



65-67 Maygrove Road, London

Air Quality Assessment



65-67 Maygrove Road, London

Air Quality Assessment

Revision	Date	Notes	Author	Checked	Approved
1	December 2017	E2266	JK	ND	Dr N Davey
1.1	May 2018	E2266	AB	ND	Dr N Davey

**Entran Limited
7 Greenway Farm
Bath Road
Wick
Bristol
BS30 5RL**

**T: 0117 937 4077
www.entranltd.co.uk**



-

CONTENTS

PAGE

1	Introduction	1
2	Legislation And Policy	3
3	Review of Potential Impacts	9
4	Conclusions	12
	APPENDIX A - Air Quality Terminology	13
	APPENDIX B - Air Quality Standards And Objectives	14



1 INTRODUCTION

1.1 Entran Limited has been commissioned to undertake an assessment of air quality impacts associated with the relocation of a life safety generator at a site at 65-67 Maygrove Road, London. The location of the generator in relation to the Site is shown in Figures 1.1 and 1.2.

1.2 It is understood it is proposed to relocate the generator in a roof top location within the Site.

1.3 This report presents the findings of an air quality assessment of the potential impacts associated with the relocation of the generator.

1.4 A glossary of common air quality terminology is provided in **Appendix A**.



Figure 1: Site Plan

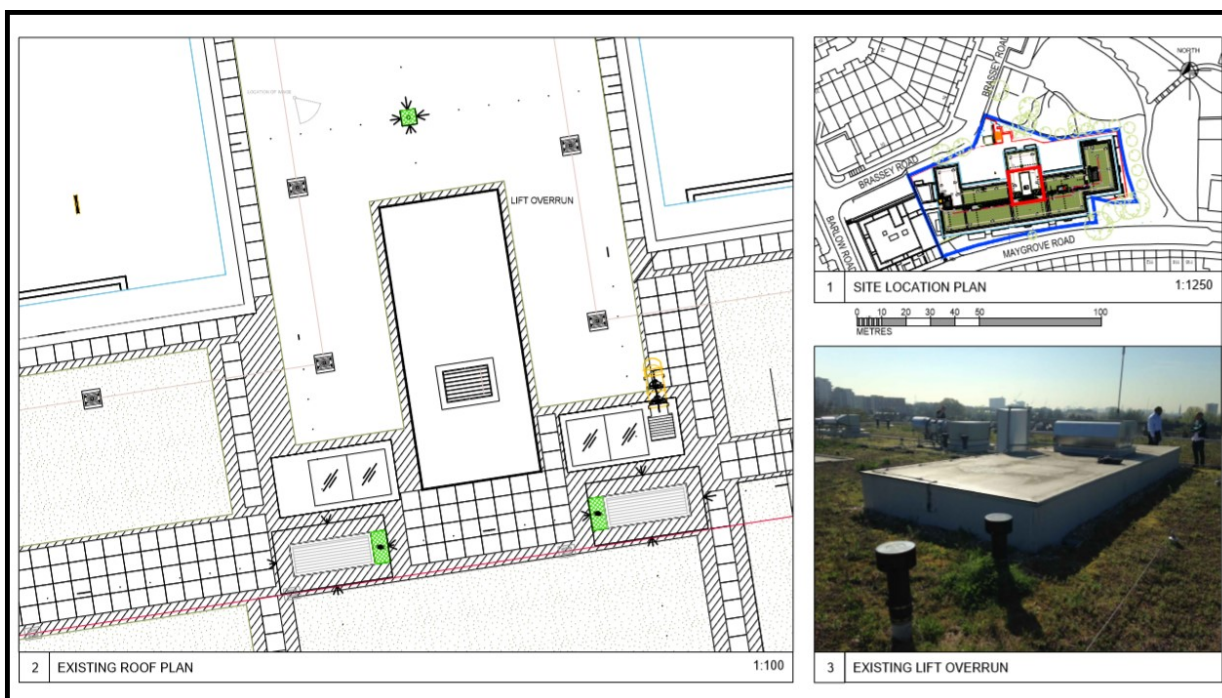
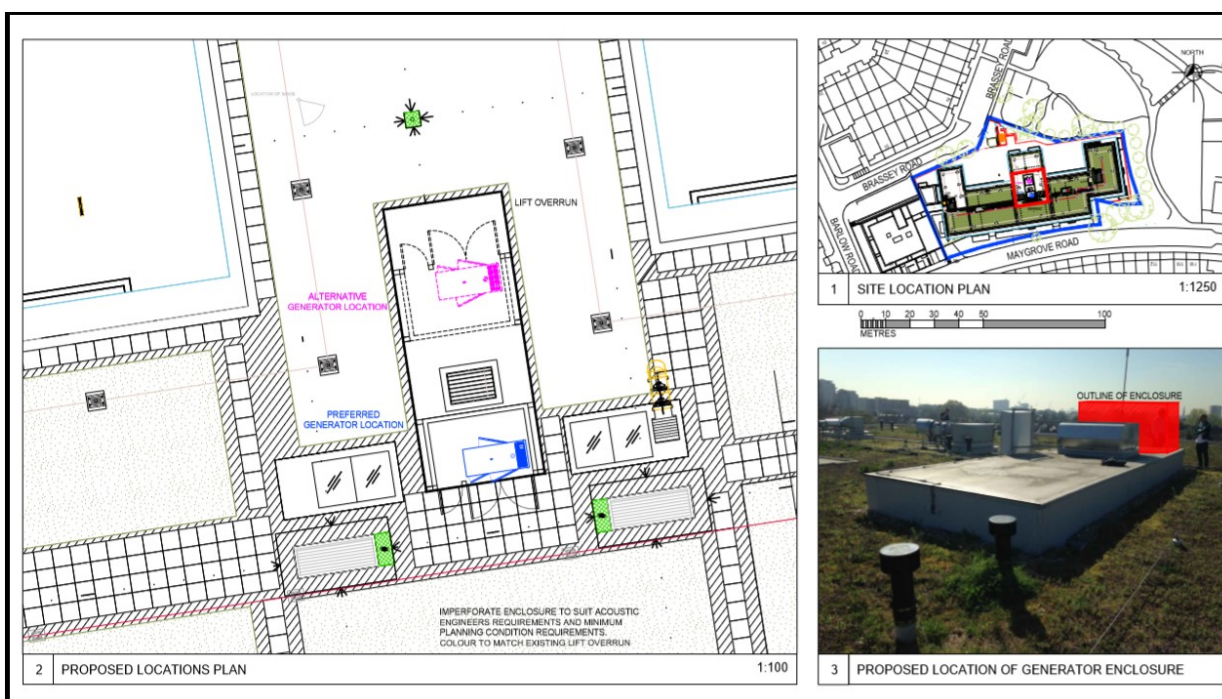


Figure 2: Location of New Generator





2 LEGISLATION AND POLICY

Air Quality Strategy for England, Scotland, Wales & Northern Ireland

2.1 The Government's policy on air quality within the UK is set out in the Air Quality Strategy (AQS) for England, Scotland, Wales and Northern Ireland (AQS) published in July 2007¹, pursuant to the requirements of Part IV of the Environment Act 1995. The AQS sets out a framework for reducing hazards to health from air pollution and ensuring that international commitments are met in the UK. The AQS is designed to be an evolving process that is monitored and regularly reviewed.

2.2 The AQS sets standards and objectives for ten main air pollutants to protect health, vegetation and ecosystems. These are benzene (C₆H₆), 1,3-butadiene (C₄H₆), carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO₂), particulate matter (PM₁₀, PM_{2.5}), sulphur dioxide (SO₂), ozone (O₃) and polycyclic aromatic hydrocarbons (PAHs).

2.3 The air quality standards are long-term benchmarks for ambient pollutant concentrations which represent negligible or zero risk to health, based on medical and scientific evidence reviewed by the Expert Panel on Air Quality Standards (EPAQS) and the World Health Organisation (WHO). These are general concentration limits, above which sensitive members of the public (e.g. children, the elderly and the unwell) might experience adverse health effects.

2.4 The air quality objectives are medium-term policy-based targets set by the Government which take into account economic efficiency, practicability, technical feasibility and timescale. Some objectives are equal to the EPAQS recommended standards or WHO guideline limits, whereas others involve a margin of tolerance, i.e. a limited number of permitted exceedances of the standard over a given period.

2.5 For some pollutants there is both a long-term (annual mean) standard and a short-term standard. In the case of nitrogen dioxide (NO₂), the short-term standard is for a 1-hour averaging period, whereas for fine particulates (PM₁₀) it is for a 24-hour averaging period. These periods reflect the varying impacts on health of differing exposures to pollutants (e.g. temporary exposure on the pavement adjacent to a busy road, compared with the exposure of residential properties adjacent to a road).

2.6 The current statutory standards and objectives are set out in the table presented in **Appendix B**.



2.7 Of the pollutants included in the AQS, NO₂ will be particularly relevant to this project, as this is the primary pollutant associated with emissions from engines and is the pollutant most likely to exceed relevant objective limits in the vicinity of the Site.

Local Air Quality Management (LAQM)

2.8 Part IV of the Environment Act 1995 also requires local authorities to periodically Review and Assess the quality of air within their administrative area. The Reviews have to consider the present and future air quality and whether any air quality objectives prescribed in Regulations are being achieved or are likely to be achieved in the future.

2.9 Where any of the prescribed air quality objectives are not likely to be achieved the authority concerned must designate that part an Air Quality Management Area (AQMA).

2.10 For each AQMA, the local authority has a duty to draw up an Air Quality Action Plan (AQAP) setting out the measures the authority intends to introduce to deliver improvements in local air quality in pursuit of the air quality objectives. Local authorities are not statutorily obliged to meet the objectives, but they must show that they are working towards them.

2.11 The Department of Environment, Food and Rural Affairs (DEFRA) has published technical guidance for use by local authorities in their Review and Assessment work². This guidance, referred to in this report as LAQM.TG(16), has been used where appropriate in the assessment.

National Planning Policy Framework

2.12 Published on 27th March 2012, the National Planning Policy Framework (NPPF)³ sets out the Government's planning policies for England and how these are expected to be applied.

2.13 At the heart of the NPPF is a presumption in favour of sustainable development. It requires Local Plans to be consistent with the principles and policies set out in the Framework with the objective of contributing to the achievement of sustainable development.

2.14 Current planning law requires that applications for planning permission must be determined in accordance with the relevant development plan. The NPPF should be taken into account in the

¹ The Air Quality Strategy for England, Scotland, Wales and Northern Ireland – July 2007.

² Department for Environment, Food and Rural Affairs (DEFRA), (2016): Part IV The Environment Act 1995 Local Air Quality Management Review and Assessment Technical Guidance LAQM.TG(16).

³ Communities and Local Government: *National Planning Policy Framework* (March 2012)



preparation of development plans and therefore the policies set out within the Framework are a material consideration in planning decisions.

2.15 The NPPF identifies 12 core planning principles that should underpin both plan-making and decision-taking, including a requirement for planning to *'contribute to conserving and enhancing the natural environment and reducing pollution'*.

2.16 Under Policy 11: Conserving and Enhancing the Natural Environment, the Framework requires the planning system to *'prevent both new and existing developments from contributing to or being put at unacceptable risk or being adversely affected by unacceptable levels of air pollution'*.

2.17 In dealing specifically with air quality the Framework states that *'planning policies should sustain compliance with and contribute towards EU limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and the cumulative impacts on air quality from individual sites in local areas. Planning decisions should ensure that any new development in Air Quality Management Areas is consistent with the local air quality action plan'*.

Control of dust and particulates associated with construction

2.18 Section 79 of the *Environmental Protection Act (1990)* states that where a statutory nuisance is shown to exist, the local authority must serve an abatement notice. Statutory nuisance is defined as:

- 'Any dust or other effluvia arising on industrial, trade or business premises and being prejudicial to health or a nuisance', and
- 'any accumulation or deposit which is prejudicial to health or a nuisance'.

2.19 Failure to comply with an abatement notice is an offence and if necessary, the local authority may abate the nuisance and recover expenses.

2.20 There are no statutory limit values for dust deposition above which 'nuisance' is deemed to exist – 'nuisance' is a subjective concept and its perception is highly dependent upon the existing conditions and the change which has occurred. However, research has been undertaken by a number of parties to determine community responses to such impacts and correlate these to dust deposition rates.



The Mayor of London's Air Quality Strategy

2.21 The Mayor of London's AQS⁴ sets out a series of policies and proposals for the implementation of the UK AQS and for the achievement of the air quality standards and objectives in Greater London. With regards new developments the following policies are of relevance:

2.22 Policy '1 - Encouraging smarter choices and sustainable travel': *The Mayor will support a shift to public transport, by only supporting developments that generate high levels of trips in locations with good public transport accessibility, by supporting car free developments and encouraging the inclusion of infrastructure to support sustainable travel, such as cycling, electric vehicle recharging points and car clubs;*

2.23 Policy '6 - Reducing emissions from construction and demolition sites': *The London Council's Best Practice guidance will be reviewed and updated, and more vigorously implemented;*

2.24 Policy '7 - Using the planning process to improve air quality - new developments in London as a minimum shall be 'air quality neutral': *The Mayor will encourage boroughs to require emissions assessments to be carried out alongside conventional air quality assessments. Where air quality impacts are predicted to arise from developments these will have to be offset by developer contributions and mitigation measures secured through planning conditions, section 106 agreements or the Community Infrastructure Levy;*

2.25 Policy '8 - Maximising the air quality benefits of low to zero carbon energy supply': *The Mayor will apply emission limits for both PM and NO_x for new biomass boilers and NO_x emission limits for Combined Heat and Power Plant (CHPP). Air quality assessments will be required for all developments proposing biomass boilers or CHPPs and operators will be required to provide evidence yearly to demonstrate compliance with the emission limits;*

2.26 Policy '9 - Energy efficient buildings': *The Mayor will set CO₂ reduction targets for new developments which will be achieved using the Mayor's Energy Hierarchy. These measures will result in reductions of NO_x emissions; and*

2.27 Policy '10 - Improved air quality in the public realm': *The Mayor will encourage the improvement of air quality in the public realm by planting vegetation to trap particulate matter. Through the planning system the Mayor will increase the number of green roofs and living walls across London. Additionally, he will encourage the planting of trees in areas of poor air quality.*

⁴ Mayor of London (2010) Clearing the Air, The Mayor's Air Quality Strategy, December 2010



The London Plan

2.28 The London Plan 2016⁵ was published in March and consolidated the London Plan 2011⁶ with the Revised Early Minor Alterations to the London Plan⁷ and the Further Alterations to the London Plan also published in March 2015. The Plan is the overall strategic plan for London setting out an integrated economic, environmental, transport and social framework for the development of London over the next 20-25 years. It specifically addresses how development can help support the implementation of the Mayor's Air Quality Strategy and achieve a reduction in pollutant emissions and public exposure to pollution.

2.29 Policy 7.14 - Improving Air Quality requires all development proposals to:

- *Minimise increased exposure to existing poor air quality, make provision to address local problems of air quality (particularly within AQMAs) and promote greater use of sustainable transport modes through travel plans;*
- *Promote sustainable design and construction to reduce emissions from demolition and construction of buildings including following current best practice guidance;*
- *Be at least 'air quality neutral' and therefore not leading to further deterioration of existing poor air quality;*
- *Look, in the first instance, to implement measures on-site to reduce emissions from a development. If inappropriate or impractical, other measures should be considered and where found to provide equivalent air quality benefits, planning obligations or planning conditions should be used to ensure their implementation;*
- *Permission will only be granted where a detailed assessment of biomass boilers shows no*
- *adverse impact from emissions.*

Mayor of London Sustainable Design and Construction SPG

2.30 The Mayor's Sustainable Design and Construction Supplementary Planning Guidance (SPG)⁸ sets out guidance on meeting the London Plan Policy on sustainable design and construction.

⁵ Greater London Authority (2016) The London Plan: The Spatial Development Strategy for London Consolidated with Alterations Since 2011

⁶ Greater London Authority (July 2011) The London Plan: Spatial development Strategy for Greater London

⁷ Mayor of London (2013) The London Plan Spatial Development Strategy for Greater London, Revised Early Minor Alterations Consistency with the NPPF

⁸ Mayor of London (2014) Sustainable Design and Construction Supplementary Planning Guidance



2.31 In relation to air quality the SPG sets out guidance on the following key areas:

- assessment requirements;
- construction and demolition;
- design and occupation;
- air quality neutral policy for buildings and transport; and
- emissions standards for combustion plant.

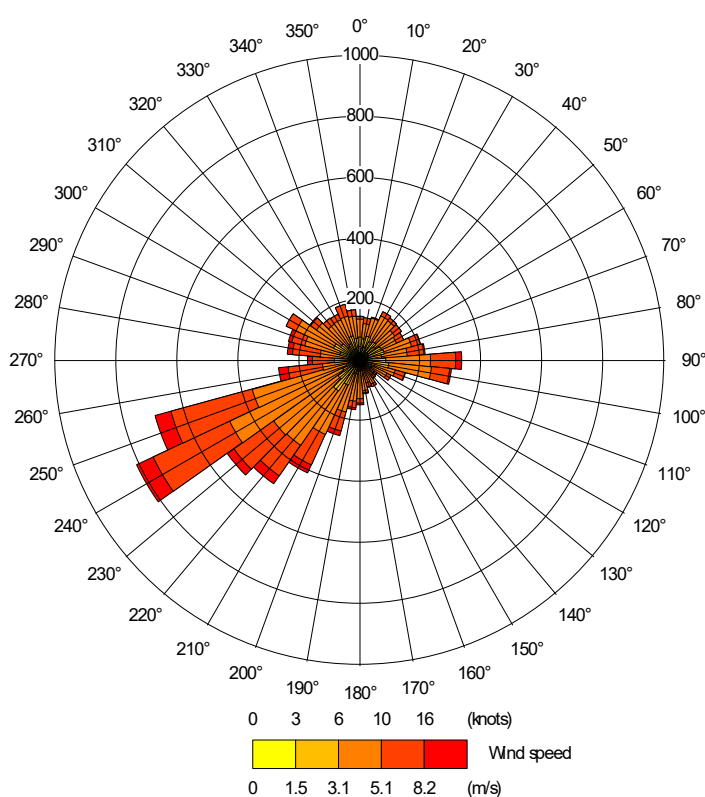
2.32 Reference has been made to the guidance set out within the SPG when undertaking this assessment.

3 REVIEW OF POTENTIAL IMPACTS

3.1 It is proposed to relocate the generator to a location on top of the building.

3.2 A review of local meteorological data (Figure 3.1) shows the prevailing winds for the area are from the south-west. The most significant impacts from any emissions arising during operation of the generator would therefore occur to the north-east of the Site.

Figure 3.1: Windrose for London City Meteorological Station 2016



3.3 A review of local mapping reveals that there are no residential units or other sensitive receptors representative of long-term (annual mean) exposure located to the north-east of the Site. However, there is a park and children's playground. Although the annual mean objectives would not be relevant in this location due to the transient nature of people using the area, the 1-hour NO₂ objective would apply.

3.4 A review of local monitoring carried out by both Camden Council and Brent Council in the local area is set out in Table 3.1. The data shows that at all locations the annual mean NO₂ objective is being exceeded. However, diffusion tubes cannot measure short-term concentrations.



Research⁹ has concluded that exceedences of the 1-hour mean objective are generally unlikely to occur where annual mean concentrations do not exceed 60 $\mu\text{g}/\text{m}^3$.

3.5 Based on the data set out in Table 3.1 NO_2 concentrations are likely to be exceeding the 1-hourly objective at the majority of monitoring locations in the vicinity of the Site. However, a review of the monitoring sites indicates that the CA25 Emmanuel Primary School is the closest and most representative of conditions at Maygrove Road. Concentrations at this monitoring site have been below 60 $\mu\text{g}/\text{m}^3$ over the last three years indicating it is unlikely that the 1-hour objective is being exceeded in the vicinity of the Site on Maygrove Road.

Table 4.4: Annual Mean NO_2 Concentrations Measured by Diffusion Tube ($\mu\text{g}/\text{m}^3$)

Site Name	OS Grid Reference	Annual mean concentrations ($\mu\text{g}/\text{m}^3$)		
		2014	2015	2016
Brent 29 – Junction Dollis Hill Lane/Cricklewood	523191, 186571	82.7	74.1	85.9
Brent 30 Chichele Road nr Melrose Avenue	523663, 185353	58.6	52.6	62.6
BRT 56 Chamberlayne Road	523635, 183153	67.7	56.8	69.4
BRT 57 Kilburn Bridge	525461, 183558	86.2	85.3	84.2
CA25 Emmanuel Primary School	525325, 185255	48.4	48.1	52.2

3.6 It is proposed to install a diesel generator (FG Wilson, P50-3). The generator is installed as a life safety generator, therefore expressly for the purpose of providing power as a result of a power cut or another emergency situation resulting in loss of power to the adjacent housing development. Operation of the generator would therefore be very infrequent and only for short periods of time with the exception of occasional servicing when the generator would operate for no more than 15-30 minutes twice a year.

3.7 Furthermore, the generator will be located top of a five storey building which will aid dispersion of the plume. The surrounding properties are generally three / four storeys.

⁹ D Laxen and B Marner: Analysis of the relationship between 1-hour and annual mean nitrogen dioxide at UK roadside and kerbside monitoring sites (July 2003).



3.8 Based on the information above and relatively small capacity of the plant, it is considered very unlikely that operation of the generator would result in a significant impact on local air quality at locations of relevant exposure.

3.9 Locations where the annual mean objective applies are also located upwind of the prevailing wind direction, therefore reducing potential impacts.

3.10 Locations downwind of the prevailing wind are those where only the 1-hour NO₂ objective applies and in these areas concentrations are currently expected to meet the short-term NO₂ objective. As the generator would operate so infrequently and for such short periods of time it is considered unlikely that emissions would have a significant impact on short-term concentrations.

3.11 The impact of the generator is therefore deemed to be negligible in relation to exposure at adjacent sensitive receptors.



4 CONCLUSIONS

4.1 An air quality impact assessment has been carried out to determine the impact of the relocated life safety generator on local air quality.

4.2 Following a review of the proposed location of the generator, operating profile, location of sensitive receptors and local meteorological conditions, the impact of the generator is considered to have a negligible impact on local air quality.



APPENDIX A - AIR QUALITY TERMINOLOGY

Term	Definition
Accuracy	A measure of how well a set of data fits the true value.
Air quality objective	Policy target generally expressed as a maximum ambient concentration to be achieved, either without exception or with a permitted number of exceedances within a specific timescale (see also air quality standard).
Air quality standard	The concentrations of pollutants in the atmosphere which can broadly be taken to achieve a certain level of environmental quality. The standards are based on the assessment of the effects of each pollutant on human health including the effects on sensitive sub groups (see also air quality objective).
Ambient air	Outdoor air in the troposphere, excluding workplace air.
Annual mean	The average (mean) of the concentrations measured for each pollutant for one year. Usually this is for a calendar year, but some species are reported for the period April to March, known as a pollution year. This period avoids splitting winter season between 2 years, which is useful for pollutants that have higher concentrations during the winter months.
AQMA	Air Quality Management Area.
DEFRA	Department for Environment, Food and Rural Affairs.
Exceedance	A period of time where the concentrations of a pollutant is greater than, or equal to, the appropriate air quality standard.
Fugitive emissions	Emissions arising from the passage of vehicles that do not arise from the exhaust system.
LAQM	Local Air Quality Management.
NO	Nitrogen monoxide, a.k.a. nitric oxide.
NO₂	Nitrogen dioxide.
NO_x	Nitrogen oxides.
O₃	Ozone.
Percentile	The percentage of results below a given value.
PM₁₀	Particulate matter with an aerodynamic diameter of less than 10 micrometres.
ppb parts per billion	The concentration of a pollutant in the air in terms of volume ratio. A concentration of 1 ppb means that for every billion (10 ⁹) units of air, there is one unit of pollutant present.
ppm parts per million	The concentration of a pollutant in the air in terms of volume ratio. A concentration of 1 ppm means that for every billion (10 ⁶) units of air, there is one unit of pollutant present.
Ratification (Monitoring)	Involves a critical review of all information relating to a data set, in order to amend or reject the data. When the data have been ratified they represent the final data to be used (see also validation).
µg/m³ micrograms per cubic metre	A measure of concentration in terms of mass per unit volume. A concentration of 1µg/m ³ means that one cubic metre of air contains one microgram (millionth of a gram) of pollutant.
UKAS	United Kingdom Accreditation Service.
Uncertainty	A measure, associated with the result of a measurement, which characterizes the range of values within which the true value is expected to lie. Uncertainty is usually expressed as the range within which the true value is expected to lie with a 95% probability, where standard statistical and other procedures have been used to evaluate this figure. Uncertainty is more clearly defined than the closely related parameter 'accuracy', and has replaced it on recent European legislation.
USA	Updating and Screening Assessment.
Validation (modelling)	Refers to the general comparison of modelled results against monitoring data carried out by model developers.
Validation (monitoring)	Screening monitoring data by visual examination to check for spurious and unusual measurements (see also ratification).
Verification (modelling)	Comparison of modelled results versus any local monitoring data at relevant locations.



APPENDIX B - AIR QUALITY STANDARDS AND OBJECTIVES

Air Quality Objectives currently included in the Air Quality Regulations 2000 and (Amendment) Regulations 2002 for the purpose of Local Air Quality Management (LAQM)						
Pollutant	Applies to	Standard		Objective		EU AQ Daughter Directive
		Concentration	Measured as	Annual exceedances allowed	Target date	
Nitrogen dioxide (NO ₂) ¹	All UK	200 µg/m ³	1 hour mean	18	31.12.2005	As objective. target: 01.01.2010
Nitrogen dioxide (NO ₂)	All UK	40 µg/m ³	annual mean		31.12.2005	As standard. target: 01.01.2010