

6 Air quality

6.1 Where do we want to be?

6.1.1 Air quality limits

Croydon should enjoy fresh clean air that meets European Union limits for the variety of pollutants that are considered harmful to human health and the environment. Along with many other European cities, parts of London do not meet EU targets for the most harmful pollutants nitrogen dioxide (NO₂) and fine particulate matter (PM10).

Croydon Council in its most recent Air Quality Action Plan [Croydon Council, 2007] and Environmental & Climate Change Strategy [Croydon Council, 2009b] sets out some ambitious reduction targets for these Greenhouse gases and those emissions harmful to human health. With transport activity being a major contributor of both pollutants, this Strategy supports measures to achieve the objectives set out in the above two policy documents.

Transport's contribution to poor air quality is due to the amount of traffic, how vehicles are driven, whether vehicles can flow freely or are constrained by congestion and the type of vehicles (size, emissions standard built to, how it is maintained etc).

The aim of this Strategy is to reduce transport related emissions through measures that discourage the need to travel but also encourage a switch from the private car use to more sustainable modes of transport. In recognition that the private car/ fleet vehicle use will continue to be major component of Croydon's transport network, a move towards low/ zero emission vehicles should be encouraged. These goals are very much interrelated with those stated in the Travel Demand section but specific to improving air quality within the Borough.

6.1.2 Road traffic congestion

Levels of road traffic congestion within the Borough need to be significantly reduced with a focus on those strategic routes where congestion and air quality are currently at unacceptable levels. To achieve this, improvements are required to the highway network to keep traffic moving but progressed in parallel with measures to discourage car use. These measures are however, counter productive, as better roads attract more car trips. Without a road charging system (or some other pricing mechanism) vehicle delay will remain a key disincentive of car use and so air quality improvement will also depend on cleaner engine technologies.

6.1.3 Vehicles emissions

Through the development of new engine technologies the Council should in the short term support the adoption of low emission petrol/ diesel/ hybrid vehicles by local residents and within the Councils own fleet of vehicles. Towards the medium to long term a move towards electric and fuel cell powered vehicles should be supported.

Vehicle emission reduction must be opportunity led, with the Council supporting TfL initiatives to reduce bus and taxi emissions but also national schemes such as any car scrapage initiative; tax breaks for the purchase of electric vehicles and the implementation the electric vehicle charging points (EVCP). Through car parking⁴ controls the Council has a mechanism with which to encourage the use of lower emission vehicles through Carbon tiered residential parking scheme or Carbon metered parking for Pay & Display bays.

⁴ Car parking is a cross cutting theme in this Strategy. Its inclusion within this Air Quality section relates only to how parking controls can be used to encourage greater use of zero or low emission vehicles.

In the longer term the Council should establish it self as a flagship Borough for the use of hydrogen as a fuel.

6.1.4 Car dependency

Support for new engine technologies should be counterbalanced with an overriding need to reduce car dependency in everyday life. Initiatives to achieve this have already been disused in the Travel Demand section and remains a key objective of the modal strategies that follow this chapter.

To reduce car dependency, the Council should produce revised planning guidance that promotes sustainable growth in terms of economic development and land-use planning [TD.12]. This should encourage more mixed use development in areas of high public transport accessibility. The uptake of travel plans should be increased with improved monitoring arrangements [TM.04 to TM.09].

Public transport should be easy to use, accessible, safe, reliable and affordable while awareness campaigns should raise awareness of how transport and travel decisions affect the environment with which they live in. Walking and cycling trips should be encouraged for all short trips within the Borough.

6.1.5 Enforcement

The Council should continue to support London's Low Emission Zone (LEZ) by enforcing vehicle emission standards at roadside checks and imposing tighter standards on air pollution emissions from construction sites.

6.2 Where are we now?

6.2.1 Council initiatives

Croydon currently achieves the national air quality objectives for all the pollutants included in Local Air Quality Management Plan (LAQMP), with the exception of the annual mean objective for nitrogen dioxide close to busy roads. Although modelling undertaken in 2003 predicted that targets for fine airborne particles (PM₁₀) were also likely to be exceeded recent monitoring undertaken as part of the Mayor of London's emerging air quality strategy [Mayor of London, 2010] suggests for Croydon this is not the case.

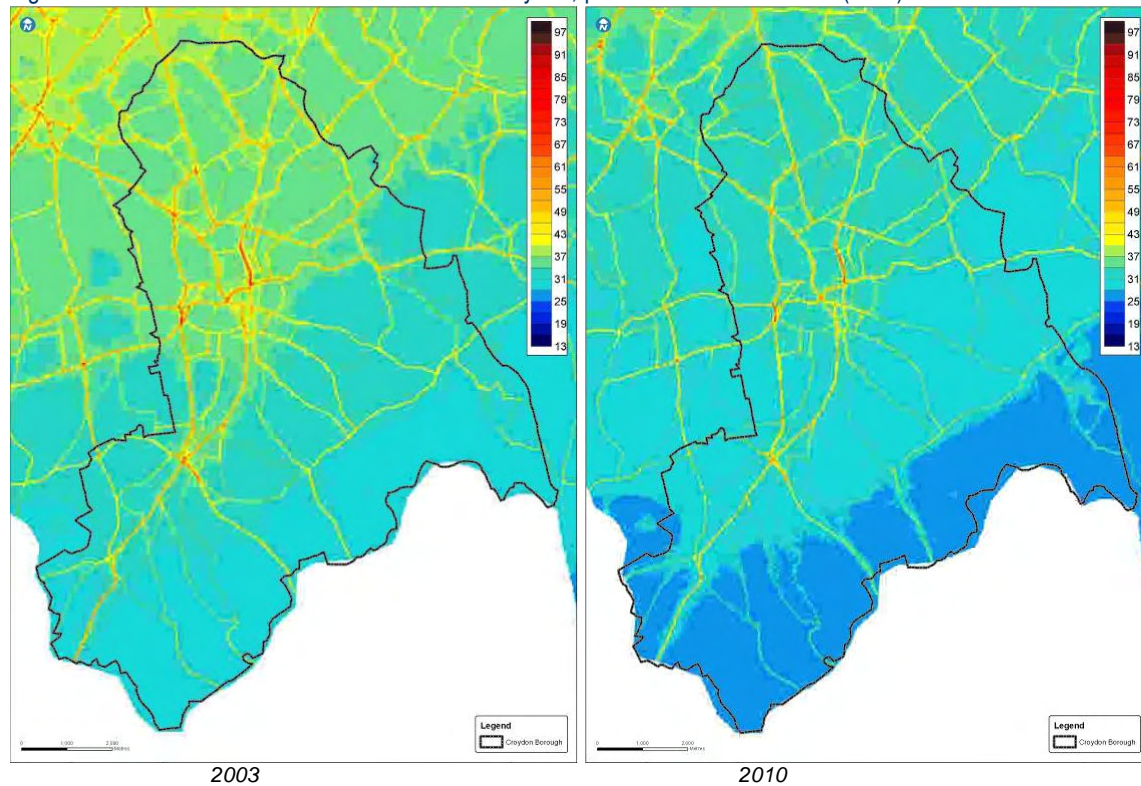
Air quality varies from year to year due mainly to weather conditions but taking this into account; nitrogen dioxide concentrations across the Borough have remained broadly unchanged since monitoring started. This is not due to a lack of effort on Croydon's part, as the Council was awarded Beacon status for delivering cleaner air quality in 2007-2008. Croydon has been innovative in terms of the dissemination of air quality data. It provides up to date information on air quality in the Borough via a free hotline and a forecast of future air quality on the intranet. The Council has pioneered the airTEXT service which sends free text, voice and e-mails to alert people with asthma, bronchitis, emphysema, heart disease and angina of poor air pollution.

Croydon declared an Air Quality Management Area (AQMA) covering the whole Borough in April 2003 for exceedence of the annual mean NO₂ objective. Monitoring indicates concentrations to be still well above the annual mean objective at roadside locations with much of Croydon's poor air quality linked to high levels of traffic congestion. This gives urgency to all measures needed to reduce car dependency across the Borough.

Figure 6-1 presents the results of the modelling Croydon commissioned in 2006 which predicted annual average nitrogen dioxide concentrations in 2003 and 2010 across the Borough. Predicted levels for 2010 indicate that concentrations are likely to improve but not by a substantial amount. The figures show those areas where the National Air Quality Objective (NAQO) is exceeded and relate to locations of major road congestion within the Borough. Particularly sensitive areas are located at:

- the Fiveways and Croydon Road junctions with the A23;
- the CMC (Wellesley Road & Croydon Flyover);
- South Croydon approaches to the CMC (e.g. the Old Town roundabout);
- London Road up to Thornton Heath Pond;
- The Lombard roundabout and Thornton Heath Pond on the A23.
- Whitehorse Road;
- Thornton Heath High Street and Parchmore Road; and
- Mitcham Road (A236) and St. James Road (A222).

Figure 6-1: Annual av. NO₂ concentrations within Croydon, predicted for 2003 & 2010 (2006)



Areas in yellow and red represent concentrations of Nitrogen Dioxide over of the National Air Quality Objective

It should be noted that whilst the model predicted improvements between 2003 and 2010 the nitrogen dioxide monitoring data indicates this has not occurred. Since this modelling was undertaken, Defra has issued new guidance with revised estimates of the background concentrations and methodologies for estimating nitrogen dioxide levels. It is likely that the 2003 maps therefore provide a good indication of current air pollution hotspots in the Borough.

Croydon has published two Air Quality Action Plans (in 2002 and 2007) and are currently preparing a third, due to be published in 2010. The first action plan states that 67 per cent of nitrogen oxides within the Borough originated from road sources and it has been predicted that if all the measures in the 2007 action plan were satisfactorily implemented annual mean concentrations of NO₂ will decline by up to 4 g/m³ by 2010. These impacts are likely to be highly localised, at the roadside.

The 2003 modelling suggests that around half of the nitrogen dioxide measured originates from outside Croydon and so the Borough anticipates that the measures proposed by the two AQAP will make little impact on background pollution levels.

There is a limit to the effect that local measures can have on air pollution levels, and the Council accepts that it is unlikely that the measures in the 2007 Action Plan [Croydon Council, 2007] will achieve the air quality improvements needed.

Discussions with the Croydon Air Quality Officer confirmed that certain initiatives such as airTEXT and measures to persuade drivers to switch off their idling engine or face a fixed penalty charge have been successful and easy to implement. Other initiatives have been less successful. For example, the use of hydrogen fuel cells in buses has been hindered by the technology being still in its infancy, and the banning of bonfires has proven difficult to implement.

6.2.2 London Low Emission Zone (LEZ)

The majority of Croydon lies within the London Low Emissions Zone (LEZ)⁵ and the Council welcomed the proposed change to the London Low Emission Zone (LEZ) which would have extended the Euro III standard for particulate emissions (PM₁₀) for lorries, buses and coaches to include large vans (LGVs) and minibuses from October 2010. This change has however, been postponed by the Major (until 2012) due to concerns that the additional cost to operators of complying with extended LEZ, would be detrimental to the wider economy.

6.2.3 Policy guidance

The Borough has published policy guidance [Croydon Council, 2009c] that gives advice to developers on air quality mitigation measures. This includes the use of S106 agreements to support measures in the air quality action plan, the provision of refuelling facilities for cleaner/renewable fuels and other low emissions measures such as the provision of car clubs or car-free developments while extending the uptake of Travel Plans.

Taxis in London are covered by a TfL taxi emissions strategy that was introduced in two phases between July 2006 and July 2007. The effect of this strategy is that all London Taxi International (LTI) taxis registered before 1st January 2002 were required to bring their cab to Euro 3 standard or better for Nitrous Oxides and PM₁₀ particulates. Furthermore, since June 2008 new PCO taxi licenses have only been issued to vehicles that meet the Euro 3 standard. Hence the Euro 3 standard now applies to all taxis in London. The LTI TX14 taxi introduced in 2007 complies with the Euro 4 emissions standard. The timescales for making the Euro 4 standard mandatory are not known.

⁵ The London Low Emission Zone covers most of Greater London, excludes the M25 but is operational 24 hours a day, 365 days a year. Its aim is to improve air quality within London by discouraging the worst polluting vehicles from entering the Zone through a charging mechanism. The LEZ requires vehicles to meet Euro III standards for particulate emissions and this is enforced using fixed and mobile cameras that read vehicle registration plates and check these against a database of registered vehicles which meet the LEZ emission standards. Vehicles that don't comply or qualify for an exemption or discount must pay a daily charge which for affected vehicles is £200 for lorries and £100 for vans. At present the London LEZ only applies to large diesel-engined vehicles. All cars, small vans and motorcycles are excluded from the scheme. The regulations relating to large vans and minibuses has been suspended until 2012.

6.3 What are the options for change?

6.3.1 Overview

Significant reductions in emissions over a large area of London and beyond are required to ensure that the national objectives and EU limit values are achieved in Croydon. The Council will therefore have to continue to work pro-actively and in partnership with other authorities to reduce emissions in the area.

Without any increase in emissions, Croydon should achieve the EU limits values for airborne particles (PM₁₀) but with the extent of development proposed within the CMC, borderline routes such as the Wellesley Road and Mitcham Road could in future exceed these limits unless mitigation measures are taken. Achieving the annual mean nitrogen dioxide objective has proved to be difficult across much of London. Modelling shows that concentrations along nearly 1400 km of roads in Greater London will exceed this objective in 2010 and over 800 km in 2015 (Defra, 2009).

The key to improving air quality is to reduce traffic congestion on key routes across the Borough but this will only be achieved with London wide initiatives. The Mayor of London's draft Air Quality Strategy [Mayor of London, 2010] is proposing a number of transport policies to make London's transport network cleaner and greener. These proposals can be summarised as:

- Ensuring all London buses meet Euro IV emissions standards for both NO_x and PM₁₀ by 2015.
- Introduction of a 15 year rolling age limit from 2012 and a 10 year rolling age limit in 2015 for the London taxi fleet with future aspirations to work with industry to develop a zero-emission taxi by 2020.
- Introduction of 10 year rolling age limit from 2012 for London's Private Hire Vehicle (PHV) fleet.
- Include larger vans and minibuses in the London LEZ from 2012.
- Introduce a new NO_x standard for the LEZ from 2015 that will bring all lorries, buses and coaches to Euro IV standards across London.
- Reducing emissions from freight vehicles by promoting Delivery Service Plans.

The Mayor of London's draft Air Quality Strategy proposes to working with Boroughs to implement targeted action plans at air quality priority locations. These include measures such as: power washing and applying dust suppressants, deploying low emission buses, new green infrastructure, traffic management measures to smooth vehicular flows and street enhancement schemes.

Overall poor air quality within London is most significant in central areas and it is suspected that the above interventions will focus on these areas. Croydon however, has hot spots of very poor air quality and with the level of growth predicted over the next 20 years; each of these areas faces significant challenges if the impact of travel on air quality is to improve from current levels.

Areas for the Council to focus on are described below.

6.3.2 Air quality limits [AQ.01]

The Mayor of London has announced that this will be extended to include large vans and minibuses from 2012. Extending the LEZ in this way (or the stringency of the emission requirements) would benefit Croydon significantly due to Croydon's strategic road network (areas where air quality is poorest) being a key route for freight movement within and through the Borough. The A23 and A232 would be significant beneficiaries of any scheme that reduced the number of high polluting vehicles.

The Council could introduce its own LEZ across the Borough or over certain areas such as the CMC. Although, potentially difficult the introduction of a local LEZ, possibly with a different name, would be a powerful instrument for promoting a low emission strategy for new development and growth such as the CMC.

6.3.3 Traffic congestion [AQ.02]

Air quality targets for NO₂ are not being met within the CMC and in northern areas of the Borough. This has been the case for at least 6 years and will continue without a significant reduction in road traffic congestion. An aim of this Strategy is to reduce congestion levels by encouraging people to walk, cycle or use public transport rather than use the car. In addition to this, the General Traffic section focuses on measures to improve the efficiency of the road network and thereby reduce the risk of stop-start traffic conditions which increases vehicle emissions. Measures include removing bottlenecks to traffic flow, better co-ordination of traffic signals and initiatives to limit the impact of road works.

The risk of reduced levels of congestion is that if demand for car based trips remains, additional car trips will be generated, negating the initial air quality benefits. Reducing the capacity of the highway network for general traffic is unlikely to be achievable in the short to medium term and politically may not be acceptable at any time.

Air quality improvements may therefore have to rely on other interventions such as the uptake of more low/ zero emission based vehicles. But with this unlikely to have a significant impact on air quality over the short to medium periods of this Strategy there will be increasing pressure to reduce the impacts of traffic congestion on air quality. The London Air Quality Strategy (Mayor of London, 2010) proposes some drastic measures for central London where EU-mandated (Directive 2008/50/EC) maximum levels for particulate (PM10) and NO_x are often breached. The Council should investigate how applicable these options would be for critical areas of Croydon.

6.3.4 Vehicle emissions [AQ.03]

Cars

Measures to promote and encourage the use of low/ zero emission vehicle are outlined below. These could be both new vehicles (which due to the increasing stringency of the EU emission limits have become cleaner over time) and retro-fitted vehicles (e.g. diesel vehicles fitted with selective catalytic reduction technology to reduce emission of nitrogen oxides).

Measures, to encourage the use of low/ zero emission vehicles could include:

- local publicity campaigns on the impact of traffic on air quality and human health;
- preferential parking for low emission vehicles in residential areas and council car parks;
- emission-based car parking charges in controlled parking zones and council owned car parks;
- work with the owners/ operators of privately owned car parks to introduce revenue neutral emissions-based parking charges;
- provision of electric charging infrastructure in strategic locations⁶;
- require car clubs introduced as part of a new development, or supported in any way by the Council, to only use low emission vehicles;
- require the Council car fleet to be low emission; and

⁶ The Mayor of London has pledged to deliver 1,600 charge points over the next 12 months (2010/11) rising to 7,600 by 2013, with an aim to reach 25,000 by 2015.

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- require service providers as part of their contract to use low emission vehicles.

All new developments over a specified size should be required to adopt measures to promote and encourage the use of low/ zero emission vehicles within the Borough. For residential and employment development, this could include, as a minimum, the requirement of information leaflets for new residents/employees on low emission vehicles linked to electronic information media and the provision of electric vehicle recharging points for cars. For employment development there could also be a requirement, within the Travel Plan, for deliveries to be in low emission vehicles. Low emission vehicles would need to be carefully defined to ensure the effectiveness of this measure over the long term.

It may be possible for contributions to be sought from developers of smaller sites to fund installation of charging points at convenient locations in the town centre or at employment areas. Intra-authority partnerships would be beneficial to ensure that a usable network of low emission fuelling points is established in at least the southern part of Greater London and in parts of Kent, Sussex and Surrey.

Any UK government incentives or grants to encourage the uptake of low emission vehicles need to be appropriately publicised across Croydon to raise awareness of the benefits.

To further encourage the uptake of low/ zero emission vehicles, Croydon could investigate the legality of using financial contributions from developers to fund improvements to the local authority's own fleet. This could help improve the visibility of low emission vehicles within the Borough and may encourage neighbouring authorities to invest in these vehicles.

Goods and delivery vehicles

Introducing a LEZ for the CMC or parts of the A23 where air quality may be unrealistic due to the cost of operating such a system and its implications on the London LEZ. If air pollution in parts of Croydon is as critical as those in central London then the Council should lobby TfL for funds to help improve conditions.

Buses

TfL is already committed to introducing hybrid buses from 2012 which it is doing so on priority basis of routes with the poorest air quality. It is understood that much of Croydon's bus network is due to be retendered and gives the Council an opportunity to ensure Croydon's fleet benefits from cleaner engine vehicles.

The new bus for London, due to enter service in 2012, will incorporate the latest hybrid technology and will be both 40 per cent more fuel efficient than conventional diesel buses and 15 per cent more fuel efficient than current London hybrid buses.

Taxi services

Air quality issues can be addressed by establishing minimum emission standard for taxis within the Borough and encouraging use of alternative low emission fuels. These standards should include:

- Minimum Euro 4 standard for all taxis licensed to operate within the Borough;
- Incentives to encourage early adoption of diesel or petrol electric hybrid vehicles.

The expected introduction of Euro 5 in 2014 provides an impetus to define milestones for achieving incremental reductions in taxi emissions.

Private hire vehicles

Now that TfL licenses private hire vehicles/ drivers there may be an opportunity in the future to specify maximum vehicle emissions.

6.3.5 Awareness & training campaigns [AQ.04]

Media campaigns can be an effective method of raising awareness transport related emission and the link with climate change and respiratory health.

The way vehicles are driven and maintained impact on their emission characteristics and therefore the following have a role to play:

- provision and/ or a subsidy for low emission driving lessons; and
- publicity campaigns, possibly in association with local vehicle repairers that stress the importance of vehicle maintenance for reducing emissions.

Whilst better driving techniques would have a role to play in reducing vehicle emissions, their combined importance is small compared to measures that significantly reduce traffic and so need to be part of a wide package of measures to improve air quality.

6.3.6 Noise levels [AQ.05]

The Environmental Noise Directive requires all member states to produce strategic noise maps of agglomerations showing major road, rail, air and industrial noise sources. As part of the ongoing implementation of this Directive, Defra will be required to identify candidate noise management areas and quiet spaces. Candidate noise management areas are likely to be prioritised based on noise levels and the number of people exposed to unacceptable noise levels. Action plans to reduce exposure to high noise levels in these areas will also be required in the future, and therefore this will become an increasingly important driver for change within Transport Strategy development.

