Swindon Borough Council
Air Quality Action Plan

A Consultation Document

December 2018

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HAVE YOUR SAY

This draft Air Quality Action Plan lists the things we are planning to do and will continue doing on Kingshill Road to improve air quality and improve our residents' health and wellbeing. We are now asking for your help and input to let us know what you think of our plan and if you think there is more we can do as a Council.

Copies of the document will be available in all of our libraries.

How can I comment?

Your comments are welcome on all parts of the draft.

You can comment online (see link below) but if you would rather post or email your comments to us we have provided questions at the end of this document to help structure your response. If you are responding using a hardcopy, please feel free to use additional paper if needed.

Online www.swindon.gov.uk/airquality

Or Post your comments to:

Air Quality Consultation
Public Health,
Swindon Borough Council,
Floor 3, Wat Tyler West,
Beckhampton Street,
Swindon
SN1 2JG

When can I comment?

This consultation will run from **21st December 2018 and all comments are due by 3rd February 2019**.

The paper will also be circulated to statutory consultees and partner organisations including: Environment Agency; Highways England; Neighbouring Local Authorities; Other public authorities as appropriate; and Bodies representing local business interests and other organisations as appropriate.

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Executive Summary

This action plan sets out the measures Swindon Borough Council intends to take to improve the air quality on Kingshill Road which was declared an Air Quality Management Area in February 2018 after high readings of Nitrogen Dioxide were recorded.

The main cause of the high levels of pollution recorded on this particular street is the high number of vehicles using the road, the closeness of the houses to the road; the orientation of the houses on the road sheltering the road from prevailing winds and the topography of the road.

The only current solution would be to drastically reduce vehicle numbers. A wide range of options have been considered but due to the limited influence and control local authorities have over many contributing factors, and the negative impacts many of the potential solutions would have, there is not yet a complete solution. Options considered have included closing the road, diverting traffic and changing the road layout.

Our proposal is to introduce a number of measures including signage, restricting the use of the road by heavy goods vehicles, and encouraging alternative transport to reduce the amount of Nitrogen Dioxide while at the same time doing more work to explore other potential solutions.

The Council will also lead by example by looking to replace its fleet with electric vehicles and also putting air quality at the forefront of future planning decisions and in plans for the town centre.

Introduction

This report outlines the actions that Swindon Borough Council aims to investigate and implement between 2019 and 2024 in order to contribute to a reduction in concentrations of, and exposure to, Nitrogen Dioxide air pollution especially in the recently declared Air Quality Management Area (AQMA) on Kingshill Road. An improvement in air quality will positively impact the health and quality of life of residents and visitors to the borough, whilst maintaining sustainable economic growth.

This draft action plan has been developed in recognition of the legal requirement of the local authority to work towards Air Quality Strategy (AQS) objectives under Part IV of the Environment Act 1995, relevant regulations made under that Part, and to meet the requirements of the Local Air Quality Management (LAQM) statutory process.

The Air Quality Action Plan (AQAP) will be monitored regularly and subject to an annual review. Progress on measures set out within the AQAP will be reported on annually within our Air Quality Status Reports (ASR).

This action plan was developed in conjunction with local residents, businesses and elected members. It was developed through a community engagement event and engagement events with elected members. This action plan was co-ordinated by the Air Quality Steering Group.

The main driver of the air quality issues in Swindon is road transport related, and so we all have a role to play in improving the quality of the air we breathe. Using our cars less, walking and cycling more and not running engines when stationary can make a big difference. All Swindon residents need to be pulling in the same direction to improve our air quality. We look forward to your ideas and feedback on our draft AQAP.

Summary of the current air quality in Swindon

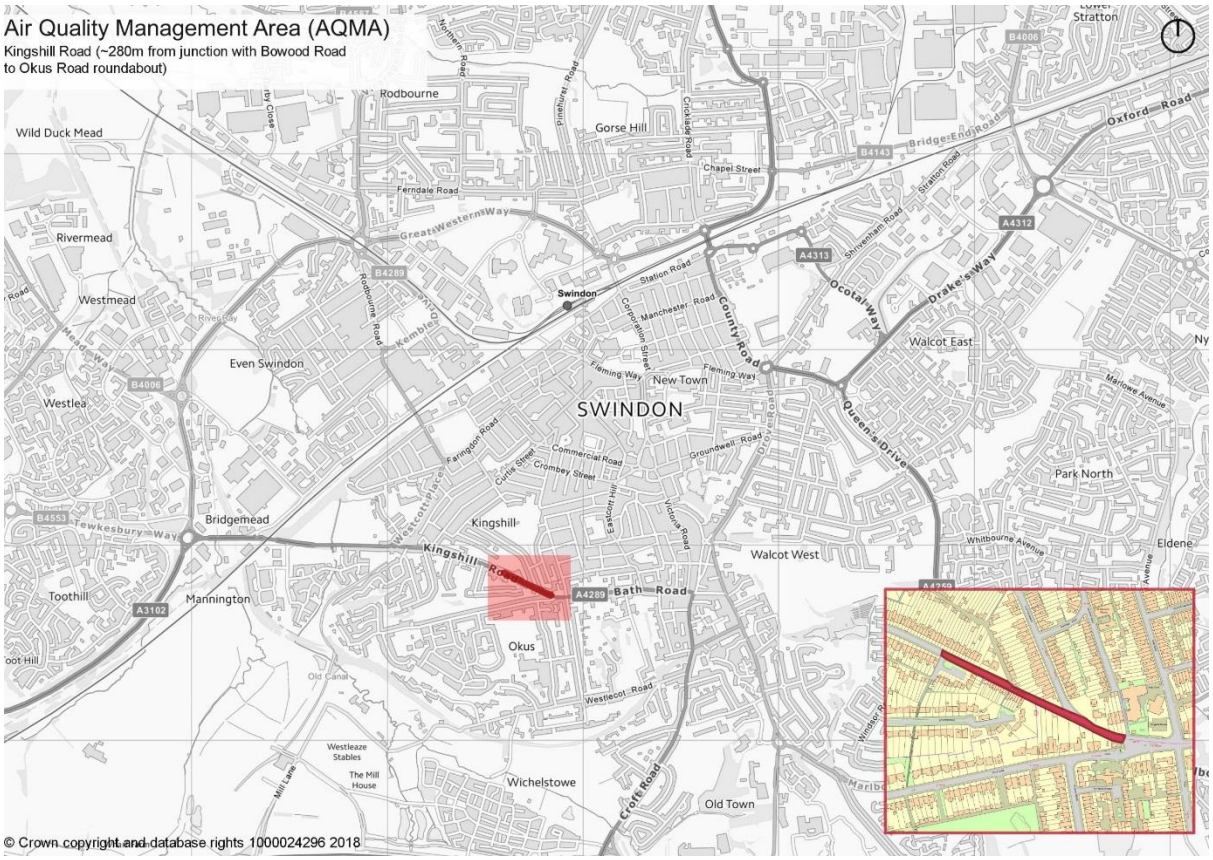
Air quality within the Swindon Borough is generally very good.

In common with many towns and cities however, there are some discrete parts of the town where air quality is poorer. These areas are generally associated with congested traffic routes, and where dwellings are close to the kerb; creating ‘street canyons’. Where a ‘street canyon’ exists, vehicle exhaust gases do not disperse well.

One such area in Swindon is on Kingshill Road (Figure 1), and here it has been necessary to declare an Air Quality Management Area (AQMA). This AQMA was declared in February 2018, and covers a circa 280m stretch of the road south east of the junction, with Bowood Road to the roundabout with Okus Road. The pollutant of concern here is Nitrogen Dioxide (NO_2), and the limit value which has been exceeded is the annual average limit of 40mcg/m3.

Monitoring of air quality on this stretch of Kingshill Road indicates that the level of NO_2 at the façade of some dwellings on Kingshill reaches 56 mcg/m^3. NO_2 exists in the air everywhere as a background pollutant, but here heavy traffic flows emit more, and this has led to the increased levels. The road is also oriented away from prevailing winds, is uphill and closely bound by trees and houses, so the gas cannot disperse well.

Figure 1 Map showing the Air Quality Management Area declared in Swindon



There are other areas in Swindon with measured levels of Nitrogen Dioxide approaching the limit levels, such as Rodbourne Road/Iffley Road junction and the western end of Manchester Road near the bus station. We maintain a close watch on these locations.

There is no clear overall trend in the levels of NO_2 across Swindon. Some sites experienced a slight increase, but others experienced slight improvements. Levels of NO_2 around major roads continues to respond to rising levels of traffic, the improvement of vehicle emissions over time, and/or the constant evolution of the town's road network.

Although new vehicles have become more efficient and their emissions much less harmful, vehicle numbers increase year on year, and it takes a number of years for people to replace their older vehicles. The continuing improvements in vehicle emissions, and the move to alternative fuel vehicles is expected to somewhat offset the rise in the number of vehicles and of miles travelled, but the pace of these changes is very difficult to predict.

Swindon also has a great deal of major development either planned or currently being delivered. Levels of pollution will also respond to these changes on a continuing basis, and new developments are designed to account for what is now known of the effects of heavy road traffic. We do not, therefore, expect any new areas of concern to be identified inside these new developments, but there will be a continuing and growing

pressure in areas already highlighted. This is because new development across Swindon inevitably leads to increased traffic in other areas, including those already identified as potential air pollution hotspots.

We continue to monitor air quality with regard to Nitrogen Dioxide in Swindon using a network of long and short timeframe measuring devices, coupled with traffic flow monitoring.

Please refer to the latest Annual Status Report from Swindon Borough Council for more information on air quality in the borough.

Swindon Priorities

Factors driving air quality priorities on Kingshill Road

The factors which drive the Nitrogen Dioxide levels within the Kingshill Road Air Quality Management Area, and so drive our priorities for reducing exposure, are clear:

1. **Traffic Flow**

Kingshill Road carries around 18,000 vehicles a day. The road functions as a key route into and out of Old Town, and as a primary route to the south of Old Town, including to Wroughton and other towns and villages in this direction. Long term traffic monitoring in the AQMA shows that Kingshill Road does not suffer significant congestion, and it functions well as a road, carrying around 18,000 vehicles a day split equally in both directions. Less than 2% of vehicles are heavy vehicles and few buses.

Average vehicle speeds are in line with or around the speed limit for the road and there is no evidence of queuing traffic in the AQMA, even during peak periods. It is an important road in Swindon's network and it is expected to carry more vehicles as Swindon grows.

- 69.6% of the Nitrogen Dioxide present in the AQMA comes from vehicles. The remainder comes from other local and regional sources; the background level, over which we have little local control.
- Of this, Nitrogen Dioxide heavy vehicles contribute to only a relatively small proportion, 12.4%, and light vehicles contribute the great majority; 87.6%.

In order to meet the target criteria of 40mcg/m3, a reduction of 30% in traffic derived Nitrogen Dioxide would need to be achieved.

The scale of the reduction in Nitrogen Dioxide needed means it is not thought possible to meet the air quality criteria simply by drastically restricting access to the road. Severely limiting access, through closure or restriction would simply move the problem elsewhere, to other areas which are close to the limit themselves. Traffic models show this would likely create more severe congestion and new pollution hotspots elsewhere, especially around the Town Centre. The most sustainable answer is likely through influencing behaviour change, and through the purchasing choices of vehicle buyers.

We need to take more journeys, especially shorter ones, using cleaner forms of transport. We need to choose less polluting vehicles when we renew them.

2. **Vehicle Emissions**

The design of engines with regard to their emissions has been controlled by European legislation for some time. These Euro classes (new vehicles are currently 'Euro 6') have imposed increasingly stringent emission limits, particularly with regard to Nitrogen Oxides. As a result, the average vehicle on our roads is becoming significantly cleaner and more efficient over time; as older cars are removed, to be replaced by newer, cleaner models.

Government has also announced its intention that all new vehicles will be alternative fuel from 2040, some 21 years hence, and this is ultimately expected to have the biggest impact on the fleet mix. This is not a factor which is under significant local control and we welcome national action on reducing vehicle emissions. In the meantime, we can all make an impact by choosing the cleanest models when we replace our current vehicle and by using them less for short journeys.

3. **Topography**

The problematic stretch of the road is south east of the Bowood Road junction and the Okus Road junction. Vehicles moving uphill emit more Nitrogen Dioxide as they burn more fuel in doing so. The land to both the south and north is higher than the road surface. It is also sheltered by buildings close to the road, and by large trees. As a result, the road and the houses which line it, are sheltered from the prevailing south westerly and north easterly winds. Nitrogen Dioxide produced by the vehicles using the road does not disperse well.

4. **Active Travel**

Nationally, less than 60% of all work journeys are regularly made by car. For people who live in Swindon and work outside the Swindon area, the proportion of trips made by car rises to over 80%. Public Transport accounts for 9% of all work trips, which is split between 1% train and 8% bus. Seven percent of work trips were on foot and 3% were on bike. The 2017 survey of modes of travel[i] to school showed 5% of children travelled by bike and 57% walked. Most car journeys in Swindon are made by one person alone and car sharing can be an effective way of reducing pollution. Shorter journeys can be made on foot or by cycle, or public transport. All of these things directly affect the Nitrogen Dioxide level alongside roads, and can have other important health benefits too. The proportion of physically active adults in Swindon is about two thirds which is similar to the proportions across England. Kingshill Road is a major commuter route to businesses and schools. Promoting active travel along the road will reduce traffic and promote physical activity.

Source of Pollution

Automatic traffic monitoring equipment provides detailed traffic flow on Kingshill Road. This data has been used to determine which type of vehicle(s) are contributing most to

pollution at Kingshill Road. The tables below give summary data for traffic flow on Kingshill Road.

Table 1 Summary of Traffic Data

	2017	**2016**
Annual Average Daily Traffic	16798	15690
Average Speed of vehicle (mph)	32.0	31.7
%Heavy Goods Vehicle	1.4	1.3

This analysis shows the predominance of light vehicle types with very few Heavy Goods Vehicles or Buses.

The Emissions Factors Toolkit (EFT) (v 8.0.1) has been used to model the relative contributions to NO_2 emissions on Kingshill Road of the different vehicle types, as shown in table 2.

Table 2 Modelled contribution of Vehicles by type to Road NO_2 emissions

	Total all vehicles	**Light Duty Vehicles**	**Heavy Duty Vehicles**
NO_2 Emissions rate g/km	5005	4382	623
% Contribution	100	87.6	12.4

- **Light Duty Vehicles:** Approximately 15% of total NO_2 is emitted by petrol cars and vans, and 72% of NO_2 is emitted by diesel fueled cars and vans.

- **Heavy Duty Vehicles:** Approximately 10% of total NO_2 is emitted by rigid HGVs, and 2% of NO_2 is emitted by articulated HGVs.

Required Reduction in Emissions

From this data it has also been estimated what percentage of NO_2 emissions must be reduced in order to achieve compliance with the annual mean national objective for Nitrogen Dioxide (40mcg/m3).

The outcome of this estimate is that, to achieve the objective, a reduction in road-derived NO_2 of 30% is required.

Key Priorities

- Priority 1 – To investigate sustainable options for reducing traffic flow of Kingshill Road; particularly in the uphill, south east direction.
- Priority 2 – To facilitate a shift to more sustainable modes of travel, better planned journeys and more sustainable fuels.

Planned measures

Table 3 Swindon Draft Air Quality Action Plan Measures

	Measure	Who	Cost	Expected emissions benefit	When complete	Additional information
Cleaner Transport						
1	Continue to investigate the potential for restricting the use of the road (or other roads that either become, or where monitoring indicates may become appropriate for designation as an AQMA) by the most polluting users through the most effective restrictions.	Highways	Normal business	Medium	2024	Heavy Goods Vehicles and similar are only 2% of the road users on this road but produce 10% of the emissions. Removing this category of vehicles can be achieved through weight restriction on the road
2	Improve signage on and around the Kingshill Road to help improve driving behaviour and better planned journeys -real time NO_2 level and traffic information -alternative routes	Highways Town Centre Manage ment	Financial implications to be determined	Medium	2024	Improved signage of the roads leading to Kingshill Road will help influence driving behaviour positively by better planned journeys and avoiding idling.
3	Carry out further detailed modelling of vehicle movement options to ensure that decisions are informed by relevant data, including impacts of any interventions on other relevant roads in the light of further study.	Environm ental Health Highways	£50k	High	2020	Better understanding of journey origins and destinations; fleet mix and local traffic
4	Explore and evaluate the impact of alternatives routes between south and west Swindon	Planning Highways	Normal business	Medium	2024	

		Local residents				
5	Promote active travel (walking and cycling)	Highways	Normal Business	Medium -High	2024	Active modes of transport are part of the Town Centre plan and the Swindon Transport Strategy
6	Support and collaborate with local bus companies to minimise emissions and maximise usability of the bus network in Swindon, including their vehicle fleet renewal plans.	Bus companies Planning Environmental Health	Financial implications to be determined	Low	2024	Bus companies operating in Swindon are Thamesdown Transport and Stagecoach
Awareness raising and health Promotion						
7	Raise awareness of Air Quality Issues with local residents, schools and businesses to encourage behaviour change	Public Health Localities LEP	Normal business	Low- medium	2024	Influencing behaviour change through health education and promotion
8	Promote Swindon Travel Choices; to enable people to make more sustainable choices for travel including cycling (cycle to work schemes), walking and public transport	LEP Local businesses	Normal Business	Low- medium	2024	Promote Swindon Travel Choices for active journey planning http://www.swindontravelchoices.co.uk/
9	Work with partners such as large vehicle manufacturers, the Local Enterprise Partnership (LEP), etc to expedite the transition to electric and other alternatively fuelled vehicles, company car schemes, etc.	LEP Public Health Elected Members	Financial implications to be determined	Low – medium	2024	Wiltshire and Swindon LEP Local Energy Strategy – draft https://swlep.co.uk/docs/default-source/board-meetings/2018/28-nov-2018/agenda-for-board-

						meeting-28th-nov-2018.pdf?sfvrsn=15645c74_2
Local Planning						
10	Review and, if necessary, update Local Development Orders relating to electric vehicle charging requirements and alternative fueled vehicle fueling stations across the borough.	Planning	Financial implications to be determined	Medium-High	2019	Local development Order is already in place, but should be reviewed to ensure that it provides appropriate planning guidance
11	Pursue the Transport Vision 2026 for Swindon & Wiltshire LEP with regard to sustainable transport outcomes.	Planning Highways	Normal Business	Low- Medium	2026	Wiltshire and Swindon LEP Local Energy Strategy – draft https://swlep.co.uk/docs/default-source/board-meetings/2018/28-nov-2018/agenda-for-board-meeting-28th-nov-2018.pdf?sfvrsn=15645c74_2
12	Review and enhance the Swindon Borough Local Plan (2026) to prioritise sustainable transport and ensure that policies relating to, and impacting upon air quality, are fit for purpose and serve to reduce emissions where possible.	Planning Highways Public Health	Normal business	Low- Medium	2020	Swindon Borough Local Plan 2026 available at https://www.swindon.gov.uk/info/20113/local_plan_and_planning_policy/635/swindon_borough_local_plan_2026
13	Review and enhance the developing Town Centre Movement Strategy and the Swindon Local Transport Plan 2011-2026 with air quality improvements a central theme.	Planning Localities Public Health Highways	Financial implications to be determined	medium	2019	TCM strategy under review

14	Review the Park and Ride Strategy for Swindon to minimise the need for vehicular journeys into the town centre.	Highways Planning Localities Highways	Financial implications to be determined	Low - medium	2020	
Borough Fleet Actions						
15	To review purchasing strategy for Council owned vehicles with a view to prioritising clean fuelled vehicles wherever possible.	SBC	Financial implications to be determined	Low	2024	www.sustainableswindon.co.uk
16	Change the schedule for recycling and waste collection to out of peak times on Kingshill Road(7am -9am)	Waste manage ment	Normal business	Low	2024	Reduce queuing on Kingshill Road and create smoother traffic flow.

Archived measures

This table shows measures that have been considered but not progressed and the reasons for not progressing with them.

Action category	Action description	Reason action is not being pursued (including Stakeholder views)
Congestion Charges	Not proceeded with	Challenges to obtaining ANPR info due to GDPR raises questions around availability of alternative data sources to accurately assess the effectiveness of implementing this option
Removing Roundabout (Okus road)	Not proceeded with	Modelling indicates that this measure would result in increased traffic congestion on Okus Road whilst doing little to reduce traffic on Kingshill Road. There is no evidence that denuded air quality on Kingshill is a cause of the problem as the road flows well at all times.
Reinstating M4 Diversion (southern relieve road)	Not proceeded with	That is not supported by the external planning strategic consent.
Scrappage Scheme (lower emission vehicles)	Not proceeded with	The costs attached to the implementation of this option are prohibit unless attached to a national scheme.
Trimming Greenery (encourage air flow)	Not proceeded with	This action is not likely to make a significant impact as cutting trees/ shrubbery may open up other periphery houses to risk. In addition to this, it has been determined that the trees are not Council-owned, and this would likely raise challenges.

Complete Road Closure of Kingshill Road	Not proceeded with	Modelled data shows that this action would cause congestion on the roads in the centre of the town and worsen air pollution in nearby marginal areas
Partial Closure of Kingshill Road	Not proceeded with	Modelled data shows that this action would cause congestion on the roads in the centre of the town and worsen air pollution in nearby marginal areas
Introduction of Traffic Lights	Not proceeded with	Feasibility studies concluded that the need for safe braking distances made this option unviable.
Further speed restriction on Kingshill Road	Not proceeded with	Modelling suggests that slowing traffic would worsen air quality not improve it.
Increased foliage and planting	Not proceed with	Location restrictions prevent any planting. This will have little impact on NO_2 concentration on this part of Kingshill

Next steps

This Air Quality Action Plan (AQAP) has been produced as part of our statutory duties required by the Local Air Quality Management framework. It outlines the measures that the council intends to take to improve air quality in the Swindon Borough from 2019 and 2024. Swindon Borough enjoys relatively good air quality. However, there are pockets in the town where measured Nitrogen Dioxide levels are close to limits set by DEFRA. This first AQAP stems from the declaration of an Air Quality Management Area covering a portion of Kingshill road in Old Town. Studies and observations from the road shows that the source of the Nitrogen Dioxide is mainly from vehicles. This AQAP has evolved following engagement with local residents, businesses and elected representatives. It identifies priorities around reducing traffic volumes, promoting active modes of transport and reducing the harms from pollution.

Feedback from this consultation will inform the plan to be summited to DEFRA. It will also inform activities to monitor and reduce pollution on the identified stretch of Kingshill road from 2019 to 2024.

[i] http://ukcensusdata.com/swindon-e06000030/method-of-travel-to-work-qs701ew#sthash.ptr52mGL.dpbs