levels of air pollution they produce. Permits are issued either by the Environment Agency or the local authority, depending on the type of process. The Environment Agency issue permits for those processes which have the potential for a greater environmental impact such as chemical plants.

The following infographic shows the wide range of pollutants that are monitored by industries in the South Tees and regulated by permits issued by the local authorities and the Environment Agency.

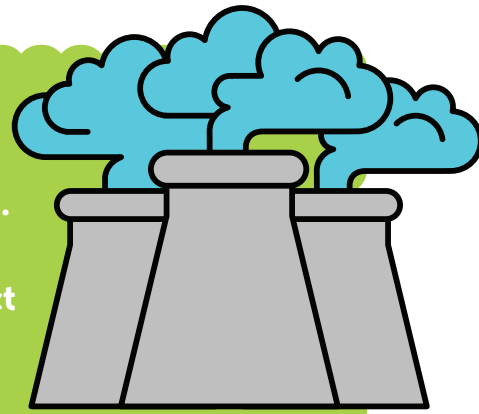
Figure 18: Industrial stack pollutants monitored across the South Tees



Emission limit values

These are the maximum levels of the pollutants which are allowed to be released.

The levels are set according to each type of industry and are based on the health impact of the pollutants and the techniques which are available to improve emissions.



In 2018, in the South Tees area 65 businesses were issued with permits, 11 of these businesses are permitted to release pollutants to the air from their stacks within the emission limit. During this period, there was only one process which breached the emission limit value.

In 2018 the Environment Agency was responsible for regulating a further 35 permits held across the South Tees. All of the Environment Agency's regulated processes met the emission limit values.

What does this mean?

- The monitoring and regulating of the industrial processes across the South Tees has been in place for a long time and good working relationships have been established
- If the conditions of a permit are not been met then the industry are subject to tighter regulatory control and enforcement action is taken where appropriate
- There is a high level of compliance in the industrial sector and the permit process and their responsible approach means that they do not present a risk to air quality standards in the South Tees

Key messages:

Air quality in the South Tees is good and it is meeting national standards

Though the environments in Middlesbrough and Redcar & Cleveland differ the main causes of pollution in both areas is traffic

Air quality in South Tees has improved in recent years

A local authority has responsibility for issuing permits to control certain types of industrial pollution

CHAPTER 6.

What are we doing to improve air quality?

Everyone can do something to help improve air quality.

Both Middlesbrough Council and Redcar & Cleveland Councils have a wide range of activities, plans and strategies delivered by many different services and organisations which aim to improve air quality. Close working and good communication is needed to make sure that air quality is considered across a broad range of different agendas.

Promoting travel alternatives



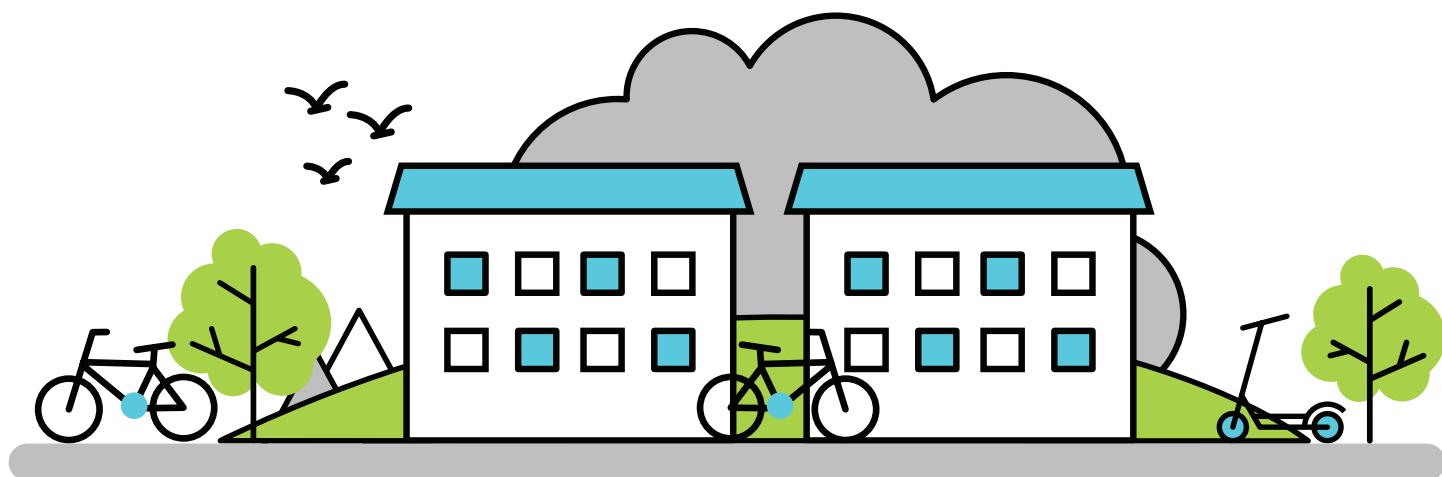
Bike it

- Encouraging the use of bikes
- Free, indoor secure cycle centre for town centre bike parking is located in Middlesbrough Bus Station Transport Hub providing showers, lockers, help and advice
- Pool bikes provided via Yorkshire Bike Library
- Bike-ability for primary school children
- Middlesbrough Bike Academy providing cycle maintenance training



Walk it

- Cycling and walking initiatives are widely promoted across the South Tees
- Child pedestrian training delivered across all primary schools





Travel it - different ways of travelling

- Work based travel plans are available to any Middlesbrough-based organisation
This is picked up as part of planning conditions for large developments
- Agile working supported by both councils helps to reduce unnecessary travelling to work
- Both councils support dedicated journey planning across the Tees Valley via connectteesvalley.co.uk and letsgeteesvalley.co.uk
- Joint working with the Job Centre to promote journey planning for those seeking employment
- Promotion of liftshare.com - publicly available car sharing website to reduce single occupancy car journey



Public transport - use it

- Promotion of rail and bus travel across the South Tees
- Bus fares and ticketing system - including concessionary fares and introduction of contactless payment terminals
- Continue to work with bus operators to develop improved bus corridors



Manage it - managing traffic and the environment

- Traffic calming initiatives to keep vehicle speeds low
- Variable Messaging Signs used alert drivers to traffic problems and assist in managing the traffic
- 20mph zones to improve pedestrian safety
- Bus lanes to keep buses moving at busy times and improving reliability
- Considering the introduction of engine idling controls to reduce exposure to air pollution around schools
- Tree planting schemes to naturally reduce the levels of air pollution



Clean it - promoting low emission transport

- Prioritising the purchase of low emission vehicles (Euro 6 spec) as part of the council's fleet renewal programme
- Redcar & Cleveland Council has purchased 10 fully electric small panel vans with zero emissions to replace 10 diesel vans, and is purchasing 8 x 7.5ton Euro VI vehicles for use within the Highways Team
- Taxi licensing policies have an age restriction on vehicles and/or an emission standard
- Installed EV charging points at 7 locations - car parks - Seafield House & Cat Nab and council depots Grangetown, Dormanstown and Skelton and at Skelton Youth and Community Centre. Middlesbrough has 38 EV charging points across the town



Promote it - encouraging people to do things differently

- Websites are used to promote all sustainable transport information
- Walking, cycling, guided route maps and public transport information is available
- Campaigns to raise awareness and understanding of the use of wood and multi-fuel stoves and fireplaces and how they contribute to the release of particulate matter and NO₂
- Support annual Clean Air Day campaigns, the UK's largest air pollution campaign
- Attended major events to raise awareness and understanding of air pollution and to gain public perception of what causes air pollution and what needs to be done to improve air quality





Plan it - transport planning and infrastructure

- Improved public transport hubs
- Installation of a new rail station at James Cook University Hospital to support passenger facilities
- Rail improvements to Darlington and Middlesbrough rail stations, ensuring they are ready for the new services
- Improving rail links between the Tees Valley and the rest of the country including key airports and ports
- Improving the East Coast Main Line, catering for future growth in both freight and passenger numbers across the north
- Improvement of the Northallerton to Teesport rail line
- Introducing newer trains, such as the high speed rail train
- Created a new and improved cycling set-up
- Middlesbrough Council 10 year infrastructure plan for walking and cycling improvements
- Improvements of the highway network to address bus route inefficiency
- Redcar & Cleveland Council have installed 14,500 LED street lights. Middlesbrough have installed 17,000 LED street lights
- The Tees Valley Strategic Transport Plan - to grow the local economy and transport to help deliver growth and support sustainable transport

Major road improvements to relieve traffic congestion

The A19 corridor is being enhanced to improve journey times and reliability to major centres in the north and across the UK.

A Tees River Crossing feasibility study is underway.

Improvements for the East - West A66 corridor from the A1(M) to Teesport

Middlehaven Dock Bridge has been built as part of a regeneration scheme. This creates a gateway to Middlehaven enhancing access to the A66 and Riverside Park.

The A66 throughabout to improve traffic flow and reduce congestion.



Urban vegetation

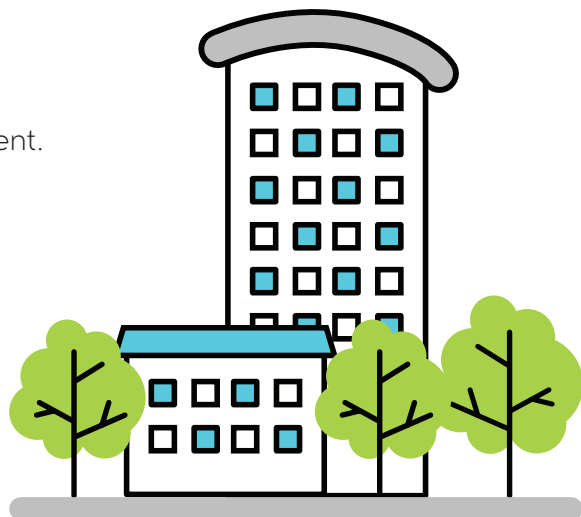
Urban vegetation can directly and indirectly affect local and regional air quality by altering the urban atmospheric environment.

The ways in which trees affect air quality are through:

- Temperature reduction and other microclimatic effects
- Removal of air pollutants
- Emission of volatile organic compounds (VOCs)

Recent research suggests that the planting of trees along the sides of roads could reduce NO₂ concentrations in addition to providing visual improvements (Defra).

In Middlesbrough there are plans to plant at least 15,000 trees.



Redcar & Cleveland declare a climate emergency.

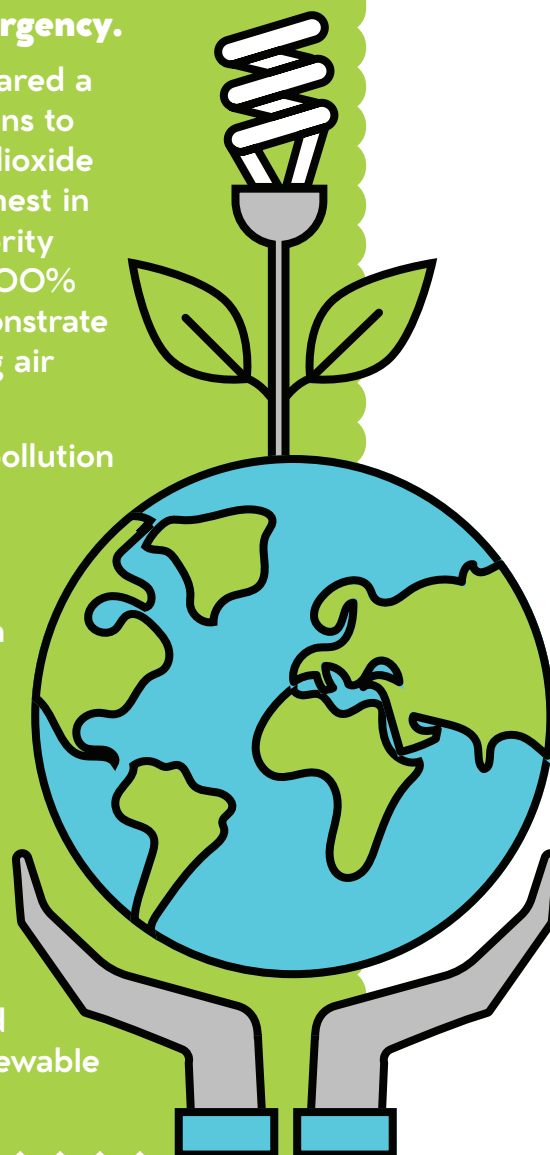
Redcar & Cleveland Borough Council have declared a borough-wide climate emergency with aspirations to become carbon neutral by 2030. The carbon dioxide levels in Redcar & Cleveland are one of the highest in the UK. Following a similar approach, the authority has signed up to the UK100 to move towards 100% clean energy by 2050. These declarations demonstrate Redcar & Cleveland's commitment to improving air quality and tackling climate change.

Many of the sources of both CO₂ and local air pollution are the same including vehicle exhaust factory chimneys, energy and heating.

Great benefits can be realised if both issues are tackled in an integrated way. Hence the Carbon Capture Utilisation and Storage initiative being looked at and funded by the oil, gas industries and the Government.

Carbon Management Funding has been used to implement LED lighting across the borough and also funded IT server replacement, heating/convector upgrades, secondary glazing, loft and cavity wall insulation.

The council's electricity supplier has been asked for all future electricity supplies to be from renewable sources.



Your views on air quality are important to us

Two events were held to get the views of businesses, the public and others on air quality.

Clean Air Strategy Consultation Event March 2019, Middlesbrough Football Club

What did we learn?

- Sustainable transport policies are already being encouraged and developed within organisations
- There is interest in active travel, car sharing and promoting fuel efficient driving and journey planning
- Measures are already being implementing to increase the energy efficiency of buildings to reduce pollution
- More information was needed on national legislation and local policy plays an important part to improve air quality
- There are barriers to improving air quality such as improved access and information on grant funding, investment for infrastructure for a greener fleet
- There is a need for sharing of knowledge around the subject and the need for improved public awareness of the issues

Clean Air Strategy Consultation March 2019

“Improve technology around the infrastructure for ultra-low emission vehicles”

“Improve existing fleet to reduce pollution from vehicles”

“Invest in public transport services to allow them to be more accessible for all”

“Invest in public transport to assist modal shift away from domestic car use”

“Increase promotion and uptake of ultra-low emission vehicles”

“Provide more education”

“Share information to make people more aware of the impacts of their own actions on air pollution”



**Public Consultation, particularly engaging children through craft to gain further valuable insight into their opinions.
September 2019, Festival of Thrift**



What did we learn?

Question: Can you give air pollution the green light?

Residents gave green lights to the moors and along the seafront. They gave red lights to major roads and industrial areas. Interestingly, there was a mention of odours arising from sewage which the public recognise as a form of air pollution.

Question: What do you think causes air pollution?

Residents thought that air pollution is caused mainly by transport, followed jointly by industry and burning fossil fuels.

Question: How can we stop air pollution?

Residents said we can stop air pollution by stopping burning fossil fuels, and jointly using renewable energy for transport, cleaner technology and reduce/reuse/recycle.

Question: If you were in charge of the world what would you do to make sure we breathe clean air?

Residents said they would change legislation, switch to sustainable energy, stop large scale deforestation, prioritise public transport and protect against oligarchs.



A South Tees Clean Air Strategy

Both Middlesbrough and Redcar & Cleveland locally are demonstrating their commitment to improving air quality by developing the first joint South Tees Clean Air Strategy which aims to put air quality at the heart of council decisions and priorities.

As a result of the work carried out to engage with the public, organisations, businesses and others the following priority area are proposed for the South Tees Clean Air Strategy: -



Priority 1 - Planning for cleaner air

- Develop our policies and practices to identify how they can improve air quality
- Transport infrastructure and environmental improvements that work to reduce pollution
- Enforce proposed new legislation around open fires, wood burners and multi-fuel stoves
- Investigate existing pollutant sources to target future actions and intervention

Priority 2 - Reducing vehicle emissions

- Explore improvements that can be made to the council fleet using cleaner more fuel-efficient vehicles
- Work with bus companies to encourage the introduction of a cleaner bus fleet
- Promote the implementation of ultra-low emission vehicle infrastructure
- Explore opportunities with businesses and organisations to encourage the use of cleaner commercial vehicles

Priority 3 - Raising awareness

- Explore opportunities to lead by example within our authorities to promote and improve air quality in South Tees
- Engage with businesses, organisations, residents and visitors to promote the benefits of low emission technology, smooth driving, speed reduction, anti-idling, active travel and public transport
- Encourage action at a community level to link air pollution to specific locations such as busy roads, junctions, shopping areas, hospitals or schools
- Provide support and advice around new technologies
- Identify funding streams that are available to the local authority, businesses and residents to improve air quality
- To present positive messages around the actions and choices residents make that will lead to cleaner air

Priority 4 - Promoting active travel and modal shift

- Investigate measures that improve the uptake of public transport
- Promote modal shift away from traditional car use and active travel

Let's Go Tees Valley

Let's Go Tees Valley arranged a Commuter Challenge from 16 to 22 September 2019.

They encouraged people to leave the car at home for a week and try greener, healthier ways to get to work. With the benefits that by walking, cycling or catching local transport local people will be moving more, driving less and feeling better and fitter as a result. Fewer cars also means better air quality so they will be doing their bit for the community and the environment too.

People were asked to register and prizes were given away throughout the week, with the main prize draw won at the end of the challenge. By working together we can make sure we meet our air quality targets for the Tees Valley.

Let's Go Tees Valley are carrying out a longitudinal study over 4 years to encourage local people to use more sustainable transport.



Key messages:

Improving air quality requires action across a whole range of partners and communities no one organisation can tackle this issue alone

There is already a lot of support in place to enable individuals and organisations to make positive changes

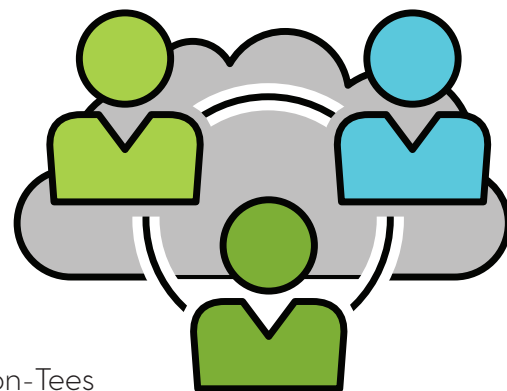
The first clean air strategy for the South Tees is in development and 4 key priorities for action have been identified

Working with other partners

On a day to day basis and in the development of the South Tees Clean Air Strategy we engage with a wide range of partners in a number of different forums.

Tees Valley Environmental Protection Group

Middlesbrough and Redcar & Cleveland Borough Councils, together with colleagues from Darlington, Hartlepool and Stockton-on-Tees Borough Councils work together under the Tees Valley Environmental Protection Group to review air quality on the wider Tees Valley level.



Tees Valley Combined Authority

The South Tees area is part of the Tees Valley Combined Authority, which in conjunction with other neighbouring authorities, takes a strategic view of transport planning within the Tees Valley area to improve transport and the economy.

The Tees Valley Combined Authority's Strategic Transport Plan is currently in draft form and is due to be published in spring 2020 for public consultation. It will include further details on plans up until 2026. Part of the remit of the strategy is to take into consideration the environmental impact that transport has upon the area.

There are a number of local documents which will support the Strategic Transport Plan including:

- (i) A Tees Valley Road Strategy**
a programme of local highway improvements to support strategic priorities, which include supporting housing and employment growth
- (ii) A Tees Valley Freight Strategy**
identifying the investment priorities to facilitate planned freight growth across the Tees Valley and beyond
- (iii) A Tees Valley Rail Strategy**
outlining further enhancement of local rail services to build on franchise improvements and our recent investment in station facilities
- (iv) A Tees Valley Bus Strategy**
to develop the bus route network and build on the recent Tees Valley Bus Network Improvements investment. The Bus Services Act will provide the opportunity to work with operators to develop the necessary future network
- (v) A Tees Valley Walking and Cycling Strategy**
continued development of a complementary programme of cycling, walking and other sustainable transport measures to support economic growth as well as health and wellbeing

All five partner local authorities will produce individual transport implementation plans that will set out local measures to be delivered by each of the boroughs.

CHAPTER 7

Making a difference - what we all can do to make our air cleaner

We know that the air in the South Tees is good but we are trying to make it “as clean as it can be.” We need your help!

We can all make the air cleaner by introducing small and simple changes to our behaviour and what we do in our everyday lives.



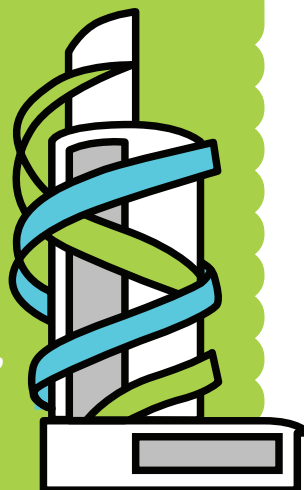
“Make public transport a priority, less cars, walk. Stop reliance on cars, stop use of dirty diesel”

Festival of Thrift

A survey of travel needs in 2018 for Redcar & Cleveland shows -

62% of respondents work or go to school or college in Redcar & Cleveland, 21% in Middlesbrough and 8% in Stockton-on-Tees.

22% of respondents live less than a mile from their place of work, school or college, 36% live between 1 mile and 4.9 miles, 25% live between 5 miles and 9.9 miles and 16% live 10 miles or further.



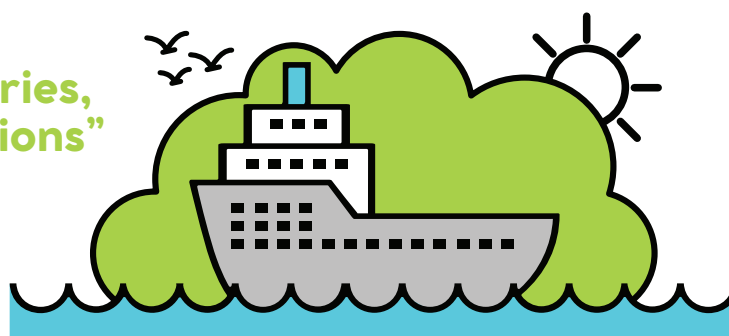
What you can do differently when you are getting around...

- Drive your car less, and walk or cycle and feel the benefit from the exercise
- Bikes, mountain bikes, road bikes, hybrid, fold up bikes, e-bikes and accessories may be available through your employer's cycle to work scheme
- Use less congested transport routes if you are cycling or walking
- Use public transport more
- Use park and ride when it is available
- Drive less by combining journeys in one trip
- Switch off vehicle engines when not moving, especially outside school gates
- If travelling in very busy traffic set the car to recycling the air inside the car to reduce the levels of pollutants
- Avoid driving at peak times as congestion increases the levels of particulate matter in the air
- Make use of the variable messaging system at key locations on the road network which warn drivers of delays so alternative routes can be found to reduce congestion
- Purchase a vehicle that has an automatic cut-out to turn off the engine when stationary as this reduces emissions
- Make sure tyres are inflated to the correct pressure, a difference of 15 psi (1 bar) can increase fuel consumption by 6% and therefore increase pollution. Inflating tyres to the correct pressure saves money too
- Avoid excessive speed, this reduces pollution
- Pay greater attention to engine emission levels, downsize if practicable
- Consider converting from a diesel or petrol to an electric vehicle
- Lift share is an option. Look at this website - liftshare.com/uk
- Join a car club and share journeys with others. It saves money too!
- Purchase an electric scooter, electric bike, moped or motorbike. They are eco friendly, easy to charge, not taxed, cheap to run, low maintenance, road legal, low noise and no smells. Your workplace may have a purchase scheme
- Make use of video conferencing instead of travelling to conferences, meetings and events



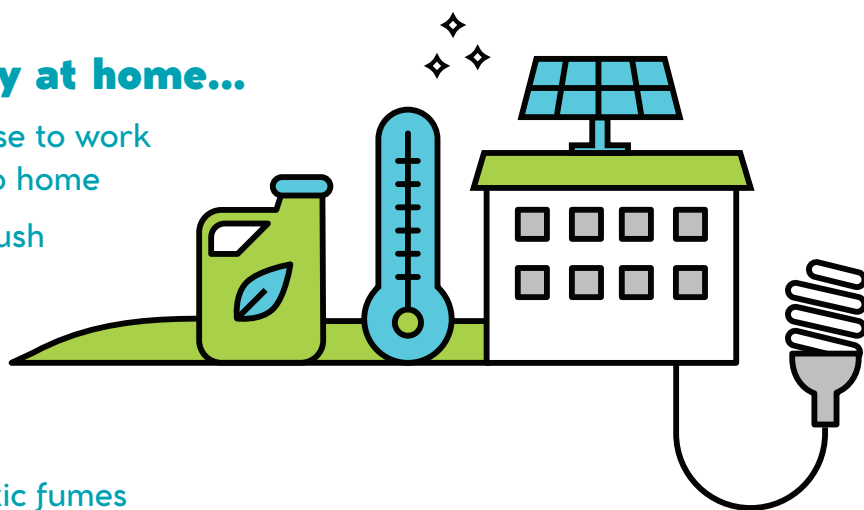
**“Less flights and ferries,
enjoy more staycations”**

Festival of Thrift



What you can do differently at home...

- If you can, work from home or choose to work from a branch office based nearer to home
- Use tools without motors - shears, push mowers
- Purchase environmentally friendly heating systems
- Do not burn garden waste
- Do not burn materials that cause toxic fumes
- Reduce the use of wood and coal - or switch to a cleaner burning modern wood stove. Burn quality wood or smokeless fuels on open fires instead of wet/green wood or house coal
- Use paint and cleaning products with fewer or no volatile organic compound
- Take notice of local air quality - this is particularly useful for vulnerable individuals who can take steps to use this information to manage symptoms, in consultation with their GP
- Install solar panels on available roofs
- Switch to energy companies that source energy from renewable sources and also plant trees
- If you smoke get support to quit through your local smoking cessation service stopsmokingsouthtees.co.uk



Make a pledge

Why not make a pledge to do one thing to make a change and improve air quality?

By joining forces our small changes in behaviour multiply and together they can bring about much bigger changes which can have positive health benefits for each and every one of us. By making these changes now we will be making sure future generations can benefit from breathing clean air.





“In the year 2030, we will be in a position where we set off an irreversible chain reaction beyond human control, that will most likely lead to the end of civilisation as we know it”

Greta Thunberg

No one is too small to make a difference,
Penguin, 2019

Key messages:

There are lots of things we can all do to improve air quality

Action at an individual level is key - everyone can make a difference

Small changes in our everyday lives can have significant health, social and environmental benefits

CHAPTER 8.

Recommendations

Whilst there are lots of activities being carried out and plans underway to improve air quality there are some key areas which require further action to make sure we continue to work towards cleaner air.

The South Tees Clean Air Strategy will provide the framework for key partners including the public to work together. Recommendations are for Middlesbrough and Redcar & Cleveland Councils.

- Establish a South Tees Clean Air Partnership to develop and deliver the South Tees Clean Air Strategy
- To continue to monitor air quality proactively to ensure that potential hotspots of poor air quality are detected early and that measures are put in place to make improvements
- To engage with the public on air quality matters, provide information and awareness raising to empower them to change their behaviour and consider its impact on cleaner air
- To engage with businesses to raise awareness of how they impact on clean air and how they and their employee's behaviour can maximise their contribution to cleaner air
- To continue to lobby for national measures to improve air quality and access to funding at a local level to develop and implement initiative and projects which will contribute to cleaner air
- To continue to work towards a smokefree South Tees

Responsibilities and governance

South Tees Public Health is a joint service between Middlesbrough and Redcar & Cleveland local authorities. The recommended actions from this Director of Public Health 2019 Report will be incorporated into the South Tees Clean Air Strategy and associated action plan.

It is proposed that the delivery of the Clean Air Strategy will be through a South Tees Cleaner Air Partnership and monitored through the governance structure of both local authorities, the joint Health and Wellbeing Board and external partners.



CHAPTER 9.

At a glance

This chapter provides a short “at a glance” summary of each of the chapters within this report for quick referencing.

Air quality is one of the most challenging public health problems in the 21st century and it requires a system-wide and community response to tackle it.

Good air quality plays a key role in good health and it is therefore important that we understand how air quality impacts on health, what contributes to worsening air quality and what action can be taken.

While some of the factors which affect air quality impact at international and national levels, there is still a lot of things that can be done at local, community and individual level to improve the air we breathe in our own neighbourhoods.



CHAPTER 1.

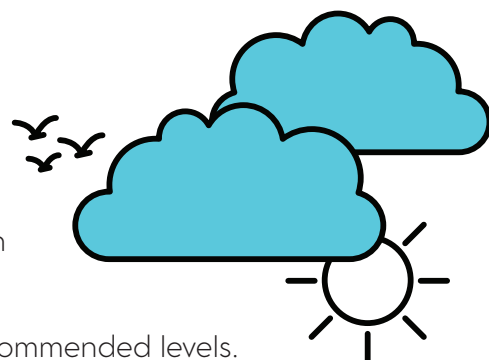
Why is air quality important?

Air quality in the UK has significantly improved in the last 50 years but air pollution remains one of the biggest environmental risks to health in the South Tees and in England as a whole.

Air pollution occurs when the amount of certain pollutants exceed recommended levels. There are national and European standards which are set for air pollution depending on how they affect human health.

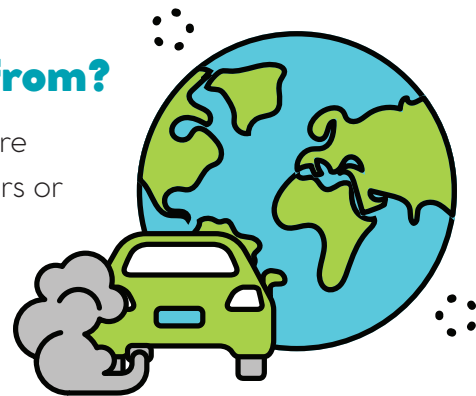
However, the International Agency for Research on Cancer (IARC) has classed outdoor air pollution as carcinogenic to humans (a Group 1 carcinogen) and causing lung cancer. They have declared that there is no clear evidence of a safe level of exposure to air pollution. This report demonstrates that the air quality in the South Tees is good and meets the legal standards, however to protect the long term health of residents we are aiming to make our air “as clean as it can be.”

Some of the activities which produce air pollution form an essential part of our daily lives and economy and are difficult to stop. However, cost effective changes can be made both locally and nationally to make cleaner cities and a greener economy.



CHAPTER 2. What is air pollution and where does it come from?

Air pollution is made up of gases, droplets and tiny solid particles which are considered to be harmful to health. Air pollutants may be present outdoors or indoors and they come from a wide range of sources. The sources of modern pollution range from transport and other everyday activities such as industrial processes, farming, heating homes and generating electricity which also affect air quality.



Middlesbrough and Redcar & Cleveland Councils are required by law to review, monitor and assess air quality within their boroughs. Currently, in both areas there are three main pollutants which are at the core of the Local Air Quality Monitoring programme;

- Nitrogen dioxide (NO₂)
- Particulate matter (small particulate matter is PM₁₀, very small particulate matter is PM_{2.5})
- Sulphur dioxide (SO₂)
- In addition, in Redcar & Cleveland, ozone (O₃).

Whilst most attention is focussed on outdoor air quality it is also important to consider the quality of indoor air.

CHAPTER 3. How does air quality affect health?

The risks of ill health to those people who are exposed to air pollution are dependent upon a range of factors; the health of the person, type of pollution, concentration and the length of time the person is exposed. The effects of air pollution can also be short-term or long-term.



Whilst there are national and European standards set for air pollution levels, which the South Tees meets, there is currently no clear evidence of a safe level of exposure to air pollutants.

Some people are at a greater risk from poor air quality eg babies and children including unborn babies, older people and those with existing medical conditions. Different pollutants affect health in different ways. Daily updates on air quality are available to the public.

CHAPTER 4. Health inequalities

People living on low incomes are more likely to live closer to busy roads and industry and therefore they may be exposed to higher levels of pollution.



Low income groups are also more likely to suffer from preventable long-term conditions such as heart disease, lung disease and cancer and these conditions can make them more susceptible to the harm caused by air pollution. We have to consider that the same level of exposure to air pollution will have a greater negative impact on the health of people living in disadvantaged areas than those who live in less disadvantaged areas.

CHAPTER 5. How good is the air in the South Tees?

The geography of Middlesbrough and Redcar & Cleveland local authority areas are very different. Middlesbrough is a compact urban area whilst Redcar & Cleveland sprawls across a much wider rural landscape which also incorporates full coastal coverage across the east of the borough.

Air pollution is monitored across the South Tees at three static monitoring stations and also through a network of 43 diffusion tubes. The measurements from the static sites and diffusion tubes show the air quality in the South Tees is good. The trends in measured pollutants show that they have been significantly decreasing over time. Industrial processes in the South Tees are also monitored and regulated to ensure their emissions meet the required standard.



CHAPTER 6. What are we doing to improve air quality?

Everyone can do something to help improve air quality. Both Middlesbrough Council and Redcar & Cleveland Council have a wide range of activities, plans and strategies delivered by many different services and organisations which aim to improve air quality. Close working and good communication is needed to make sure that air quality is considered across a broad range of different agendas.

There are a wide range of activities underway and planned to help improve air quality:

- Promoting travel alternatives
- Managing travel and the environment
- Promoting low emission transport
- Transport planning and infrastructure

We are in the process of developing a Clean Air Strategy to engage with partners to ensure air quality is a consideration in the council and other partners' delivery plans.

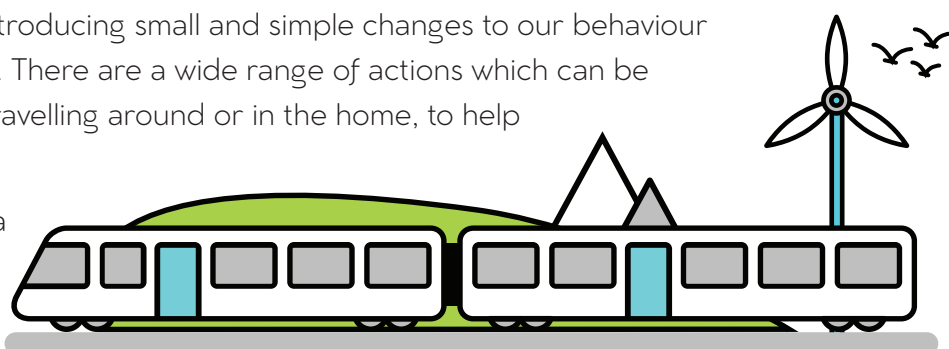


CHAPTER 7. Making a difference - what we all can do to make our air cleaner

We know that the air in the South Tees is good but we are trying to make it “as clean as it can be.”

We can all make the air cleaner by introducing small and simple changes to our behaviour and what we do in our everyday lives. There are a wide range of actions which can be built into everyday life, whether it is travelling around or in the home, to help make air quality even better.

The public are encouraged to make a pledge to do one thing to make a change and improve air quality.



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