

Surrey Transport Plan

Air Quality Strategy

January 2016



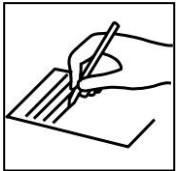
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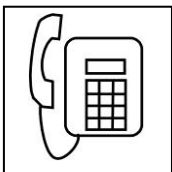
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Surrey Transport Plan, 2011-2026

Air Quality Strategy

January 2016

Executive Summary.....	iii
1 This Air Quality Strategy and the Surrey Transport Plan	1
2 Background.....	2
3 Problems and challenges.....	5
4 Aim, objectives, indicators and targets.....	18
5 Appraisal of options	20
6 Preferred strategy	21
7 Delivery of the preferred strategy	26
Appendix 1: National air quality objectives	28
Appendix 2: Health and environmental effects of nitrogen oxides and particulate matter.....	29

Executive Summary

This is the Air Quality Strategy, one of the strategies of the [Surrey Transport Plan](#). The Air Quality Strategy was updated in January 2016 to reflect changes to Air Quality Management Areas (AQMAs) within Surrey.

Air quality is key to the health of humans and ecosystems. Road traffic is one of the major contributors to air pollution in Surrey. Air pollution is the presence of contaminant or pollutant substances in the air at a concentration that interferes with human health or welfare, or produces other harmful environmental effects.

Surrey's borough and district councils have a statutory duty to identify Air Quality Management Areas (AQMAs) where current, and likely future, air quality in their areas is unlikely to meet the Government's national air quality objectives. There are twenty four AQMAs in Surrey as of December 2015, distributed between eight of the eleven boroughs and districts.. These have been declared in relation to excessive nitrogen dioxide (NO₂), or both nitrogen dioxide and particulate matter (PM₁₀). The main source of both these pollutants in Surrey is road traffic.

There are various factors which, alone or in combination, contribute to air pollution exceedances in specific locations on the road network. Factors can include narrow streets with residential properties close to the kerb, high flows of buses or heavy goods vehicles, congestion, and busy junctions.

Surrey County Council, as the highways authority for the county road network, has a statutory duty to bring forward proposals to help meet the national air quality objectives in declared AQMAs.

The aim of the Air Quality Strategy is: To improve air quality in AQMAs on the county road network such that Surrey's borough and districts are able to undeclare these areas as soon as possible, with regard to other strategies and funding constraints.

The objectives are:

1. Working with the accountable borough or district council for each designated AQMA, to incorporate physical transport measures in the borough or district council's Infrastructure Delivery Plan, agree options for the enforcement of existing regulations and agree options for supporting smarter travel choices, for future implementation as and when funding becomes available, in order to reduce air pollution from road traffic sources;
2. To provide assistance to the borough and district councils in producing their review and assessment reports, and Action Plan progress reports; and,
3. To consider air quality impacts when identifying and assessing transport measures in Surrey.

A twin-track preferred strategy approach is proposed:

- **A focus on AQMAs** through incorporating appropriate physical transport measures in Infrastructure Delivery Plans, enforcing existing regulations for parking and loading, supporting travel choices that are better for air quality and considering air quality issues in planning and other processes and areas of responsibility;
- **Countywide air quality improvements** delivered through synergies with other Surrey Transport Plan strategies and other county council strategies when and where these tend to restrain traffic growth, reduce vehicle delay, reduce vehicle emissions and improve the provision of travel information to people on the air quality impacts of their travel choices.

Partnership working with the boroughs and districts, the Highways Agency and with wider partners in Surrey is essential to the delivery of this strategy.

1 This Air Quality Strategy and the Surrey Transport Plan

This Air Quality Strategy document

- 1.1 This is the Air Quality Strategy, one of the strategies of the [Surrey Transport Plan](#).
- 1.2 This strategy sets out the county council's approach to local air quality in Surrey, and provides the link between the Surrey Transport Plan and borough and district Air Quality Action Plans. This reflects Policy Guidance (PG09): Local Air Quality Management (Defra, February 2009): "Where the air quality management area designation arises primarily because of local transport pollution, local authorities in England should integrate their Action Plans into their Local Transport Plans (or Local Implementation Plans in London)." (para 5.13)
- 1.3 This strategy focuses on roads for which the county council is the highway authority.
- 1.4 A public consultation on the draft strategy was held between September and November 2010. The results of this consultation have helped to inform the strategy. A formal [consultation report](#), first published in 2012, gives details of who was consulted, the consultation feedback received and how it was reflected in changes to this final strategy.

The Surrey Transport Plan

- 1.5 The Surrey Transport Plan is the county's third Local Transport Plan (LTP3). The plan covers the period from April 2011 and looks ahead to 2026.
- 1.6 The Surrey Transport Plan replaces the Surrey Local Transport Plan second edition: 2006/07 – 2010/11 (March 2006), known as LTP2.
- 1.7 Documents are available giving an [introduction](#) to the Surrey Transport Plan and its overarching [vision and objectives](#) and an explanation of key [abbreviations](#) and acronyms used in the Surrey Transport Plan.

2 Background

2.1 This section establishes the context for the Air Quality Strategy:

- Air pollution, pollutants and sources are defined;
- The statutory duties in relation to air quality of the borough and district councils, and the county council, are set out; and,
- The relationship with the vision and objectives of the Surrey Transport Plan and other strategies are established.

Definition of air pollution, pollutants and sources

2.2 The European Environment Agency defines air pollution as "the presence of contaminant or pollutant substances in the air at a concentration that interferes with human health or welfare, or produces other harmful environmental effects."

2.3 Local transport strategies have been developed to take account of and provide a plan for addressing transport problems and opportunities in a geographical area. A local transport strategy (LTS) has been produced for each district and borough in the county.

- There are a range of air pollutants, which cause a variety of effects on the environment and health.
- The main sources of air pollution are fossil fuel combustion, heating systems and motor vehicles.

Statutory duties

2.4 The Environment Act 1995, a United Kingdom Act of Parliament, requires the preparation and publication of a national air quality strategy to include national air quality objectives and introduced the present system of local air quality management (LAQM).

2.5 The [Air Quality Strategy for England, Scotland, Wales and Northern Ireland \(Defra, July 2007\)](#) sets out the present national air quality objectives; these are reproduced as Appendix 1 in this document. Reviews to the national Air Quality Strategy are on a pollutant-by-pollutant basis, driven by policy and scientific developments. The objectives of the national Air Quality Strategy are either equivalent or more stringent than those currently described under European Union Directives.

2.6 Part IV of the Act requires local authorities to periodically review and assess current, and likely future, air quality in their areas against the national air quality objectives. This is the system of local air quality management (LAQM).

2.7 Where any objective is unlikely to be met by the relevant deadline, local authorities must designate those areas as Air Quality Management Areas (AQMAs). This area could be a small area consisting of one or two houses, or it could be much bigger taking in whole towns or administrative areas. Once an AQMA is declared, the local authority will put together a plan to improve the air quality in pursuit of the objectives - a Local Air Quality Action Plan.

- 2.8 In two tier local authority areas such as Surrey, it is the borough and district councils who monitor air quality in their areas, declare AQMAs and prepare the action plans. Certain obligations are also placed on the relevant county council. Under section 86(3): “Where a district council is preparing an action plan, the county council shall, within the relevant period, submit to the district council proposals for the exercise (so far as relating to the designated area) by the county council, in pursuit of the achievement of air quality standards and objectives, of any powers exercisable by the county council.”
- 2.9 Relevant powers exercisable by the county council could include:
- Developing policies for the promotion and encouragement of safe, integrated, efficient and economic transport, as set out in the Local Transport Plan (Local Transport Act 2000 as amended by the Local Transport Act 2008);
 - Reducing the causes of congestion and disruption on the road network, by co-ordinating and managing road and street works effectively, the management of incidents, event planning, the control of parking and the network as a whole under the Network Management Duty (Traffic Management Act 2004); and,
 - Maintaining and repairing the highway on county roads as a local highway authority.
- 2.10 Road traffic is one of the main contributors to air pollution in Surrey’s AQMAs. The county council is local highway authority for the county roads in 21 of the 25 AQMAs in Surrey, including two AQMAs which also involve the Strategic Road Network managed by the Highways Agency. Four AQMAs relate to strategic roads managed solely by the Highways Agency. Thus, working with the borough and district councils, the county council has a key role to play in the mitigation of air pollution in these AQMAs.
- 2.11 This strategy focuses on roads for which the county council is the highway authority. Highways England, as the national executive organisation responsible for managing the national strategic road network, has this role for those AQMAs in Surrey which are on the motorways and trunk roads that pass through Surrey. Such AQMAs cover sections of the M25, M3, A3, A30, A316 and A23. The county council will liaise and work in partnership with Highways England, as described in section 0.

Links with vision and objectives of the Surrey Transport Plan

- 2.12 As one of the strategies of the Surrey Transport Plan (see section 1), the Air Quality Strategy has been developed within the context of the overarching [vision and objectives](#). The Air Quality Strategy seeks to balance the overarching objectives for *effective*, *reliable* and *safe* transport with the objective for *sustainable* transport.

Relationship with the Climate Change Strategy

- 2.13 The synergies between the Air Quality Strategy and the [Climate Change Strategy](#), both elements of the Surrey Transport Plan, have been considered in the development of both strategies. Carbon dioxide (CO₂), nitrogen dioxide (NO₂) and particulate matter under 10 microns (PM₁₀) are all emitted by fossil-fuelled vehicles.

- 2.14 The county's Air Quality Strategy for tackling local air quality problems is linked to the Climate Change Strategy because many of the emissions sources are the same and the many measures to tackle these problems are complementary. However, due to specific obligations placed upon borough and district councils and the localised nature of AQMAs, this issue is covered by this discrete strategy.
- 2.15 Countywide, AQMAs will benefit from measures in the Climate Change Strategy and which reduce the need to travel, encourage people to use lower carbon modes and those which reduce tailpipe emissions, as described in section 0.

Links with other county and national policies

- 2.16 The ['Confident in our Future' Corporate Strategy 2014-19](#) sets out the county council's vision and objectives for the county over the next five years. It is a high-level document that tells our residents, Members, partners and staff about where we see the Council in five years time, what we want to have achieved by then and how we will get there. The Surrey Transport Plan has a key role in helping to deliver these goals.
- 2.17 From a national perspective, the statutory duties under the Environment Act 1995 for air quality were set out in section 0 above.
- 2.18 In January 2011, the Coalition Government published its [Local Transport White Paper entitled 'Creating Growth, Cutting Carbon – Making Sustainable Local Transport Happen' \(DfT, January 2011\)](#). It is considered that local transport faces a sustainability challenge – excess delay is costing our urban economies £11 billion per annum, and carbon emissions impose a cost to society equivalent to up to £4 billion per annum. The costs to the health of communities are even greater – up to £25 billion per year on the costs of physical inactivity, air quality and noise, and £9 billion on road traffic accidents¹. The Government considers that it is short-distance local trips where the biggest opportunity exists for people to make sustainable travel choices. Around two out of every three trips we make are less than 5 miles in length, many of which could be easily cycled, walked or undertaken by public transport. And encouraging sustainable travel choices does not just help create economic growth and cut carbon, but also contributes to improvements in road safety and in public health. In the longer term, it is considered that road transport could be almost completely decarbonised. Consequently, tackling air pollution is a high priority.

¹ 'Creating Growth, Cutting Carbon – Making Sustainable Local Transport Happen (DfT 2011, p15)

3 Problems and challenges

Effects of air pollution on human health and the environment

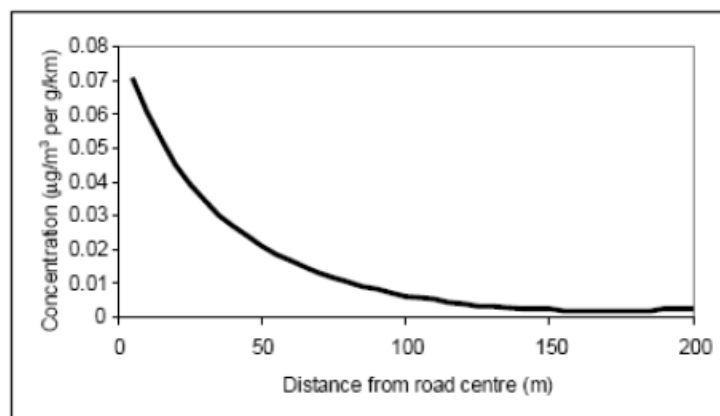
3.1 Air pollution in the UK harms human health and the environment:

“Air pollution can have a serious effect on people’s health. Exposure to air pollution can have a long-term effect on health, associated in particular with premature mortality due to cardiopulmonary (heart and lung) effects. In the short-term, high pollution episodes can trigger increased admissions to hospital and contribute to the premature death of those people that are more vulnerable to daily changes in levels of air pollutants. Air pollution also has negative impacts on our environment, both in terms of direct effects of pollutants on vegetation, and indirectly through effects on the acid and nutrient status of soils and waters”²

3.2 It is estimated that poor air quality reduces the life expectancy of everyone in the UK by an average of seven to eight months³ and up to 50,000 people a year may die prematurely because of it.⁴ To illustrate the significance of the impact of air quality on life expectancy, it is worth noting that road traffic accidents result in 1 to 3 months reduction in the average person’s life.

3.3 Ecosystems are not only at risk from concentrations of pollutants which are still suspended in the atmosphere (critical levels) but are also at risk from deposited concentrations from the atmosphere to a surface (normally soil, vegetation or water bodies). Deposited concentrations of pollutants below which different ecosystems do not suffer from harmful effects according to current knowledge are known as critical loads.

3.4 Nitrogen deposition (from NO_x or other emissions) can enrich soils causing changes in species composition particularly for ecosystems that are nitrogen limited. This process is known as eutrophication. This is a key consideration for Surrey as the county contains a number of nature conservation sites of national and international importance which are designated for their lowland heathland, one of the ecosystems particularly sensitive to this



² ([Air Quality Strategy for England, Scotland, Wales and Northern Ireland \(Defra, July 2007\)](#)), Volume 1, para 14)

³ [Air Quality Strategy for England, Scotland, Wales and Northern Ireland \(Defra, July 2007\)](#)

⁴ [House of Commons Environmental Audit Committee; Air Quality; Fifth Report of Session 2009-10; Volume 1](#)

type of deposition. It should be noted that beyond 200m, the contribution of vehicle emissions from the roadside to local pollution levels is not significant. This is shown in Figure 1.

Figure 1: Traffic contribution to concentrations of pollutants at different distances from a road (DfT)

Long term UK trends in air quality

- 3.5 Overall, the long term trend for air quality in the UK is of general improvement. Air is cleaner today than at any time since before the industrial revolution. This improvement has been achieved through tightening controls on emissions of pollutants from industry, transport and domestic sources (Defra, 2007).
- 3.6 In the transport sector, there are two main trends which historically have worked in opposite directions: new vehicles are becoming individually cleaner in response to European emission standards legislation, but total vehicle kilometres are increasing. Overall, emissions of key air pollutants from road transport have fallen by about 50% over the last decade, despite increases in traffic, and are expected to reduce by a further 25% or so over the next decade. This is mainly a result of progressively tighter vehicle emission and fuel standards agreed at European level and set in UK regulations (Defra, 2007). The most recent set of standards are the Euro V standards which became mandatory in 2009. Incentives in rates of vehicle tax based on CO₂ emissions have helped to encourage the adoption of vehicles conforming to the standards in advance of their statutory deadlines. Further information on vehicle tax rates is available at <https://www.gov.uk/search?q=vehicle+tax+rates>.
- 3.7 Historic and forecast emissions of nitrogen oxides (NO_x) and particulate matter (PM₁₀) per vehicle are presented in Figures 2 and 3. The forecasts, from the DfT, show what may happen, based on:
- Our current understanding of how people make travel choices
 - The expected path of key drivers of travel demand, and
 - Assuming no change in government policy beyond that already announced.
 - The Figures demonstrate that NO_x and PM₁₀ concentrations are not expected to vary to any great degree nationally as a result of different population, GDP and oil price growth projections.
- 3.8 Further explanation of the historic and forecast emissions can be found in the road transport forecasts 2013, at [Road transport forecasts 2013 - Publications - GOV.UK](#). This publication predicts that
- “Road transport NO_x and PM₁₀ emissions from 2010-2040 are forecast to fall substantially by 62% and 93% respectively..... The NTM (National Transport Model) forecasts a continuing downward trend until 2025, in line with historical precedent and deployment of new vehicle EURO standards. After 2025, PM₁₀ and NO_x emissions are projected to plateau, at significantly lower levels than those observed in 2010.”*

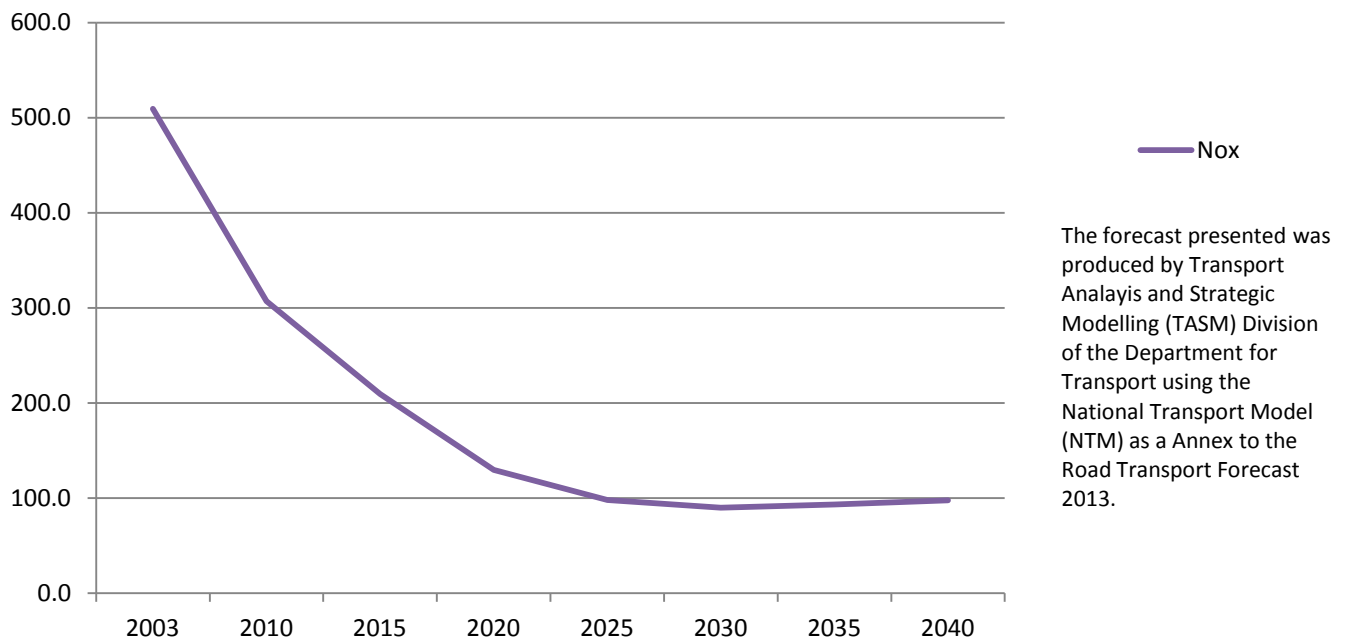


Figure 2: NOx (kt) Forecasts for All Roads in England (Source: forecasts from the National Transport Model)

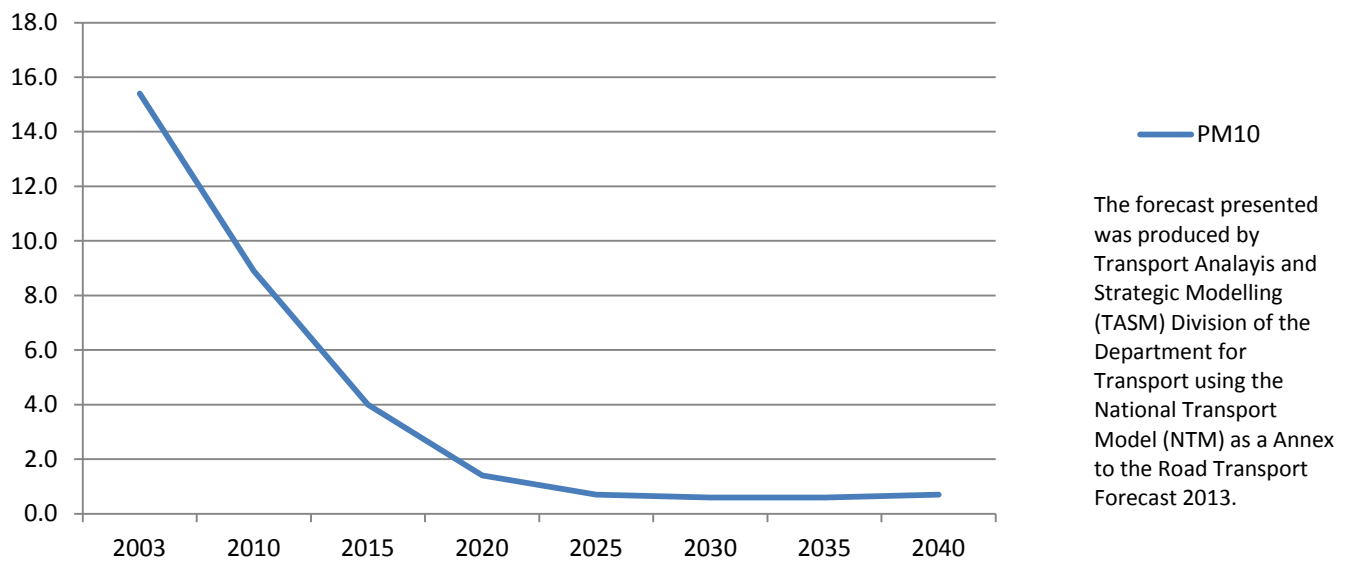


Figure 3: PM₁₀ (kt) Forecasts for All Roads in England (Source: forecasts from the National Transport Model)

3.9 Whilst there have been significant decreases over the last decade in the amounts of nitrogen dioxide (NO₂) and particulate matter emitted to the atmosphere, there has been a less marked downward trend in concentrations in the air around us. The relationship between emitted and ambient air pollution is not straightforward. An increase in the emission of primary NO₂ from diesel engines (as opposed to NO which subsequently oxidises in the atmosphere) is part of the reason why ambient NO₂ has not declined at the rate previously expected (Faulkner and Russell, March 2010). In 2009, 27 per cent of cars in Great Britain were diesel vehicles, up from 13 per cent in 2000 ([DfT, 2009](#)).

- 3.10 So, despite the long term improvement in air quality overall across the UK, air pollution continues to harm human health and the environment, as explained earlier in section 0-3.4. These issues are most acute in the designated AQMAs.
- 3.11 The next section considers the designated AQMAs in Surrey. At a local level, Defra consider that “Action taken at the local level can be an effective way of tackling localised air quality problems, leading to an overall improvement of air quality across the UK” (Defra, 2007). However, the Review of Local Air Quality Management (Faulkner and Russell March 2010) undertaken for Defra and the devolved administrations, found that “Measures put in place locally through LAQM action planning have had very limited impact, and few AQMAs have been revoked following the successful implementation of pollution reduction measures” (Executive Summary).

AQMAs in Surrey

- 3.12 There are currently 25 AQMAs declared in Surrey distributed between eight of the eleven boroughs and districts. Guildford, Mole Valley and Tandridge have not declared any AQMAs. The AQMAs are listed in Table 1 below. Note: Weblinks in the table link to the each borough council’s webpages on air quality. The webpages include borough and district’s Updating and Screening Assessments (prepared every three years), Progress Reports (prepared every intervening year), Detailed Assessments (prepared before an AQMA is declared) and Further Assessments (prepared after an AQMA is declared), and the Action Plans for designated AQMAs.
- 3.13 Where a district or borough has declared an AQMA, this is reflected in the relevant [Local Transport Strategy and Forward Programme](#).

Table 1: AQMAs in Surrey

Borough or district	Name of AQMA	Pollutants	Highway authority
Elmbridge BC	Esher High Street	NO ₂	Surrey CC
	Walton Road, Molesey	NO ₂	Surrey CC
	Weybridge High St	NO ₂	Surrey CC
	Walton High Street	NO ₂	Surrey CC
	Cobham High Street	NO ₂	Surrey CC
	Hampton Court	NO ₂	Surrey CC
	Hinchley Wood	NO ₂	Surrey CC
Epsom & Ewell BC	Ewell High Street	NO ₂	Surrey CC
Guildford BC	No AQMAs declared		
Mole Valley DC	No AQMAs declared		
Reigate & Banstead BC	M25	NO ₂	Highways England
	Horley (near Gatwick)	NO ₂	Surrey CC, West Sussex CC and Highways England ⁵
	A217 / Blackhorse Lane	NO ₂	Surrey CC
	A2022/A240 Drift Bridge	NO ₂	Surrey CC
	Reigate High Street / West Street	NO ₂	Surrey CC
	A23 Merstham High Street	NO ₂	Surrey CC
	A217 Reigate Hill	NO ₂	Surrey CC
	A23 / Redhill Town Centre	NO ₂	Surrey CC
	A23 Hooley	NO ₂	Surrey CC
Runnymede BC	M25/ Egham	NO ₂ & PM ₁₀	Highways England
	Addlestone town centre	NO ₂	Surrey CC
Spelthorne BC	Spelthorne	NO ₂	Surrey CC and Highways England
Surrey Heath BC	Camberley AQMA	NO ₂ & PM ₁₀	Highways England
Tandridge DC	No AQMAs declared		
Waverley BC	Farnham AQMA	NO ₂	Surrey CC
	Godalming AQMA	NO ₂	Surrey CC
Woking BC	Anchor Hill AQMA	NO ₂	Surrey CC

⁵ [NO₂ concentration contributions by source for worst case receptor RB59 in 2010 were 53.3% total Gatwick Airport, 37.4% background and 9.3% non-airport road traffic \(Air Quality Action Plan for the Non Airport sources of Nitrogen Dioxide within the Horley Air Quality Management Area, Reigate and Banstead Borough Council, January 2007\).](#)

3.14 All 25 AQMAs in Surrey are declared in relation to excessive nitrogen dioxide (NO₂), or both NO₂ and particulate matter under 10 microns (PM₁₀). Appendix 2 describes the health and environment effects of these pollutants. The source of both these pollutants in Surrey is road traffic. This mirrors the national picture: transport is identified as the main source of pollution in 92% of all AQMAs (Faulkner and Russell, March 2010).

3.15 For each AQMA in Surrey, Table 2 sets out:

- The number of properties within the AQMA - this gives an indication of the potential impact on human health;
- Annual mean NO₂ concentration (PM₁₀ concentrations are not shown, as the figures are not available, however, as a rule, measures which mitigate NO₂ will have a similar proportional effect on PM₁₀);
- Contribution to pollutant by source, split into background, cars & light good vehicles (LGV) and heavy goods vehicles (HGV) sources; and,
- Estimated percentage reduction in road traffic which would, in theory, be required to reduce pollutant levels to within the national Air Quality Objective.

Recent Changes to AQMAs

3.16 Since LTP3 was first published in April 2011, four AQMAs have been revoked; three in Reigate & Banstead and one in Waverley:

- The M23 (South)
- A217 / Rushworth Road, Reigate, and
- A23 / Dean Lane, Merstham
- Hindhead

3.17 Three new AQMAs have been declared in Reigate & Banstead and one in Woking:

- A217 Reigate Hill in 2011 in Reigate & Banstead
- A23 Redhill Town Centre in 2011 in Reigate & Banstead
- A23 Hooley in 2013 in Reigate & Banstead, and
- Anchor Hill in Woking.

3.18 The construction of the Hindhead Tunnel on the A3 has improved air quality within the village of Hindhead since its opening in 2013 and as a result, the AQMA was revoked on February 2015 with immediate effect.

Table 2: Reductions in road traffic required to mitigate NO₂ exceedances in Surrey's AQMAs

AQMA Name	No. of Properties Affected	Annual Mean NO ₂ Concentration (µg/m ³)	Contribution to pollutant level by source (% - based on NO _x)			Estimated reduction in road traffic required to reduce pollutant level to within national Air Quality Objective (%)	Notes
			Background (%)	Cars + LGV Contribution (%)	HGV Contribution (%)		
Elmbridge							
Esher High Street	61	43.5	Currently unavailable				Annual mean NO ₂ concentration from 2014 monitoring data
Walton Road, Molesey	237	38.1	Currently unavailable				Annual mean NO ₂ concentration from 2014 monitoring data
Weybridge High St	78	41.1	28	72		30	Annual mean NO ₂ concentration from 2014 monitoring data; contribution figures from modelling carried out for 2010 Final Assessment
Walton High St	27	41.5	30	70		21	Annual mean NO ₂ concentration from 2014 monitoring data; contribution figures from modelling carried out for 2010 Final Assessment
Cobham High St	90	42.4	29	71		28	Annual mean NO ₂ concentration from 2014 monitoring data; contribution figures from modelling carried out for 2010 Final Assessment
Hampton Court	567	46.7	26	74		30	Annual mean NO ₂ concentration from 2014 monitoring data; contribution figures from modelling carried out for 2010 Final Assessment

AQMA Name	No. of Properties Affected	Annual Mean NO ₂ Concentration (µg/m ³)	Contribution to pollutant level by source (% - based on NO _x)			Estimated reduction in road traffic required to reduce pollutant level to within national Air Quality Objective (%)	Notes
			Background (%)	Cars + LGV Contribution (%)	HGV Contribution (%)		
Hinchley Wood	137	41.2	25	75		46%	Annual mean NO ₂ concentration from 2014 monitoring data; contribution figures from modelling carried out for 2010 Final Assessment

Epsom & Ewell

Ewell High Street	>10	45	35.5	36.7	14.4	>50	Monitoring continuing. Action Plan has been progressed, SCC actions have been notable in aiming to assist the free flow of traffic at this location.
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Reigate and Banstead

M25	53	27	30.6	24.9	44.5	0	
Horley nr Gatwick	1568	28	43.1	-	-	-	Non-airport road traffic currently only 9.3 % of the total pollution.
A217 / Blackhorse Lane	1	28	45	32	23	0	
A2022/A240 Drift Bridge	2	32	38.7	27.6	33.7	0	
Reigate High Street / West Street	197	40	48	25	27	>5	
Merstham High Street	37	44	35	34.8	30.2	>8	

A217 Reigate Hill	111	38	37	41	23	0	Currently 0 though 5 % reduction would provide margin of error.
A23 / Redhill Town Centre	35	36	35	19	21 + 16 bus	0	Note buses make significant contribution in Redhill - absent in all other AQMAs
A23 Hooley	52	57	65	36	29	>47	Currently highest concentrations in borough, and depending on weather in given year risk that hourly standard is being breached as well.
Runnymede							
M25	40	53	53	23	30	30	
Addlestone town centre	174	48	48	25	22	5-10% or up to 1% decrease in HGV number	AQMA has been extended (2015).

Spelthorne							
Spelthorne	Whole borough	32.6		48 (cars 32%; LGVs 16%; 2011 data)	42 (2011 data)		At nine sites in Borough the annual average for NO ₂ was exceeded; 6 site had NO ₂ levels between 37 & 40 ug/m ³
Surrey Heath							
Camberley AQMA	105	50					Unlikely to revoke until three years data is shown to be under the average required.
Waverley							
Farnham AQMA	483	50.4	40%	46%	6%		Level of reduction required will depend entirely on what tyoes of vehicle are targeted
Godalming AQMA	40	44.9	Not assessed	58	6	1%	Level of reduction required will depend entirely on what tyoes of vehicle are targeted
Woking							
Anchor Hill AQMA	33	43.9				<17%	

- 3.19 Whilst the designated AQMAs highlight where air quality is the poorest, there may be some other locations where air pollution levels are such that an AQMA could be declared in future if, for instance, there was a small increase in traffic. The number of monitoring locations are limited by cost and practical reasons, therefore it is possible that some undesignated areas could exceed the national air quality objectives.
- 3.20 This suggests that, in addition to developing mitigation measures for designated AQMAs, measures which offer air quality benefits over wider areas or indeed across the whole of Surrey should be considered.

AQMAs - contributory road traffic sources

- 3.21 As demonstrated in section 2.11, road traffic is one of the main contributors to air pollution in Surrey's AQMAs.
- 3.22 Despite flows of road traffic in Surrey being far higher than those experienced nationally (see [Transport Statistics for Surrey: Movement Monitoring Report 2007/8](#)), the designated AQMAs are localised to limited sections of the county and Highway Agency road networks. The exception is the borough of Spelthorne which has been designated in its entirety as an AQMA.
- 3.23 In combination with high road traffic flows, the typical road traffic conditions that can give rise to air pollution in exceedance of the national air quality objectives are as shown in Table 3 below.

Table 3: Typical road traffic conditions that can give rise to air pollution exceedances

Road traffic sources	Explanation
Narrow congested streets with residential properties close to the kerb	Concentrations are often higher where traffic is slow moving, with stop/start driving, and where buildings on either side reduce dispersion
Busy streets where people may spend 1-hour or more close to traffic	There will be some street locations where individuals may regularly spend 1-hour or more, for example, streets with many shops and streets with outdoor cafes and bars
Roads with a high flow of buses and/or Heavy Goods Vehicles	There will be some street locations where traffic flows are not necessarily high (fewer than 20,000 vehicles per day) but there is an unusually high proportion of buses and/or HGVs
Junctions	Concentrations are usually higher close to junctions, due to the combined impact of traffic emissions on two roads, and to the higher emissions due to stop start driving
Roads with significantly changed traffic flows	For instance due to new developments
Bus and coach stations	There may be exposure to air pollution at bus stations or sections of bus stations that are not enclosed, including at nearby residential properties

Source: Based on Box 5.3: Updating and Screening Checklist, from [Defra, February 2009, Local Air Quality Management: Technical Guidance LAQM.TG\(09\)](#).

4 Aim, objectives, indicators and targets

Aim and objectives

4.1 The aim and objectives for the Air Quality Strategy are:

Aim: To improve air quality in AQMAs on the county road network such that Surrey's borough and districts are able to undeclare these areas as soon as possible, with regard to other strategies and funding constraints.

Objectives:

1. Working with the accountable borough or district council for each designated AQMA, to incorporate physical transport measures in the borough or district council's Infrastructure Delivery Plan, agree options for the enforcement of existing regulations and agree options for supporting smarter travel choices, for future implementation as and when funding becomes available, in order to reduce air pollution from road traffic sources;
2. To provide assistance to the borough and district councils in producing their review and assessment reports, and Action Plan progress reports; and,
3. To consider air quality impacts when identifying and assessing transport measures in Surrey.

Indicators and targets

4.2 The borough and district councils in Surrey have been monitoring levels of NO₂ and PM₁₀ for a number of years and they report to Defra annually on air quality in their areas. These reports are the basis for the detailed assessments of problem areas and the declarations and revocations of AQMAs. The county council will continue to review such monitoring data as it works in partnership with the boroughs and districts to discharge these statutory duties.

4.3 An outcome-type indicator has been identified concerning the revocation of AQMAs located on the county road network; this is indicator AQ1 below.

Table 4: Indicators and targets for Air Quality Strategy

Indicator name	Topic Strategy promoter	Description	Target & Baseline	Rationale
AQ1 – Revocation of AQMAs located on the county road network	Air Quality	Number of AQMAs located on the county road network which are revoked	4.4 Target is: The revocation of 2 AQMAs located on the county road network during 2011-2015. Will report progress in future updates to this Air Quality Strategy.	Specific – Clear target set Measurable – Based on revocations of AQMAs by borough/district councils Achievable – This will depend on a combination of factors, including patterns of traffic growth, changes in the petrol:diesel mix of vehicles, realistic solutions and investment in the implementation of such solutions Relevant – This relates to experienced air quality on the county road network Time-based – Yes

5 Appraisal of options

5.1 Potential measures were assessed at a strategic level in a two stage process.

5.2 In stage one, potential measures were assessed as to whether they achieved one or more of the following outcomes beneficial to air quality in a typical AQMA:

- Restrain or reduce traffic volumes;
- Reduce traffic delays;
- Reduce tailpipe emissions of air pollutants per vehicle; or,
- Improve the provision of information to people on the air quality impacts of their travel choices.

5.3 In stage two, potential measures were assessed using a simple appraisal framework against the following criteria:

- Policy compatibility, by assessing the contribution measures will make to meeting policy objectives, including impacts in relation to climate change and air quality;
- Cost of implementation and requirement for future maintenance/operation, and potential funding opportunities;
- Deliverability and risk, considering the likelihood of being able to implement interventions successfully.

5.4 This analysis helped to inform the preferred strategy.

6 Preferred strategy

6.1 A twin-track preferred strategy approach to addressing air quality in Surrey is proposed, as described below.

Focus on AQMAs

6.2 The focus on AQMAs relates primarily to objectives 1 and 2.

6.3 As and when the county council contributes to the development of an Air Quality Action Plan for an AQMA, the county council will work with the borough or district council to:

- Incorporate appropriate physical transport measures in the Infrastructure Delivery Plan, and implement as and when funding becomes available;
- Identify and agree options for the enforcement of existing parking and loading regulations, and implement as and when funding becomes available;
- Identify and agree options for supporting travel choices that are better for air quality, and implement as and when funding becomes available; and,
- Consider air quality issues in planning and other processes and areas of responsibility.

6.4 The Air Quality Strategy Toolkit is shown in Table 5. Each identified measure should, given the appropriate context, achieve an outcome or outcomes which benefit local air quality in an AQMA.

- It should be noted that measures would be identified in agreement with the borough or district council. As an example, the inclusion of differential parking changes, for instance preferential parking charges for low emission vehicles, would be agreed for an individual AQMA with the appropriate borough or district council, not applied county-wide.
- This strategy document does not include quantitative estimates of the improvement to air quality that each type of measure could make, as the characteristics of each AQMA will present different opportunities and challenges for the implementation of measures.
- Defra consider that Air Quality Action Plans, as prepared by the appropriate borough or district council, should include quantification, where possible, of the improvement to air quality that each measure, proposed or implemented, is expected to have over time, with a clear date for meeting this target.⁶ The county council will assist borough and district councils to undertake such quantification for measures, where quantification is feasible. However, it should be recognised that some measures may be impossible to quantify in any meaningful way at all.⁷

⁶ Local Air Quality Management Policy Guidance (PG09) (Defra, February 2009); para 4.10.

⁷ Ibid.

- Further information on each of the bulleted elements is given below.

Incorporating physical transport measures in the Infrastructure Delivery Plan

- 6.5 Option appraisal of potential physical transport measures will be carried out. The county council, working in partnership with the borough or district council, will incorporate agreed physical transport measures and in the appropriate borough/district Infrastructure Delivery Plan. These will subsequently be brought forward as and when funding becomes available.
- The county council will closely track ongoing air quality monitoring in order to determine whether or not there is a need to implement further measures and interventions. The county council will be minded to bring forward lower cost transport measures and interventions first.
- 6.6 The county council does not intend to produce an Infrastructure Delivery Plan in its role as the mineral planning authority for Surrey, as, in general, mineral sites have unique, case by case infrastructure requirements.

Enforcement of existing parking and loading regulations

- 6.7 A review of the enforcement of existing parking and loading regulations will be undertaken. Agreed options can be implemented as and when funding becomes available.

Supporting travel choices which are better for air quality

- 6.8 A review of behaviour change-type options for supporting travel choices that are better for air quality will be undertaken. Agreed options can be implemented as and when funding becomes available.

Planning and other processes and responsibilities

- 6.9 The county council will support the boroughs and districts in considering air quality issues in planning processes, and in relation to other areas of responsibility such as taxi licensing procedures. The county council will continue to consider air quality issues in its role as the minerals and waste planning authority and as a consultee on environmental permits in the Environment Agency's waste regulation role.
- 6.10 The county council will also work with other partners and stakeholders as required, such as neighbouring authorities and developers.

Table 5: Air Quality Strategy Toolkit

Measures	Contribution to Surrey Transport Plan objectives				Strategy which is the main promoter of the measure	Achieves outcome which benefits local air quality in an AQMA		
	Effective	Reliable	Safe	Sustainable		Restrain or reduce traffic volumes in AQMA	Reduce traffic delays in AQMA	Reduce tailpipe emissions in AQMA
Infrastructure Measures								
Transport interchange infrastructure	✓	✓		✓	Local Bus	✓		
Tree planting and green roofs within schemes				✓	Air Quality	✓		
New and/or improved cycle lane	✓	✓	✓	✓	Cycling	✓		
New and/or improved cycle track	✓	✓	✓	✓	Cycling	✓		
Cycle parking	✓		✓	✓	Cycling	✓		
Park and Ride	✓	✓			Local Bus	✓		
Park and Stride	✓	✓			Walking	✓		
Parking and loading restrictions	✓	✓			Parking	✓	✓	
Removal/installation of traffic signals	✓	✓	✓	✓	Congestion		✓	
Infrastructure to support use of hybrid/electric vehicles	✓			✓	Climate Change			✓
Management of Infrastructure								
Urban Traffic Management and Control (UTMC)	✓	✓		✓	Congestion		✓	
Civil parking enforcement officers	✓				Parking		✓	
CCTV parking enforcement	✓				Parking		✓	
Coordination of roadworks	✓	✓			Congestion		✓	
Freight Quality Partnerships	✓	✓	✓	✓	Freight	✓	✓	✓
Police enforcement including speed limits	✓	✓	✓	✓	Road Safety			

Measures	Contribution to Surrey Transport Plan objectives				Strategy which is the main promoter of the measure	Achieves outcome which benefits local air quality in an AQMA		
	Effective	Reliable	Safe	Sustainable		Restrain or reduce traffic volumes in AQMA	Reduce traffic delays in AQMA	Reduce tailpipe emissions in AQMA
Promotional and Behavioural Measures								
Car share database	✓			✓	Travel Planning	✓		
Car clubs	✓			✓	Travel Planning	✓		
School travel planning	✓	✓	✓	✓	Travel Planning	✓	✓	
Workplace travel planning	✓	✓	✓	✓	Travel Planning	✓	✓	
Promotion of eco-driving			✓	✓	Climate Change			✓
Encourage internet use to facilitate access to services	✓			✓	Travel Planning	✓		
Home working		✓		✓	Travel Planning	✓		
Information Provision								
Advisory signage (e.g. turn off engine at level crossings)	✓			✓	Air Quality			✓
Pricing Measures								
Differential parking charges				✓	Parking			✓
Other Measures (including Land Use Measures)								
Working with partners to consider air quality issues:						✓	✓	
<ul style="list-style-type: none"> in Local Development Framework process to plan location and type of development and local infrastructure improvements and controls, 						✓	✓	
<ul style="list-style-type: none"> in identification of appropriate developer-funded mitigation schemes, 						✓	✓	
<ul style="list-style-type: none"> in providing guidance on parking provision 						✓	✓	
Encourage boroughs and districts to consider adopting minimum emissions standards or vehicle age restrictions into taxi licensing procedures								✓

Synergies with other strategies to deliver countywide air quality improvements

- 6.11 Countywide air quality improvements will be delivered through other [Surrey Transport Plan strategies](#) and other county council strategies when and where these tend to restrain traffic growth, reduce vehicle delay, reduce vehicle emissions and improve the provision of travel information to people on the air quality impacts of their travel choices. This relates primarily to objective 3.
- 6.12 The strategies which deliver these outcomes include:
- [Congestion Strategy](#)
 - [Cycling Strategy](#)
 - [Freight Strategy](#)
 - [District/Borough Local Transport Strategies](#)
 - [Parking Strategy](#)
 - Passenger Transport Strategy: [Part 1 - Local Bus](#) and [Part 2: Information](#)
 - [Climate Change Strategy](#)
 - [Travel Planning Strategy](#)
- 6.13 In future, infrastructure to support use of hybrid/electric vehicles could become a key measure for reducing air pollution in Surrey and the designated AQMAs, through a reduction in tailpipe emissions of such vehicles. The [Climate Change Strategy](#) is the main promoter of this measure. The county council will develop proposals and funding bids for electric vehicle recharging points, determining appropriate locations e.g. workplaces, public car parks and on-street, future-proofing infrastructure as far as possible and encouraging take-up through demonstration schemes and promotional campaigns.

7 Delivery of the preferred strategy

Funding

- 7.1 Funding sources for the delivery of the preferred strategy will be drawn from:
- LTP capital funding;
 - Revenue funding; and,
 - Other funding sources, including Local Enterprise Partnership funding, development funding and potential opportunities presented by future central Government grants or challenge competitions.
- 7.2 The county council will work with partners, including the boroughs and districts, to seek to secure funding to deliver this strategy.

Delivery in partnership

Boroughs and districts

- 7.3 The statutory duties of Surrey's boroughs and districts and the county council for air quality were explained in section 0.
- 7.4 The county council will continue to work in partnership with the boroughs and districts to discharge these statutory duties. Specifically, the county council will:
- Provide timely responses to all AQMA-related consultations received from the borough and district councils;
 - Seek to meet reasonable requests for traffic and other data from the borough and district councils;
 - Incorporate appropriate physical transport measures in infrastructure schedules (subject to funding being available), agree options for enforcing existing parking and loading regulations, agree options for supporting travel choices that are better for air quality and consider air quality issues in planning and other processes and areas of responsibility; and,
 - Bring air quality-related proposals forward to the appropriate member committees (e.g. the relevant local committee).

Highways England

- 7.5 As set out in section 0, Highways England, as the organisation responsible for managing the national strategic road network, is the highway authority for those AQMAs in Surrey which are centred on the motorways and trunk roads that pass through Surrey. A number of the AQMAs in Surrey are on the strategic road network, as shown in Table 1.
- 7.6 In conjunction with the relevant lead borough or district council, the county council will continue to work in partnership with the Highways Agency to address air pollution.

7.7 Highways England is also represented on the board of the Transport for Surrey Partnership, as described below.

Appendix 1: National air quality objectives

Pollutant	Objective	Averaging Period	Date to be achieved
<i>For the protection of human health</i>			
Particulate Matter (PM ₁₀)	50µg/m ³ , not to be exceeded more than 35 times a year	Daily mean	31/12/2004
	40µg/m ³	Annual mean	31/12/2004
Particulate Matter (PM _{2.5}) Exposure reduction	25µg/m ³	Annual mean	2020
Nitrogen Dioxide	200µg/m ³ not to be exceeded more than 18 times per year	Hourly mean	31/12/2005
	40µg/m ³	Annual mean	31/12/2005
Ozone	100µg/m ³ not to be exceeded more than 10 times per year	8 hour mean	31/12/2005
Sulphur dioxide	266µg/m ³ not to be exceeded more than 35 times per year	15 minute mean	31/12/2005
	350µg/m ³ not to be exceeded more than 24 times per year	Hourly mean	31/12/2004
	125µg/m ³ not to be exceeded more than 3 times per year	Daily mean	31/12/2004
Polycyclic aromatic hydrocarbons	0.25ng/m ³ B[a]P	Annual mean	31/12/2010
Benzene	16.25µg/m ³	Running annual mean	31/12/2003
	England & Wales: 5µg/m ³	Annual mean	31/12/2010
1,3-butadiene	2.25µg/m ³	Annual mean	31/12/2003
Carbon monoxide	210mg/m ³	Max daily running 8 hour mean	31/12/2003
Lead	0.5µg/m ³	Annual mean	31/12/2004
	0.25µg/m ³	Annual mean	31/12/2008
<i>For the protection of vegetation & ecosystems</i>			
Nitrogen oxides	30µg/m ³	Annual mean	31/12/2000
Sulphur dioxide	20µg/m ³	Annual mean	31/12/2000
	20µg/m ³	Winter mean	31/12/2000
Ozone: protection of vegetation & ecosystems	Target value of 18,000µg/m ³ to be calculated from 1 hour values from May to July, and to be achieved so far as possible by 2010	Average over 5 years	01/01/2010

Source: Table 2, [Air Quality Strategy for England, Scotland, Wales and Northern Ireland \(Defra, July 2007\)](#)

Appendix 2: Health and environmental effects of nitrogen oxides and particulate matter

The air pollutants which cause exceedances of the national air quality objectives in Surrey are nitrogen oxides (NO_x) and particulate matter (PM). A summary of each is given below.

Pollutant	Health effects	Environmental effects	Road traffic contribution
Nitrogen oxides (NO _x – made up of NO and NO ₂)	<ul style="list-style-type: none"> Can cause inflammation of the airways, affect lung function and respiratory symptoms. Involved in the formation of PM and ozone. The effects of long-term exposure are less certain than the effects of shortterm exposure. 	<ul style="list-style-type: none"> Oxides of nitrogen contribute to smog formation and acid rain and indirectly, through reactions with other chemicals in the air, produce powerful greenhouse gases. Nitrogen deposition (from NO_x or other emissions) can enrich soils causing changes in species composition particularly for ecosystems that are nitrogen limited. This process is known as eutrophication. This is a key consideration for Surrey as the county contains a number of nature conservation sites of national and international importance which are designated for their lowland heathland, one of the ecosystems particularly sensitive to this type of deposition. 	<ul style="list-style-type: none"> Road transport is responsible for approximately 40% of the NO_x produced in the UK, most of which is oxidised in the air to create nitrogen dioxide (NO₂). Research suggests that catalytic converters fitted to vehicle exhausts, designed to reduce emissions of particulate matter, are resulting in an increase in emissions of nitrogen dioxide.
Particulate matter (PM _{2.5} and PM ₁₀ , secondary PM)	<ul style="list-style-type: none"> Short and long term exposure can worsen respiratory and cardiovascular illness and increase mortality. 	<ul style="list-style-type: none"> Particulate matter can combine with other atmospheric chemicals to produce nitrates and sulphates, which are associated with the acidification of water courses. 	<ul style="list-style-type: none"> Road vehicles emit about a quarter of the primary particle air pollution in the UK. Particles may be emitted from the exhaust, disturbed from the road surface or generated as abrasion products from tyre, brake and road wear. Diesel exhaust

			contains much higher particle concentrations than petrol exhaust.
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