

Subject:	Review of Air Quality Management Area leading to New Air Quality Action Plan
Date of Meeting:	9th July 2013
Report of:	Executive Director of Environment, Development & Housing
Author:	Samuel Rouse
Contact Officer:	Tim Nichols
	Tel: 01273 292163
	Email: Tim.Nichols@brighton-hove.co.uk
Ward(s) affected:	All

FOR GENERAL RELEASE**1. SUMMARY AND POLICY CONTEXT:**

- 1.1 This report sets out a proposal for a new Air Quality Management Area (AQMA) and brief outline for a new Air Quality Action Plan (AQAP). The proposal is in line with the council's strategic priority to create a more sustainable city using the One Planet approach and with the three-year Sustainability Action Plan, which contains as one of its high level priorities: 'To minimise the impacts of transport-related air and noise pollution on people, and the natural and built environment.'
- 1.2 The report considers the outcome of detailed air quality assessments and, based on the findings from those assessments, makes recommendations for amendments to the existing Air Quality Management Plan and Action Plan.:

2. RECOMMENDATIONS: That Committee:-

- 2.1 Approves the proposed refocusing of the existing AQMAs and instructs the Executive Director Environment, Development and Housing, after necessary consultation, to take all necessary steps to vary the AQMA Orders of 2004 and 2008 as shown in Figure 2 of Appendix 1.
- 2.2 Instructs the Executive Director Environment, Development and Housing to continue to explore measures to improve air quality in the new AQMA, including the policy themes listed in paragraph 3.27 and Appendix 2.
- 2.3 Instructs the Executive Director Environment, Development and Housing to consult the taxi trade and stakeholders concerning the potential new taxi licensing policy measures as set out in paragraph 3.25.

3. RELEVANT BACKGROUND INFORMATION/CHRONOLOGY OF KEY EVENTS:

- 3.1 Part IV of the Environment Act 1995 sets a statutory duty on local authorities in England to assess the quality of air within their administrative boundary. If beyond all reasonable doubt one or more of the set pollutant standards¹ is exceeded where there is human exposure the authority has legal obligation to declare an Air Quality Management Area (AQMA).
- 3.2 The air quality objectives applicable to LAQM (Local Air Quality Management) in England are set out in the Air Quality (England) Regulations 2000 (SI 928), The Air Quality (England) (Amendment) Regulations 2002 (SI 3043), and are shown in Table 1 (Appendix 1). The objectives are now legally binding standards expressed in units as microgrammes per cubic metre $\mu\text{g}/\text{m}^3$ (milligrammes per cubic metre, mg/m^3 for carbon monoxide). The outdoor standards apply where people are likely to be exposed for the duration of the averaging period for example an annual mean. For Nitrogen Dioxide legally binding English and EU standards ([Directive 2008/50/EC](#)) are set at the same concentration. As Table 1 in Appendix 1.
- 3.3 Nitrogen dioxide is a respiratory irritant associated with both acute (short-term) and chronic (long-term) effects on human health. Repetitive exposure can inhibit lung tissue growth and repair increasing the risk of poor respiratory health later in life. Some research evidence suggests chronic exposure can make the respiratory tract more susceptible to disease including allergens. Children under six (especially infants born early) and people with existing respiratory illnesses such as asthma and bronchitis are more vulnerable to repeated inhalation of Nitrogen Dioxide. Nitrogen Dioxide (NO_2) and nitric oxide (NO) are both Oxides of Nitrogen (NO_x). In the atmosphere oxides of Nitrogen also lead to the formation of other pollutants such as ground level ozone and particulate matter. The gas is often emitted at the same time as fine particles to form a mixture of pollutants close to trafficked roads.
- 3.4 Whilst there has been long term improvements in levels of Nitrogen Dioxide outside of the city centre, concentrations of NO_2 continue to remain above the legal limits within a few metres of narrow roads in central Brighton, Portslade and Rottingdean High Street. Appendix 4 & 5 show the continuous and Nitrogen Dioxide diffusion results for the last calendar year.
- 3.5 The council receives a few hundred complaints and enquires relating to poor air each year. This is a small proportion in comparison with the number of noise complaints the council receives. Environmental Protection law for noise relates to the average person. In contrast air quality protection is for the most vulnerable members of a population. Those complaints that are received for airborne pollution do not always relate to the worst effected areas. It is important to note that nitrogen dioxide and microscopic particles are normally odourless and invisible and are not normally detected by human senses. Therefore perception is not likely to be proportional to true respiratory and cardiovascular health risk.

¹ Concentration in outdoor air set out in Table 1 (Appendix 1) are not emissions discharged from a pipe or chimney

The level of enquiries and web hits received by the council should not be used to gauge how air quality should be prioritised.

- 3.6 Vehicle exhaust fumes affect air quality and relatively few vehicles (compared to motorway or trunk road) can cause an air quality problem in a confined or narrow street environment. The urban street problem has similarities with London, Paris Oxford and Cambridge scenarios. That said in Brighton it relates to a small area that to some extent is mitigated by ventilation and coastal location. The city has an opportunity to solve the problem as relatively few sources are responsible.
- 3.7 The first AQMA in Brighton was declared in 2004 and has remained in place ever since. The area was expanded with a second declaration 2008 that includes the city centre and much of Hove and Portslade south of the Old Shoreham Road. Appendix Figure 1 shows the current AQMA which includes the original area that follows parts of Lewes Road, London Road, Preston Circus, Beaconsfield Road, Viaduct Road, and Valley Gardens. Table 3, Appendix 1 includes a comparison of the original, existing and proposed AQMAs.
- 3.8 Ambient air quality monitoring within the city is annually reviewed. The majority of nitrogen dioxide monitoring in the cities AQMA are located within thirty feet (nine metres) of a main road. Some monitors are outside of this area in parks or adjacent to roads not in the 2008-AQMA. Two monitoring methods are used; automatic analysers that are continuous (four sites are active) and monthly diffusion tubes (about sixty sample sites are active in the city). In addition there is a historical monitoring record stretching back nearly twenty years.
- 3.9 In accordance with the act and its statutory duties BHCC has delivered regular air quality reports to defra (department for the environment food and rural affairs). Table 2 in appendix 1 lists the reports delivered to defra.
- 3.10 The two most recent reports are air quality detailed assessments (2012) which recommend a review of the existing AQMA designation. The report findings are based on a combination of outdoor monitoring, calculated emission rates and dispersion modelling.
- 3.11 A dispersion model has assessed the influence of multiple emission sources on local air quality. Three hundred local road links plus commercial and domestic sources have been included. The model considers variables such as emissions rate, road width, street canyon, surface roughness, wind speed and direction over long durations in order to calculate and map outdoor concentrations of pollutants.
- 3.12 Vehicle count data has been collected for roads in and around the cities existing AQMA. The scope of work includes all BHCC areas with the exception of trunk roads namely the A27(T) and A23(T) north of Patcham. Where possible this data derives from continuous traffic counters. Manual junction counts have been used to supplement this data if there are any gaps. Inner road sections carrying more than 2,000 vehicles or 200 heavy vehicles each day have been selected for inclusion in the assessment. Subtotal tallies for; motorbikes, petrol cars, diesel cars, vans, lorries and buses have been obtained for all main roads in the area. Vehicle counts, road gradient and flow have been used to derive emission rates expressed as grammes of oxides of nitrogen per km of road.

- 3.13 The pollutant model predictions throughout the city are verified by comparing concentrations with real monitoring locations. Small adjustments to variables in the model have been made in order to obtain the closest agreement between the model predictions and monitoring records at roadside and background locations.
- 3.14 Methods used follow agreed technical guidance approved by defra and or Cambridge Environmental Research Consultants and are based on thirteen years Professional experience with air quality assessment.
- 3.15 The verification shows a high level of confidence in model estimations throughout the city with close agreement at monitoring localities for the period 2007 to 2012.
- 3.16 The emission and model assessment have produced an up to date map showing the area that exceeds standards for nitrogen dioxide.
- 3.17 As long as the vehicle fleet frequenting the AQMA remains predominately diesel no significant improvements in air quality are expected from 2013
- 3.18 The local authority has a statutory duty under the Environment Act 1995 to declare an AQMA for the area that has concentrations above the set standard
- 3.19 As concentrations comply with standards in the majority of the city there is good reason for a net reduction in the area of the AQMA. The area that continues to exceed standards is a specific series of transport corridors adjacent to residential dwellings. As a general rule the method used for establishing the new AQMA considers the 90%ile (36 microgram) of the annual mean standard for Nitrogen Dioxide. Other considerations are the consolidated shape of the area and the inclusion of addresses adjacent to roads with monitoring evidence for exceeding concentrations. The boundary of the AQMA in many cases is along the backs of roadside residences. In most cases parks and gardens are not included as concentrations are expected to be compliant with all standards and objectives
- 3.20 Following declaration of an AQMA the local authority has statutory duty to set out a series of measures of how air quality can be improved in the area. Defra and the European Commission need to see action plan measures set to improve air quality. The risk of infringement action against the council is more likely where there is no action plan or it is proven that actions in practice make the problem worse.
- This report sets out introductory ideas for the 2013 Air Quality Action Plan (in a separate paper as Appendix 2) and considers which measures are likely to be beneficial for air quality and achieve compliance with Defra targets and EU standards. In June 2013 defra published a paper detailing “Examples of Air Quality Action Plan Measures”; and this includes details of the Brighton and Hove City Council’s project on solid fuel burning (see Appendix 3). This was achieved after a successful application for defra local air quality management funds in 2012.

Defra Policy Guidance (PG09) indicates that an air quality action plan should be submitted to defra within 12 to 18 months of declaring an AQMA. The Local Transport Plan (LTP) shall be reporting by 31st December 2014.

- 3.21 Previous AQAP were published in 2006 with open consultation are re-submission in 2011. Recommendations were made for integrated policies such as the 2013 Sussex development control guidance and Sussex Low Emissions Strategy (LEZ).
- 3.22 It is recommended that the 2013 AQAP is based more closely on technical evidence and be integrated into city health, transport and planning, climate change policies.
- 3.23 Cost benefit analysis is required in order to assess the cost of pollution on health vs the cost of implementing proposed measures.
- 3.24 Investigation is required in order to identify where existing measures are proposed how these may be beneficial for local air quality for example the Valley Gardens transport scheme and city biosphere project.
- 3.25 Following recent concerns about taxis, licence conditions, byelaws and ranks, officers are considering possible options for the air quality action plan to inform taxi licensing policy:
- 1) Signage asking drivers to turn their engines off whilst waiting at ranks.
 - 2) Policy for no ranks within five metres of residential; especially bedrooms and living rooms.
 - 3) Policy for idling enforcement engines and automatic cut out when the vehicles are stationary.
 - 4) Alternatives to diesel fuel in the air quality management area; licensing smaller petrol driven and hybrid cars, even electric vehicles as taxis.
- 3.26 **One Planet Living** Air quality features within the One Planet Living principles by virtue of the Sustainable Transport section (LTP).
- 3.27 **Local Transport Plan Implications** Two key policy drivers that transport measures can help to support in the city are 1) to improve health and 2) increase quality of life. Reducing transport use and its emissions can contribute towards meeting those objectives and they can be achieved in a number of ways. It is important to recognise that measures can take many forms and be the responsibility of a number of different organisations, in addition to the council in its role as the Highway Authority.

The following themes will provide a framework within which specific transport measures can be identified and tested to address specific AQ issues in each of the AQMA areas that are agreed, and subsequently included in an AQAP.

- 1) Working in partnership – with public transport operator’s (bus, coach, taxi, PHV and train)to improve engine technology and driving styles, establish routes, and offer attractive fares and ticketing arrangements; with businesses to upgrade fleets and reduce business mileage within their operations or by staff; with universities and schools to increase sustainable.
- 2) Engaging with individuals and communities – by encouraging and providing for greater use of sustainable transport alternatives for some journeys, such as walking and cycling for shorter journeys, that will make those forms of transport

safer and more convenient; by promoting car club membership and car-sharing; and increasing the use of electric vehicles.

- 3) Maximising the use of technology – such as enabling the use of variable message information signs to reduce the unnecessary circulation associated with searching for a car parking space, or 'intelligent' traffic signals that respond to pedestrians, cyclists and vehicles to maintain an efficient and safe use of busy road junctions.
- 4) Reviewing and changing road layouts to manage traffic and movement better – with the aim of reducing congestion and therefore the associated idling of engines and unnecessary emissions, and introducing street trees.
- 5) Creating areas or routes that are not dominated by traffic – by introducing temporary or permanent changes to the way that streets are used by people and vehicles.
- 6) Adopting an integrated, sustainable and accessible approach to the location of new development of all forms to reduce the need to travel and/or dependence on the car – such as locating development in accessible locations or enabling appropriate, mixed-use development.
- 7) Bidding for and securing additional investment to improve air quality – such as the government's Clean Bus Technology Fund

Based on the above themes, there will be a range of different types and degrees of intervention that can improve air quality in particular locations. The new AQ data that have been collected and analysed provides an up-to-date insight into the AQ conditions in certain areas; the number of people likely to be affected (both by any AQ improvement or any measure); and the level of intervention that may be required to ensure that EU AQ thresholds are not exceeded in either the short or longer term. This will then inform how best the council can lead and work with partners and stakeholders on specific measures to address particular problems. The outcome of this combined effort and investment will be expected to significantly reduce the effects of poor air quality on residents' health and make the city a healthier place to live.

The council will be embarking on a review of its current Local Transport Plan [LTP] this year with the intention of producing a revised document, including a long-term Strategy and short-term Delivery Plan, in 2014. The new LTP will incorporate a number of the measures that will be established in the new AQAP, once it has been finalised.

4. COMMUNITY ENGAGEMENT AND CONSULTATION

- 4.1 Defra advice will be followed in relation to consolidation of the revised AQMA. Officers will also be consulting in relation to the new air quality action plan.
- 4.2 In relation to the amendments to the AQMA, copies of the amended Orders will be available for public inspection free of charge at Council libraries and public offices in accordance with the requirements of the Environment Act 1995.

- 4.3 A presentation has been made to the local transport partnership and further presentation will be made in due course. Air quality was recently made a priority for the partnership.

5. FINANCIAL & OTHER IMPLICATIONS:

Financial Implications:

- 5.1 Air Quality investigations and action plan measures are funded by a combination of ring fenced grants from Defra and existing Environmental Health and Licensing revenue budgets. The LSTF is funded by DfT with match funding from the City Council and local bus company. LSTF funding is not specifically for air quality. In the future it is possible that further measures to improve air quality might be funded by Section 106, Community Infrastructure Levies or some of the surplus from parking enforcement.

Finance Officer Consulted: Jeff Coates

Date: 13th June 2013

Legal Implications:

- 5.2 The process of Local Air Quality Management is set out under Part IV of the Environment Act 1995 and Air Quality Regulations. The Act places the Council under a duty to prepare and revise from time to time an action plan in relation to an area designated as an Air Quality Management Area. The Council is required to consult on the preparation of an air quality action plan and is also required to keep copies of any AQMA available for public inspection. Although the act requires consultation on Action Plans it does not require consultation on revisions or amendments to AQMA's. Consultation on revisions to AQMA's is recommended in the Policy Guidance but that is not legally enforceable.

Lawyer Consulted: Elizabeth Culbert

Date: 21st June 2013

Equalities Implications:

- 5.3 A healthy environment is vital for quality of life and employment. Deprived parts of England can suffer worse air quality. There are strong links between cardiovascular, respiratory health, inequality and social deprivation. In Brighton higher concentrations of NO₂ and PM₁₀ are found in both deprived and affluent areas.

Sustainability Implications:

- 5.4 Air Quality Action Plan linked with the City Climate Change Strategy. A key desirable for air quality and sustainability is to promote alternatives to diesel in the city centre. Planning approvals often depend on points scored towards code five and six sustainable homes. Often these points are earned by installation of smaller scale biomass combustion at the site of the development. Such actions may encourage additional low level emissions of Nitrogen Dioxide and Fine Particles. Policy should avoid low level solid fuel burning in and around the new AQMA.

Crime & Disorder Implications:

5.5 None

Risk and Opportunity Management Implications:

5.6 Dealt with within the body of the report.

Public Health Implications:

5.7 The Joint Strategic Needs Assessment has a chapter on air quality. Air pollution has short & long term health effects including worsening the condition of those with cardiovascular² or respiratory disease; potentially inhibiting the growth of lung tissue in infants; aggravating asthma in those already diagnosed with the condition &; in the longer term, reducing life expectancy at a population level.³ Some people (especially older people) with cardiovascular & respiratory diseases can be adversely affected by day-to-day changes in air pollutants, including an increased risk of hospital admission & mortality.⁴ It is now well established that air pollution can have a small influence on around 30% of all cause mortality with a much stronger influence on around 5% of mortality.

Long-term exposure to air pollution has a lasting effect on health, though the effects vary depending on where people spend time live, work and. & the type of pollutant mixture that people are exposed to. Exposure to pollutants will be significantly higher in the newly designated AQMA compared to the rest of Brighton.

The new national Public Health Outcomes Framework sets out the Gov't's desired outcomes and indicators for public health. It includes an indicator for the health impact of air pollution:

Fraction of all-cause adult mortality attributable to long-term exposure to current levels of anthropogenic particulate air pollution

<http://www.phoutcomes.info/public-health-outcomes-framework#gid/1000043/par/E12000008/ati/102/page/6/>

This relates the fraction of all-cause adult mortality attributable to long-term exposure to current levels of anthropogenic particulate air pollution. The indicator is an estimated proportion. It represents the estimated annual mortality attributable to air pollution in the population aged 30+, as a proportion of total deaths of those aged 30+.

The value of the indicator for Brighton and Hove for 2010 is 5.40%.

Corporate / Citywide Implications:

5.8 These are linked to corporate strategies:

³ COMEAP (2006) Cardiovascular Disease and Air Pollution

³ Health Protection Agency (2005) Health Protection in the 21st Century

⁴ COMEAP (2010) The Mortality Effects of Long-Term Exposure to Particulate Air Pollution in the United Kingdom

- LTP Local Transport Plan
- City Plan Transport Policies
- SU9, impact of development on airborne pollution
- DA Development Areas
- SA Special Areas
- JSNA Joint Strategic Needs Assessment

6. EVALUATION OF ANY ALTERNATIVE OPTION(S):

- 6.1 The submission of air quality progress reports to Defra is mandatory. Reports are also used by Department for Energy and Climate Change (DECC) and Department for Transport (DfT). Local Air Quality Management (LAQM) is a statutory duty for the Council.

7. REASONS FOR REPORT RECOMMENDATIONS

- 7.1 The new AQMA follows closely the actual area that is likely to exceed nitrogen dioxide standards. Council needs to supplement the existing measures in the Air Quality Action Plan in order to mitigate roadside pollution and reduce the area that exceeds standards.

SUPPORTING DOCUMENTATION

Appendices

1. Air Quality Standards included in Regulations for the purpose of LAQM in England
2. Appendix 2 Draft Air Quality Action Plan (AQAP) section
3. Appendix 3 Defra examples of Air Quality Action Plans
4. Appendix 4 TRL report on continuous analyser monitoring in the city 2012
5. Appendix 5 Nitrogen Dioxide Diffusion Tubes results table 2008 to 2012

Appendix 1

Table 1 Air Quality Standards included in Regulations for the purpose of LAQM in England

Pollutant	Air Quality Legally binding Standard	
	Concentration	Measured as
Benzene	16.25 $\mu\text{g}/\text{m}^3$	Running annual mean
	5.00 $\mu\text{g}/\text{m}^3$	Running annual mean
1,3-Butadiene	2.25 $\mu\text{g}/\text{m}^3$	Running annual mean
Carbon monoxide	10.0 mg/m^3	Running 8-hour mean
Lead	0.5 $\mu\text{g}/\text{m}^3$	Annual mean
	0.25 $\mu\text{g}/\text{m}^3$	Annual mean
Nitrogen dioxide	200 $\mu\text{g}/\text{m}^3$ not to be exceeded more than 18 times a year	1-hour mean
	40 $\mu\text{g}/\text{m}^3$	Annual mean
Particles (PM ₁₀) (gravimetric)	50 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 35 times a year	24-hour mean
	40 $\mu\text{g}/\text{m}^3$	Annual mean
Sulphur dioxide	350 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 24 times a year	1-hour mean
	125 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 3 times a year	24-hour mean
	266 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 35 times a year	15-minute mean

Figure 1 Brighton and Hove AQMA and Green Space (2008-2012)

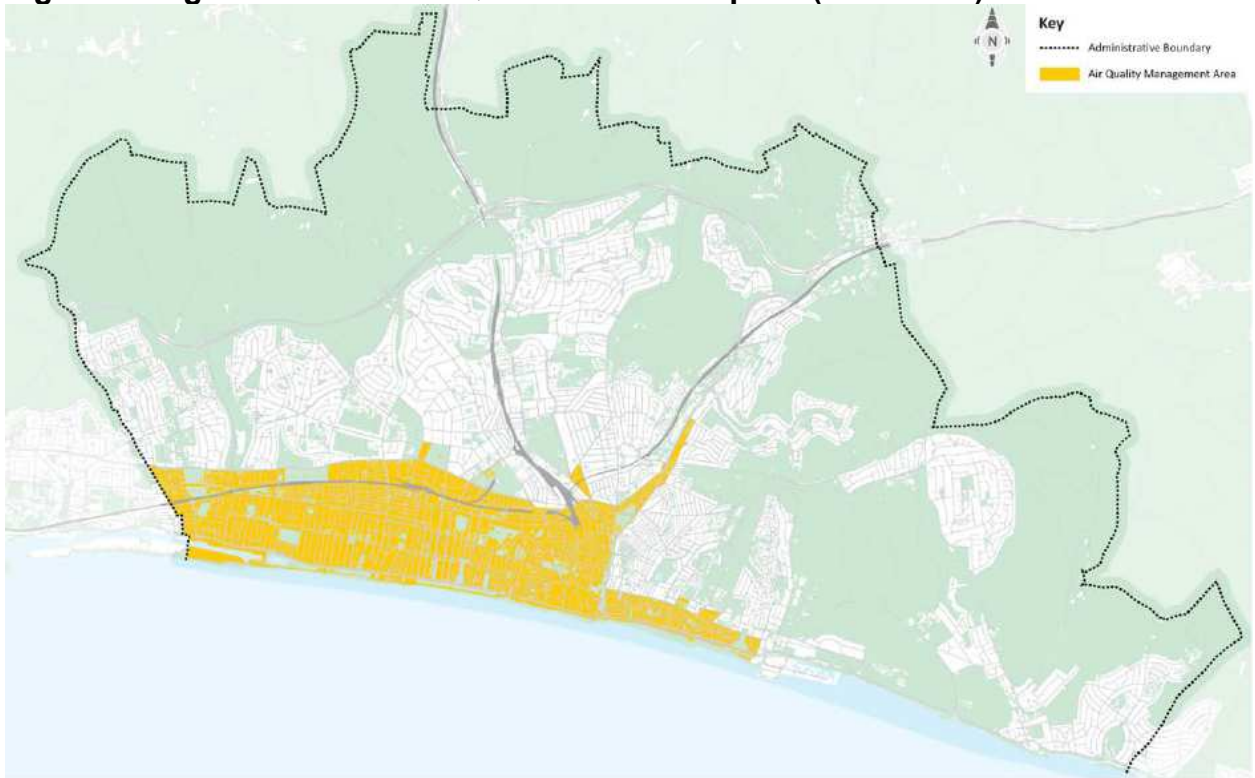


Figure 2 Proposed AQMA Brighton & Portslade



Second Proposed AQMA Rottingdean



Table 2 Order of Brighton and Hove LAQM reports delivered to defra 1999 to 2012

Review and Assessments Report	Dated
Stage 1 Consultation Draft	January 1999
Stage 2 & 3 Final Report	June 2000
Second round Updating Screening and Assessment	May 2003
First Detailed Assessment	May 2003
Declaration of the 2004-AQMA	April 2004
Second round Progress Report	April 2005
Third round Updating Screening and Assessment	April 2006
First Air Quality Action Plan for the 2004-AQMA	March 2007
Second Detailed Assessment leading to declaration of the 2008-AQMA	September 2007
Further Assessment following 2008-AQMA deceleration	Final January 2008
Third round Progress Report	April 2008
Declaration of expanded AQMA	February 2008
AQMA declaration amendment to include the short-term NO₂ AQO	October 2008
Fourth round Updating Screening and Assessment	April 2009
Further Review and Assessment on expanded AQMA	May-October 2010
Draft Air Quality Action Plan on expanded AQMA	
Fourth Round Progress Report and Action Plan Progress Report	

2011 Air Quality Action Plan	July-2011
Preston Drove Detailed Assessment	October 2012
Rottingdean Detailed Assessment	
Updated Screening and Assessment	

Table 2a Local Air Quality Action Plan Timetable going forwards

Action	Timescale
Council committee report outlining proposals for a smaller AQMA area – internal consultation on the democratic services web pages	June 2013
Council committee report exploring future action plan measures for the new air quality management area	June 2013
Application for 2013 LAQM grant monies before	28 th June 2013
New AQMA shape presented to Brighton & Hove committee 9 th July 2013	9 th July 2013
AQMA revocation and new declaration	July/August 2013
Air Quality chapter update for the Joint Strategic Needs Assessment written for the Directorate of Public Health	September 2013
2013 Progress Report including complete 2012 monitoring results and provisional results since that time	End 2013
New Air Quality Action plan integrated with Further Assessment findings and latest source apportionment	Guidance suggests Twelve to Eighteen months after AQMA declaration. To be delivered 2013/14.
Local Transport Plan refresh	31 st December 2014

Table 2 Comparison of AQMAs

AQMA	Area Hectares	Area Acres	GIS ^a Count of residential dwellings included in area	Estimated population ^b	Proportion of BHCC Area	Porportion of BHCC population
2004	26	64	1,373	2,746	0.3%	0.97%
2008	1050	2600	59,473	118,946	12.3%	42.1%
2013 city	243	600	10,500	21,000	2.85%	7.4%
2013 Rottingdean	0.9	2.2	51	102	0.01%	0.03%

a) Geographical Information System

b) June 2013 there are: 141,254 residential dwellings in the city, average 2 people per dwelling population estimated to be 282,508 in line with progression since the 2011 census.

BHCC administrative area= 8537 hectares including part of South Downs National Park (very good air quality) and the South East Regional area.

