

GLOSSARY

Advanced air quality dispersion model – computer based air quality dispersion models are used to predict pollutant dispersion and deposition patterns. This helps to identify areas where highest ambient concentrations are to be expected.

AQMA - Air Quality Management Area, an area designated by a local authority where it is likely that the air quality objectives in the National Air Quality Strategy will not be achieved by the appropriate future year specified by each pollutants' objective.

Air Quality Action Plan – a plan of initiatives that is being implemented to improve air quality.

Automatic monitoring sites - sites producing high-resolution measurements typically hourly or shorter period averages.

AURN - Automated Urban Rural Network - A DEFRA (previously DETR) air quality monitoring network.

AURN affiliate - a monitoring site owned and operated by a local authority but included in the DEFRA network of sites.

Urban background site - a sampling site in an urban location distanced from sources and broadly representative of city-wide background concentrations e.g. elevated locations, parks and urban residential areas.

Benzene - an aromatic hydrocarbon.

1,3-Butadiene - colourless gaseous hydrocarbon.

Carbon monoxide - gas formed by the incomplete combustion of carbon containing fuels.

DEFRA – Department for Environment, Food & Rural Affairs.

Diffusion tube - a small air pollution monitor that passively absorbs a pollutant over a monthly time period, and is then collected and analysed.

Emissions inventory – a comprehensive data set of pollution emitted from a variety of sources.

Fine particles – see Particles.

Gravimetric method – a method of sampling particulate matter by collecting it on a filter which is then weighed later e.g. Partisol

HGV – heavy goods vehicle, a goods carrying vehicle of 3.5 tons, or more, gross laden weight.

8 hr running mean - an average taken over an 8-hour period, which progresses hour by hour.

Intermediate site - a sampling site within 20-40 metres of the source/road.

Kerbside site – a site sampling within 1 metre of a busy road.

Lead – one of the heavy metals that are a toxic and acts as a cumulative poison.

LAQN - London Air Quality Network, a network run by a consortium including local authorities, the Environmental Research Group - King's College, to co-ordinate air pollution monitoring.

$\mu\text{g}/\text{m}^3$ - a microgram of pollutant in a cubic metre of air.

Nitric oxide (NO) - a colourless toxic gas arising from the combination of atmospheric nitrogen with oxygen in high temperature combustion.

Nitrogen dioxide (NO₂) - a stable brown gas largely produced by the oxidation of NO. NO₂ is more toxic than NO.

99th percentile - the concentration at which 99% of the data are below.

Particles – or fine particles, these are microscopic particles of varying composition, and for the purposes of this report the term 'particles' refers to a range of particle sizes from 10 μ to 0.1 μ .

Pollutant specific guidance – issued by DEFRA, provides advice on review and assessment for each pollutant identified in the air quality regulations 1997.

Objective – we have used the word objective throughout this report. This is the term used by the Government to describe standards which have a set timescale (i.e. a target date) for their achievement.

ppb - parts per billion.

ppm - parts per million.

PM₁₀ - particulate matter less than 10 μ (micrometres) in diameter.

PM_{2.5} - particulate matter less than 2.5 μ (micrometres) in diameter.

Roadside site - a sampling site between 1 metre of the kerbside of a busy road and the back of the pavement. Typically within 5 metres of the road.

Screening models - give a preliminary level of assessment and only require simple input data.

Source apportionment – the degree to which various sources of pollution contribute to air quality problems.

Sulphur dioxide (SO₂) - a colourless toxic and acid forming gas, it is the main product of the combustion of sulphur contained in fuels.

Technofix – the use of improved engine and fuel technology to reduce pollution.

TEOM - Tapered Element Oscillating Microbalance - a device for continuously measuring fine particles.

APPENDICES

REVIEW AND ASSESSMENT WORK TO DATE**Appendix 1**

This section describes briefly the work undertaken previously.

First Round of Review and Assessment:Stages One - Three

The Royal Borough of Kensington and Chelsea completed the first round of Review and Assessment in 2003: it consisted of three stages of examining the sources, identifying the contribution of each and a reviewing of monitoring data and finally a prediction of concentrations for the key deadlines using sophisticated modelling. By the end of stage three after a process of elimination the following conclusions were reached.

Table 15 Summary of results

Pollutant	Assessment
NO ₂	High likelihood the Borough would exceed the annual mean and hourly mean objective along many of the major roads in the borough.
PM ₁₀	High likelihood that the Borough would exceed the 24 hour mean objective at a few locations.
SO ₂	Virtually no likelihood that the Borough would exceed the objectives for sulphur dioxide.
CO	No likelihood that the Borough would exceed the objectives for carbon monoxide.

Consequently an Air Quality Management Area was declared in December 2000 based on exceedences of nitrogen dioxide (NO₂), particulate matter (PM₁₀). This covers the whole of the Royal Borough of Kensington and Chelsea.

Stage Four

Stage four was carried out to check the results of the previous reports in the light of the latest air monitoring results at the time and further modelling work. It also took into account the revised information gathered on road traffic emissions, which essentially acknowledged that the exhaust emissions of newer vehicles were not as clean as previously claimed. There were some differences between the modelling undertaken previously, but exceedences were still being predicted for both nitrogen dioxide and PM₁₀. In addition the further work eliminated any concerns regarding carbon monoxide and sulphur dioxide. Alongside this, an Air Quality Management Plan was produced, setting out 25 actions that the Council should take to work towards improving air quality.

Second Round of Review and Assessment

An Updating and Screening Assessment (USA) was conducted as part of the second round. This was published in April 2004. The purpose of a USA is to identify whether any changes have taken place with the seven pollutants, highlighted in table 1, since the previous assessment. A Detailed Assessment (DA) must then be undertaken if this is the case. We concluded that a DA was unnecessary. The following year we submitted a combined Air Quality and Action Plan Progress report.

Third Round of Review and Assessment

A further updating and screening assessment was undertaken of as part of the third round of assessment in 2004/05. Each pollutant was dealt with individually and considered against the updated guidance checklist.

A Progress report is undertaken in years when updating and screening assessments are not required this is the second of such reports.

Appendix 2

DATA COLLECTION AND QUALITY ASSURANCE/QUALITY CONTROL

Data collection, screening and validation

Monitoring data is stored as 15-minute averages within the analysers. Air quality data, including full instrument status information, is collected hourly via modem by the King's ERG on the Borough's behalf from the monitoring sites via the data loggers within the analysers. This data is stored within the London Air Quality Network database. Data is validated by a combination of automatic and manual checks. The procedures used comply with the validation requirements of the UK Automatic Urban and Rural Network Management and Co-ordination Units. Manual validation is carried out daily. Data is ratified in three to six month blocks using service records, calibration records, and the results of inter-calibration and audit. Data is passed on to the DEFRA's Quality Assurance and Quality Control Unit for final ratification.

Quality Control and Audit

Routine calibration and independent checks

Local site visits are undertaken fortnightly at the urban background site and weekly for the roadside Tapered Element Oscillating Microbalance (TEOM) for the purposes of calibration, filter changes and instrument cleaning. Equipment is additionally serviced at regular intervals.

Independent calibration and audit is carried out by AEA Technology as part of their Automatic Urban and Rural Network (AURN) responsibilities for the North Kensington site and for the Cromwell Rd through a separate contract. Calibration certificates are provided by AEAT. National Physical Laboratory (NPL) undertake the London affiliate inter-calibration exercise. The following checks are performed for the oxides of nitrogen, sulphur dioxide and carbon monoxide analysers:

Analyser response factors: The analyser samples a stable 'inter-calibration standard' which has been validated against a network primary standard. The analyser also samples from a certified zero air source.

Analyser linearity: The analyser response to a series of known concentrations covering the analyser range is noted. A linear regression is then performed on the results.

Analyser 'noise' levels: This is the standard error of ten successive spot readings of analyser readings when fully stabilised on zero.

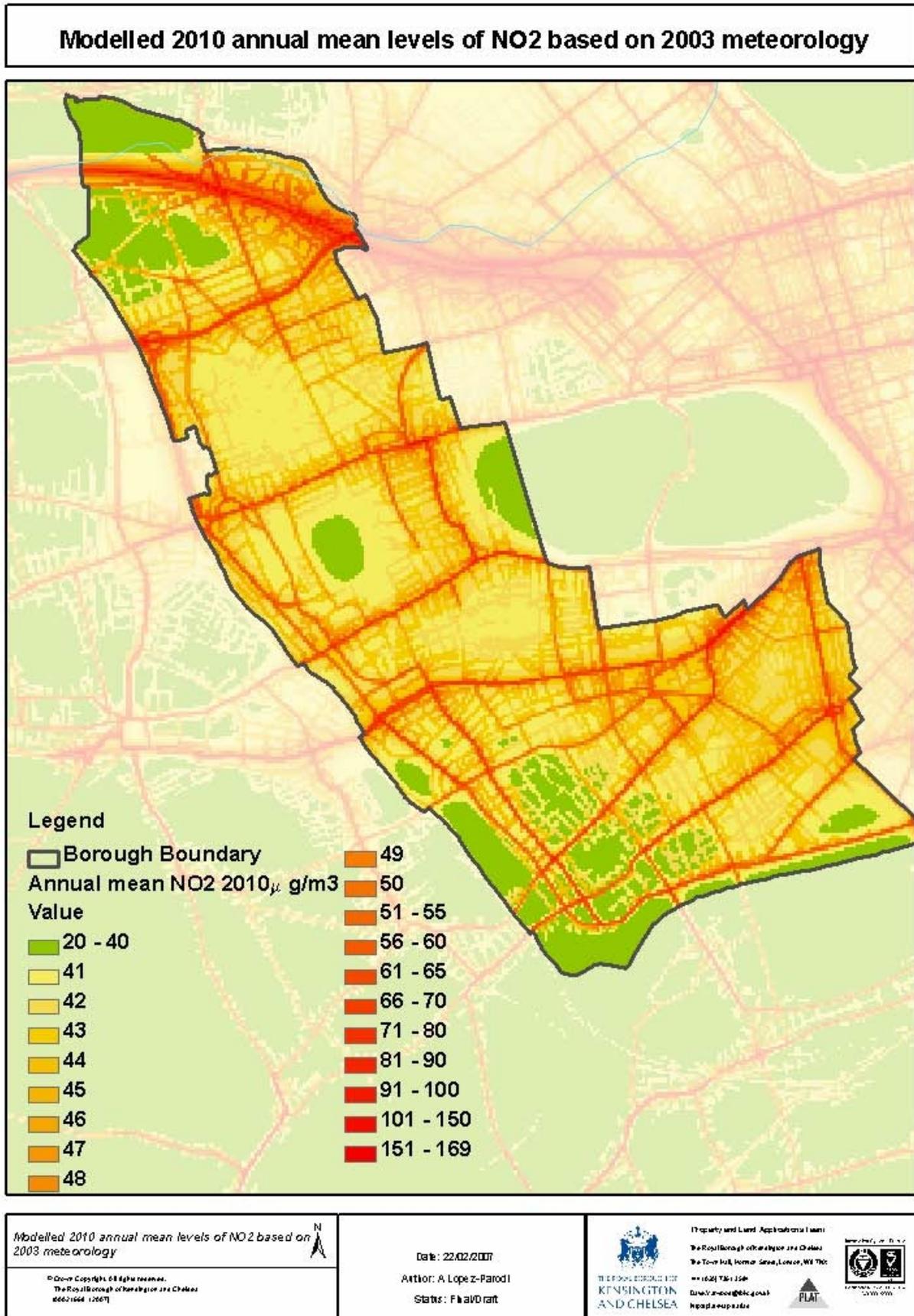
Nitrogen Oxides analyser converter efficiency: NO_x analyser converter efficiency is determined using Gas Phase Titration at a range of concentrations, this uses a high concentration of NO and a known amount of O₃ which is subsequently converted to NO₂.

Estimation of site cylinder concentrations: The concentrations are evaluated by sampling from the site cylinder and comparison to analyser response factors determined from the 'inter-calibration standard'.

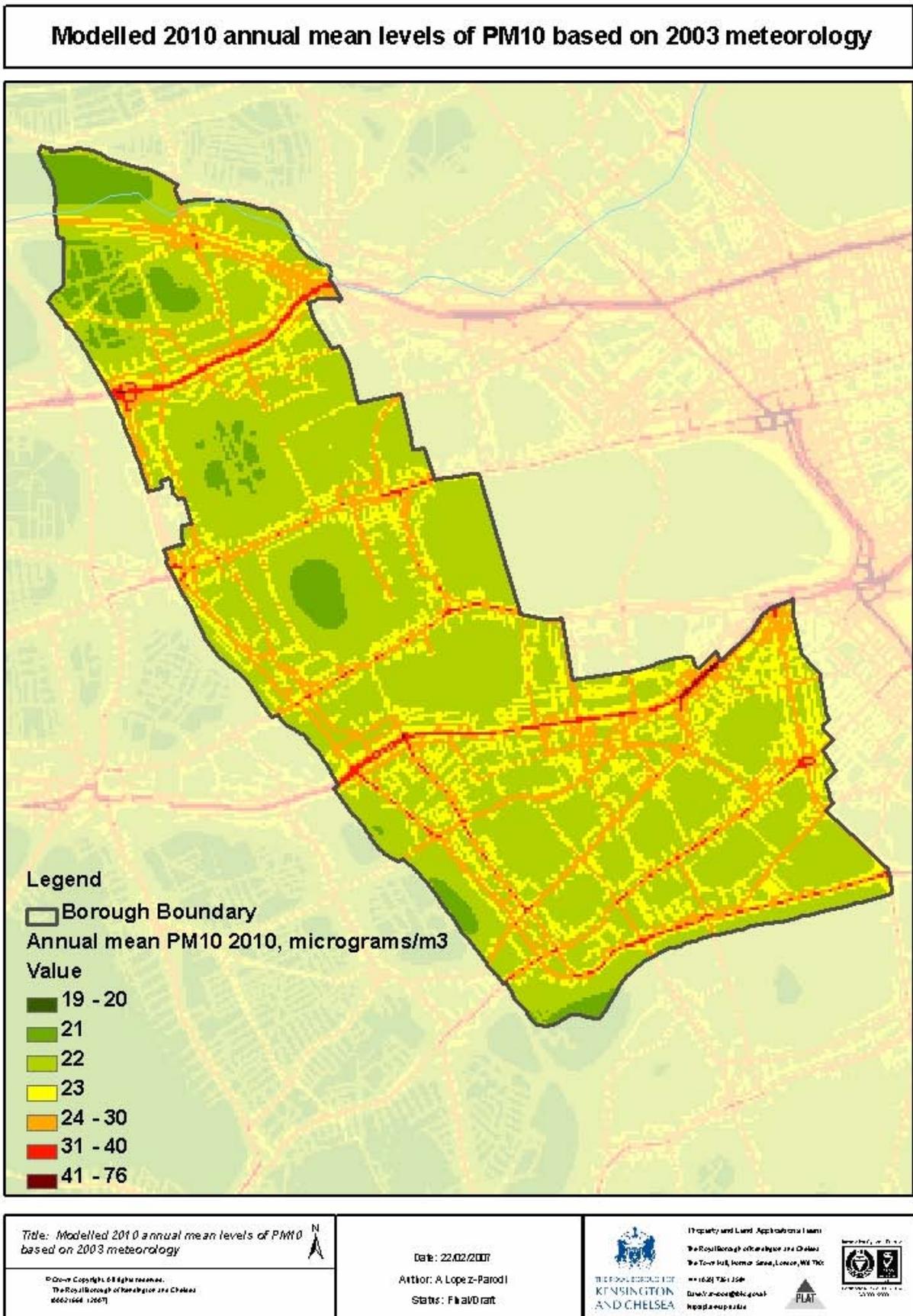
For particle analysers the following checks are performed: Mass transducer calibration: The mass transducer is calibrated by placing pre-weighed filters on it and noting the change in the frequency that is induced.

Analyser flow rates: Flow rates are measured by calibrated flow audit measurement systems. Leak checks are also carried out.

Map 1

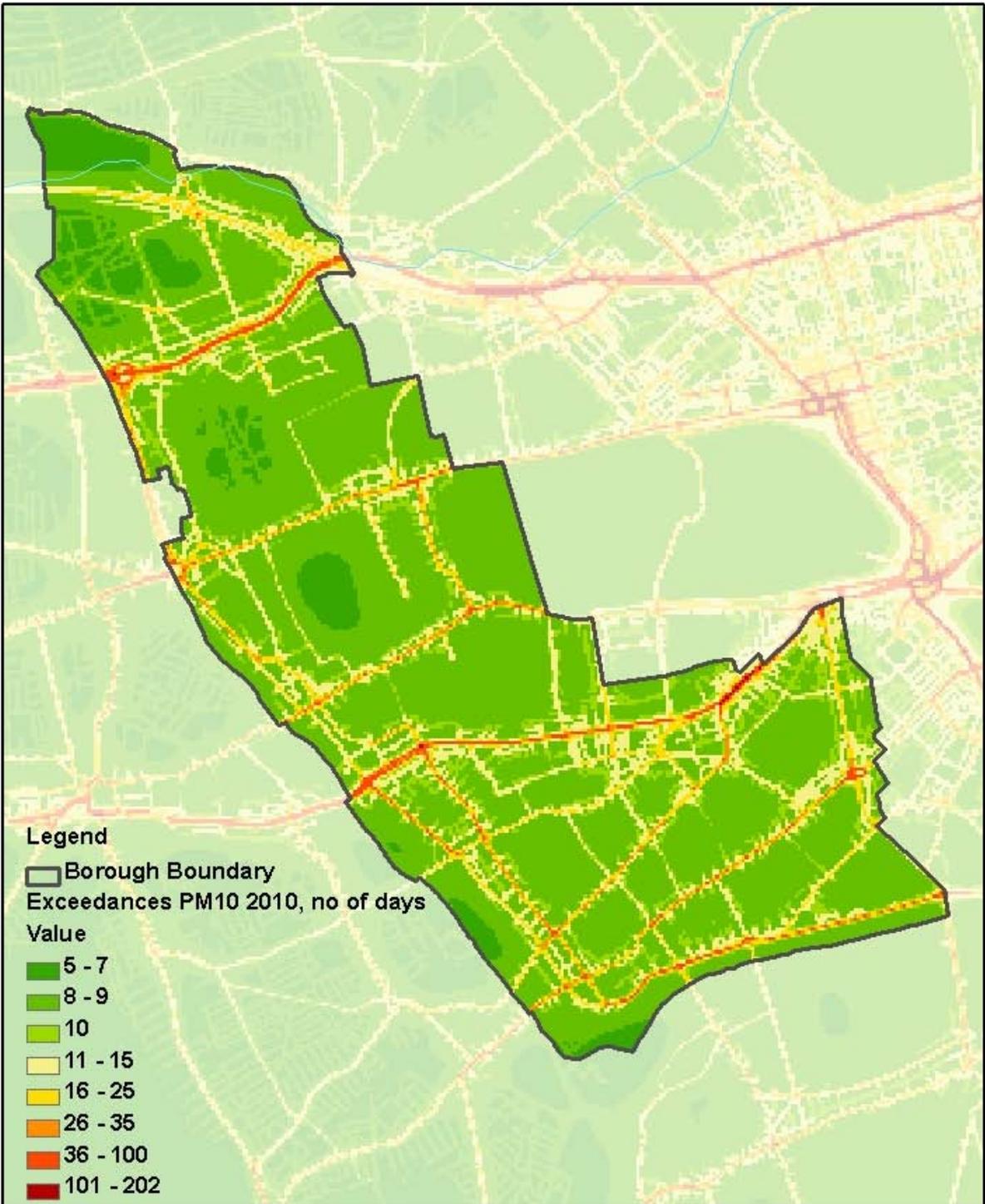


Map 2



Map 3

Modelled number of exceedances of PM10 in 2010 based on 2003 meteorology



<p><i>Title: Modelled number of exceedances of PM10 in 2010 based on 2003 meteorology</i></p> <p>© Crown Copyright. All rights reserved. The Royal Borough of Kensington and Chelsea 0001004 12607</p>	<p>Date: 22/02/2007</p> <p>Author: A Lopez-Parodi</p> <p>Status: Final Draft</p>	<p>  Property and Land Applications Team The Royal Borough of Kensington and Chelsea The Town Hall, North Street, London, W8 7TH W8 7TH Email: enquiries@kcc.gov.uk http://www.kcc.gov.uk </p> <p>  THE ROYAL BOROUGH OF KENSINGTON AND CHELSEA </p> <p>  </p>
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