



2012 Air Quality Updating and
Screening Assessment for the
Merton Council

In fulfillment of Part IV of the
Environment Act 1995
Local Air Quality Management

July 2012

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Report Reference number	MERTON_USA_2012_V1
Date	July 2012

Executive Summary

The Council is required to review and assess air quality against the objectives in the Air Quality Regulations 2000 and amendment regulations as part of a rolling three-year cycle ending in 2017. The air quality objectives to be assessed are for the following seven pollutants: carbon monoxide, benzene, 1,3-butadiene, lead, nitrogen dioxide, sulphur dioxide and particles (PM₁₀).

The role of the local authority Review and Assessment process is to identify any relevant areas where it is considered that the government's air quality objectives for the above air pollutants will be exceeded. The Merton Council has previously undertaken the earlier rounds of Review and Assessment of local air quality management and identified areas where some of the objectives are exceeded and where there is relevant public exposure.

This report concerns the fifth round Updating and Screening Assessment of air quality in the Merton Council area. It has re-examined pollution sources and air quality monitoring in its area in accordance with Defra LAQM guidance.

The report identifies that:

For carbon monoxide, benzene, 1,3-butadiene, lead and sulphur dioxide there is not a significant risk of the objectives being exceeded in the Council's area.

For nitrogen dioxide and particles PM₁₀ the Council has previously designated an AQMA across the Borough. The findings from this report indicate that the AQMA should be maintained.

In view of the findings from the report the Council will undertake the following actions:

1. Undertake consultation with the statutory and other consultees as required.
2. Maintain the existing monitoring programme.

3. Continue with the implementation of its Air Quality Action Plan in pursuit of the AQS objectives.
4. Prepare for the submission of its next Air Quality Progress Report.

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1 Introduction

1.1 Description of Local Authority Area

Merton is situated in the south of London. It is an inner London Borough bordered by the Boroughs of Kingston upon Thames to the west, Sutton to the south, Wandsworth and Lambeth to the north and Croydon to the east. It covers an area almost 15 square miles (3,700 hectares). The Borough is mostly residential and the main commercial centres are Mitcham, Morden and Wimbledon, of which Wimbledon is the largest. Other smaller centres include Raynes Park, Colliers Wood, South Wimbledon, Wimbledon Park and Pollards Hill. The estimated population in Merton for 2010 is approximately 209,000 (from the Office of National Statistics (ONS)).

The main local sources of atmospheric pollutants are road transport from the busy and congested roads in the Borough and the neighbouring areas of London. The principal roads through the Borough include the A3 trunk road, the A24 (Sidcup By-Pass), the A217, A236, A237 and A296.

1.2 Purpose of Report

This report fulfils the requirements of the Local Air Quality Management regime as set out in Part IV of the Environment Act (1995), the Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2007 and the relevant Policy and Technical Guidance documents. The LAQM regime places an obligation on local authorities to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives are likely to be achieved. Where exceedences are considered likely, the local authority must then declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to put in place in pursuit of the objectives.

The objective of this Updating and Screening Assessment (USA) is to identify any matters that have changed which may lead to risk of an air quality objective being exceeded. A checklist approach and screening tools are used to identify significant new sources or changes and whether there is a need for a Detailed Assessment.

The USA report should provide an update of any outstanding information requested previously in Review and Assessment reports.

1.3 Air Quality Objectives

The air quality objectives applicable to LAQM 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 1.1. This table shows the objectives in units of microgrammes per cubic metre $\mu\text{g m}^{-3}$ (milligrammes per cubic metre, mg m^{-3} for carbon monoxide) with the number of exceedences in each year that are permitted (where applicable).

Table 1.1 Air Quality Objectives included in Regulations for the purpose of LAQM in England

Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
Benzene	16.25 $\mu\text{g m}^{-3}$	Running annual mean	31.12.2003
	5.00 $\mu\text{g m}^{-3}$	Running annual mean	31.12.2010
1,3-Butadiene	2.25 $\mu\text{g m}^{-3}$	Running annual mean	31.12.2003
Carbon monoxide	10.0 mg m^{-3}	Running 8-hour mean	31.12.2003
Lead	0.5 $\mu\text{g m}^{-3}$	Annual mean	31.12.2004
	0.25 $\mu\text{g m}^{-3}$	Annual mean	31.12.2008
Nitrogen dioxide	200 $\mu\text{g m}^{-3}$ not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 $\mu\text{g m}^{-3}$	Annual mean	31.12.2005
Particles (PM_{10}) (gravimetric)	50 $\mu\text{g m}^{-3}$, not to be exceeded more than 35 times a year	24-hour mean	31.12.2004
	40 $\mu\text{g m}^{-3}$	Annual mean	31.12.2004
Sulphur dioxide	350 $\mu\text{g m}^{-3}$, not to be exceeded more than 24 times a year	1-hour mean	31.12.2004

	125 $\mu\text{g m}^{-3}$, not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 $\mu\text{g m}^{-3}$, not to be exceeded more than 35 times a year	15-minute mean	31.12.2005

1.4 Summary of Previous Review and Assessments

The Merton Council has previously completed all earlier stages of air quality review and assessment as required under the LAQM regime. As part of its earlier duties the Council completed a detailed Stage 4 assessment for nitrogen dioxide (NO₂) and particles (PM₁₀) in 2003. The aim of the Council's detailed assessment was to determine with reasonable certainty whether or not there is a likelihood of the AQ objectives being achieved. The assumptions used were therefore in depth and the data used were quality assured to a high standard. This allowed the Council to have confidence in reaching a decision whether to declare an Air Quality Management Area or not. When carrying out its detailed assessment the Council applied its best estimates to all components used to produce the estimated future concentrations.

Modelled predictions confirmed that the annual mean NO₂ and PM₁₀ objectives were exceeded. These predictions highlighted that the objectives were exceeded in areas close to busy roads and junctions throughout the Borough. Relevant public exposure was identified in these areas and on the basis of the findings the Council designated the whole Borough an Air Quality Management Area (AQMA) for the NO₂ and PM₁₀. (See Figure 1 overleaf).

The Council's subsequent Updating and Screening Assessments and Progress reports concurred with these original findings.

Figure 1 Map of Merton AQMA



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2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring

The Council has undertaken automatic monitoring at two long-term sites. These sites have been installed in the Borough, since the previous Council's Updating and Screening Assessment. The automatic sites in operation at the time of writing are:

Merton Morden (ME1) - a roadside site located at the Civic Centre in Morden; this site started operating during February 2010. The sample inlet is located at 4m from ground level (i.e. at first floor level) and 3m from the road.

Merton Road (ME2) - a roadside site located in South Wimbledon; this site started operating during June 2011. (See Figure 2 overleaf).

The above sites are also representative of relevant exposure. All the sites are part of the London Air Quality Network and therefore the standards of QA/QC are similar to those of the government's AURN sites. Regular calibrations are carried out, with subsequent data ratification undertaken by the ERG at King's College London. In all cases the data are fully ratified unless reported otherwise. Further details of the sites can be found at www.londonair.org.uk.

Figure 2 Merton 2 monitoring site in South Wimbledon



Table 2.1 Details of Automatic Monitoring Sites

Site Name	Site Type	Easting	Northing	Pollutants Monitored	In AQMA?	PM ₁₀ Monitoring Technique	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance (m) to kerb of nearest road (N/A if not applicable)	Does this location represent worst-case exposure?
Merton (ME1)	Roadside	525591	168437	NO ₂	Y	N/a	Y	4	N
Merton (ME2)	Roadside	525808	170122	PM ₁₀	Y	BAM	N (3)	1	Y

2.1.2 Non-Automatic Monitoring Sites

The Merton Council also undertook non-automatic monitoring using NO₂ diffusion tubes across the Borough; the purpose of which was to supplement and extend its understanding of air quality.

During the 2003 – 2010 period, diffusion tubes were used at 11 monitoring locations throughout the Borough. For 2010 these were deployed and collected at 4 to 5 weeks intervals (in accordance with the UK NO₂ Diffusion Tube calendar requirements). Duplicate tubes were also deployed at each site. A co-located study with the automatic monitoring station was not undertaken. For 2011 the number of monitoring locations was increased to a total of 34 sites. The locations of the diffusion tubes are illustrated in Figure 3 and 4. Details of the areas are given in the table below.

Figure 3 Map of Non-Automatic Monitoring Sites in L.B of Merton

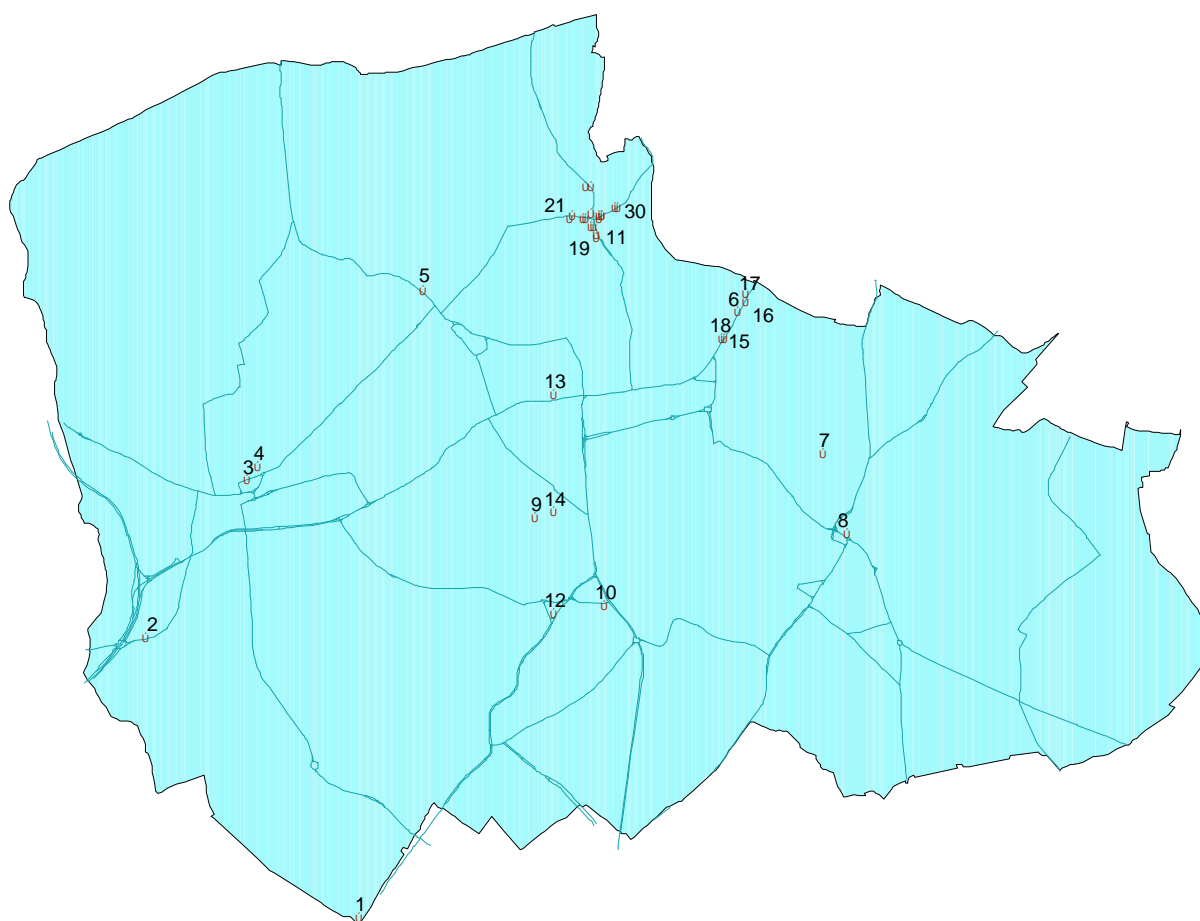
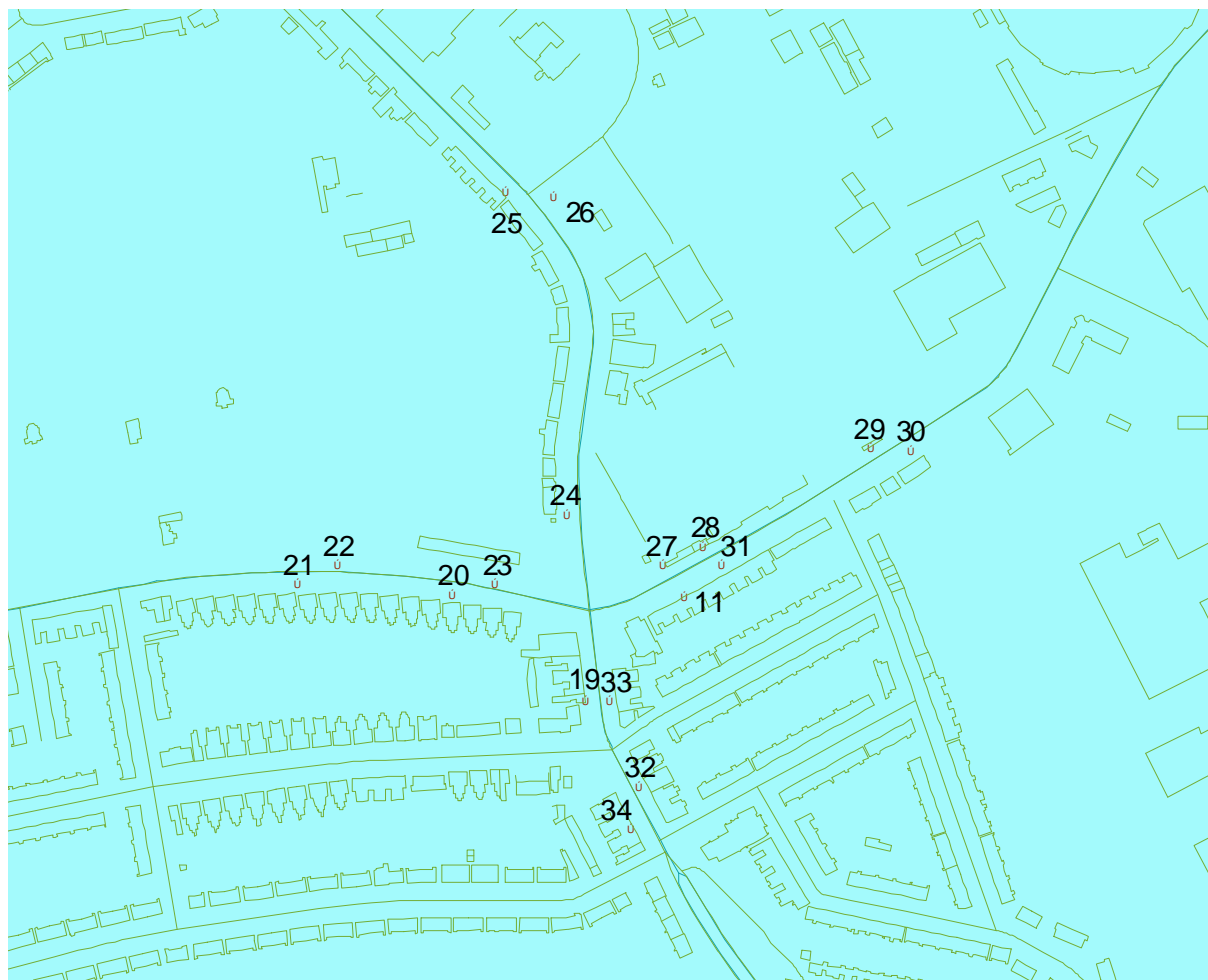


Figure 4 Close up of South Wimbledon diffusion tube sites

The diffusion tubes were supplied and analysed by Lambeth Scientific Services, with a preparation method using 50% TEA in acetone. Lambeth Scientific Services participates in the Health and Safety Laboratory's (HSL) Workplace Analysis Scheme for Proficiency (WASP) programme for diffusion tubes, which provides a Quality Assurance / Quality Control (QA/QC). It achieved a of 100% for the laboratory performance testing rounds 109, 110, 111 and 114 between January 2010 and December 2011 and had a good precision score for 2011.

A major disadvantage of undertaking monitoring using diffusion tubes is that the method is less precise and accurate than continuous monitoring. The recommended methods to reduce errors include the use of good QA/QC practices and bias adjustment factors that are derived from co-location studies between continuous analysers and diffusion tubes.

The bias adjustment factors (shown below) are specific to each year, analysing laboratory, method of analysis and location. The factors are therefore also limited to the data supplied. The Review and Assessment website advises that “in many cases, using an overall correction factor derived from as many co-location studies as possible will provide the ‘best estimate’ of the ‘true’ annual mean concentration, it is important to recognise that there will still be uncertainty associated with this bias adjusted annual mean. One analysis has shown that the uncertainty for tubes bias adjusted in this way is $\pm 20\%$ (at 95% confidence level). This compares with a typical value of $\pm 10\%$ for chemiluminescence monitors subject to appropriate QA/QC procedures.”

Year	Bias Default factor
2008	0.98 (10 studies)
2009	1.03 (5 studies)
2010	1.06 (4 studies)
2011	1.06 (6 studies)

The Above Defra default factors indicate that the diffusion tube results for each year slightly underestimate continuously monitored concentrations for all years shown, other than 2008, which slightly overestimates concentrations.

Table 2.2 Details of Non-Automatic Monitoring Sites

Ref	Address	Easting	Northing	Location	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (N/A if not applicable)	Does this location represent worst-case exposure?
BA	Sacred Heart School, Burlington Road, New Malden (Site 2)	522479	168321	Suburban	Y	30m	N
CA	Bardney Road, Morden (Site 10)	525969	168481	Suburban	Y	1m	Y
DA	Worple Road, Raynes Park South (Site 3)	523272	169428	Kerbside	Y (1m)	1m	Y
GA	Corner of Garth Road, Stonecot Hill, Morden (Site 1)	524113	166129	Suburban	Y	1m	Y
HA	High Street, Colliers Wood (Site 6)	526965	170707	Roadside	Y (1m)	1m	Y
LA	Leonard Avenue, Morden (Site 9)	525447	169158	Urban Background	Y	15m	N
MA	Lavender Avenue, Morden (Site 7)	527621	169646	Suburban	Y (3m)	1m	Y
RA	Pepys Road, Raynes Park North (Site 4)	523357	169534	Suburban	Y (5m)	1m	Y
TA	Upper Green West, Mitcham Town Centre (Site 8)	527806	169029	Urban centre	Y	20m	Y
WA	Wood Side, Wimbledon (Site 5)	524608	170873	Suburban	Y (5m)	1m	Y
PA	Plough Lane, Wimbledon Park (Site 11)	525932	171403	Kerbside	Y (3m)	1m	Y

2.2 Comparison of Monitoring Results with Air Quality Objectives

The monitoring reported below represents the continuous and non-continuous results for recent years' monitoring. Results from previous years can be found in earlier Council reports. Details for the automatic site can also be found on the London Air Quality Network website (see <http://www.londonair.org.uk/london/asp/lahome.asp>). The results are reported in accordance with the requirements of TG09.

2.2.1 Nitrogen Dioxide

The results for nitrogen dioxide are reported separately for the Council's automatic site and the diffusion tube sites. The automatic results are directly compared to the annual mean and hourly mean objective, whereas the diffusion tube results are compared to the annual mean objective and also to an annual mean of $60 \mu\text{g m}^{-3}$, which represents an indicative value to represent the hourly mean objective. This is in line with TG09 guidance.

Automatic Monitoring Data

The following table (Table 2.3) provides details of the monitoring. The results are for the period from 2010 to 2011 inclusive.

For 2010 data capture at the ME1 site was reasonably good (representing over 70%). The data are fully ratified for 2010 and the annual mean concentration was just over $50 \mu\text{g m}^{-3}$ and so easily exceeded the AQS annual mean objective of $40 \mu\text{g m}^{-3}$.

During 2011 however there were instrument problems and also the data for the site are not fully ratified yet. Hence data for 2011 are not reported here. Furthermore the original instrument installed has since been replaced (in April 2012).

Table 2.4 provides a comparison with the AQS hourly mean objective, which requires that the number of periods that exceed a one-hour mean of $200 \mu\text{g m}^{-3}$ does not arise more than 18 times over a calendar year. These episodic periods arise during

meteorological conditions that are conducive e.g. such as settled conditions in the wintertime when there is reduced dispersion from local sources. The results for the site show that the hourly mean standard was exceeded in 2010. The objective of more than 18 periods however was not approached with 4 periods only exceeding during 2010.

Table 2.3 Results of Automatic Monitoring of Nitrogen Dioxide: Comparison with Annual Mean Objective

Site ID	Site Type	Within AQMA ?	Valid Data Capture for period of monitoring % ^a	Valid Data Capture 2011 % ^b	Annual Mean Concentration $\mu\text{g m}^{-3}$	
					2010	2011 ^c
Merton (ME1)	Roadside	Y	N/a	N/a	52	-

^a i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

^b i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%.)

^c There were instrument problems during 2011 and so provisional data are not reported here.

^d Data capture for 2010 was 77%.

Notes: Bold indicates that AQS objective exceeded; italics indicates < 90% valid data capture.

Table 2.4 Results of Automatic Monitoring for Nitrogen Dioxide: Comparison with 1-hour mean Objective

Site ID	Site Type	Within AQMA ?	Valid Data Capture for period of monitoring % ^a	Valid Data Capture 2011 % ^b	Number of Exceedences of Hourly Mean (200 µg m ⁻³)	
					2010	2011 ^c
Merton (ME1)	Roadside	Y	N/a	N/a	4	-

^a i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

^b i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%.)

^c There were instrument problems during 2011 and so provisional data are not reported here.

^d Data capture for 2010 is 77%.

Notes: Bold indicates that AQS objective exceeded; italics indicates < 90% valid data capture.

Diffusion Tube Monitoring Data

The results given in Table 2.5 are the bias adjusted mean values of the duplicate tubes exposed in 2010 (as detailed earlier). Those annual mean concentrations in excess of the $40 \mu\text{g m}^{-3}$ annual mean NO_2 objective are highlighted in bold. The overall data capture rates during 2010 were high and achieved an average of 96% for all site types. The lowest data capture was reported for the urban background monitoring site in Mitcham (site LA) with an 83% capture rate.

Both kerbside sites easily exceeded the annual mean objective of $40 \mu\text{g m}^{-3}$ for all years reported, with the Plough Lane (PA) also exceeding $60 \mu\text{g m}^{-3}$. The roadside site at Colliers Wood (HA) also exceeded the objective and $60 \mu\text{g m}^{-3}$ for all three years. Based on TG09 guidance this suggests the possibility that the hourly mean objective might also be exceeded at these sites.

The urban centre site in Mitcham, plus three suburban sites at New Malden (BA), Morden (CA) and Stonecot Hill (GA) also exceeded the objective in 2010. This was consistent with the earlier years reported, although the New Malden (BA) site has previously been close to achieving the objective. All of the sites either represent or are close to locations with relevant exposure.

All other sites met the objective in 2010. Of these, three suburban sites in Mitcham (MA), Raynes Park North (RA) and Wimbledon (WA) previously exceeded the objective (for both other years 2008 and 2009 reported). For 2010 the objective was approached with each site recording more than $38 \mu\text{g m}^{-3}$.

The only site that consistently met the objective for the three years reported was the urban background site in Mitcham (LA). The annual mean concentration at this site varied around $30 \mu\text{g m}^{-3}$.

Table 2.5 Results of Nitrogen Dioxide Diffusion Tubes (2008 to 2010)

Ref	Address	Location	2008	2009	2010
BA	Sacred Heart School, Burlington Road, New Malden (Site 2)	Suburban	38.2	40.1	43.8
CA	Bardney Road, Morden (Site 10)	Suburban	47.3	50.6	44.6
DA	Worple Road, Raynes Park South (Site 3)	Kerbside	58.4	60.3	56.8
GA	Corner of Garth Road, Stonecot Hill, Morden (Site 1)	Suburban	42.5	43.7	44.6
HA	High Street, Colliers Wood (Site 6)	Roadside	70.6	75.5	68.0
LA	Leonard Avenue, Morden (Site 9)	Urban Background	29.9	33.0	28.0
MA	Lavender Avenue, Morden (Site 7)	Suburban	41.7	44.6	38.4
RA	Pepys Road, Raynes Park North (Site 4)	Suburban	43	45.7	38.8
TA	Upper Green West, Mitcham Town Centre (Site 8)	Urban centre	45.1	45.1	45.5
WA	Wood Side, Wimbledon (Site 5)	Suburban	41	45.6	39.9
PA	Plough Lane, Wimbledon Park (Site 11)	Kerbside	69.4	69.6	67.6

2.2.2 PM₁₀

The TG09 guidance highlights those instruments that conform to the equivalence criteria relating to the gravimetric European reference method and as a result these instruments can be used to measure PM₁₀ concentrations for comparison with the air quality objectives. Not all instruments are directly equivalent however and hence corrections are permissible in the guidance to meet the equivalence criteria.

The equivalence criteria trials found that measurements made using BAM instruments were shown to be equivalent to the PM₁₀ reference method. However, correction factors need to be applied to the measurements. The results for the Merton site are therefore reported below as **reference equivalent**, with the correction factor applied.

The Merton monitoring site in Merton Road, South Wimbledon (ME2) opened in June 2011. As a consequence the data capture was low at only 16% and the data are not fully ratified.

The site did not exceed the annual mean objective for 2011 for this short period of measurement as shown in Table 2.7, with a gravimetric equivalent measurement that was less than 30 µg m⁻³ (compared to the objective of 40 µg m⁻³). For the current year to date, the annual mean is 29 µg m⁻³ (note – this is also based on provisional data and with a data capture of less than 50%).

The daily mean objective, which has been exceeded more widely across the UK than the annual mean objective, is reported in Table 2.8. The monitoring results for the ME2 roadside site show that the daily mean standard of greater than 50 µg m⁻³ was not exceeded during the very short period monitored in 2011. For 2012 the standard has been exceeded on 17 days (note – this is to date; it is based on provisional data with less than 50% data capture for the year). This suggests that with full data capture for the year the daily mean objective of 35 days may be approached.

Table 2.6 Results of Automatic Monitoring of PM₁₀: Comparison with Annual Mean Objective

Site ID	Site Type	Within AQMA?	Valid Data Capture for monitoring Period % ^a	Valid Data Capture 2011 % ^b	Confirm Gravimetric Equivalent (Y or NA)	Annual Mean Concentration $\mu\text{g m}^{-3}$	
						2011	2012 ^c
ME2	Roadside	Y	16	-	Y	26	29

^a i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

^b i.e. data capture for the full calendar year.

^c Data capture for 2012 is less than 50% at the time of this report's preparation.

Table 2.8 Results of Automatic Monitoring for PM₁₀: Comparison with 24-hour mean Objective

Site ID	Site Type	Within AQMA?	Valid Data Capture for monitoring Period % ^a	Valid Data Capture 2011 % ^b	Confirm Gravimetric Equivalent	Number of Exceedences of 24-Hour Mean (50 $\mu\text{g m}^{-3}$)	
						2011	2012 ^c
ME2	Roadside	Y	16	-	Y	0	17

^a i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

^b i.e. data capture for the full calendar year.

^c Data capture for 2012 is less than 50% at the time of this report's preparation.

2.2.3 Summary of Compliance with AQS Objectives

The Merton Council has examined the results from monitoring in the Borough. Concentrations are above the annual mean objective for nitrogen dioxide. For the PM₁₀, there have been periods exceeding the daily standard, suggesting that the objective may be approached within the designated Borough wide AQMA. As a consequence of these findings there is no need to proceed to a Detailed Assessment.

Those diffusion tube sites exceeding 60 µg m⁻³ in 2010 will be further examined with a view to confirming whether or not there is relevant exposure to one hour NO₂ objective.

3 Road Traffic Sources

The focus of attention for road traffic sources is on those relevant locations close to busy roads, especially in congested areas and near to junctions, where traffic emissions are higher, and in built up areas where the road is canyon like and buildings restrict the dispersion and dilution of pollutants. Only those locations, which have not been assessed during the earlier rounds or where there has been a change or new development, are assessed.

The 2008 London Atmospheric Emissions Inventory (LAEI) has been used to identify changed flows and as reported earlier the Council previously designated the whole of the Borough as an AQMA.

3.1 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. Screening models so far have not proved helpful at identifying potential exceedences, which have only been identified by monitoring. This assessment is for NO₂ only.

Previous Review and Assessments undertaken by the Council investigated the presence of narrow roads with residential properties close to the kerb. The TG09 guidance requires the identification of residential properties within 2 m of the kerb. The roads previously identified are all within the Council's AQMA and this situation has not changed.

The Merton Council confirms that there are no new/newly identified congested streets with a flow above 5,000 vehicles per day and residential properties close to the kerb, that have not been adequately considered in previous rounds of Review and Assessment.

3.2 Busy Streets Where People May Spend 1-hour or More Close to Traffic

These include 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, close to road traffic where there may be high concentrations of NO₂. (Note - those people that are occupationally exposed are not included, as they are not covered by the regulations). The assessment is for NO₂ only.

Busy streets where people may spend an hour or more close to traffic were examined in previous assessments. There has been no change to the previous findings since then and no new roads have been constructed with traffic flows greater than 10,000 vehicles per day in the Council's area.

The Merton Council confirms that there are no new/newly identified busy streets where people may spend 1 hour or more close to traffic.

3.3 Roads with a High Flow of Buses and/or HGVs

These include street locations in the Borough where traffic flows are not necessarily high (i.e. fewer than 20,000 vehicles per day) but where there are an unusually high proportion of buses and/or HGVs. The assessment is for both NO₂ and PM₁₀ and is dependent on the proximity of relevant exposure within 10 m of the kerbside. The Council in earlier Review and Assessments identified those roads within the Borough with high flows of heavy-duty vehicles. No new roads relevant to this section have been identified in the Borough.

The Merton Council confirms that there are no new/ newly identified roads with high flows of buses/HGVs.

3.4 Junctions

Air pollutant concentrations are usually higher close to junctions, due to the combined impact of traffic emissions on roads forming the junction, and to the higher emissions due to stop start driving. The assessment is for both NO₂ and PM₁₀ and is dependent on the proximity of relevant exposure within 10 m of the kerbside.

There is no change to the previously reported situation concerning junctions and no new or newly identified junctions with relevant exposure within 10 m.

The Merton Council confirms that there are no new/ newly identified busy junctions/ busy roads.

3.5 New Roads Constructed or Proposed Since the Last Round of Review and Assessment

The approach to considering new roads depends on whether or not an assessment was carried out in advance of building the new road. The assessment is for both NO₂ and PM₁₀ and is dependent on the proximity of relevant exposure within 10 m of the kerbside.

There have been no new or proposed roads in the Borough where an air quality assessment was required.

The Merton Council confirms that there are no new/ proposed roads.

3.6 Roads with Significantly Changed Traffic Flows

Only roads with significantly changed traffic flows that have not already been considered above were investigated. The assessment is for both NO₂ and PM₁₀.

A comparison of traffic flows from the latest version of the London Atmospheric Emissions Inventory confirms that there are no new roads with significantly changed traffic flows.

The Merton Council confirms that there are no new/ newly identified roads with significantly changed traffic flows.

3.7 Bus and Coach Stations

This section only applies to bus stations or sections of bus stations that are not enclosed, and where there is relevant exposure, including at nearby residential properties. The assessment is for both the annual mean and the 1-hour NO₂ objectives. (Note - the term “bus” in this instance is used to signify both buses and coaches).

Bus stations in Merton were examined in previous USAs and found not to require further investigation. Based on the TG09 guidance if such sources were previously considered and are within an existing AQMA there is no need to proceed further.

The Merton Council confirms that there are no relevant bus stations in the Local Authority area.

4 Other Transport Sources

4.1 Airports

Aircraft are potentially significant sources of nitrogen oxides (NO_x) emissions, especially during takeoff. The TG09 guidance used new information, which has resulted in the criteria to trigger a Detailed Assessment being relaxed, while the requirement to assess PM₁₀ has been removed. Thus this section only applies to NO₂. (Note – any road traffic using airports was considered in the previous section.)

The nearest airports are Heathrow and then Gatwick. Both are outside the Borough and sufficiently distant (greater than 10km) as not to be relevant.

The Merton Council confirms that there are no airports in the Local Authority area.

4.2 Railways (Diesel and Steam Trains)

Stationary locomotives, both diesel and coal fired, can give rise to high levels of sulphur dioxide (SO₂) close to the point of emission. Recent evidence also suggests that moving diesel locomotives, in sufficient numbers, can also give rise to high NO₂ concentrations close to the track where, along busy lines, emissions can be equivalent to those from a busy road.

4.2.1 Stationary Trains

Previous rounds of Review and Assessment also found that there are no areas within the Borough where diesel or steam locomotives are stationary for periods of 15 minutes or more and within 15 m of locations where regular outdoor exposure arises. This situation has not changed.

The Merton Council confirms that there are no locations where diesel or steam trains are regularly stationary for periods of 15 minutes or more, with potential for relevant exposure within 15m.

4.2.2 Moving Trains

Diesel locomotives use rail lines that run through Merton, however these are not included within the list of lines (from Table 5.1 of TG09), which identify those with a “high” usage of diesel locomotives.

The Merton Council confirms that there are no locations with a large number of movements of diesel locomotives, and potential long-term relevant exposure within 30m.

4.3 Ports (Shipping)

The assessment for shipping needs to consider SO₂ only. The River Thames is to the north of Borough and although there are some ship movements in this area they are minor and not sufficient to require further investigation based on the TG09 guidance.

The Merton Council confirms that there are no ports or shipping that meet the specified criteria within the Local Authority area.

5 Industrial Sources

5.1 Industrial Installations

The Council and the Environment Agency (EA) control industrial sources within the Borough under the Environmental Permitting Regulations (England and Wales) 2010, as amended. The Council also has control over some smaller industrial and commercial sources, largely through the Clean Air Act, with its associated control of the stack heights. As a result of these controls, there are relatively few sources that may be relevant under the Local Air Quality Management (LAQM) regime. Many of these sources were also addressed during previous rounds of Review and Assessment. The focus is thus on new installations and those with significantly changed emissions.

Industrial sources are considered unlikely to make a significant local contribution to annual mean concentrations, but could be significant in terms of the short-term objectives in the Borough. Sources in neighbouring authorities and the combined impact of several sources are considered. The approach used is based on use of the planning and permitting processes. The assessment considers all the LAQM pollutants, including those most at risk of requiring further work (SO₂, NO₂, PM₁₀ and benzene).

5.1.1 New or Proposed Installations for which an Air Quality Assessment has been Carried Out

Since the last round of Review and Assessment the Council have permitted three non-reduced installations (two cement batchers and mobile crusher). None of these however have required an air quality assessment. Furthermore other installations have closed, including one Part A installation.

An application, (referenced 08/P2724) for the formation of Mitcham Ecopark to extend an existing materials recycling facility and provide a new building with an anaerobic digestion and integrated in vessel composting facility was made in late

2011. The accompanying air quality assessment detailed a 36m gas engine stack, releasing emissions from two low NOx gas engines that will burn the biogas produced from an onsite anaerobic digestion process. The assessment found that nitrogen dioxide (and sulphur dioxide) emissions from the plant (both the long term and short term emissions) could be considered to be insignificant based on the EA criteria at both the point of maximum impact and therefore at all sensitive receptors identified.

The Merton Council has assessed new/ proposed industrial installations, and concluded that it will not be necessary to proceed to a Detailed Assessment.

5.1.2 Existing Installations where Emissions have Increased Substantially or New Relevant Exposure has been Introduced

The lists of existing Part A and B processes that are regulated under the Environmental Permitting regime are provided in the Appendix. These are all processes with low emissions of LAQM pollutants. None of these have increased emissions by greater than 30% and no new relevant exposure has been introduced nearby.

The Merton Council confirms that there are no industrial installations with substantially increased emissions or new relevant exposure in their vicinity within its area or nearby in a neighbouring authority.

5.1.3 New or Significantly Changed Installations with No Previous Air Quality Assessment

Since the last round of Review and Assessment the Council has received several applications for new installations. None of these however has required an air quality assessment.

No other applications have been received for new or proposed sources where it has been determined that the installation is likely to give rise significant pollutant emissions.

The Merton Council confirms that there are no new or proposed industrial installations for which planning approval has been granted within its area or nearby in a neighbouring authority.

5.2 Major Fuel (Petrol) Storage Depots

This was previously assessed in earlier rounds of Review and Assessment and it was found that there are no major petrol storage depots in the Borough. This situation has not changed.

There are no major fuel (petrol) storage depots within the Local Authority area.

5.3 Petrol Stations

There is some evidence that petrol stations could emit sufficient benzene to put the 2010 objective at risk of being exceeded, especially if combined with higher levels from nearby busy roads. Some sites in the Borough have however already incorporated petrol vapour recovery (PVR) systems, furthermore those service stations with petrol sales above 3.5 million litres per annum were required to install Stage 2 PVR systems before the 1st January 2010 deadline to comply with UK legislation to reduce petrol vapour (and benzene) from vehicles.

The previous round of Review and Assessment assessed all petrol stations for a throughput of more than 2000 m³ of petrol, and a busy road nearby. Of these none were found to have relevant exposure within 10m of the pumps and therefore it was not necessary to go to a Detailed Assessment. There has been no change in this situation for this round.

The Merton Council confirms that there are no petrol stations meeting the specified criteria.

5.4 Poultry Farms

Some local authorities in England have identified potential exceedences of the PM₁₀ objectives associated with emissions from poultry farms (defined as chickens (laying hens and broilers), turkeys, ducks and guinea fowl). These relate to large farms (> 100,000 birds) that are regulated by the EA. None however exist within the Council's area.

The Merton Council confirms that there are no poultry farms meeting the specified criteria.

6 Commercial and Domestic Sources

Biomass burning can lead to an increase in PM₁₀ emissions, from the combustion process itself and also by aerosol formation from the volatile materials distilled from the wood. Compared to conventional gas burning, biomass burning can also result in an increase in NO_x emissions due to the fuel-derived portion that is not present in gas combustion.

The whole Borough however is a Smoke Control Area, meaning that the emission of smoke from chimneys of domestic premises and other buildings is not permitted. Furthermore furnaces, chimneys and industrial processes are monitored carefully and only authorised appliances (as listed under the Smoke Control Area Orders) can be used to burn solid fuels such as coal, coke and wood.

6.1 Biomass Combustion – Individual Installations

The use of biomass to generate energy has potentially significant benefits for the reduction of greenhouse gas emissions. However there are concerns that an increase in biomass combustion in urbanised areas such as Merton could be detrimental to air quality, particularly with respect to PM₁₀ and NO₂. The TG09 guidance includes a procedure to determine the impact of biomass combustion plant to see if there is the potential for the air quality objectives to be exceeded.

Since the last USA, the Council has approved 2 separate applications for the use of biomass. These were for a new school on Middleton Road, Morden, Surrey SM4 6SD and an extension at the Holy Trinity Church of England Primary School, Effra Road, South Wimbledon. Air quality assessments were completed for both and these showed insignificant increases of NO₂ or PM₁₀ at the nearest receptors.

An air quality assessment was also submitted with a planning application to install a biomass boiler to provide heating to a building in Lombard Road, South Wimbledon. The assessment for this application indicated that under the EA guidance the installation of

the boiler would have insignificant impact on NO₂ and PM₁₀ concentrations in the Borough.

The Merton Council has assessed the biomass combustion plant, and concluded that it will not be necessary to proceed to a Detailed Assessment.

6.2 Biomass Combustion – Combined Impacts

As already outlined the Council is a Smoke Control Area and therefore any biomass burning using non-authorized appliances is considered minimal. There is however the potential that many small biomass combustion installations (including domestic solid-fuel burning), whilst individually acceptable, could in combination lead to unacceptably high PM₁₀ concentrations, particularly in areas where PM₁₀ concentrations are close to or above the objectives. The impact of domestic biomass combustion in most areas is thought to be small at the time of writing, but could become more important in future. The potential for combined impacts, other than that discussed above, will be assessed should future plant be proposed. Currently there is minimal domestic solid fuel burning as discussed in the next section.

The Merton Council has assessed the combined impact of biomass combustion, and concluded that it will not be necessary to proceed to a Detailed Assessment.

6.3 Domestic Solid-Fuel Burning

The previous rounds of Review and Assessment identified areas where domestic solid fuel burning gives rise to exceedences of the objective for SO₂. PM₁₀ from domestic solid fuel burning was also covered above.

The whole of the Borough is designated a Smoke Control Area and there are no areas of significant domestic solid fuel use in the Borough. This position has not

changed from the previous USA, which confirmed that no areas of significant domestic solid fuel burning were identified. Gas is widely available in the Borough and it remains the predominant fuel used for domestic water and space heating.

The Merton Council confirms that there are no areas of significant domestic fuel use in the Local Authority area.

7 Fugitive or Uncontrolled Sources

Dust emissions from uncontrolled and fugitive sources can give rise to elevated PM₁₀ concentrations. These sources can include, but are not limited to the following sites: quarrying and mineral extraction sites, landfill sites, coal and material stockyards, or materials handling, major construction works and waste management sites. Dust can arise from the passage of vehicles over unpaved ground and along public roads that have been affected by dust and dirt tracked out from dusty sites. Other sources of dust are from the handling of dusty materials, the cutting of concrete, etc and wind-blown dust from stockpiles and dusty surfaces.

No additional fugitive and uncontrolled particulate matter emissions have however been identified based on local professional knowledge, recent air quality assessments or recent complaints to the Council.

The Merton Council confirms that there are no additional potential sources of fugitive particulate matter emissions in the Local Authority area.

8 Conclusions and Proposed Actions

8.1 Conclusions from New Monitoring Data

Monitoring within the Borough confirmed that the annual mean nitrogen dioxide objective has recently been widely exceeded at roadside and background locations. The Council monitors at one location continuously and 11 other locations across the Borough in 2010 using diffusion tubes. Most of the sites monitored are considered to represent relevant exposure. Of these only the background site, plus three suburban sites met the relevant annual mean objectives for nitrogen dioxide. The roadside sites plus other suburban sites however exceeded the annual mean objective. Two diffusion tube sites also exceeded an annual mean of $60 \mu\text{g m}^{-3}$.

The Council's most recent PM_{10} monitoring for 2012 indicates that the daily mean standard has recently been exceeded within the Borough. To date the daily mean objective has not been exceeded, although with further exceedences of the standard it will be approached. An analysis of PM_{10} trends in London (KCL, 2009) also confirms that concentrations do not appear to be reducing, with some evidence indicating that close to roadsides PM_{10} from primary sources may be increasing.

Based on these findings from monitoring in the Borough, the Council, having previously designated the Borough as an Air Quality Management Area, does not need to undertake a Detailed Assessment as no new potential or actual exceedences at relevant locations were established.

8.2 Conclusions from Assessment of Sources

The Council has assessed the likely impacts of local developments for road transport, other transport, industrial processes, commercial/domestic, fugitive emissions, plus residential and commercial sources. The findings have indicated that

there are no new changes that require the Council to undertake a Detailed Assessment.

8.3 Proposed Actions

This report follows the technical guidance (TG09) produced for this round of Review and Assessment. It therefore fulfils this part of the continuing LAQM process.

The results, from following this methodology, are that the Council has not identified an additional risk of the air quality objectives for the LAQM pollutants: carbon monoxide, benzene, 1,3-butadiene, lead and sulphur dioxide, being exceeded anywhere in the Council's area. Thus the Council need not proceed beyond the updating and screening assessment for these pollutants. For nitrogen dioxide and particles (PM₁₀) the Council has previously designated the Borough as an AQMA. The findings from this report indicate that the AQMA should be maintained.

The Council will therefore undertake the following actions:

1. Undertake consultation on the findings arising from this report with the statutory and other consultees as required.
2. Maintain the existing monitoring programme.
3. Continue with the implementation of its Air Quality Action Plan in pursuit of the AQS objectives.
4. Prepare for the submission of its 2013 Air Quality Progress Report.

9 References

Defra, 2007. Air Quality Strategy for England, Scotland, Wales and Northern Ireland (Volume 1). Defra, London. Cm 7169.

Defra, 2009a. Local Air Quality Management, Technical guidance LAQM.TG09. Defra, London.

Defra, 2011. WASP – Annual Performance Criteria for NO₂ Diffusion Tubes used in Local Air Quality Management (LAQM) - Summary of Laboratory Performance in Rounds 108-115. AEA February 2011.

Merton Council (2009). Local Air Quality Management – Updating and Screening Assessment 2009.

Merton Council (2010) Local Air Quality Management – Progress Report. 2010.

KCL, 2009. Air Quality in London 2006-7. London Air Quality Network Report 14. ERG, King's College London 2009.

Appendices

Appendix 1: Part A installations in Merton

Type of process	Company Name	Site Address
Reichhold UK LTD	Manufacture and use of organic chemicals	Willow Lane, Mitcham, Surrey

Appendix 2: Part B installations in Merton

Table of permitted petrol stations in the Council's area

Ref no.	Company/ Site Address
023	Tesco, 300 Beverley Way, New Malden, Surrey, KT3 4PJ
025	Savacentre Ltd, 1 Merton High Street, SW19 1DD
027	Total Convenience Store Western Road, 231 Western Road, SW19 2QE
030	Colliers Wood Service Station, 164-168 High Street, Colliers Wood, SW19 2BN
033	Shell Pepys Corner, Worple Road, SW20 8RE
034	Kingston Autoway Centre, Shannon Corner, New Malden, Surrey, KT3 6HM
038	Shell Plough Lane, 53 Plough Lane, Wimbledon, SW17 8HA
042	Martin Way Service Station, Martin Way, Morden, Surrey, SM4 4AW
044	Wimbledon Chase Service Station, 314 Kingston Road, SW20 8LR
045	Haydons Road Service Station, 298 Haydons Road, SW19 1ED
048	Total Convenience Store, Rowan Road, SW16 5JM
050	Wandle Service Station, Bishopsford Road, Morden, Surrey, SM4 6AP
054	Tesco, 195 – 210 Merton Road, SW19 1EG

Table of Part B installations in the Council's area

PG Note	Company Name	Site Address/ Home Address of Mobile Plant
PG5/02(04) Crematoria	South London Crematorium	Rowan Road, Streatham, SW16 5JG
PG5/02(04) Crematoria	North East Surrey Crematorium	Lower Morden Lane, Morden, Surrey SM4 4EU
PG6/02(04) Timber & Combustion	A.W. Champion Ltd	Champion House, Burlington Road, New Malden Surrey KT3 4NB
PG3/1(04) Bulk Cement	Rapid Ready Mix	Alpha Place, Garth Road, Morden, SM4 4LG
PG3/1(04) Bulk Cement	Allen Concrete Ltd	38 Willow Lane, Mitcham, Surrey, CR4 4NA
PG3/1(04) Bulk Cement	Hanson Premix	Archway Close, Endeavour Way, London, SW19 8UH
PG6/34(11) Respraying of Road Vehicles	Morden Repair Centre Ltd	141 Garth Road, Morden, Surrey, SM4 4LF
PG6/34(11) Respraying of Road Vehicles	Link Vehicle Solutions Ltd	Unit 2, Greenlea Industrial Park, Prince Georges Road, Colliers Wood, SW19 2RB
PG6/34(11) Respraying of Road Vehicles	Autodex Ltd.	2 Prince Georges Road, Merton Abbey, SW19 2PX
PG6/34(11) Respraying of Road Vehicles	DWS Bodyworks	Mitcham, 11/11A Bunting Close, Mitcham, CR4 4ND
PG3/1(04) Bulk Cement	Maguire Skips Limited	Land adj 24 Wandle Way, Willow Lane, Mitcham, CR4 4NB
PG3/16(04) Mobile Crushing and Screening	Maguire Skips Limited	Land adj 24 Wandle Way, Willow Lane, Mitcham, CR4 4NB
PG1/01(04) Waste Oil and Recovered Oil Burners Less Than 0.4 MW	New Generation Cars	Elm Grove Industrial Estate, Elm Grove, Wimbledon SW19 4HE

Table of permitted dry cleaners in the Council's area

Process Name	Ref Number	Post Code
Bond	DC/001	SW19 1LX
Bourjois Cleaners	DC/002	KT3 6NB
Kingsmere Cleaners	DC/004	SW19 7PA
Dry Cleaning By Mona	DC/005	CR4 4BE
Dudley Dry Cleaners	DC/007	SW19 8JZ
Elegance Dry Cleaners	DC/009	SW20 0BA
Galaxy Dry Cleaners	DC/010	SW19 7BD
Grand Dry Cleaners	DC/011	SW20 9NQ
High Quality	DC/012	SW19 1EE
Johnson Cleaners UK Limited	DC/013	SW19 5DW
First Impressions	DC/014	SM4 5HJ
Master John (Dry cleaners)	DC/016	SW19 3NT
Morden Dry Cleaners	DC/017	SM4 5BL
Parrisianne Cleaners	DC/018	SM4 5SQ
Pisces Dry Cleaning	DC/019	CR4 4BE
Rendezvous	DC/020	SW20 8LX
Surrey Linen Services	DC/021	KT3 6JF
Serena Dry Cleaners	DC/022	CR4 3NB
Smarty Dry Cleaning Services	DC/023	SW19 1QN
Swan Cleaners	DC/024	SW20 9NQ
London Quality Cleaners	DC/025	CR4 2JB
Unit 4 London Dry Cleaners Ltd	DC/027	SW20 0RH
Get Smart Dry Cleaners	DC/030	SM4 4AH
Perry de Montaignac	DC/032	SW19 3TZ
Claremar Cleaners	DC/034	SW20 9NE
Nelson And Freelander Dry Cleaners	DC/036	SW20 0TW
Elite Ironing Ltd	DC/037	SW19 8JA
Heritage	DC/038	SM4 6HY