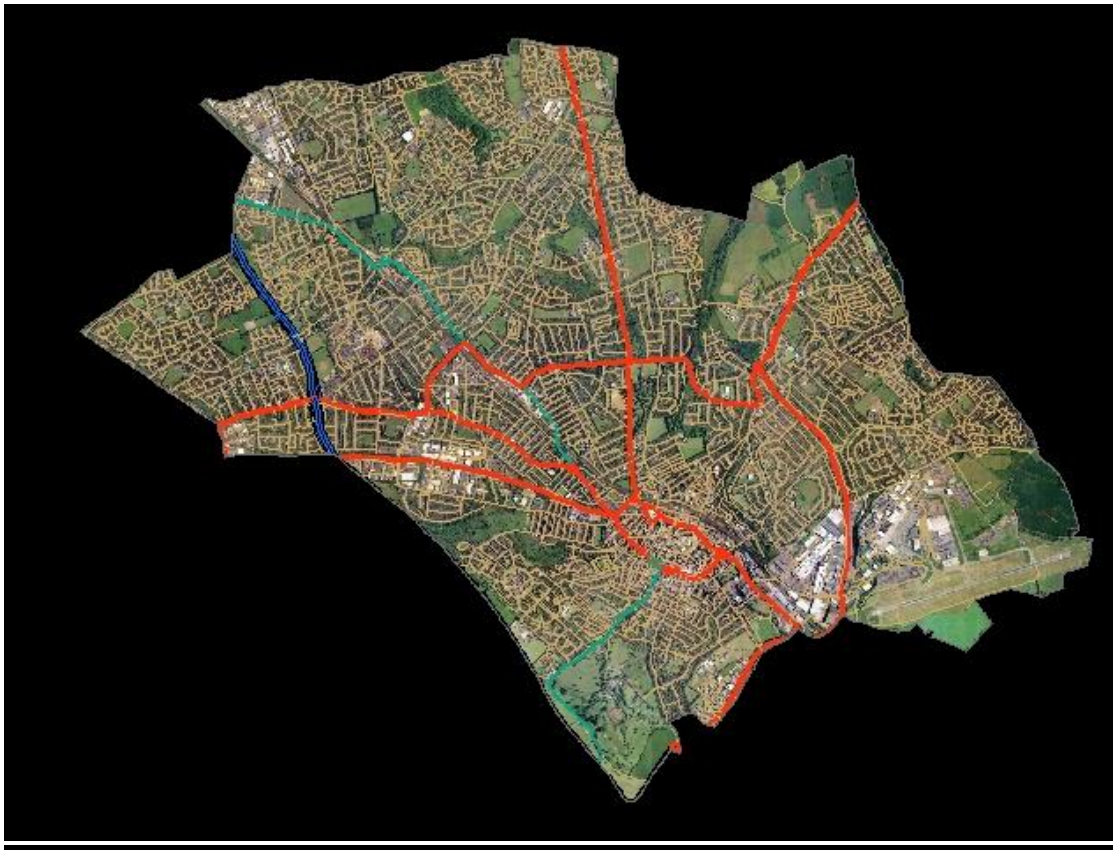
Updating & Screening Assessment for the Area of Luton Borough Council, April 2006



LUTON BOROUGH COUNCIL

Front Cover - information

Aerial Photograph of Luton taken Saturday 1st June 2002 with OSCAR Road Centreline Data overlaid.

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What is required for an Updating and Screening Assessment?

The requirements for the Updating and Screening Assessment have not changed since 2003.

The intent is to identify those matters that have *changed* since the second round of Review and Assessment was completed.

Authorities should build upon and utilise the information provided in the Progress Reports submitted in 2004 or 2005. The USA should consider any new monitoring data, new sources or significant changes to existing sources (either locally or within neighbouring authorities), or any other local changes that may be significant. Authorities should also consider any relevant changes to public exposure.

Authorities *do not* need to re-assess the issues that have already been adequately considered in previous rounds, but they should make it clear that due consideration has been given to each item in the checklist, and as a minimum confirm that the item is not relevant or has not changed.

Updating & Screening Assessment for the Area of Luton Borough Council, May 2006

Background

All Local Authorities are required to carry out an Updating & Screening Assessment (USA) for their areas.

This follows on from Round 1 of Local Air Quality Management where Local Authorities were required to carry out up to four Reviews & Assessments (R&A).

The philosophy behind Local Air Quality Management is that future air quality is predicted and the predictions compared against "Objectives" which have been set by the Government. If the R&As indicated that the Objectives will not be met in areas where people will be regularly exposed to the exceedences the LA is required to designate an Air Quality Management Area (AQMA) and devise a plan (Air Quality Action Plan – AQAP) indicating how it will try and reduce levels of air pollution to prevent exceedences in areas of relevant exposure.

Stage 1 R&A

Luton Borough Council published its Stage 1 R&A in March 1999. It concluded that so far as Benzene, 1,3-Butadiene and Lead were concerned there was no need to take further action. It stated though that further investigation was required for Carbon Monoxide, Nitrogen Dioxide, PM_{10} (Particulate Matter, the 50th % ile aerodynamic diameter of which is less than 10μ microns [a micron is1 millionth of a metre or 1 thousandth of a millimetre]) and Sulphur Dioxide.

Stage 2 R&A

The Stage 2 R&A published in October 1999 considered in more detail the 4 pollutants indicated by the Stage 1 and in regard to Carbon Monoxide and Sulphur Dioxide concluded that no further action need be taken. It found though that further investigation needed to be made regarding Nitrogen Dioxide and PM_{10}.

Stage 3 R&A

The Stage 3 R&A looked in greater detail at Nitrogen Dioxide and PM_{10} and found that the Air Quality Standards objectives predicted to be exceeded were the annual mean nitrogen dioxide objective (21ppb/40μgm^{-3} by end of 2005) and the 24 hourly mean PM_{10} objective (50μgm^{-3} by end of 2004). The report concluded that it should be established if relevant exposure occurred in the areas of exceedence. The area of exceedence was in a corridor 65m from the centre line of the M1 Motorway. Investigations showed that the occupiers of 170 dwellings would be subjected to relevant exposure as they were within the area of exceedence.

In addition to seeking the views of Statutory Consultees, letters were sent to occupiers of the 170 properties in the predicted area of exceedence explaining the fact that an AQMA would have to be declared. They were asked in the letter if they wanted to receive a summary of the Stage 3 R&A and 28 (16.5%) indicated that they did. (Discussions with colleagues in other LAs in Bedfordshire & Hertfordshire who consulted the public on LAQM revealed they had a much lower response rate). Further replies were received from occupiers of 3 dwellings, the nub of their responses being that they wanted action regarding noise from vehicles on the Motorway, they were less concerned in practice about air pollution from the Motorway because they realised that little could be done about it.

Luton Borough Council is committed to consultation, as is Central Government. There is clearly little point in consultation**, if it is have any meaning**, if the responses of Consultees are not to be acted upon where action is possible. At the time of consultation on Stage 3 in December 2001 the Highways Agency (HA) were in the process of developing proposals for arranging for noise barriers to be installed alongside the Motorway in Luton as part of the Government's national discretionary scheme. Extensive discussions had taken place with the HA in early 2001 regarding a scheme which should have commenced by the end of 2001/2. However, shortages of Central Funding meant that the noise barrier works did not commence then. During discussions between the HA and Luton Borough Council it became apparent that some of the proposals for the barriers were unacceptable to Luton, not offering an optimum solution to those affected by noise from vehicles on the M1 Motorway. These issues were never resolved in the discussions in 2001 as the discussions petered out due to the above-mentioned lack of Central Funding. However, when discussions were resumed again in 2002 between the HA and Luton Borough Council and it became apparent that the HA were still not prepared to accede to the requests being made by the Council, it became necessary for Officer-time in the area responsible for LAQM to be devoted to securing a better deal for people affected by the M1 noise. Thus an AQMA was not designated with respect to the 170 dwellings identified as being subject to likely exceedences and therefore relevant exposure.

Stage 4 R&A

In 2002 a Stage 4 Review & Assessment was commissioned. This was done to provide information to feed into an Action Plan and also to obtain more up-to-date information on future Air Quality in Luton. Vehicle Emission Factors had been revised by the Department for Environment, Food and Rural affairs (DEFRA) since the Stage 3 R&A was carried out and so the Stage 4 R&A used these new factors. New vehicles are becoming ever cleaner in terms of their permitted regulated emissions as required by EU legislation (see www.vca.gov.uk or phone 0117 9524235 for information from the Vehicle Certification Agency on vehicle emissions) and therefore the new Vehicle Emission Factors take lower tailpipe emissions into account.

The Stage 4 R&A looked in detail at Nitrogen Dioxide and PM_{10}. In regard to PM_{10} it concluded that the annual average objective of 40 μgm^{-3} in 2004 will not be exceeded anywhere in Luton. It also concluded that the 24-hour mean objective for PM_{10} of 50 μgm^{-3} in 2004 would not be exceeded except on the M1 Motorway itself (where relevant exceedence does not occur). The Stage 4 R&A also concluded that the provisional annual average objective for PM_{10} of 50 μgm^{-3} in 2010 of 20 μgm^{-3} will not be exceeded, except perhaps within approximately 5m of the **boundary** of the M1.

So far as **Nitrogen Dioxide** is concerned, the Stage 4 R&A predicted that there will be exceedences leading to relevant exposure, as the 2005 Annual mean objective of 40 μgm^{-3} will not be met. These locations of relevant exposure were at 24 specified dwellings that are stated to be within a 50 m band surrounding the M1.

Updating & Screening Assessment 2003

In 2003 new DEFRA Guidance came into force which meant that an Updating & Screening Assessment needed to be produced. This was done in accordance with Technical Guidance LAQM.TG (03). All 7 pollutants (Benzene, 1-3 Butadiene, Carbon Monoxide, Lead, Nitrogen dioxide, PM_{10} & Sulphur Dioxide) were considered and it was found that only the 2005 annual mean objective for 2005 of 40μgm^{-3} was likely to be exceeded at locations where relevant exceedence would occur, both inside and outside the AQMA that was to be declared. This meant that a Further Assessment and a Detailed Assessment were required to be done in 2004.

Air Quality Management Area 2003

An Air Quality Management Area (AQMA) was declared in November 2003, which contained 24 dwellings.

Further & Detailed Assessment 2004

A Further Assessment & Detailed Assessment (FADA) was carried out and published in 2004. The FADA used more recent meteorological data than had been used in previous reports and it concluded that the 2005 annual mean objective for 2005 of 40 μgm^{-3} was likely to be exceeded over a much greater area than had been concluded by the Stage 3 and 4 R&As, that area comprising of 431 dwellings.

Air Quality Management Area 2005

An Air Quality Management Area (AQMA) was declared in March 2005, which contained 431 dwellings. It may be found on the Luton Borough council website, http://www.luton.gov.uk/ - Link - AQMA 2005

Progress Report 2005

Executive Summary from Progress Report 2005 :-

The main source of air pollution in Luton and the surrounding area is from road transport. There are proposals for new and altered road schemes in and around Luton that may have a beneficial effect on air quality.

During 2004 the measured average annual concentration of Nitrogen Dioxide in Luton reduced at all locations compared to 2003. There is only 1 Site exceeding the 40μgm^{-3} Annual Mean objective for NO_2, by Junction 11 of the M1.

There are normal variations year on year in Nitrogen Dioxide (and other analytes) but the trend in Luton for NO_2 concentrations at the measurement sites is downwards, as shown by the chart at the rear of Progress Report (PR) 2005. Previous reports have identified that the concentrations of other pollutants for which there are Air Quality Objectives are not an issue in Luton as they fall consistently below the objective concentrations.

Useful Information about Luton

The population of Luton is 184,000 (2001 Census updated to 2004 [mid year estimate]) and its area is 4336 ha (*c*. 10,657 acres)

The main sources of air pollution are the M1 Motorway that runs North – South towards the Western side of the Borough, and London Luton Airport (LLA) that is situated in the Southeast corner of the Borough. There is only the one Part A IPPC process (regulated by the Environment Agency) in the area, being the IBC vehicle-plant Boiler house. There are no **large** Part B IPPC processes (regulated by Luton BC) in the area.

Enquiries in March 2006 of neighbouring Local Authorities (North Herts DC & South Beds DC) reveal that there are no new or modified industrial processes within their areas.

A Real-Time Continuous Air Quality Monitoring Station is Situated 183m from the Centreline of the M1 Motorway, just to the North of Junction 11 (Dunstable Road.

It is considered to be a background site, although it is in the vicinity of the M1 and the Dunstable Road. Paragraphs 1.19 – 1.21 of *LAQM TG(03)* have been checked to ensure that the Monitoring Station location represents relevant exposure.

Data from the Station is collected hourly and ratified by Environmental Research Group (ERG, formerly SEIPH). Carbon Monoxide, Nitrogen Dioxide, NO_x, Sulphur Dioxide, PM_{10} (TEOM Method - see page 55 for an explanation of TEOM) and Ozone are measured at the station. 2 NO_x tubes are also collocated at the station.

Nitrogen Dioxide concentrations are also measured at 26 locations around the Borough using Diffusion tubes. The tubes are 50% “TEA” (NOT the beverage!) in water, supplied and analysed by GRADKO.

Air quality data quoted is for 2002 and 2005 unless specified otherwise (2002 data have been left in from the 2003 USA to show as a comparison).

Format of this Document

In order to assist those reading this report, and to help them understand the thought process, the tabular format used in *Technical Guidance LAQM. TG(03 Update)* has been used. This follows a structured method of looking at sources and data to screen out those pollutants that are unlikely to be of concern.

The format follows that of the Luton Borough Council *Updating & Screening Assessment 2003*, taking into account the *"Guidance issued for Updating and Screening Assessment 2006: FAQS"* at www.uwe.ac.uk/aqm/review/mguidance_05.html

The above link has, in part answer to one of its FAQs, the following statement:-

> **"Authorities *do not* need to re-assess the issues that have already been adequately considered in previous rounds, but they should make it clear that due consideration has been given to each item in the checklist, and as a minimum confirm that the item is not relevant or has not changed. An example of a suitable response to the checklist items is provided in the tables in the accompanying document. [This is a hyperlink - not a table in this USA report]"**

For the ease of the reader, for those pollutants that are **N**ot **A**n **I**ssue in **L**uton (**NAIL**), a statement has been made at the beginning of each pollutant section.

Where there has been no change in a particular detail since the USA 2003 - *ie* it is **S**till **T**he **P**osition (**STP**), a statement to this effect is made at the appropriate place.

Data has been kept in regarding 2003 so that the reader can make comparisons between the years of the USAs.

Data for 2005 for Real Time analysers for the LBC & London Luton Airport monitoring stations has been obtained from the ERG web site www.hertsbedsair.net**. At the time of writing this report (March/April 2005) some of the data carried an advisory that it had not been fully ratified. ERG advised that this was a general notification, which in practice applied only to data from National Monitoring Network stations - local operator sites had in fact been fully ratified**

There are no new or modified industrial sources within the areas of neighbouring authorities, or within the area of Luton.

Bold text in the Report gives the Luton BC position

Air Quality Objectives in the Air Quality Regulations (2000) and (Amendment) Regulations 2002 for the purpose of Local Air Quality Management.

Pollutant	Concentration limits		Averaging period	Objective [Number of permitted exceedances a year and equivalent percentile]	
	(μgm^{-3})	(ppb)		(μgm^{-3})	date for objective
Benzene	16.25	5	**Running annual mean**	**16.25**	by 31.12.2003
	5	1.5	**Annual mean**	**5.0**	by 31.12.2010
1,3-butadiene	2.25	1	**Running annual mean**	**2.25**	by 31.12.2003
CO	10,000	8,600	**Running 8-hour mean**	**10000**	by 31.12.2003
Pb	0.5	-	**Annual mean**	**0.5**	by 31.12.2004
	0.25	-	**Annual mean**	**0.25**	by 31.12.2008
NO_2 (see note)	200	105	**1 hour mean**	**200** [Maximum of 18 exceedances a year or equivalent to the 99.8th percentile]	by 31.12.2005
	40	21	**Annual mean**	**40**	by 31.12.2005
PM_{10} gravimetric (see note)	50	-	**24-hour mean**	**50** [Maximum of 35 exceedances a year or ~ equivalent to the 90th percentile]	by 31.12.2004
	40	-	**Annual mean**	**40**	by 31.12.2004
SO_2	266	100	**15 minute mean**	**266** [Maximum of 35 exceedances a year or equivalent to the 99.9th percentile]	by 31.12.2005
	350	132	**1 hour mean**	**350** [Maximum of 24 exceedances a year or equivalent to the 99.7th percentile]	by 31.12.2004
	125	47	**24 hour mean**	**125** [Maximum of 3 exceedances a year or equivalent to the 99th percentile]	by 31.12.2004

Notes

1. Conversions of ppb and ppm to (μgm^{-3}) correct at 20°C and 1013 mb.
2. The objectives for nitrogen dioxide are provisional.
3. PM_{10} measured using the European gravimetric transfer standard or equivalent.

Photo of Luton Borough Council's
Continuous Real Time Air Quality Monitoring Station (CRAQM)

Review and Assessment of Carbon Monoxide

Not An Issue in Luton (NAIL)

Source, location or data that need to be assessed	Steps that must be taken to complete the assessment	Notes relevant to each step
Monitoring		
(A) Monitoring data	**Overview**	
	These steps will ensure you collate all relevant carbon monoxide monitoring data and assess them appropriately to identify locations where exceedences of the 8-hour objective might occur. You should focus on monitoring data obtained since the last round of review and assessment, but it is also useful to show longer-term trends where possible.	
	Approach	
	1. Collate all carbon monoxide monitoring data	Include your own local monitoring data.
	2. Ratify your local monitoring data, if you not have already done so	It is imperative that any local monitoring data are ratified before being used. Key steps will be to ensure that you have screened and scaled the data – see Annex 1 of TG(03) and the FAQ on ratification for techniques to do this.
	3. Identify the maximum daily running 8-hour concentrations during each year of measurement.	The data can only be used to demonstrate *compliance* with the objective where data capture exceeds 90%. An *exceedence* of the objective may of course be demonstrated with much lower data capture rates.
	There are no National Network stations in the Luton Area. **The Annual Mean concentration in 2002 was 0.38 mgm^{-3}, in 2005 it was 0.2 mgm^{-3}.** **The maximum daily running 8-hour concentration during 2002 was 2.6 mgm^{-3}; in 2005 it was 3.4 mgm^{-3}.**	
	Question	
	• Are any current maximum daily running 8-hour concentrations greater than 10 mgm^{-3}?	Before you assess the measured concentrations check that the monitoring locations represent relevant exposure (see Paras 1.19 – 1.21).
	There are no current maximum daily running 8-hour concentrations greater than 10 mgm^{-3}. Still the Position (STP).	
Carbon Monoxide		

Source, location or data that need to be assessed	Steps that must be taken to complete the assessment	Notes relevant to each step
	Action	
	As the Answer to the above question is "No", there is no need to proceed to a Detailed Assessment (DA) of CO on the basis of Monitoring results. STP	
Road Traffic	**Overview**	
	Available monitoring data suggest that the carbon monoxide objective is unlikely to be exceeded at any locations. If exceedences are possible then they will be close to very busy roads or junctions. **In the case of Luton, data from the Monitoring Station indicates that there were no exceedences of the daily running 8-hour mean of 10 mgm^{-3} (note CO is measured in milli-, NOT micro-, grammes/m^{3}). The highest daily running 8-hour mean value was 2.6 mgm^{-3}, [3.4mgm^{-3} in 2005] the annual mean was 0.38 mgm^{-3}, [0.2mgm^{-3}in 2005] and % age data capture 94% [91% in 2005]**	
(B) Very busy roads or junctions in built up areas	1. Identify 'very busy' roads and junctions in areas where the 2003 background is expected to be above 1 mgm^{-3}. It is only necessary to include very busy roads or junctions not considered in previous review and assessment reports: where there has been a significant increase (.10%aadt) in traffic flows or where there is new relevant exposure.	You should use the following criteria to define 'very busy': • Single carriageway roads with daily average traffic flows which exceed 80,000 vehicles per day. • Dual carriageway (2 or 3-lane) roads with daily average traffic flows which exceed 120,000 vehicles per day. • Motorways with daily average traffic flows which exceed 140,000 vehicles per day. At junctions you should add flows. There are likely to be few roads meeting these criteria.
	There are no roads which fall into any of the above-right categories (maximum M1 Luton-segment traffic flow 111,000 in 2000, 2004 flow *c.* 119,000, maximum other road flow A5065 44,400 in 2000, 2004 flow *c.* 47,500.	
	Action	
	As there are no roads with flows exceeding those specified above-right there is no need to proceed to a Detailed Assessment (DA) of CO on the basis of traffic flows. Still the Position (STP)	

<u>No more Consideration needed of Carbon Monoxide</u>
Still the Position (STP)

Review and Assessment of Benzene

Not An Issue in Luton (NAIL)

Source, location or data that need to be assessed	Steps that must be taken to complete the assessment	Notes relevant to each step
Monitoring		
(A) Monitoring data outside an AQMA	**Overview**	
	These steps will ensure you collate all relevant benzene monitoring data and assess them appropriately to identify locations where exceedences of the annual mean objectives for 2003 and/or 2010 might occur. You should include all monitoring data as you will not previously have assessed them against the 2010 objective.	
	Approach	
	1. Collect all benzene monitoring data	Include your own local monitoring data and data from the national networks.
	A Benzene tube survey was carried out in 1994 (July - December). **The average <u>measured concentration</u> at each location were as follows (µgm^{-3}),** **Junction A505/M1 16.9** **Luton Museum 9.4** **Round Green 18.8** **Windsor Street 14.3** **Eaton Green Road 9.1** **Town Hall 10.4**	**There is no nearby national monitoring data**
	2. Ratify your local monitoring data if you have not already done so.	It is imperative that any local monitoring data are ratified before being used. Key steps will be to ensure that you have screened and scaled the data - see Annex 1(not reproduced in this report) of TG(03) and the FAQ on ratification for techniques to do this.
	There is no other data against which to ratify the local monitoring data	
	3. Calculate the highest means from the data and identify the highest values	The annual mean concentration may be assumed to be equivalent to the running annual mean concentration.
	The highest value is 18.8 µgm^{-3}	
	4. If the results are for a roadside location estimate the annual mean concentrations for 2006 and 2010 **This result of 18.8 µgm^{-3} is for a location near a Filling Station.** **The highest roadside location concentration is 16.9**	Box 3.4 (not included in this report) provides the factors to do this. You should summarise both current and future concentrations in a Table. It is also advisable to project forward from each year of monitoring, to show the range of future concentrations. You should then use the highest value as the basis for your decision.

Source, location or data that need to be assessed	Steps that must be taken to complete the assessment	Notes relevant to each step
Benzene		
	The factors given in box 3.4 do not go back past 1999. Using that factor therefore, to obtain corrected roadside concentrations for 2003, multiply the above figures by 0.3147, for 2006 by 0.2667 and for the 2010 value, use 0.2338. **These factors will give over overestimations of future years' concentrations**	**The AEA helpdesk advised in 2003 that there are no other factors for benzene diffusion tubes other than those given in box 3.4.** **They suggest that the 1994 data is now too old to use for current LAQM purposes and ask if concentrations measured in 1994 would be representative of current benzene concentrations.**
	Corrected concentrations in µgm^{-3} for the years **2003 are 5.3** **2006 are 4.5** **2010 are 3.9** **at Junc A505/M1**	
	Questions	
	•Are any running annual means greater than 16.25 µgm^{-3}? •Are any annual means greater than 5 µgm^{-3}? •Are any running annual means greater than 3.25 µgm^{-3} (**Scotland and Northern Ireland only)?**	Before you assess the measured concentrations check that the monitoring locations represent relevant exposure (see Paras 1.19 – 1.21). For industrial and petrol station sources you should use current concentrations because there is no straightforward way to project future exceedences. Future estimates would be part of any Detailed Assessment.
	Action	
	If the answer is YES to either of these questions, proceed to a Detailed Assessment for benzene.	The Detailed Assessment will be with a view to determining whether to declare an AQMA.
	The annual mean is lower than 5 µgm^{-3} and therefore there is no need to proceed to a DA for benzene.	

Source, location or data that need to be assessed	Steps that must be taken to complete the assessment	Notes relevant to each step
Benzene		
	Overview	
	This step will determine whether there is evidence to suggest that an AQMA previously declared may need reconsideration	
(B) Monitoring data within an AQMA	**Approach**	
	1. Carry out the data analysis as set out under (A) above.	This will be for monitoring carried out within the previously defined areas of exceedence.
	There were no previously defined areas of exceedences. There is no monitoring data within the area of the AQMA	
	Action	
	There is no need to proceed to a DA	
Road Traffic		
	Overview	
	The assessment carried out by DEFRA for the 2010 objective for benzene suggests there may be a few locations close to busy roads in areas with high background concentrations, that may be at risk of exceeding the objective. This section is designed to identify such locations	
[C] Very busy roads or junctions in built up areas	**Approach**	
	1. Identify 'very busy' roads and junctions where the 2010 background is expected to be above 2 µg/m^3. It is only necessary to include very busy roads or junctions not considered in previous Review & Assessment reports; where there has been a significant increase (10% AADT) in traffic flows; or where there is new relevant exposure	
	None of the above conditions apply	
	Action	
	No further action needed **STP**	
Industrial Sources		
[D] New Industrial Sources	**Overview**	
	There may be a few petrochemical works that emit sufficient benzene to put the 2010 objective at risk of being exceeded. You should also include sources in neighbouring authorities close to your boundary.	
	Approach	
	1.Check whether an air quality assessment has already been carried out for the new industrial source.	
	There are no new industrial sources, either within the boundary or outside, but close to, the boundary.	

Source, location or data that need to be assessed	Steps that must be taken to complete the assessment	Notes relevant to each step
Benzene		
(E) Industrial sources with substantially increased emissions, or relevant new exposure	**Approach**	
	1. Determine whether any of the sources identified during previous rounds of R&A as potentially significant have substantially increased emissions.	
	There were no industrial sources identified in previous rounds of R&A	
Other Sources		
	Overview	
	There is some evidence that petrol stations will emit sufficient benzene to put the 2010 objective at risk of being exceeded, especially if combined with higher levels from nearby busy roads.	
(F) Petrol Stations	**Approach**	
	1. Identify all petrol stations with an annual throughput of more than 2000 m^3 of petrol (2 million litres per annum) and with a busy road nearby that have not been covered by previous R&A reports.	A busy road can be taken to be one with more than 30,000 vehicles per day. Petrol stations fitted with Stage 2 recovery systems can be ignored. Information on throughput should be available from the authorisations. Only count petrol, not diesel.
	2. Determine whether there is relevant exposure within 10m of the pumps.	Guidance on locations that are relevant in terms of an annual mean objective is provided in Box 1.3 (sic) – actually box 1.4. You should include residential accommodation located above the garage, i.e. a petrol station at the base of a block of flats. You should use distance from the pumps, not from the boundary of the site.
	There is now no residential accommodation above a petrol station in Luton (there used to be, at Oakley Road). **There is no residential accommodation within 10 m of petrol pumps**	
	Question	
	• Does the Petrol station meet the above criteria? •	
	Action	
	No petrol stations meet the above criteria	
	As there are no petrol stations meeting the above criteria [and there are no new PFSs within the criteria of (1) above], there is no need to carry out a DA on the basis of petrol stations.	

Source, location or data that need to be assessed	Steps that must be taken to complete the assessment	Notes relevant to each step
Benzene		
Other Sources (contd)		
(G) Major fuel storage depot (Petrol Only)	**Approach**	
	1. Identify any major fuel storage depots that have not been covered by previous R&A reports. You should also include sources in neighbouring authorities close to your boundary.	**The LA support Helpdesk is able to provide a list of major fuel storage depots and their locations.**
	There are no major fuel depots within 8km of Luton.	
	Action	
	As there are no major fuel depots meeting the above criteria there is no need to proceed to a DA for Benzene	
No more Consideration needed of Benzene **STP**		

Review and Assessment of 1,3-Butadiene

Not An Issue in Luton (NAIL)

(The main source of 1,3- butadiene in the UK is emissions from motor vehicle exhausts. 1,3-butadiene is also an important industrial chemical and is handled in bulk at a small number of industrial premises).

Source, location or data that need to be assessed	Steps that must be taken to complete the assessment	Notes relevant to each step
Monitoring		
(A) Monitoring Data	**Overview**	
	These steps will ensure you collate your 1,3- Butadiene monitoring data and assess them appropriately to identify locations where exceedences of the running and annual mea objective might occur.	
	Approach	
	1. Collate all 1,3-butadiene monitoring data.	Include your own local monitoring data and data from the national networks.
	There is no local monitoring data and there are no monitoring stations in the national network in the vicinity of Luton.	
	2. Ratify your local monitoring data, if you have not already done so.	It is imperative that any local monitoring data are ratified before being used. Key steps will be to ensure that you have screened and scaled the data – see Annex 1 of TG(03) and the FAQ on data ratification for techniques to do this.
	There is no Local monitoring data to ratify	
	3. Calculate running annual means from the data and identify the highest value.	
	Questions	
	• Are any current running annual means greater than 2.25 μgm^{-3}?	Before you assess the measured concentrations check that the monitoring locations represent relevant exposure (see Paras 1.19 – 1.21). Use is made of current concentrations because there is no straightforward way to project future exceedences. Future estimates would be part of any Detailed Assessment.
	Action	
	If the answer is YES, proceed to a Detailed Assessment for 1,3- butadiene.	The Detailed Assessment will be with a view to determining whether to declare an AQMA.
	There is no monitoring data and therefore there is no need to proceed to a DA for 1,3-Butadiene on the basis of Monitoring results. STP	

Source, location or data that need to be assessed	Steps that must be taken to complete the assessment	Notes relevant to each step
1,3-Butadiene		
Industrial sources		
	Overview	
	No industrial sources were identified during the first round of Review & Assessment (Nationally) as likely to give rise to exceedences of the running annual mean objective for 1,3-butadiene. You could, however, have new sources introduced into your area or existing sources with substantially increased emissions. This section deals with these possibilities. You should also include sources in neighbouring authorities close to your boundary.	
(B) New Industrial Sources	**Approach 1**	
	1. Check whether an air quality assessment has already been carried out for the new industrial source.	An assessment may already have been carried out as part of the planning or authorisation process. If this is the case you should confirm that the assessment is sufficient for review and assessment purposes. You only need to consider proposed sources for which planning approval has been granted.
	There are no new industrial sources of 1,3-butadiene STP	
	Approach 2	
	This approach uses the checklist in Annex 2 of LAQM. TG (03) to determine whether a new source needs considering further, there are however no new sources	
	There are no new industrial sources and therefore there is no need to proceed to a DA for 1,3-Butadiene on the basis of new industrial sources. STP	
[C] Industrial sources with substantially increased emissions, or new relevant exposure	**Approach**	
	1. Determine whether any of the sources identified during the first round of review and assessment as potentially significant have substantially increased emissions.	A 'substantial' increase can be taken to be one greater than 30%.
	2. Obtain updated information on the total annual emission of 1,3-butadiene and the height of the emission.	See Para 4.20. If it is proving difficult to obtain the information on the emissions contact the Emissions Helpdesk (Box 1.1).
	There were no sources of 1,3-Butadiene identified during the First Round of Review & assessment.	
	There were no sources identified during the First Round of R&A and therefore there is no need to proceed to a DA for 1,3- Butadiene on the basis of previously identified sources.	
No more Consideration needed of 1,3- Butadiene STP		

Review and Assessment of Lead

Not An Issue in Luton (NAIL)

Source, location or data that need to be assessed	Steps that must be taken to complete the assessment	Notes relevant to each step
Monitoring		
(A) Monitoring data outside an AQMA	**Overview**	
	These steps will ensure you collate all relevant lead monitoring data and assess them appropriately to identify locations where exceedences of the annual mean objectives for 2004 and/or 2008 might occur. You should focus on monitoring data obtained since the last round of review and assessment, but it is also useful to show longer-term trends where possible.	
	Approach	
	1. Collate all lead monitoring data.	Include all data in your own local authority area..
	There is no local lead monitoring data (nor nearby data from the national monitoring network)	
	2. Ratify your local monitoring data, if you have not already done so.	It is imperative that any local monitoring data are ratified before being used. Key steps will be to ensure that you have screened and scaled the data – see Annex 1 for techniques to do this.
	3. Calculate annual means from the data.	The annual means should represent a calendar year if possible. Where less than 9 months data are available, contact the Monitoring Helpdesk for advice.
	Questions	
	• Are any current annual means greater than 0.5 μgm^{-3}? • Are any current annual means greater than 0.25 μgm^{-3}?	Before you assess the measured concentrations check that the monitoring locations represent relevant exposure (see Paras 1.19 – 1.21). Use is made of current concentrations because there is no straightforward way to project future exceedences (but see Para 5.13). Future estimates would be part of any Detailed Assessment.
	Action	
	If the answer is YES to either of these questions, proceed to a Detailed Assessment for lead.	The Detailed Assessment will be with a view to determining whether to declare an AQMA
	There is no monitoring data and therefore there is no need to proceed to a DA for Lead on the basis of Monitoring results	

Source, location or data that need to be assessed	Steps that must be taken to complete the assessment	Notes relevant to each step
Lead		
Industrial Sources		
	Overview	
	No industrial sources [nationally] were identified during the previous rounds of review and assessment as likely to give rise to exceedences of the annual mean objective for lead. You could however have new sources introduced into your area or existing sources with substantially increased emissions. This section deals with these possibilities. Particular attention should be paid to the combined impact of several sources, including those outside the local authority area.	
(B) New Industrial sources	**Approach 1**	
	1. Check whether an air quality assessment has already been carried out for the new industrial source.	An assessment may already have been carried out as part of the planning or authorisation process. If this is the case you should confirm that the assessment is sufficient for review and assessment purposes. You only need to consider proposed sources for which planning approval has been granted.
	There are no new industrial sources of Lead in the area	
	Question	
	• Did the assessment predict any exceedences of the objectives at relevant locations?	
	Action	
	If the answer is YES you should proceed to a Detailed Assessment for lead for this source.	The Detailed Assessment may be no more than relying on the findings of the air quality assessment. For this to be the case the assessment will have to meet the standards of a Detailed Assessment.
	There are no new industrial sources and therefore there is no need to proceed to a DA for Lead on the basis of new industrial sources.	
	Approach 2	This approach should be followed if there has been no previous air quality assessment.
	1. Use the checklist in Annex 2 to determine whether the source needs considering further.	
	There are no new sources of Lead	
	2. Obtain information on the total annual emission of lead and the height of the emission.	See Para 5.21. If it is proving difficult to obtain the information on the emissions contact the LA Support Helpdesk.
	3. Use the nomograms described in Para 5.14 onwards to determine if the source requires further assessment.	You will need to derive the effective stack height. Details of how to do this are provided in Para 5.22.

Source, location or data that need to be assessed	Steps that must be taken to complete the assessment	Notes relevant to each step
Lead		
	This approach uses the checklist in Annex 2 of LAQM. TG (03) to determine whether a new source needs considering further, there are however no new sources.	
	There are no new industrial sources and therefore there is no need to proceed to a DA for Lead on the basis of new industrial sources.	
[C] Industrial sources with substantially increased emissions	**Approach**	
	1. Determine whether any of the sources identified during the last round as potentially significant have 'substantially' increased emissions. Also consider whether there is any new relevant exposure. You should also include sources in neighbouring authorities close to your boundary.	A 'substantial' increase can be taken to be one greater than 30%.
	2. Obtain updated information on the total annual emission of lead and the height of the emission	See Para 5.21. If it is proving difficult to obtain the information on the emissions contact the LA Support Helpdesk.
	3. Use the nomograms described in Para 5.15 onwards to determine if the source requires further assessment.	You will need to derive the effective stack height. Details of how to do this are provided in Para 5.22.
	There were no sources identified during previous rounds of R&A and therefore there is no need to proceed to a DA for Lead on the basis of previously identified sources	
	Question	
	• Does the source exceed the threshold in the nomograms?	
	Action	
	If the answer is YES you should proceed to a Detailed Assessment for lead.	
	As there are no Industrial sources with substantially increased emissions there is no need to proceed to a DA for Lead on this basis.	
<u>No more Consideration needed of Lead</u> **STP**		

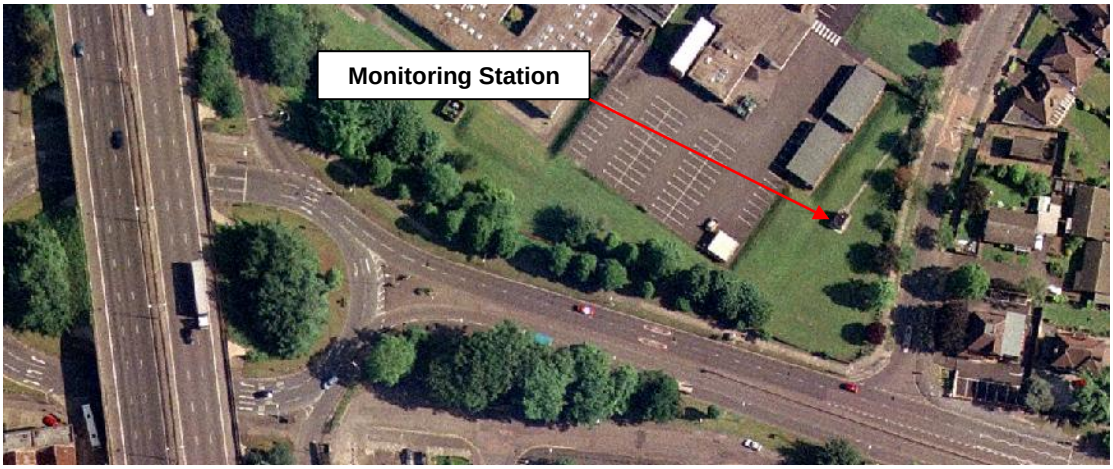
Review and Assessment of Nitrogen Dioxide

Source, location or data that need to be assessed	Steps that must be taken to complete the assessment	Notes relevant to each step
Monitoring		
(A) Monitoring Data outside an AQMA	**Overview**	
	These steps will ensure you collate all relevant nitrogen dioxide monitoring data and assess them appropriately to identify locations where exceedences of the annual mean and/or 1-hour objectives might occur. You should focus on monitoring data obtained since the last round of review and assessment, but it is also useful to show longer-term trends where possible.	
	Approach	
	1. Collate all nitrogen dioxide monitoring data.	Include your own local monitoring data and data from the national networks. Both continuous (chemiluminescent) and diffusion tube data should be included.
	The monitoring station data is collated by ERG (formerly SEIPH)	
	2. Ratify your local monitoring data, if you have not already done so.	It is imperative that any local monitoring data are ratified before being used. Key steps will be to ensure that you have screened and scaled continuous monitoring data – see Annex 1 of TG(03) and the FAQ on data ratification for techniques to do this. Diffusion tube data should be appropriately 'bias-corrected'– see Box 6.4. Recent national network data will be labelled 'provisional'. They can still be used, as they have been scaled, but they have yet to be ratified. Do not base decisions on any provisional data alone.
	The local monitoring data is ratified by ERG	**The bias correction factor for the years 2003, 2004 and 2005, derived from the 2 diffusion tubes that are co-located at the CRAQM station, was 1.00.**
Nitrogen Dioxide		
	3. Calculate annual means from the data.	The annual means should represent a calendar year if possible. Adjust the result to estimate the annual mean if you have less than 9 individual monthly means – see Box 6.5 for the technique to do this.
		All annual means represent a full calendar year.
	In 2002:- **The Annual Mean Nitrogen Dioxide concentration at the Luton Monitoring Station for 2002 calendar year was 30 µgm^{-3}.** **The highest Bias Corrected Annual Mean Nitrogen Dioxide concentration is 51.1 µgm^{-3} at the M1 by Junction 11.**	

Source, location or data that need to be assessed	Steps that must be taken to complete the assessment	Notes relevant to each step
	The highest Bias Corrected Annual Mean Nitrogen Dioxide concentration in the New M1 Corridor study is 43.2 µgm^{-3} at High Street, Leagrave. **In 2005:-** **The Annual Mean Nitrogen Dioxide concentration at the Luton Monitoring Station for 2005 calendar year was 28.2 µgm^{-3}.** **The highest Bias Corrected Annual Mean Nitrogen Dioxide concentration is 54.2 µgm^{-3} at the M1 by Junction 11.** **The highest Bias Corrected Annual Mean Nitrogen Dioxide concentration in the Corridor study is 54.8 µgm^{-3} at High Street, Leagrave.**	
	4.(.**1**) Estimate the annual **mean concentrations in 2005. [USA 2003]**	**Guidance used in 2003 USA** Box 6.6 provides the factors to do this for roadside and kerbside sites. You should summarise both current and future concentrations in a Table. It is also advisable to project forward from each year of monitoring, to show the range of future concentrations. You should then use the highest value as the basis for your decision. **Guidance used in 2006 USA** **Factors to do this for roadside & kerbside sites are available at http://www.airquality.co.uk/archive/laqm/tools.php Box 6.6 in LAQM.TG(3) should no longer be used**
	The Luton Monitoring Station is considered by ERG to be a "Background" site. **From USA 2003** **If it were to be**	**Box 6.6 states that Roadside locations are typically within 1 to 5 metres of the roadside, but may extend up to 15 metres depending upon the road configuration and traffic flow.**

Source, location or data that need to be assessed	Steps that must be taken to complete the assessment	Notes relevant to each step
	considered a roadside or kerbside site the correction factor for calculating a 2005 mean from a 2002 mean would be 0.920. **The M1 by Junction 11 site is a Roadside site and the 2005-corrected value is 47.0 µgm^{-3}.** **The High Street, Leagrave site is a roadside site and the 2005-corrected value is 39.7 µgm^{-3}.**	
	4.(.**2**) Estimate the annual mean concentrations **in the Current year *ie* 2006. [USA 2006]**	
	The Luton Monitoring Station is considered by ERG to be a "Background" site. **For USA 2006** **If it were to be considered a roadside or kerbside site the correction factor for calculating a 2006 mean from a 2005 mean would be 0.971.** **The M1 by Junction 11 site is a Roadside site and the 2006-corrected value is 52.6 µgm^{-3}.** **The Leagrave Road site is now on the edge of the AQMA 2005** **The High Street, Leagrave site is a roadside site and the 2006-corrected value is 53.24 µgm^{-3}.**	

Nitrogen Dioxide



Source, location or data that need to be assessed	Steps that must be taken to complete the assessment	Notes relevant to each step
Nitrogen Dioxide		
	5. Calculate the number of 1-hour exceedences of 200 μgm^{-3} in a full year, or the 99.8th percentile of hourly means.	This step can only be completed if you have continuous monitoring data. Where you have less than 90% data capture you should use the 99.8th percentile rather than a count of exceedences.

Source, location or data that need to be assessed	Steps that must be taken to complete the assessment	Notes relevant to each step
Nitrogen Dioxide		
	The number of 1-hour exceedences of 200 µgm^{-3} in Calendar year 2002 was zero (the absolute maximum 1-hourly value was 154.6 µgm^{-3}). **<u>However,</u>** **As the % age data capture in 2002 was less than 90%, the 99.8th %ile has been calculated, it was 99.7 µgm^{-3}.** **The number of 1-hour exceedences of 200 µgm^{-3} in Calendar year 2005 was zero (the absolute maximum 1-hourly value was 172.2 µgm^{-3}).** **<u>However,</u>** **As the % age data capture in 2005 was less than 90%, the 99.8th %ile has been calculated, it was 142 µgm^{-3}.**	**The % age data capture in 2003 for Nitrogen Dioxide is 86.4%** **The % age data capture in 2006 for Nitrogen Dioxide is 79 %**
	Questions	
	• Are any predicted annual means in **2005 greater** than 40 µgm^{-3}? • Are there **currently more** than 18 exceedences of 200 µgm^{-3} or are any 99.8th percentiles greater than 200 µgm^{-3}?	**Before you assess the measured concentrations check that the monitoring locations represent relevant exposure (see Paras 1.19–1.21).** **Due to the location of the Continuous Real Time Air Quality Monitoring Station and NO_x tubes, they do not represent relevant exposure, located as they are away from directly where people are regularly & frequently exposed for a substantial part of their day.**
	Action	
	<u>From USA 2003</u> **There are predicted annual means in 2005 greater than 40 µgm^{-3}.** **There are currently (2002) <u>less than</u> 18 exceedences of 200 µgm^{-3}.** **The 99.8th percentile is currently (2002) <u>less</u> than 200 µgm^{-3}.** **<u>For USA 2006</u>** **There are predicted annual means in 2006 greater than 40 µgm^{-3}.** **There are currently (2005) <u>less than</u> 18 exceedences of 200 µgm^{-3}.**	

Source, location or data that need to be assessed	Steps that must be taken to complete the assessment	Notes relevant to each step
	The 99.8th percentile is currently (2005) <u>less</u> than 200 µgm^{-3}.	
	If the answer is YES to **either** of these questions, proceed to a Detailed Assessment for nitrogen dioxide.	The Detailed Assessment will be with a view to determining whether to declare an AQMA.
	A Detailed assessment is therefore <u>NOT</u> needed for NO_2 from roads outside the AQMA.	
(B) Monitoring data within an AQMA	**Overview**	
The AQMA in Luton contains 24 dwellings (2003 USA) (431 dwellings 2005 AQMA) within the vicinity of the M1 Motorway.	This step will determine whether there is evidence to suggest that an AQMA previously declared may require reconsideration.	
	Approach	
	1. Carry out the data analysis as set out under (A) above.	This will be for monitoring carried out within the previously defined area of exceedence.
Nitrogen Dioxide		
	The Real-Time monitoring station does not lie within the boundaries of the AQMA. **<u>USA 2003</u>** The 3 NO_2 tube exposure locations which lie just on the edge of the AQMA #1 can be considered as roadside locations and these are shown in aerial photographs above. Locations and bias corrected annual means for 2002 in µgm^{-3} are: -	
	<u>2002</u> High Street 43.2 Longfield Drive 33.4 Bradley Road 32.4	
	The Correction Factor for obtaining 2005 concentrations from 2002 data is 0.920, so the corrected concentrations are: -	
	<u>Corrected for 2005</u> High Street 39.7 Longfield Drive 30.7 Bradley Road 29.8	

Source, location or data that need to be assessed	Steps that must be taken to complete the assessment	Notes relevant to each step
	USA 2006 The NO_2 tube exposure locations that lie just on the edge of the AQMA #2 can be considered as roadside. Locations and bias corrected annual means for 2005 and estimates for 2006 in μgm^{-3} are: - [The Correction Factor for obtaining 2006 concentrations from 2005 data is 0.971]	

	2005	Corrected for 2006
Belper Road	46.7	45.3
Longfield Road	43.8	42.5
Raleigh Grove	39.9	38.7
Armitage	38.9	37.7
Bradley E	43.5	42.2
Bradley W	36.3	35.2
Eldon	37.1	36.0
Wyndham	47.0	45.6
Abingdon	36.1	35.0
Lime	33.9	32.9
Seabrook	32.8	31.8
High St, Leagrave	54.8	53.2
Copperfield	35.6	34.5
Bank Close	49.6	48.1

	Questions	
	• Are all predicted annual means in 2005 **less** than 40 μgm^{-3}? • Are there currently 18 or fewer 1-hour exceedences of, or 99.8thpercentiles **less** than, 200 μgm^{-3}?	Before you assess the predicted concentration check that the monitoring location represents relevant exposure (see Para 1.19 – .21).
	Action	
	If the answer is YES to **both** of these questions, proceed to a Detailed Assessment for nitrogen dioxide.	The Detailed Assessment will be with a view to revoking the AQMA.
	The answer is NO to the first question, [there is no hourly data within the AQMA.]	
	A Detailed assessment is NOT therefore needed for NO_2 from roads within the AQMA.	
Nitrogen Dioxide		
Road traffic		
	Overview	
	Defra has examined the results from previous rounds of review and assessment and looked for locations and levels of traffic that might lead to exceedences of the objective for nitrogen dioxide. This part of the assessment is structured around those conclusions. In each case it will be important to check for any new, relevant exposure that may have occurred since the previous round of Review and Assessment was completed	
[C] Narrow congested streets with residential properties close to the kerb	**Approach**	Concentrations are often higher where traffic is slow moving with stop/start driving, and where buildings either side reduce the dispersion. Such locations were not always fully considered during previous Rounds of Review and Assessment.

Source, location or data that need to be assessed	Steps that must be taken to complete the assessment	Notes relevant to each step
	1. Check whether these locations were assessed during the first round of review and assessment.	If you specifically included these types of location during previous rounds, then there is no need to proceed further with this part.
	These locations were not specifically included, neither were they specifically excluded, in Round 1, only roads with Average Annual Daily Traffic (AADT) flows over 20,000 were considered	
	2. Identify all general areas where there may be narrow congested streets with residential properties within 5 m of the kerb.	Use local knowledge to identify such locations. They could usefully be marked on a map. Only include areas where the average speed is 50 kph or less. Only include roads where the carriageway is less than 10 m wide.
		Digital Aerial Photographs have been used to assist in this assessment. There are some narrow congested streets, however their traffic flow <u>does not</u> exceed 10,000 vehicles per day (see below left).
	3. Obtain information on traffic flows sufficient to list those roads identified above that have a flow greater than 10,000 vehicles per day.	Obtain measured or modelled traffic data where possible. If not make a judgement based on local knowledge of roads likely to have such flows.
	There are (still) no relevant narrow congested streets	
	4. Use the DMRB screening model (Para 6.29) to predict the annual mean in 2005 at relevant locations. You will also need information on traffic flows, speeds and proportion of different vehicle types.	You will require information on the local background concentrations. Information on the proportion of vehicle types may be based on 2 classes (HDV/LDV) or a more detailed breakdown if data are available.
	Question	
	• Are any of the predicted annual means in 2005 greater than 40 μgm^{-3}?	
	Action	
	If the answer is YES, this indicates a potential exceedence of the annual mean objective. You should then proceed to a Detailed Assessment for nitrogen dioxide at these locations. **A DA is <u>NOT</u> required for narrow congested streets**	If there are monitoring data for these locations, then you should use these results in preference to the DMRB screening model to reach a decision. This assumes the data have been quality assured (see Annex 1).

Source, location or data that need to be assessed	Steps that must be taken to complete the assessment	Notes relevant to each step
Nitrogen Dioxide		
(D) Junctions	**Approach**	Experience from previous rounds suggests that junctions were often not considered adequately. This assessment is required where there was no specific assessment of junctions during previous Rounds against the 2005 objectives.
		These locations were not specifically included, neither were they specifically excluded, in Round 1, only roads with AADTs over 20,000 were considered
	1. Identify 'busy' junctions.	A 'busy' junction can be taken to be one with more than 10,000 vehicles per day. Guidance on how to add flows at junctions is given in TG(03) Update @ p19.
	2. Determine whether there is relevant exposure within 10m of the kerb (20m in major conurbations).	A major conurbation may be considered to be a city with a population in excess of 2 million. If there is no relevant exposure then you do not need to proceed further.
		Digital Aerial Photographs have been used to assist in this assessment. **There are some junctions where there may be relevant exposure within 10m of the kerb, however their traffic flow <u>does not</u> exceed 10,000 vehicles per day.**
	3. Obtain detailed information on traffic flows, speeds and the proportion of different vehicle types.	Information on the proportion of vehicle types may be based on 2 classes (HDV/LDV) or a more detailed breakdown if the data are available.
	There are no relevant junctions	
	4. Use the DMRB screening model to predict the annual mean concentration in 2005 at relevant locations.	You will require information on the local background concentrations.
	Question	
	• Are any of the predicted annual mean concentrations in 2005 greater than 40 μgm^{-3}?	

Source, location or data that need to be assessed	Steps that must be taken to complete the assessment	Notes relevant to each step
Nitrogen Dioxide		
	Action	
	If the answer is YES, this indicates a potential exceedence of the annual mean objective in 2005. You should then proceed to a Detailed Assessment for NO_2 at these locations. **A DA is <u>NOT</u> required for busy junctions**	If there are monitoring data for these locations, then you should use these results in preference to the DMRB screening model to reach a decision. This assumes the data have been quality assured (see Annex 1).
(E) Busy streets where people may spend 1-hour or more close to traffic	**Approach**	There will be some street locations where members of the public may regularly spend 1-hour or more, e.g. streets with many shops, streets with outdoor cafes/bars. You should not include people occupationally exposed in such locations.
	1. Check whether such locations were assessed during previous rounds of R&A	If you specifically included these types of location during previous rounds, then there is no need to proceed further with this part.
		These locations were not specifically included, neither were they specifically excluded, in Round 1, only roads with AADTs over 20,000 were considered.
	2. Identify all busy streets where members of the public may be exposed within 5 m of the kerb for 1-hour or more.	A busy street can be taken to be one with more than 10,000 vehicles per day.
	3. Obtain detailed information on traffic flows, speeds and proportion of different vehicle types.	Information on the proportion of vehicle types may be based on 2 classes (HDV/LDV) or a more detailed breakdown if data are available.
		Luton is not noted for its café society, the main shopping area is pedestrianised and it is not considered that other shopping areas, such as Dunstable Road/Birch Link and Marsh Parade, fall into the description due to kerb width and short exposure periods.
	4. Use the DMRB screening model (Para 6.29) to predict the annual mean in 2005 at relevant locations.	You will require information on the local background concentrations.
	Question	
	• Are any of the predicted annual means in 2005 greater than 60 μgm^{-3}? ***NB* For the USA 2003 the figure was 40, it has been changed in the guidance to 60**	The DMRB screening model does not calculate 1-hour concentrations. If the annual mean does not exceed 60 μgm^{-3}, then there should be no more than 18 hours above 200

Source, location or data that need to be assessed	Steps that must be taken to complete the assessment	Notes relevant to each step
		μgm^{-3}.
Nitrogen Dioxide		
	Action	
	If the answer is YES you should proceed to a Detailed Assessment for nitrogen dioxide at these locations. **A DA is <u>NOT</u> required for Busy streets where people may spend 1-hour or more close to traffic**	If there are kerbside monitoring data for these locations, then you should use these results in preference to the DMRB screening model to reach a decision. This assumes the data have been quality assured (see Annex 1).
	Approach	
(F) Roads with high flow of buses and/or HGVs		There will be some street locations where traffic flows are not high (less than 20000 vehicles per day) but there is an unusually high proportion of buses and/or HGVs. These can be a major source of nitrogen oxides.
	1. Check whether such locations were assessed during first round of review and assessment.	If you specifically included these types of location during previous rounds, then there is no need to proceed further with this part.
		These locations were not specifically included, neither were they specifically excluded, in Round 1, only roads with AADTs over 20,000 were considered.
	2. Identify all roads with an unusually high proportion of heavy-duty vehicles.	An unusually high proportion can be taken to be greater than 25%. If traffic data are not available, use local knowledge. Such roads could include bus only streets or roads leading to an industrial estate.
	There are still no roads with more than 25% HGV	
	3. Determine whether there is relevant exposure within 10m of these roads (20m in major conurbations).	Relevant exposure should be judged against the annual mean and 1-hour criteria (see Box 1.4). A major conurbation may be considered to be a city with a population in excess of 2 million.
	4. Determine whether the flow of heavy-duty vehicles is greater than 2,500 vehicles per day.	Items 3 and 4 could be carried out in either order. There would be no need to look for relevant exposure if the flow is less than 2,500 HDV vehicles per day.
	5. Use the DMRB screening model (Para 6.29) to predict the annual mean in 2005 at relevant locations.	You will require information on the local background concentrations.

Source, location or data that need to be assessed	Steps that must be taken to complete the assessment	Notes relevant to each step
Nitrogen Dioxide		
	Question	
	• Are any of the predicted annual means in 2005 greater than 40 μgm^{-3} (for the annual mean objective) or 60 μgm^{-3} (for the hourly mean objective)? ***NB* For the USA 2003 the figure was only 40 as an annual mean, it has been changed in the guidance to 60 as well as an hourly mean**	Annual mean predictions should also be carried out at locations where the 1-hour objective only would apply, so that an assessment of the short-term objective can be made as well.
	Action	
	If the answer is YES you should proceed to a Detailed Assessment for nitrogen dioxide at these locations.	If there are monitoring data for these locations, then you should use these results in preference to the DMRB screening model to reach a decision. This assumes the data have been quality assured (see Annex 1).
	There are still no roads with high flows of HGVs or buses and therefore there is no need to proceed to a DA for Nitrogen Dioxide on the basis of high flows of HGVs or buses.	
(G) New roads constructed or proposed since first round of review and assessment	**Approach 1**	
	1. Check whether an air quality assessment has already been carried out for the new road.	An assessment may already have been carried out as part of the planning process. If this is the case you should confirm that the assessment is sufficient for review and assessment purposes. You need only consider proposed roads for which planning approval has been granted.
	No new roads have been constructed or proposed since last round of review and assessment	
	Question	
	• Did the assessment predict any exceedences of the objectives at relevant locations?	
	Action	
	If the answer is YES you should proceed to a Detailed Assessment for nitrogen dioxide at these locations	The Detailed Assessment may be no more than relying on the findings of the air quality assessment. For this to be the case the assessment will have to meet the standards of a Detailed Assessment.
	Approach 2	This approach should be followed if there has been no previous air quality assessment.

Source, location or data that need to be assessed	Steps that must be taken to complete the assessment	Notes relevant to each step
Nitrogen Dioxide		
	1. Establish whether the traffic flow on the new road is greater than 10,000 vehicles per day or whether the new road has increased traffic flow on existing roads previously identified as having 2005 annual mean concentrations greater than 36 μgm^{-3} or more than 15 1-hour exceedences of 200 μgm^{-3}.	The aim is to establish whether there is a risk of exceedences alongside the new road, or existing roads with a significant change in flows. You should only proceed if there is relevant exposure within 10m (20m in major conurbations). A major conurbation may be considered to be a city with a population in excess of 2 million.
	2. Use the DMRB screening model (Para 6.29) to predict the annual mean in 2005 at relevant locations.	You will require information on the local background concentrations.
	Question	
	• Are any of the predicted annual means in 2005 greater than 40 μg^{-3}?	
	Action	
	If the answer is YES, this indicates a potential exceedence of the annual mean objective in 2005. You should then proceed to a Detailed Assessment for nitrogen dioxide at these locations.	
	No new roads have been constructed since the first round of review and assessment and therefore there is no need to proceed to a DA for Nitrogen Dioxide on that basis.	
	Overview	
(Old H) Roads close to the objective during the first round of review and assessment **This has been left in as it was part of the 2003 USA**	This section addresses the changes to the emission factors in 2002. It applies only to the assessment against the 2005 objectives. It deals with locations where results were close to but just below the objective and for which AQMAs were not declared. **This section has been omitted from *TG(03) Update***	
	Approach	
	1. Identify any roads where annual mean concentrations in 2005 were predicted to be above 36 μgm^{-3} but below 40 μgm^{-3} at relevant locations, during the first round of review and assessment.	The new factors might make a difference if locations were predicted to be close to the objective during the first round of review and assessment.
	Question	
	• Are there any roads with a predicted annual mean concentration in 2005 above 36 μgm^{-3} but below 40 μgm^{-3}, which have not been reassessed using the new emissions factors?	
	No	
	Action	
	If the answer is YES you should proceed to a Detailed Assessment for nitrogen dioxide at these locations.	This new assessment should use the new emission factors.

Source, location or data that need to be assessed	Steps that must be taken to complete the assessment	Notes relevant to each step
Nitrogen Dioxide		
	There were no roads close to the objective during the first round of review and assessment and therefore there is no need to proceed to a DA for Nitrogen Dioxide on that basis.	
(H), [was I] Roads with significantly changed traffic flows	**Approach**	
	1. Identify any roads with more than 10,000 vehicles per day that have experienced 'large' increases in traffic. Also consider existing roads with new exposure if this was not adequately assessed in previous reports	A 'large' increase can be taken to be more than 25% increase in traffic flow. You should also consider roads where such an increase is identified due to improved traffic data.
	There are no roads with more than 10,000 vehicles per day that have experienced 'large' increases in traffic.	
	2. Determine whether these roads had previously been identified as being at risk of exceeding the objectives.	A road 'at risk' of exceeding the objectives can be taken to be one previously identified with an annual mean above 36 μgm^{-3} at a relevant location.
	3. Obtain detailed information on traffic flows, speeds and proportion of different vehicle types.	Information on the proportion of vehicle types may be based on 2 classes (HDV/LDV) or a more detailed breakdown if data are available.
	4. Use the DMRB screening model (Para 6.29) to predict the annual mean in 2005 at relevant locations.	You will require information on the local background concentrations.
	Question	
	• Are any of the predicted annual means in 2005 greater than 40 μgm^{-3}?	
	Action	
	If the answer is YES you should proceed to a Detailed Assessment for nitrogen dioxide at these locations.	If there are monitoring data for these locations, then you should use these results in preference to the DMRB screening model to reach a decision. This assumes the data have been quality assured (see Annex 1).
	There are no roads with more than 10,000 vehicles per day that have experienced 'large' increases in traffic and therefore there is no need to proceed to a DA for Nitrogen Dioxide on that basis.	

Source, location or data that need to be assessed	Steps that must be taken to complete the assessment	Notes relevant to each step
Nitrogen Dioxide		
(I), [was J] Bus stations	**Approach**	This approach only applies to bus stations that are not enclosed. The assessment will be against the 1-hour objective.
	1. Collect information on the daily movements of buses at the bus station.	You should carefully define a movement. A bus coming into the bus station then going out again should be treated as two movements.
	2. Determine whether there is relevant exposure within 10m of the bus station (20m in major conurbations).	Relevant exposure should be judged against the 1-hour criteria (see Box 1.4). A major conurbation may be considered to be a city with a population in excess of 2 million.
	3. Determine whether the flow of vehicles is greater than 1000 buses per day.	Items 2 and 3 could be carried out in either order. For instance, there is no point looking for relevant exposure if the flow is less than 1000 buses per day.
	There is no relevant exposure within 10m of the bus station.	
	4. Use the DMRB screening model (Para 6.29) to predict the annual mean in 2005 at relevant locations.	You will require information on the local background concentrations (see Para 6.22). When using the DMRB screening model enter 100% into the 'buses and coaches' column.
	Question	
	• Are any of the predicted annual means greater than 40 μgm^{-3} (for the annual mean objective) or 60 μgm^{-3} (for the hourly mean objective)	The DMRB screening model does not calculate 1-hour concentrations. If the annual mean does not exceed 40 μgm^{-3}, then there should be no more than 18 hours above 200 μgm^{-3}.
	Action	
	If the answer is YES you should proceed to a Detailed Assessment for nitrogen dioxide at these locations.	If there are monitoring data for these locations, then you should use these results in preference to the DMRB screening model to reach a decision. This assumes the data have been quality assured (see Annex 1).
	There is no relevant exposure within 10m of the bus station and therefore there is no need to proceed to a DA for Nitrogen Dioxide on that basis.	

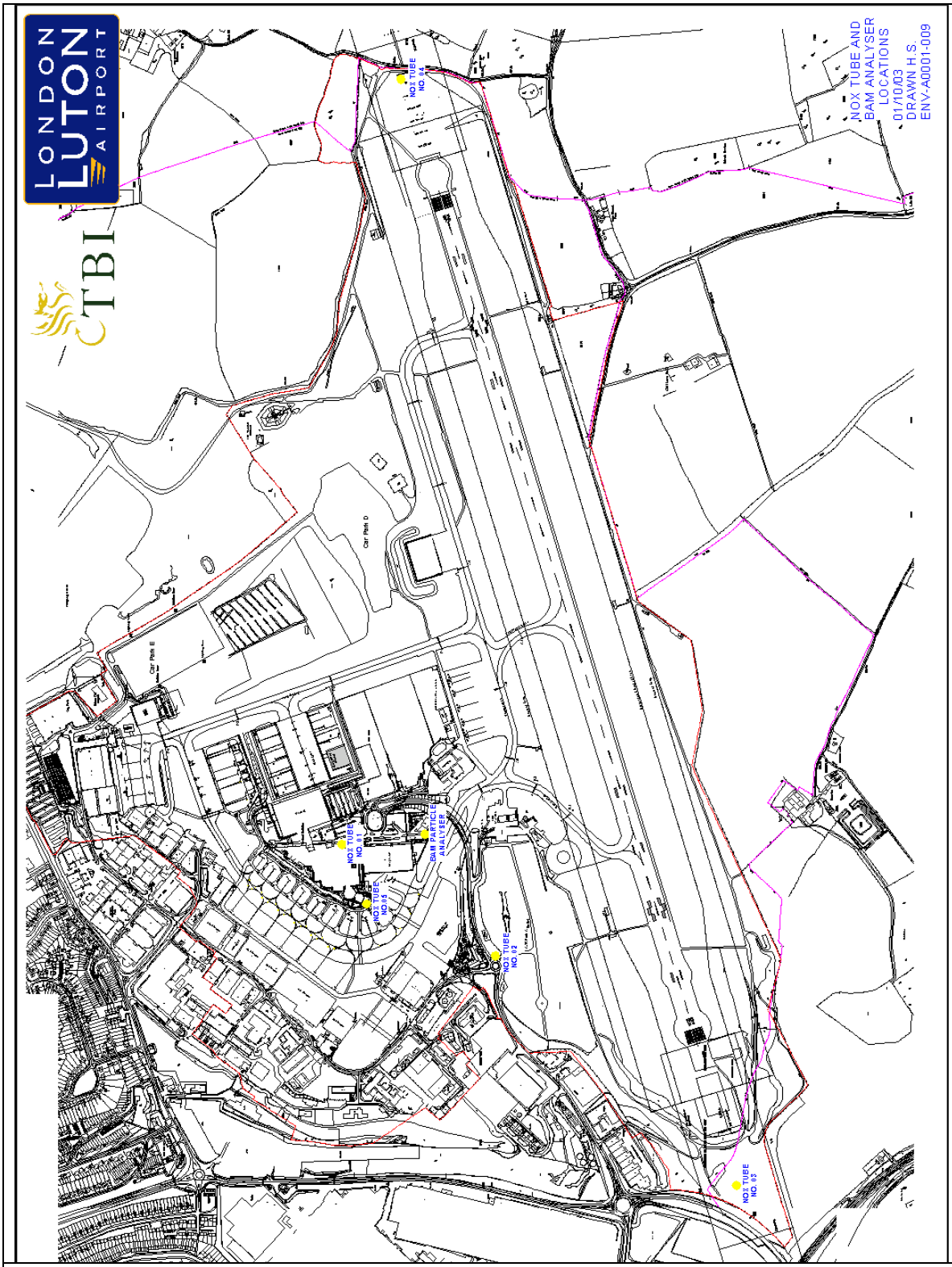
Source, location or data that need to be assessed	Steps that must be taken to complete the assessment	Notes relevant to each step
Nitrogen Dioxide		
Industrial sources		
	Overview	
	Industrial sources will not make a significant local contribution to annual mean concentrations, but could be significant in terms of the 1-hour objective. The evidence from the work carried out during the first round is that very few sources will require consideration.	
(J), (was K) New industrial sources	**Approach 1**	
	1. Check whether an air quality assessment has already been carried out for the new industrial source.	An assessment may already have been carried out as part of the planning or authorisation process. If this is the case you should confirm that the assessment is sufficient for review and assessment purposes. You only need to consider proposed sources for which planning approval has been granted.
	There are no new processes on which an assessment could have already been carried out as part of the planning or authorisation process.	
	Question	
	• Did the assessment predict any exceedences of the objectives at relevant locations?	
	Action	
	If the answer is YES you should proceed to a Detailed Assessment for nitrogen dioxide for this source.	The Detailed Assessment may be no more than relying on the findings of the air quality assessment. For this to be the case the assessment will have to meet the standards of a Detailed Assessment.
	Approach 2	This approach should be followed if there has been no previous air quality assessment.
	1. Use the checklist in Annex 2 (pA2-60) to determine whether the source needs considering further.	
	There are no new processes on which an assessment could have already been carried out as part of the planning or authorisation process and in any in any case the only process in the checklist is glass manufacturing, of which Luton does not have an example.	
	2. Obtain information on the total annual emission of nitrogen oxides and the height of the emission.	See Para 6.38. If it is proving difficult to obtain the information on the emissions contact the LA Support Helpdesk.

Source, location or data that need to be assessed	Steps that must be taken to complete the assessment	Notes relevant to each step
Nitrogen Dioxide		
	3. Use the nomograms described in Para 6.34 onwards to determine if the source requires further assessment.	You will need to derive the effective stack height. Details of how to do this are provided in Para 6.41.
	Question	
	• Does the source exceed the threshold in the nomograms?	
	There are no new industrial sources and therefore there is no need to proceed to a DA for Nitrogen Dioxide on that basis.	
(K) (was L) Industrial sources with substantially increased emissions, or relevant new exposure	**Approach**	
	1. Determine whether any of the sources identified during previous rounds of review and assessment as potentially significant have substantially increased emissions. Also consider whether there is any new relevant exposure. You should also include sources in neighbouring authorities close to your boundary.	A substantial increase can be taken to be one greater than 30%.
	No sources have substantially increased in size since previous Rounds of R&A.	
	2. Obtain updated information on the total annual emission of nitrogen dioxide and the height of the emission.	See Para 6.38. If it is proving difficult to obtain the information on the emissions contact the LA Support Helpdesk.
	3. Use the nomograms described in Para 6.34 onwards to determine if the source requires further assessment.	You will need to derive the effective stack height. Details of how to do this are provided in Para 6.41.
	Question	
	• Does the source exceed the threshold in the nomograms?	
	Action	
	If the answer is YES you should proceed to a Detailed Assessment for nitrogen dioxide for these sources.	

	There are no industrial sources with substantially increased emissions and therefore there is no need to proceed to a DA for Nitrogen Dioxide on that basis.	
Nitrogen Dioxide		
Other Sources		
	Overview	
	Aircraft are significant sources of nitrogen oxides emissions, especially during takeoff. You should evaluate aircraft emissions at airports if they were not considered during the earlier rounds of review and assessment, or if there has been any change in public exposure. Emissions from aircraft once they are above about 200 m will make a negligible contribution to ground-level concentrations.	
	Aircraft were not explicitly considered in the first Round of R&A, they were though considered in the 2003 USA.	
(L) (was M) Aircraft	**Approach** **The content of the 2003 USA has been retained here for completeness.** **A new assessment has not been carried out due to the instruction in the box to the right**	This approach deals with aircraft as a source at **airports which have not been covered by previous Reviews & Assessments.** Road traffic impacts associated with airports should be dealt with separately using the road traffic sections of Box 6.2.
	1. Establish whether there is relevant exposure within 1000m of the airport boundary	Concentrations fall-off rapidly on moving away from the source, and are unlikely to make a significant contribution beyond this distance. If there is no relevant exposure, then you do not need to proceed further.
	There is relevant exposure within 1000m of the airport boundary. **However, Luton BC considers that relevant exposure within a specified distance <u>of the airport boundary</u> is not an appropriate or suitable proxy for initial screening, but that distance from runways or taxiways is the appropriate measure.** **Advice has been sought from the Review & Assessment Helpdesk.**	**See page 44 for map showing location of dwellings in relation to runway**
	The Question : - **'Do you know the reasoning for having to "Establish whether there is relevant exposure within 1000m of the airport**	

	boundary"? Is it not more sensible to establish relevant exposure within a specified distance of the Runway(s)? At Luton, Planes don't go anywhere near to the boundaries' was posed.	
Nitrogen Dioxide		
	The reply received read: - **"I think the criteria for Airports was set as increased NO_2 is not only from take off and landing of planes, but also from ground traffic (airport and those visiting). Remember USA is rough and ready screening assessment, if you do have exposure within the 1000m the Detailed Assessment will take into account all the specifics of where exposure is in relation to actual emissions (runways/ roads). I would have thought that Luton Airport has done its own modelling/monitoring in relation to expansion plans and this can be used in preference to USA checklist – then you need to decide whether a detailed assessment is necessary."** **Luton sent the following response: -** **"I hadn't forgotten about ground traffic, but box 6.2 at (M) says road traffic impacts associated with airports should be dealt with separately using the road traffic section of Box 6.2".** **No reply was received to this response.**	
	Luton does not have a view regarding the appropriate standoff distance for identifying relevant exposure, but does believe that it is more realistic to take the distance measured from the source, not from the airport boundary.	
	Using the helpdesk's advice regarding monitoring data, NO_2 tube data has been obtained for the 5 sites where monitoring takes place at the airport. Unfortunately data is available only for Jan – May & July 2003 inclusive (June tubes lost).	
	The tubes used at the airport are prepared and analysed at the same laboratory as those used by Luton Borough Council.	
	Locations and identities of tubes exposed at the Airport are: -	
	Tube # **Old Terminal Roof Landside 1.** **Roundabout opposite Holiday Inn 2.** **End of Runway 08 3.** **End of Runway 26 4.** **Head of Apron Stand 5 5.**	

	See Map on following page for LLA NO_2 tubes locations		
Nitrogen Dioxide			
	{Note on runway Terminology. There is only the one physical runway, lying approximately East-West, the 80 runway is approached from the East (Heading *c* 80º) whilst the 26 runway is approached from the West (Heading *c* 260º)}.		
	Mean measured concentrations in μgm^{-3} for the period Jan – May & July 2003 inclusive (June tubes lost) were: -		
	1. **2.** **3.** **4.** **5.**	**33.89** **36.50** **24.11** **18.88** **36.23**	
	Applying the Bias Adjustment Factor "A" of 0.882 (see section (A) earlier in NO_2 chapter) gives:-		
	1. **2.** **3.** **4.** **5.**	**29.89** **32.19** **21.27** **16.65** **31.95**	



Location of NO_2 tubes at London Luton Airport

Map Courtesy of London Luton Airport

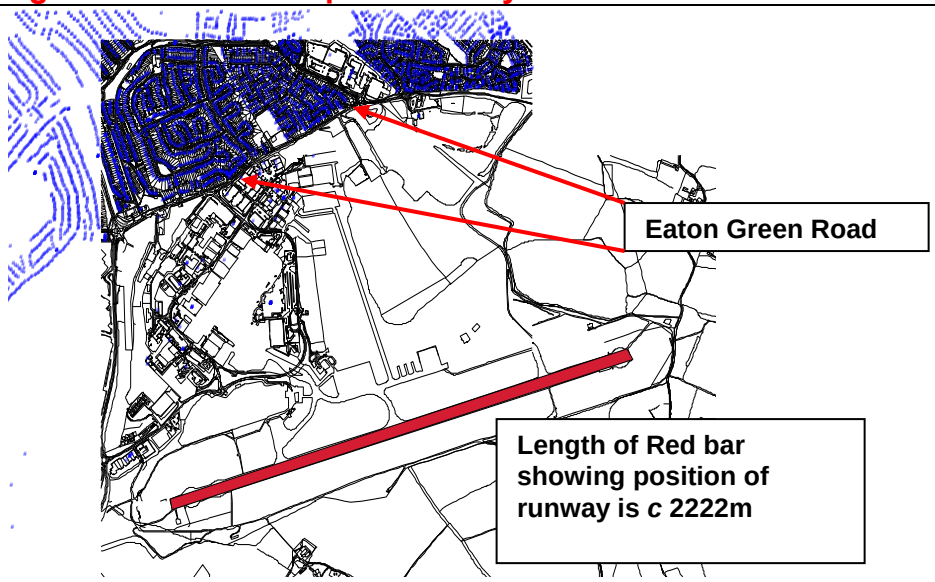
Nitrogen Dioxide

	Box 6.5 explains how to estimate the annual mean NO_2 concentration from short term monitoring data.	
	The Annual Mean, "Am", for the Luton BC Real-Time monitoring site in 2002 was 30 μgm^{-3}. **The Period Mean, "Pm", for Jan – May & July 2003 inclusive was 28.6 μgm^{-3}.** **Therefore the Ratio "R" of the annual mean to the period mean, Am/Pm, is 30/28.6 = 1.05**	
	Applying this ratio R of 1.05 to the short term Jan – May & July 2003 inclusive means to give annual means gives: -	
	1. 31.38 **2. 33.79** **3. 22.33** **4. 17.48** **5. 33.45**	
	To calculate the estimated annual average NO_2 concentration in 2005, from box 6.6, the correction factor for correcting 2003 data is (0.892/0.941) = 0.9479. **Multiplying the above figures by 0.9479 gives: -**	
	1. 29.74 **2. 32.02** **3. 21.16** **4. 16.56** **5. 31.70**	
	The Environmental Health Service has an NO_2 tube located at Colwell Rise, to the N of the airport, 1360 m from the Centre line of the Runway.	
	The Annual mean measured concentration in 2002 at Colwell Rise was 26.86 μgm^{-3}.	
	Applying the Bias Adjustment Factor of 0.882 to this gives a Bias corrected Annual Mean Nitrogen dioxide concentration of 23.69 μgm^{-3}.	
	To obtain the Estimated Annual Mean Concentration in 2005, multiply by 0.920, giving 21.79 μgm^{-3}.	
	As the annual Mean NO_2 objective is 40 μgm^{-3} and the highest Estimated Annual Mean Concentration in 2005 out of the 5 LLA located sites and the LBC Colwell Rise sites is 32.02 μgm^{-3}, it is not considered that there will be any relevant exposure	
Nitrogen Dioxide		
	2. Obtain information on expected annual throughput of passengers and tonnes of freight in 2005. Calculate the total	You should convert the tonnes of freight to an equivalent number of passengers using

	equivalent passenger numbers in million passengers per annum (mppa).	100000 tonnes = 1 mppa. This only applies to freight taken in 'freight-only' planes, not that taken in passenger planes.
	It has not been possible to obtain information from the airport on expected annual throughput of passengers and tonnes of freight in 2005, despite repeated requests having been made. NB this statement related to the 2003 USA **However, information received for 2001 is Total passengers 6,582,300 and Total Freight 25,239 tonnes**	See page 70 for 2005 throughput calculations
	Question	
	• Is the predicted total equivalent passenger throughput in 2005 more than 5 mppa?	
	Action	
	If the answer is YES you should proceed to a Detailed Assessment for nitrogen dioxide.	If there are monitoring data for worst-case relevant exposure locations near the airport boundary, then you should use these results in preference to the passenger throughput criteria to reach a decision. This assumes the data have been suitably quality assured (see Annex 1).
	Taking into account the advice quoted above received from the help desk **"I would have thought that Luton Airport has done its own modelling/monitoring in relation to expansion plans and this can be used in preference to USA checklist – then you need to decide whether a detailed assessment is necessary",** **It is not considered necessary to carry out a Detailed Assessment for Nitrogen Dioxide emissions from activities at London Luton Airport**	

Nitrogen Dioxide

Map showing London Luton Airport Runway and "Address Points".



	Blue scattered address points to S of Eaton Green Road are business premises and therefore not potential sites of Exposure.	

Review and Assessment of Sulphur Dioxide

NAIL

Source, location or data that need to be assessed	Steps that must be taken to complete the assessment	Notes relevant to each step
Monitoring		
(A) Monitoring data outside an AQMA	**Overview**	
	These steps will ensure you collate all relevant sulphur dioxide monitoring data and assess them appropriately to identify locations where exceedences of the 15-minute and/or 1-hour and/or 24-hour objectives might occur. You should focus on monitoring data obtained since the last round of review and assessment, but it is also useful to show longer-term trends where possible.	
	Approach	
	1. Collate all sulphur dioxide monitoring data.	Include your own local monitoring data (including data from 8-port bubbler samplers) and data from the national monitoring networks. Do not include SO_2 diffusion tube data.
	Sulphur dioxide is monitored continuously at the Monitoring Station near J11 of the M1 Motorway and the monitoring station data is collated by ERG (formerly SEIPH) **An 8 port Bubbler was used from 1994 to 1998 in Upper George Street at the Town Hall.**	
	2. Ratify your local monitoring data, if you have not already done so. **Though not an Air Quality Objective, for the sake of completeness it is stated here that the <u>average</u> hourly concentration of SO_2 in 2005 in Luton was 11 μgm^{-3}.**	It is imperative that any local monitoring data are ratified before being used. For concentrations recorded by continuous monitors, the key step will be to ensure that you have screened and scaled the data – see Annex 1. Box 7.3 provides information on how to treat data from bubbler samplers. Recent national network data will be labelled 'provisional' (see Para 1.32). They can still be used, as they have been scaled, but they have yet to be ratified. Do not base decisions on any provisional data alone.
	The local monitoring data is ratified by ERG	
	3. Calculate the number of 15-minute exceedences of 266 μgm^{-3} in a full year, or the 99.9th percentile.	Where you have less than 90% data capture you should use the 99.9th percentile rather than the number of 15-minute exceedences.

Source, location or data that need to be assessed	Steps that must be taken to complete the assessment	Notes relevant to each step
Sulphur Dioxide		
	The absolute maximum 1 hourly value in 2002 was 76.07 µgm^{-3}, therefore it is highly unlikely there will be <u>any</u> 15-minute exceedences of 266 µgm^{-3}, and the 99.9th percentile was 51.6 µgm^{-3}. **In 2005 there were no 15-minute exceedences of 266 µgm^{-3}.**	**93.5% data capture was achieved for SO_2.** **In 2005 90% data capture was achieved for SO_2.**
	4. Calculate the number of 1-hour exceedences of 350 µgm^{-3} in a full year, or the 99.7th percentile.	Where you have less than 90% data capture you should use the 99.7th percentile rather than the number of 1-hour exceedences.
	The absolute maximum 1 hourly value in 2002 was 76.07 µgm^{-3}. **Therefore there will be no exceedences of 350 µgm^{-3}; the 99.7th percentile was 46.3 µgm^{-3}.** **In 2005 there were no exceedences of 350 µgm^{-3}.**	
	5. Calculate the number of 24-hour exceedences of 125 µgm^{-3} in a full year, or the 99th percentile.	Where you have less than 90% data capture you should use the 99thpercentile rather than the number of 24-hour exceedences.
	The absolute maximum 1 hourly value in 2002 was 76.07 µgm^{-3} and therefore there would have been no 24-hour exceedences of 125 µgm^{-3}, and the 99th percentile was 36.2 µgm^{-3}. **In 2005 there were no 24-hour exceedences of 125 µgm^{-3}**	
	6. For monitoring with bubblers in 8-port samplers identify the maximum daily mean	If net acidity titration results have been used, contact the Monitoring Helpdesk. If desired you can use the maximum daily mean to estimate a 99.9th percentile of 15-minute means by multiplying by 1.8962.
	Data from the 8-port sampler bubblers is no longer available to identify <u>daily means</u> and levels in 1998 (the most recent levels) are unrepresentative of concentrations now due to the use of Low Sulphur Petrol and Ultra Low Sulphur Diesel.	

Source, location or data that need to be assessed	Steps that must be taken to complete the assessment	Notes relevant to each step
Sulphur Dioxide		
	However, for the sake of completeness it is recorded here that the monthly mean in 1994 & 1995 ranged between 12 and 32 while in 1997 & 1998 the range was 6 to 15 µgm^{-3} at the monitoring site in Upper George Street.	
	Questions	
	• Are there currently more than 35 15-minute exceedences of, or 99.9th %iles greater than, 266 µgm^{-3}? • Are there currently more than 24 1-hour exceedences of, or 99.7th %iles greater than, 350 µgm^{-3}? • Are there currently more than3 24-hour exceedences of, or 99th %iles greater than, 125 µgm^{-3}? • Does the maximum daily mean bubbler result exceed 80 µm^{-3}?	Before you assess the measured concentrations check that the monitoring locations represent relevant exposure (see Paras 1.19 – 1.21). The bubbler criterion is related to the risk of exceeding the 15-minute objective.
	The monitoring location does represent relevant exposure - STP	
	Action	
	If the answer is YES to any of these questions, proceed to a Detailed Assessment for sulphur dioxide.	The Detailed Assessment will be with a view to determining whether to declare an AQMA.
	The answer is NO to all of the above questions.	
	As the Answer to the above questions is "No", there is no need to proceed to a Detailed Assessment (DA) of SO_2 on the basis of Monitoring results.	
(B) Monitoring data within an AQMA	**Overview**	
	This step will determine whether there is evidence to suggest that an AQMA previously declared may require reconsideration.	
	Approach	
	1. Carry out the data analysis as set out under (A) above.	This will be for monitoring carried out within the previously defined area of exceedence.
	There is no monitoring data within the area of the AQMA	

Source, location or data that need to be assessed	Steps that must be taken to complete the assessment	Notes relevant to each step
Sulphur Dioxide		
	Questions	
	• Are there currently 35 or fewer 15-minute exceedences of, or 99.9th percentiles less than, 266 μgm^{-3}? • Are there currently 24 or fewer 1-hour exceedences of, or 99.7th percentiles less than, 350 μgm^{-3}? • Are there currently 3 or fewer 24-hour exceedences of, or 99th percentiles less than, 125 μgm^{-3}?	Before you assess the measured concentration check that the monitoring locations represent relevant exposure (see Paras 1.19 – 1.21).
	Action	
	If the answer is YES to all of these questions, proceed to a Detailed Assessment for Sulphur Dioxide.	If the answer is no to any of these, it may still be appropriate to proceed to a Detailed Assessment if you expect that levels will be below the objectives by the relevant years. The Detailed Assessment will be with a view to revoking the AQMA.
	There is no monitoring data within the area of the AQMA and so there is no need to proceed to a Detailed Assessment (DA) of SO_2 on the basis of Monitoring results	
Industrial sources		
	Overview	
	Previous rounds confirmed that the 15-minute objective was the most stringent for sulphur dioxide and that there are few sources that cause exceedences. It is likely that large coal burning boilers may be significant. The new regulations limiting the sulphur content of fuel oil to less than 1% from 1 January 2003, mean that sources burning fuel oil are unlikely to be significant. You should also include sources in neighbouring authorities close to your boundary. Particular attention should be paid to the combined impact of several sources, including those outside the local authority area.	
(C) New industrial sources	**Approach 1**	
	1. Check whether an air quality assessment has already been carried out for the new industrial source.	An assessment may already have been carried out as part of the planning or authorisation process. If this is the case you should confirm that the assessment is sufficient for review and assessment purposes. You only need to consider proposed sources for which planning approval has been granted.
	There are no new industrial sources **STP**	

Source, location or data that need to be assessed	Steps that must be taken to complete the assessment	Notes relevant to each step
Sulphur Dioxide		
	Question	
	• Did the assessment predict any exceedences of the objectives at relevant locations?	
	Action	
	If the answer is YES you should proceed to a Detailed Assessment for sulphur dioxide for this source.	The Detailed Assessment may be no more than relying on the findings of the air quality assessment. For this to be the case the assessment will have to meet the standards of a Detailed Assessment.
	Approach 2	This approach should be followed if there has been no previous air quality assessment.
	1. Use the checklist in Annex 2 to determine whether the source needs considering further.	
	There are no new industrial sources **STP**	
	2. Obtain information on the total annual emission of sulphur dioxide and the height of the emission.	See Para 7.23. If it is proving difficult to obtain the information on the emissions contact the LA Support Helpdesk.
	3. Use the nomograms described in Para 7.17 onwards to determine if the source requires further assessment.	You will need to derive the effective stack height. Details of how to do this are provided in Para 7.24.
	Question	
	• Does the source exceed the threshold in the nomograms?	
	Action	
	If the answer is YES you should proceed to a Detailed Assessment for sulphur dioxide for this source.	You should take account of other sources that may affect the area. Plumes do not have to combine, but separately they may add to the number of occasions with 15-minute values above 266 μgm^{-3}.
	There are no new industrial sources and so there is no need to proceed to a Detailed Assessment (DA) of SO_2 on that basis. **STP**	

Source, location or data that need to be assessed	Steps that must be taken to complete the assessment	Notes relevant to each step
Sulphur Dioxide		
(D) Industrial sources with substantially increased emissions	**Approach**	
	1. Determine whether any of the sources identified during the last round as potentially significant have 'substantially' increased emissions.	A 'substantial' increase can be taken to be one greater than 30%.
	2. Obtain updated information on the total annual emission of sulphur dioxide and the height of the emission.	See Para 7.23. If it is proving difficult to obtain the information on the emissions contact the LA Support Helpdesk.
	3. Use the nomograms described in Para 7.17 onwards to determine if the source requires further assessment.	You will need to derive the effective stack height. Details of how to do this are provided in Para 7.24.
	Question	
	• Does the source exceed the threshold in the nomograms?	
	Action	
	If the answer is YES you should proceed to a Detailed Assessment for sulphur dioxide.	You should take account of other sources that may affect the area. Plumes do not have to combine, but separately they may add to the number of occasions with 15-minute values above 266 μgm^{-3}.
	There are industrial sources with substantially increased and so there is no need to proceed to a Detailed Assessment (DA) of SO_2 on that basis. **STP**	
Domestic sources		
	Overview	
	There are still areas where domestic coal burning is being carried out. These can be significant sources of sulphur dioxide. Consideration of the results from the first round has shown the need to focus on the density of houses burning coal over a smaller area of 500 x 500 m. This section should focus only on locations not covered by previous reviews and assessments, or where there is new relevant exposure.	
	Approach	
(E) Areas of domestic coal burning	1. Identify areas where significant coal burning still takes place. Smokeless fuel has a similar sulphur content to coal so should be treated in the same way.	You should take 'significant' to be any area of about 500 x 500 m where there may be more than 100 houses burning solid fuel as their primary source of heating. If necessary use professional judgement to identify such areas, including experience of coal burning odours in the area on a winter's evening.

Source, location or data that need to be assessed	Steps that must be taken to complete the assessment	Notes relevant to each step
Sulphur Dioxide		
	2. Collect information on the actual use of domestic coal in these areas.	For guidance on how to obtain this information, including how to carry out a survey see Para 7.26. Do not count houses with occasional use.
	All of the area of the Borough of Luton has been covered since 1979 by Smoke Control Orders and as a consequence the incidence of any solid fuel burning is very low **STP**	
	Question	
	• Does the density of coal burning premises exceed 100 per 500 x 500 m area?	
	It is not believed that there are any areas where the density of coal burning premises exceeds 100 per 500 x 500 m area. **STP**	
	Action	
	If the answer is YES you should proceed to a Detailed Assessment for sulphur dioxide at these locations.	You should take account of other sources that may affect the area. Plumes do not have to combine, but separately they may add to the number of occasions with 15-minute values above 266 μgm^{-3}.
	There are no areas where the density of coal burning premises exceeds 100 per 500 x 500 m area and so there is no need to proceed to a Detailed Assessment (DA) of SO_2 on that basis. **STP**	
Boilers		
	Overview	
	The first round of review and assessment confirmed that larger boiler plant >5 MW (thermal) can give rise to high short-term concentrations, with the risk that the 15-minute objective may be exceeded. The new regulations limiting the sulphur content of fuel oil to less than 1% from 1 January 2003 mean that boilers using fuel oil are unlikely to be significant on their own. Particular attention should be paid to the combined impact of several sources, including those outside the local authority area. Only locations not covered by previous reviews and assessments should be covered in this section, or where there is new relevant exposure.	
(F) Small boilers >5 MW (thermal)	**Approach**	
	1. Identify all boiler plant >5 MW (thermal) that burn coal or fuel oil.	This could be plant in universities or hospitals, as well as in other large institutional and commercial buildings.

Source, location or data that need to be assessed	Steps that must be taken to complete the assessment	Notes relevant to each step
Sulphur Dioxide		
	2. Establish whether there is relevant exposure 'near' to the source.	Near can be taken to be within 500 m.
	3. Obtain information on total annual emissions of sulphur dioxide and the stack height and diameter.	You will need to derive the effective stack height. Details of how to do this are provided in Para 7.24.
	4. Use the nomograms described in Para 7.17 onwards to determine if the source requires further assessment.	
	The only large boilers of which we are aware are the Environment Agency Part A Authorised Boilers at Vauxhall/IBC, which run on Natural Gas. **STP**	
	Questions	
	• Does the source exceed the threshold in the nomograms?	The nomogram is precautionary to allow for the possibility of other sources contributing to exceedences of the objective values.
	Action	
	If the answer is YES you should proceed to a Detailed Assessment for sulphur dioxide at these locations.	You should take account of other sources that may affect the area. Plumes do not have to combine, but separately they may add to the number of occasions with 15-minute values above 266 μgm^{-3}.
	As there are no boiler plant >5 MW (Thermal) that burn coal or fuel oil there is no need to proceed to a Detailed Assessment (DA) of SO_2 on that basis. **STP**	
Other sources		
	Overview	
	The fuels used in the transport sector contain varying amounts of sulphur. This section considers the range of possible transport related sources that may represent a risk of exceeding the 15-minute objective. **Only locations not covered by previous reviews and assessments should be covered in this section, or where there is new relevant exposure.**	
(G) Shipping	**Approach**	
		Large ships generally burn oils with a high sulphur content in their main engines (bunker oils). If there are sufficient movements in a port they can give rise to short-term concentrations above the objectives. Auxiliary engines used while berthed (hotelling) usually use a lower sulphur fuel, and are unlikely to be significant.

Source, location or data that need to be assessed	Steps that must be taken to complete the assessment	Notes relevant to each step
Sulphur Dioxide		
	3 Establish whether there is relevant exposure within (a) 250 m or (b) 1km of the berths and main areas of manoeuvring	Modelling has shown that the greatest risk of exceedence may be downwind of the main alignment of berths.
	2. Collect information on the number of ship movements per year.	This should be confined to large ships, e.g. cross-Channel ferries, Ro-Ro, container ships, cruise liners. Every visit from a ship will generate two movements. If possible use information on the number of movements in 2005.
	Question	
	• Are there between 5,000 and 15,000 more movements per year (exposure within 250 metres)? • Are there more than 15,000 more movements per year (exposure within km)?	
	Action	
	If the answer is YES you should proceed to a Detailed Assessment for sulphur dioxide at these locations.	You should take account of other sources that may affect the area. Plumes do not have to combine, but separately they may add to the number of occasions with 15-minute values above 266 μgm^{-3}.
	There are no commercially navigable Waterways within Luton or within close distance of it, and so there is no need to proceed to a Detailed Assessment (DA) of SO_2 on that basis. **STP**	
(H) Railway Locomotives	**Approach**	Diesel and coal-fired locomotives emit sulphur dioxide. Moving locomotives do not make a significant contribution to short-term concentrations and do not need to be considered further. Exposure to stationary locomotives may be more significant, but only in terms of the 15-minute objective.
	1. Identify locations where diesel locomotives are regularly stationary for periods of 15-minutes or more.	This could be signals, goods loops, depots or stations.

Source, location or data that need to be assessed	Steps that must be taken to complete the assessment	Notes relevant to each step
Sulphur Dioxide		
	2. Establish whether there is the potential for regular outdoor exposure of members of the public within 15 m of the stationary locomotives.	You should consider locations outside the station or depot, as well as on the station. There will need to be the potential for exposure of members of the public for periods of 15-minutes or more. The exposure needs to be 'outdoors' in the general sense of the word. If there is no relevant exposure then you need proceed no further.
	3. Obtain information on the number of trains per day that might affect these locations, and the typical duration that they are stationary with their engines running.	This might require a period of observation.
	The great majority of trains that use the line through Luton are electrically powered. There are some diesel powered trains, but they are very few. There are no preserved railways in the area and therefore regular coal firing is not an issue. There are no marshalling yards in the area. **STP**	
	Question	
	• Are there more than two occasions a day when there might be a locomotive stationary for with its engine running for 15-minutes or more?	
	Action	
	If the answer is YES you should proceed to a Detailed Assessment for sulphur dioxide at these locations.	You should take account of other sources that may affect the area. Plumes do not have to combine, but separately they may add to the number of occasions with 15-minute values above 266 μgm^{-3}.
	There are no locations where there might regularly be stationary diesel or coal fired locos, and so there is no need to proceed to a Detailed Assessment (DA) of SO_2 on that basis. **STP**	

<u>No more Consideration needed of SO_2</u>
STP

Review and Assessment of PM_{10}

Source, location or data that need to be assessed	Steps that must be taken to complete the assessment	Notes relevant to each step
Monitoring		
(A) Monitoring data outside an AQMA	**Overview**	
	These steps will ensure you collate all relevant PM_{10} monitoring data and assess them appropriately to identify locations where exceedences of the annual mean and/or 24-hour objectives might occur. You should focus on monitoring data obtained since the last round of review and assessment, but it is also useful to show longer-term trends where possible. **PM_{10} is Particulate Matter, the 50th percentile aerodynamic diameter of which is 10 microns [a micron = 1 millionth of a metre}.**	
	Approach	
	1. Collate all PM_{10} monitoring data.	Include your own local monitoring data, and data from the national monitoring networks.
	There are 2 real time air quality monitoring stations in Luton that monitor PM_{10} - Luton BC's site near to junction 11 of the M1 Motorway, and London Luton Airport's site located 200m or so to the North of the control tower. **ERG (formerly SEIPH) collate data from the monitoring stations.**	
	2. Ratify your local monitoring data, if you have not already done so. **[Note. A TEOM is Tapered Element Oscillating Microbalance, a very elegant way of measuring small incremental changes in mass.** **It operates by directing fine particles, which have been extracted from a measured air stream, onto a disposable filter that is mounted on top of an element that is vibrating at its resonant frequency.** **As its mass increases, due to deposition, its resonant frequency decreases and the mass deposition is calculated. The TEOM is made by R&P [Rupprecht & Patashnick].** **A TEOM is used the Luton BC site, a Beta Attenuation Monitor (BAM) is used at Luton Airport.**	It is imperative that any local monitoring data are ratified before being used. See Annex 1 and the new FAQ on data ratification for details. For data collected by TEOMs you should apply the default 1.3 factor to estimate gravimetric concentrations (see Box 8.2). [BAM info left out] Recent national network data will be labelled 'provisional' (see Para 1.32). They can still be used, as they have been scaled, but they have yet to be ratified. Do not base decisions on any provisional data alone. ERG have applied the appropriate correction factors to the TEOM & BAM results.

Source, location or data that need to be assessed	Steps that must be taken to complete the assessment	Notes relevant to each step
PM_{10}		
	The local monitoring data is ratified by ERG.	
	3. Calculate annual means and the number of 24-hour exceedences of 50 μgm^{-3}.	The annual means should represent a calendar year if possible. Adjust the result to estimate the annual mean if you have less than 9 month's data – see Box 8.5.
	The annual mean, as measured by a TEOM at the LBC CRAQM, was 18.89 μgm^{-3} during Calendar year 2002. **Data capture was 94.52%.** **Applying a National TEOM correction factor of 1.3 gives an annual mean of 24.55 μgm^{-3} during Calendar year 2002.** **There were 5 exceedences of the 24-hour mean of 50 μgm^{-3} in 2002.** **Luton CRAQM Station 2005** **In 2005 the annual mean at the CRAQM was 24 μgm^{-3}, this is the corrected concentration after application of the National TEOM correction factor of 1.3** **Data capture in 2005 was 90%** **There were 2 exceedences of the 24-hour mean of 50 μgm^{-3} in 2005.** **London Luton Airport 2005** **(Not monitored in 2002)** **In 2005 the annual mean at LLA was 31 μgm^{-3}, this is the corrected concentration after application of the National TEOM correction factor of 1.3** **Data capture in 2005 was 96%** **There were 30 exceedences of the 24-hour mean of 50 μgm^{-3} in 2005.**	
	4. Estimate the number of 24-hour exceedences of 50 μgm^{-3} in the current year (2006)	If necessary, estimate the number of 24-hour exceedences of 50 μgm^{-3} using the relationship in Figure 8.1. **{NB Figure 8.1 is entitled *"Relationship between the number of 24-hour exceedences of 50 μgm^{-3} and the annual mean concentration ….."***}

Source, location or data that need to be assessed	Steps that must be taken to complete the assessment	Notes relevant to each step
		It does <u>NOT</u> give a way of estimating the number of 24-hour exceedences of 50 µgm^{-3} in the current year (2006), as is required in the box to the left. Its use is for estimating # of 24 hour exceedences from knowledge of the annual mean, not estimating number of current year exceedences from a previous year's data}. Where you have less than 90% data capture you should use the 90th percentile rather than a count of exceedences.
	<u>Luton CRAQM</u> **As there were only 5 exceedences of the 24-hour mean of 50 µgm^{-3} in 2002, *cf* the 2004 objective of 35 exceedences, it is not necessary to estimate using the relationship in figure 8.1.** **As there were only 2 exceedences of the 24-hour mean of 50 µgm^{-3} in 2005, *cf* the 2004 objective of 35 exceedences, it is not necessary to estimate for 2006 using the relationship in figure 8.1.** **<u>LLA Monitoring station</u>** **As there were only 30 exceedences of the 24-hour mean of 50 µgm^{-3} in 2005, *cf* the 2004 objective of 35 exceedences, it is not necessary to estimate for 2006 using the relationship in figure 8.1.** **Taking into account the comment in the box to the above right, the guidance does not explain how to estimate current year exceedence #s.** **However, the # of exceedences of the 24-hour mean of 50 µgm^{-3} in 2004 at LLA were 33 and in 2005 30 and 3 in 2003, but annual means for the same years were almost constant at 32, 31 & 31 respectively.** **It should be noted that the LLA monitoring station is sited very close to an area where there are large amounts of slow or stationary vehicles, and is therefore not representative of**	

Source, location or data that need to be assessed	Steps that must be taken to complete the assessment	Notes relevant to each step
	normal road traffic emissions or aircraft emissions nor is it in area of relevant exposure.	
	5. Estimate the annual mean concentrations in 2010 **(Scotland only).**	Box 8.6 describes the approach for this. You should summarise both current and future concentrations in a table. It is also advisable to project forward from each year of monitoring to show the range of future concentrations. You should use the highest value as the basis for your decision.
	Questions	
	For 2004 objectives: • Are there more than 35 predicted 24-hour exceedences of 50 μgm^{-3} in 2004 (or is the 90th percentile greater than 50 μgm^{-3})? For 2010 objectives (Scotland only): • Are any predicted annual means in 2010 greater than 18 μgm^{-3}?	Before you assess the measured concentrations check that the monitoring locations represent relevant exposure (see Paras 1.19 – 1.21). The focus for 2004 is upon the 24-hr mean objective, as this is expected to be more stringent than the annual mean objective. The focus for 2010 in Scotland is upon the annual mean objective, as this is expected to be more stringent than the 24-hour objective.
	There are not more than 35 predicted 24-hour exceedences of 50 μgm^{-3} in 2004. **There were not more than 35 predicted 24-hour exceedences of 50 μgm^{-3} in 2005.**	**The LBC CRAQM station measuring location does represent relevant exposure, the LLA one does not.**
	Action	
	If the answer is YES to any of these questions, proceed to a Detailed Assessment for PM_{10}.	The Detailed Assessment will be with a view to determining whether to declare an AQMA.
	As the answer is No to the questions, there is no need to proceed to a Detailed Assessment (DA) of PM_{10} on that basis.	
(B) Monitoring data within an AQMA	**Overview**	
	This step will determine whether there is evidence to suggest that an AQMA previously declared may require reconsideration.	

Source, location or data that need to be assessed	Steps that must be taken to complete the assessment	Notes relevant to each step
PM_{10}		
	Approach	
	1. Carry out the data analysis as set out under (A) above.	This will be for monitoring carried out within the previously defined area of exceedence.
	Question	
	For 2004 objectives: • Are there 35 or fewer predicted 24-hour exceedences of 50 μ^{gm-3} in 2004?	Before you assess the predicted concentration check that the monitoring location represents relevant exposure (see Paras 1.19 – 1.21). The focus for 2004 is upon the 24-hr mean objective, as this is expected to be more stringent than the annual mean objective.
	Action	
	If the answer is YES proceed to a Detailed Assessment for PM_{10}.	In Scotland this would be insufficient ground alone to revoke an AQMA, as consideration will have to be given to the new objectives for 2010 (see checklist item (C)). The Detailed Assessment will be with a view to revoking the AQMA.
	There is no PM_{10} monitoring data in the area of the AQMA in Luton, and so there is no need to proceed to a Detailed Assessment (DA) of PM_{10} on that basis. **STP**	
(C) Busy roads and junctions and Scotland	**Not considered here**	
(D) Junctions	**Approach**	Experience from the first round suggests that junctions were often not considered adequately. This assessment is required where there was no specific assessment of junctions during previous Rounds against the 2004 objectives.
		These locations were not specifically included, neither were they specifically excluded, in Round 1, only roads with AADTs over 20,000 were considered

Source, location or data that need to be assessed	Steps that must be taken to complete the assessment	Notes relevant to each step
PM_{10}		
	1. Identify 'busy' junctions.	A 'busy' junction can be taken to be one with more than 10,000 vehicles per day. Guidance on how to add flows at junctions is given on p 8-25 of TG(03).
	2. Determine whether there is relevant exposure within 10m of the kerb (20m in major conurbations).	A major conurbation may be considered to be a city with a population in excess of 2 million. If there is no relevant exposure then you do not need to proceed further.
		Digital Aerial Photographs have been used to assist in this assessment. **There are some junctions where there may be relevant exposure within 10m of the kerb, however their traffic flow <u>does not</u> exceed 10,000 vehicles per day.** **STP**
	3. Obtain detailed information on traffic flows, speeds and the proportion of different vehicle types.	Information on the proportion of vehicle types may be based on 2 classes (HDV/LDV) or a more detailed breakdown if the data are available.
	There are no relevant junctions **STP**	
	4. Use the DMRB screening model to predict the number of 24-hour exceedences of 50 μgm^{-3} in 2004 at relevant locations.	You will require information on the local background concentrations (see Para 8.22).
	Question	
	• Are there more than 35, 24-hour exceedences of 50 μgm^{-3} in 2004 at relevant locations?	
	Action	
	If the answer is YES, this indicates a potential exceedence of the annual mean objective in 2005. You should then proceed to a Detailed Assessment for PM_{10} at these locations.	If there are monitoring data for these locations, then you should use these results in preference to the DMRB screening model to reach a decision. This assumes the data have been quality assured (see Annex 1).
	There are no busy junctions as defined in Luton, and so there is no need to proceed to a Detailed Assessment (DA) of PM_{10} on that basis. **STP**	

Source, location or data that need to be assessed	Steps that must be taken to complete the assessment	Notes relevant to each step
PM_{10}		
(E) Roads with high flow of buses and/or HGVs	**Approach**	There will be some street locations where there is an unusually high proportion of buses and/or HGVs. These can be a major source of PM_{10}. Only locations not covered by previous reviews & Assessments should be covered in this section
	1. Identify all roads with an unusually high proportion of heavy-duty vehicles.	An 'unusually high proportion' can be taken to be greater than 20% of AADT flow. If traffic data are not available, use local knowledge. Such roads could include bus-only streets or roads leading to a quarry or freight terminal.
		These locations were not specifically included, neither were they specifically excluded, in Round 1, only roads with AADTs over 20,000 were considered
	2. Determine whether there is relevant exposure within 10 m of these roads (20 m in major conurbations).	Relevant exposure should be judged against both the 24-hour (2004) and annual mean (2010) criteria (see Para 8.19). A major conurbation may be considered to be a city with a population in excess of 2 million. If there is no relevant exposure then you do not need to proceed further.
	There are no roads with more than 20% HDV. **STP**	
	3 Obtain detailed information on traffic flows, speeds and the proportion of different vehicle types.	If the flow of HDVs is below 2000 vehicles per day then you do not need to proceed further.
	4. Use the DMRB Screening Model to predict the number of 24-hour exceedences of 50 μgm^{-3}, in the current year (2006) (and for Scotland only, the annual mean for 2010) at relevant locations.	You will require information on the local background concentrations (see Para 8.22).
	Questions	
	• Are there more than 35 24-hour exceedences of 50 μgm^{-3} predicted in 2004? • Are any of the predicted annual mean PM_{10} concentrations in 2010 greater than 18 μgm^{-3} (Scotland only)?	

Source, location or data that need to be assessed	Steps that must be taken to complete the assessment	Notes relevant to each step
PM_{10}		
	Action	
	If the answer is YES you should proceed to a Detailed Assessment for PM_{10} at these locations.	If there are monitoring data for these locations, then you should use these results in preference to the DMRB screening model to reach a decision. This assumes the data have been quality assured (see para 8.24).
	There are no roads with high flows of HGVs or buses as defined and therefore there is no need to proceed to a DA for Nitrogen Dioxide on the basis of high flows HGVs or buses **STP**	
(F) New roads constructed or proposed since last round of review and assessment	**Approach 1**	
	1. Check whether an air quality assessment has already been carried out for the new road.	An assessment may already have been carried out as part of the planning process. If this is the case you should confirm that the assessment is sufficient for review and assessment purposes. If the assessment did not cover the new 2010 objectives, then authorities in Scotland will have to use the approach set out in checklist item (C). You need only consider proposed roads for which planning approval has been granted.
	No new roads have been constructed or proposed since first round of review and assessment **STP**	
	Question	
	• Did the assessment predict any exceedences of the objectives at relevant locations?	
	Action	
	If the answer is YES you should proceed to a Detailed Assessment for PM_{10} these locations	The Detailed Assessment may be no more than relying on the findings of the air quality assessment. For this to be the case the assessment will have to meet the standards of a Detailed Assessment.
	Approach 2	This approach should be followed if there has been no previous air quality assessment.

Source, location or data that need to be assessed	Steps that must be taken to complete the assessment	Notes relevant to each step
PM_{10}		
	1. Establish whether the traffic flow on the new road is greater than 10,000 vehicles per day (AADT) or whether the new road has increased traffic flow on existing roads previously identified as having more than 30, 24-hour exceedences 50 μgm^{-3} in 2006 (or more than 6 exceedences in 2010 in Scotland).	The aim is to establish whether there is a risk of exceedences alongside the new road, or existing roads with a significant change in flows. You should only proceed if there is relevant exposure within 10m (20m in major conurbations). A major conurbation may be considered to be a city with a population in excess of 2 million.
	2. Use the DMRB screening model to predict the number of 24-hour exceedences 50 μgm^{-3}, in 2006 at relevant locations.	You will require information on the local background concentrations (see Para 8.22).
	Question	
	• Are there more than 35 24-hour exceedences of 50 μgm^{-3} predicted in 2004? • Are any of the predicted annual mean PM_{10} concentrations in 2010 greater than 18 μgm^{-3} (Scotland only)?	
	Action	
	If the answer is YES you should proceed to a Detailed Assessment for PM_{10} at these locations.	
	No new roads have been constructed or proposed since the first round of review and assessment and therefore there is no need to proceed to a DA for PM_{10} on that basis. **STP**	
NB (G) & (H) have had their titles swapped around in the Jan 2006 USA update checklist		
(G) Roads with significantly changed traffic flows	**Approach**	
	1. Identify any roads with more than 10,000 vehicles per day (AADT) that have experienced 'large' increases in traffic.	A 'large' increase can be taken to be more than 25% increase in AADT traffic flow. You should also consider roads where such an increase is identified due to improved traffic data.
	There are no roads with more than 10,000 vehicles per day (AADT) that have experienced 'large' increases in traffic. **STP**	
	2. Determine whether these roads had previously been identified as being at risk of exceeding the objectives.	A road 'at risk' of exceeding the objectives can be taken to be one previously identified with more than 30 24-hour concentrations above 50 μgm^{-3} at a relevant location (or a 90th percentile above 45 μgm^{-3}).

Source, location or data that need to be assessed	Steps that must be taken to complete the assessment	Notes relevant to each step
PM_{10}		
	3. Obtain detailed information on traffic flows, speeds and proportion of different vehicle types.	Information on the proportion of vehicle types may be based on 2 classes (HDV/LDV) or a more detailed breakdown if data are available.
	4. Use the DMRB screening model to predict the number of 24-hour exceedences of 50 μgm^{-3} in 2004 at relevant locations.	You will require information on the local background concentrations (see Para 8.22).
	Question	
	• Are there more than 35 24-hour exceedences of 50 μgm^{-3} predicted in 2004.	
	Action	
	If the answer is YES you should proceed to a Detailed Assessment for PM_{10} at these locations.	
	There are no roads with more than 10,000 vehicles per day that have experienced 'large' increases in traffic and therefore there is no need to proceed to a DA for PM_{10} on that basis. **STP**	
	Overview	
	This section addresses the changes to the background PM_{10} maps, which have been revised to a 2004 base year. In some areas, PM_{10} concentrations are higher than previously estimated. It deals with locations where results were close to but just below the objective and for which AQMAs were not declared.	
(H) Roads close to the objective during the second round of Review and Assessment	**Approach**	This only applies to the 2004 objectives
	1. Identify any roads where between 23 and 35 days exceedences of the 24-hour objective (50 μgm^{-3}) were predicted at relevant locations. 2. Scotland only question	The new factors might make a difference if locations were predicted to be close to the objective during the first round of Review and Assessment.
	3 Rerun DMRB for these locations	An alternative approach is to check whether the mapped background concentrations specifically at the location have increased significantly. A reassessment will only be necessary where background concentrations have increased. Where background concentrations have decreased or remain unchanged there will be no need for re-assessment.

Source, location or data that need to be assessed	Steps that must be taken to complete the assessment	Notes relevant to each step
PM_{10}		
	Question	
	• Are there more than 35, 24-hour exceedences of 50 μgm^{-3} in 2004.	
	NO - STP	
	Action	
	If the answer is YES you should proceed to a Detailed Assessment for PM_{10} at these locations.	This new assessment should use the new emission factors.
	There were no roads close to the objective during the first round of review and assessment and therefore there is no need to proceed to a DA for PM_{10} on that basis. **STP**	
Industrial sources		
	Overview	
	Industrial sources will not make a significant local contribution to annual mean concentrations, but could be significant in terms of the 24-hour objective. The evidence from the work carried out during previous rounds is that the focus should be on fugitive sources, although coal burning boilers and steel works may also be significant. You should also include sources in neighbouring authorities close to your boundary	
(I) New industrial sources	**Approach 1**	
	1. Check whether an air quality assessment has already been carried out for the new industrial source.	An assessment may already have been carried out as part of the planning or authorisation process. If this is the case you should confirm that the assessment is sufficient for review and assessment purposes. You only need to consider proposed sources for which planning approval has been granted.
	There are no new processes on which an assessment could have already been carried out as part of the planning or authorisation process. **STP**	
	Question	
	• Did the assessment predict any exceedences of the objectives at relevant locations?	
	Action	
	If the answer is YES you should proceed to a Detailed Assessment for PM_{10} for this source.	The Detailed Assessment may be no more than relying on the findings of the air quality assessment. For this to be the case the assessment will have to meet the standards of a Detailed Assessment.

Source, location or data that need to be assessed	Steps that must be taken to complete the assessment	Notes relevant to each step
PM_{10}		
	Approach 2	This approach should be followed if there has been no previous air quality assessment.
	1.Use the checklist in Annex 2 (pA2-60) to determine whether the source needs considering further.	
	There are no new processes on which an assessment could have already been carried out as part of the planning or authorisation process and in any in any case the only process in the checklist is glass manufacturing, of which Luton does not have an example. **STP**	
	2. Obtain information on the total annual emission of PM_{10} and the height of the emission.	See Paras 8.40 and 8.41. If it is proving difficult to obtain the information on the emissions contact the LA Support Helpdesk.
	3. Use the nomograms described in Para 8.36 onwards to determine if the source requires further assessment.	You will need to derive the effective stack height. Details of how to do this are provided in Para 8.42.
	Question	
	• Does the source exceed the threshold in the nomogram?	
	There are no new industrial sources and therefore there is no need to proceed to a DA for PM_{10} on that basis. **STP**	
(J) Industrial sources with substantially increased emissions	**Approach**	
	1.Determine whether any of the sources identified during the first round of review and assessment as potentially significant have 'substantially' increased emissions. Also consider whether there is any new relevant exposure. You should also include sources in neighbouring authorities close to your boundary.	A substantial increase can be taken to be one greater than 30%.
	No sources have substantially increased in size since the First Round of R&A. **STP**	
	2. Obtain updated information on the total annual emission of PM_{10} and the height of the emission.	See Para 8.40 and 8.41. If it is proving difficult to obtain the information on the emissions contact the LA Support Helpdesk.

Source, location or data that need to be assessed	Steps that must be taken to complete the assessment	Notes relevant to each step
PM_{10}		
	3. Use the nomograms described in Para 8.35 onwards to determine if the source requires further assessment.	You will need to derive the effective stack height. Details of how to do this are provided in Para 8.42.
	Question	
	• Does the source exceed the threshold in the nomograms?	
	Action	
	If the answer is YES you should proceed to a Detailed Assessment for nitrogen dioxide for these sources.	
	There are no industrial sources with substantially increased emissions and therefore there is no need to proceed to a DA for PM_{10} on that basis. **STP**	
Domestic Sources		
	Overview	
	There are areas where domestic solid fuel burning still takes place. These can be significant sources of PM_{10}. Consideration of the results from the First Round has shown the need to focus on the density of houses burning solid fuel over a smaller area of 500 x 500 m. This section should focus only on locations not covered by previous reviews and assessments, or where there is new relevant exposure.	
(K) Areas of domestic solid fuel burning	**Approach**	
	1. Identify areas where significant solid fuel burning still takes place.	You should take 'significant' to be any area of about 500 x 500 m with more than 50 houses burning solid fuel as their primary source of heating. Solid fuels include coal, anthracite, smokeless fuel and wood. These are used to calculate a number of 'effective' coal-burning houses – see Para 8.57. If necessary use professional judgement to identify such areas, including experience of smoke hanging over the area on a winters evening.
	2. Collect information on the actual use of solid fuel in these areas.	For guidance on how to obtain this information, including how to carry out a survey Box 7.4. Do not count houses with occasional use.
	3. Use the nomogram in Figure 8.8 to determine the risk of exceeding the objective. (In Scotland use Figure 8.9 as well to cover 2010.)	The procedure for use of the nomograms is set out in Box 8.8 and Paras 8.58 onwards.

Source, location or data that need to be assessed	Steps that must be taken to complete the assessment	Notes relevant to each step
PM_{10}		
	Question	
	• Does the density of effective coal burning premises exceed the criterion in the nomograms?	
	Action	
	If the answer is YES you should proceed to a Detailed Assessment for PM_{10} at these locations.	
	All of the area of the Borough of Luton has been covered since 1979 by Smoke Control Orders and as a consequence the incidence of any solid fuel burning is very low. **STP**	
	There are no areas where the density of coal burning premises exceeds 50 per 500 x 500 m area and so there is no need to proceed to a Detailed Assessment (DA) of PM_{10} on that basis. **STP**	
Other sources	**Overview**	
	A number of other sources may be significant for PM_{10}. They include fugitive dust and other transport sources. You only need consider these sources if they were not assessed previous rounds, or if there is new relevant exposure.	
(L) Quarries/landfill sites/opencast coal/handling of dusty cargoes at ports etc	**Approach**	This approach deals with fugitive sources of PM_{10}. The focus is on the assessment of dust emissions, as where dust is emitted, a proportion, (typically around 20%), will be present as PM_{10}.
	1. Check whether an air quality assessment has already been carried out for the relevant source	An assessment may already have been carried out as part of the planning or authorisation process. If this is the case you should confirm that the assessment is sufficient for R&A purposes. You only need consider sources for which planning approval has been granted.
	2 Establish whether there is relevant exposure 'near' to the sources of dust emission.	You should focus on unpaved haul roads, processing plant and materials handling as the main sources. Relevant exposure is as defined in Paras 1.19-1.21. 'Near' should be defined as within 1000m if the estimated 2004 (2010) annual mean

Source, location or data that need to be assessed	Steps that must be taken to complete the assessment	Notes relevant to each step
	3 Determine whether there are dust concerns associated with the facility.	background is greater than or equal to 27 (17) μgm^{-3}, within 400 m if the 2004 (2010) background is greater than or equal to 26 (16) μgm^{-3}, and within 200 m if the 2004 (2010) background is <26 (<16) μgm^{-3}. The distance should be from the source, not the site boundary. (The values in brackets are for the 2010 objectives that apply in Scotland). If there is no relevant exposure near to the source then you do not need to proceed further. Base this assessment on dust complaints and/or your experience gained from site visits.
	There are no Quarries/landfill sites/opencast coal/handling of dusty cargoes at ports. We used to have stone handling at various railway sidings, but no more. **STP**	
	Questions	
	• Are there recent complaints about dust? • Does visual inspections indicate significant dust?	
	Action	
	If the answer is YES to either question you should proceed to a Detailed Assessment for PM_{10} at these locations.	
	There are Quarries/landfill sites/opencast coal/handling of dusty cargoes at ports and therefore there is no need to proceed to a DA for PM_{10} on that basis. **STP**	
	Overview	
	Aircraft are not major sources of PM_{10} emissions, but may make a contribution close to the source. You should therefore evaluate aircraft emissions at airports if they have not been considered during the previous rounds of review and assessment. Emissions from aircraft once they are above about 200 m will make a negligible contribution to ground-level concentrations.	

Source, location or data that need to be assessed	Steps that must be taken to complete the assessment	Notes relevant to each step
PM_{10}		
(M) Aircraft	**Approach** **NB for Monitoring data on PM_{10} at London Luton Airport see section (A) above)**	This approach deals with aircraft as a source at airports. Road traffic impacts associated with airports should be dealt with separately using the Road Traffic sections of Box 8.4.
	1. Establish whether there is relevant exposure within 500 m of the airport boundary.	Concentrations fall-off rapidly on moving away from the source, and are unlikely to make a significant contribution beyond this distance. If there is no relevant exposure then you do not need to proceed further.
	For a discussion on what Luton BC consider should be taken into account when assessing distance from receptors to a source with respect to an Airport, see section L in the Nitrogen Dioxide chapter. **STP**	
	There is relevant exposure within 500m of the Airport Boundary. **STP**	
	2. Obtain information on annual throughput of passengers and tonnes of freight in the most recent year possible (and 2010 in Scotland). Calculate the total equivalent passenger numbers in million passengers per annum (mppa).	You should convert the tonnes of freight to an *equivalent number of passengers* using 100,000 tonnes = 1 mppa. This only applies to freight taken in 'freight-only' planes, not that taken in passenger planes.
	In 2005 passenger throughput was 9,149,628, and freight was 23,745 tonnes [Source London Luton Airport Annual Monitoring Report 2005{AMR 2005}], available at www.luton.gov.uk, then choose - Transport and Streets, Public Transport, Air Services, London Luton Airport Annual Monitoring Report - Link to AMRs	**The freight figure of 23,745 Tonnes is total freight; therefore freight carried on freight planes is less than this figure.** **However, converting the whole of the freight tonnage at the rate of 100,000 Tonnes = 1 mppa gives an *equivalent number of passengers* of 237,450. - see box below for [lack of] implications of doing this.**
	• Is the *predicted total equivalent passenger* throughput in 2004 more than 10 mppa? • Is the predicted total equivalent passenger throughput in 2010 more than 5 mppa (Scotland only)?	
	Adding the # of passengers, 9,149,628, to the *equivalent number of passengers* of 237,450 [see box above right] gives 9,387,078 as the *predicted total equivalent passenger*	**As the predicted *total equivalent passenger numbers* in million passengers per annum (mppa) is < 10 million, consideration is not**

Source, location or data that need to be assessed	Steps that must be taken to complete the assessment	Notes relevant to each step
	***numbers* in million passengers per annum (mppa)**	**given to how to estimate what proportion of the freight was carried on passenger planes and therefore should not strictly be included in the calculation of total equivalent passenger numbers.**
	Action	
	If the answer is YES you should proceed to a Detailed Assessment for PM_{10}.	If there are monitoring data for worst-case relevant exposure locations near the airport boundary, then you should use these results in preference to the passenger throughput criteria to reach a decision. This assumes the data have been suitably quality assured (see Annex 1).
	USA 2003 There are no data for PM_{10} in the vicinity of the airport, although the Airport did have a Beta attenuation Monitor (BAM) installed at the airport until a few years ago. It was located by a passenger drop off/pick up area near the terminal building and would have been primarily collecting particulates from road vehicles. The Airport is relocating the BAM to SW of the Control Tower. **USA 2006** The Airport's BAM PM_{10} monitor has now been relocated to near the Control Tower. In 2005 the data capture was 96%, annual mean was 31 μgm^{-3} and there were 30 days when the daily mean was less than 50 μgm^{-3}.	
	The answer is No and so there is no need to proceed to a Detailed Assessment on the basis of PM_{10} from Aircraft. **A DA is not required due to *predicted total equivalent passenger* throughput being less than 10mppa.** **It is probable that in the near future this will exceed 10mppa. It is considered that when it does exceed 10mppa a DA will still not be required due to there**	

Source, location or data that need to be assessed	Steps that must be taken to complete the assessment	Notes relevant to each step
	being no relevant exposure within 500m of runways or taxiways. As discussed above in Section (L) to the NO_2 chapter, Luton BC considers that relevant exposure within a specified distance of the airport boundary is not an appropriate or suitable proxy for initial screening, but that distance from runways or taxiways is the appropriate measure.	
No more consideration needed of PM_{10} STP		

Conclusion

Further or Detailed Assessments are not required

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Updating & Screening Assessment for the Area of Luton Borough Council, April 2006

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