



## **AIR QUALITY ASSESSMENT**

on behalf of

**BKW DEVELOPMENTS LTD**

for

**LAND SOUTH OF BLACKBURN ROAD,  
HOTHERSALL, LONGRIDGE PR3 2YY**

**REPORT DATE: 21ST AUGUST 2017**

**REPORT NUMBER: 101612**

**Miller Goodall Ltd  
Ground Floor  
Ashworth House  
Deakins Business Park  
Blackburn Road  
Egerton  
Bolton  
Lancashire  
BL7 9RP**

**Tel: 01204 596166**

**[www.millergoodall.co.uk](http://www.millergoodall.co.uk)**

Company registration number 5201673



# Summary

This air quality report is submitted in support of an outline planning application for a proposed mixed use employment development at Land South of Blackburn Road, Hothersall, Longridge PR3 2YY.

An assessment of road traffic impacts was undertaken to consider the impact of vehicle exhaust emissions associated with the proposed employment development on existing receptor locations.

The assessment concluded that existing concentrations of NO<sub>2</sub> and PM<sub>10</sub> are well below the annual mean objective and it is extremely unlikely that the proposed development would increase concentrations by 20 µg/m<sup>3</sup> at existing sensitive receptor locations, which would be required to cause an exceedance of any relevant air quality objectives.


The assessment also considered whether the proposed development could significantly change air quality during the construction phase. With the implementation of mitigation measures the dust impacts from the construction are considered to be not significant, in accordance with IAQM guidance.

There is, therefore no reason for this application to be refused on the grounds of air quality.

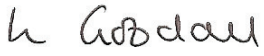
Prepared By Amy Van de Sande

Reviewed By Lesley Goodall

Signed


23rd August 2017

Signed


23rd August 2017

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D	9 <sup>th</sup> August 2017	First draft	AV
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# 1 Introduction

- 1.1 This air quality report is submitted in support of an outline planning application for a proposed employment development at Land South of Blackburn Road, Hothersall, Longridge PR3 2YY. The site lies within the administrative boundary of Ribble Valley Borough Council (RVBC).
- 1.2 The report provides a review of the existing air quality in proximity to the proposed development site and assesses the potential impact of the proposed development on local air quality, in accordance with Local Air Quality Management Technical Guidance<sup>1</sup>.
- 1.3 Air pollution in urban areas is generally dominated by emissions from road vehicles. The quantity and composition of vehicle emissions is dependent on the type of fuel used, engine type, size and efficiency, vehicle speeds and the type of exhaust emissions abatement equipment employed.
- 1.4 The main pollutants of health concern from road traffic exhaust releases are nitrogen dioxide (NO<sub>2</sub>) and fine particulates – normally assessed as the fraction of airborne particles of mean aerodynamic diameter less than ten micrometres (PM<sub>10</sub>), since these pollutants are most likely to approach their respective air quality objectives in proximity to major roads and in congested areas. This assessment has therefore focused on the impact of the proposed development on concentrations of NO<sub>2</sub> and PM<sub>10</sub>.

# 2 Site Description

- 2.1 The site is located approximately 1 km west of Longridge town centre. The site location is shown in plan reference 5220-E01-A.
- 2.2 Blackburn Road runs along the northern boundary of the site and an access road to business units and agricultural land runs along the western boundary of the site. Open land lies to the south and east of the site with a number of dwellings and also Hillside Specialist School lie to the east. 195 dwellings (planning ref 3/2015/0065) are currently under construction to the north west of the development site.

# 3 Proposed Development

- 3.1 The proposed development is for mixed employment use. The development includes B1 office space, B2 use space and some B8 development. All matters are reserved except for site access which will be from Blackburn Road and a new priority T junction with Blackburn Road is proposed. Plan reference 5220-P01-C shows an illustrative site layout.

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<sup>1</sup> Department for the Environment Food and Rural Affairs (2016) 'Local Air Quality Management Technical Guidance Document LAQM.TG (16)', London: Defra.

## 4 Policy Context

### 4.1 The Air Quality Strategy

- 4.1.1 European Union (EU) legislation forms the basis for current UK air quality policy. The EU Air Quality Framework Directive 96/62/EC on Ambient Air Quality Assessment and Management came into force in September 1996<sup>2</sup>. This is a framework for tackling air quality through European-wide air quality limit values in a series of daughter directives, prescribing how air quality should be assessed and managed by the Member States. Directive 96/62/EC and the first three daughter objectives were combined to form the new EU Directive 2008/50/EC<sup>3</sup> on Ambient Air Quality and Cleaner Air for Europe, which came into force June 2008.
- 4.1.2 The Environment Act 1995 required the preparation of a national Air Quality Strategy (AQS) which set air quality standards and objectives for specified pollutants. The Act also outlined measures to be taken by local planning authorities (LPAs) in relation to meeting these standards and objectives (the Local Air Quality Management (LAQM) system).
- 4.1.3 The UK AQS was originally adopted in 1997 and has been reviewed and updated since then to take account of changing EU Legislation, technical and policy developments and the latest information on health effects of air pollution. The strategy was revised and reissued in 2000 as the AQS for England, Scotland, Wales and Northern Ireland. This was subsequently amended in 2003 and was last updated in July 2007<sup>4</sup>.
- 4.1.4 The standards and objectives relevant to the LAQM framework have been prescribed through the Air Quality (England) Regulations (2000) and the Air Quality (England) (Amendment) Regulations 2002; the Air Quality Standards Regulations 2010 set out the combined Daughter Directive limit values and interim targets for Member State compliance.
- 4.1.5 The current air quality standards and objectives (for the purpose of LAQM) are presented in **Table 1**. Pollutant standards relate to ambient pollutant concentrations in air, set on the basis of medical and scientific evidence of how each pollutant affects human health. Pollutant objectives, however, incorporate target dates and averaging periods which take into account economic considerations, practicability and technical feasibility.

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<sup>2</sup> European Parliament (1996) Council Directive 96/62/EC on Ambient Air Quality Assessment and Management.

<sup>3</sup> European Parliament (2008) Council Directive 2008/50/EC on Ambient Air Quality and Cleaner Air for Europe.

<sup>4</sup> Department for Environment, Food and Rural Affairs (DEFRA) (2007) 'The Air Quality Strategy for England, Scotland, Wales and Northern Ireland'

**Table 1: Air Quality Strategy Objectives (England) for the Purposes of Local Air Quality Management**

Pollutant	Air Quality Objective		To be Achieved by
	Concentration	Measured As*	
Benzene	5 µg/m <sup>3</sup>	Annual mean	31/12/2010
1,3 Butadiene	2.25 µg/m <sup>3</sup>	Running annual mean	31/12/2003
Carbon monoxide	10 mg/m <sup>3</sup>	Maximum daily running 8-hour mean	31/12/2003
Lead	0.25 µg/m <sup>3</sup>	Annual mean	31/12/2008
Nitrogen dioxide (NO <sub>2</sub> )	200 µg/m <sup>3</sup>	1-hour mean not to be exceeded more than 18 times per year	31/12/2005
	40 µg/m <sup>3</sup>	Annual mean	31/12/2005
Particles (PM <sub>10</sub> )	50 µg/m <sup>3</sup>	24-hour mean not to be exceeded more than 35 per year	31/12/2004
	40 µg/m <sup>3</sup>	Annual mean	31/12/2004
Particles (PM <sub>2.5</sub> )	25 µg/m <sup>3</sup>	Annual mean (target)	2020
	15% cut in annual mean (urban background exposure)		2010-2020
Sulphur Dioxide (SO <sub>2</sub> )	350 µg/m <sup>3</sup>	1-hour mean not to be exceeded more than 24 times a year	31/12/2004
	125 µg/m <sup>3</sup>	24-hour mean not to be exceeded more than 3 times a year	31/12/2004
	266 µg/m <sup>3</sup>	15-minute mean not to be exceeded more than 35 times a year	31/12/2005

Note:\*how the objectives are to be measured is set out in the UK Air Quality (England) Regulations (2000).

- 4.1.6 Where an air quality objective is unlikely to be met by the relevant deadline, local authorities must designate those areas as Air Quality Management Areas (AQMA) and take action to work towards meeting the objectives. Following the designation of an AQMA, local authorities are required to develop an Air Quality Action Plan (AQAP) to work towards meeting the objectives and to improve air quality locally.
- 4.1.7 Possible exceedances of air quality objectives are generally assessed in relation to those locations where members of the public are likely to be regularly present and are likely to be exposed for a period of time appropriate to the averaging period of the objective.

## 4.2 National Planning Policy Framework

- 4.2.1 National planning policy is now set by the National Planning Policy Framework (NPPF). The NPPF places a general presumption in favour of sustainable development, stressing the importance of local development plans. One of its 12 Core Planning Principles states that planning should:

*“contribute to conserving and enhancing the natural environment and reducing pollution”, by (paragraph 109) “preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability”.*

4.2.2 It goes on to state (paragraphs 120 and 124) that:

*“To prevent unacceptable risks from pollution and land instability, planning policies and decisions should ensure that new development is appropriate for its location. The effects (including cumulative effects) of pollution on health, the natural environment or general amenity and the potential sensitivity of the area or proposed development to adverse effects from pollution, should be taken into account.*

*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 local air quality action plans”.*

4.2.3 Planning Practice Guidance (PPG) for the NPPF has been issued in respect of Air Quality<sup>5</sup>. It explains that whether or not air quality is relevant to a planning decision will depend on the proposed development and its location. Concerns could arise if the development is likely to generate an air quality impact in an area where air quality is known to be poor. They could also arise where the development is likely to adversely impact upon the implementation of air quality strategies and action plans and/or, in particular, lead to a breach of EU legislation (including that applicable to wildlife). The steps a local planning authority might take in considering air quality are shown in **Appendix A**.

4.2.4 When deciding whether air quality is relevant to a planning application, considerations could include whether the development would:

- Significantly affect traffic in the immediate vicinity of the proposed development site or further afield. This could be by generating or increasing traffic congestion; significantly changing traffic volumes, vehicle speed or both; or significantly altering the traffic composition on local roads. Other matters to consider include whether the proposal involves the development of a bus station, coach or lorry park; adds to turnover in a large car park; or result in construction sites that would generate large Heavy Goods Vehicle flows over a period of a year or more;
- Introduce new point sources of air pollution. This could include furnaces which require prior notification to local authorities; or extraction systems (including chimneys) which require approval under pollution control legislation or biomass boilers or biomass-fuelled CHP plant; centralised boilers or CHP plant burning other fuels within or close to an air quality management area or introduce relevant combustion within a Smoke Control Area;
- Expose people to existing sources of air pollutants, for example by building new homes, workplaces or other development in places with poor air quality;
- Give rise to potentially unacceptable impact (such as dust) during construction for nearby sensitive locations; and
- Affect biodiversity.

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<sup>5</sup> <http://planningguidance.planningportal.gov.uk/blog/guidance/air-quality/>

4.2.5 The PPG goes on to state that where there are concerns about air quality, the local planning authority may want to know about:

- The ‘baseline’ local air quality;
- Whether the proposed development could significantly change air quality during the construction and operational phases; and/or
- Whether there is likely to be a significant increase in the number of people exposed to a problem with air quality, such as when new residential properties are proposed in an area known to experience poor air quality.

4.2.6 The PPG advises that air quality assessments should be proportionate to the nature and scale of development proposed and the level of concern about air quality, and because of this are likely to be location specific and should be agreed between the local planning authority and applicant before it is commissioned.

### 4.3 Local Planning Policy

4.3.1 RVBC adopted their Core Strategy in 2008 which shapes development within the borough until 2028. Policy DMG1 states that:

*“In determining planning applications, all developments must...*

*...consider air quality and mitigate adverse impacts where possible.”*

## 5 Data Sources

5.1 The air quality assessment of the proposed development was undertaken with reference to information from a number of sources, as detailed in **Table 2**.

**Table 2: Key Information Sources**

Data Source	Reference
Ribble Valley Borough Council (RVBC)	RVBC 2015 Air Quality Updating and Screening Assessment
Department for Environment Food and Rural Affairs (Defra)	Defra (2016) Local Air Quality Management Technical Guidance TG(16)
Environmental Protection UK (EPUK) and Institute of Air Quality Management (IAQM)	EPUK and IAQM (January 2017) Land Use Planning and Development Control: Planning for Air Quality (v1.2)
Defra's LAQM Support Tools	Local Air Quality Management 1 km x 1 km grid background pollutant maps
Institute of Air Quality Management (IAQM)	IAQM (2014) Assessment of Dust from Demolition and Construction

## 6 Baseline Air Quality

### 6.1 Local Air Quality Management

- 6.1.1 RVBC declared an AQMA at Whalley Road, Clitheroe in 2010 for the exceedance of the annual mean NO<sub>2</sub> exceedance. No AQMA has been declared in the Longridge area, therefore, it is expected that there are no local issues/concerns regarding existing pollutant concentrations within the local area

### 6.2 Air Quality Monitoring

#### *Nitrogen Dioxide (NO<sub>2</sub>)*

- 6.2.1 RVBC undertake NO<sub>2</sub> monitoring across its authority. All the monitoring locations are, however, located in Clitheroe and are not, therefore, representative of site conditions. As there is no requirement for monitoring to be carried out within the Longridge area, it is expected that NO<sub>2</sub> concentrations within the area are not considered to be a concern and NO<sub>2</sub> concentrations being experienced on the development site and existing sensitive receptor locations are expected to be below the respective objectives.

#### *Particulate Matter (PM<sub>10</sub>)*

- 6.2.2 RVBC does not undertake PM<sub>10</sub> monitoring across its authority.

### 6.3 Background Concentrations

- 6.3.1 There are no background monitoring locations in the vicinity of the proposed development site or at receptor locations considered in this assessment. Background concentrations of NO<sub>x</sub>, NO<sub>2</sub> and PM<sub>10</sub> were therefore obtained from the background concentration maps provided by Defra for the grid squares covering the proposed development and nearby sensitive receptor locations<sup>6</sup>. These are shown in **Table 3** below.

**Table 3: Background Pollutant Concentrations Obtained for the 1km x 1km Grid Squares Covering the Site and Receptor Locations\***

Grid Square	Pollutant	2016	2017	2018
		(µg/m <sup>3</sup> )	(µg/m <sup>3</sup> )	(µg/m <sup>3</sup> )
361500,437500	NO <sub>2</sub>	9.6	9.2	8.8
	PM <sub>10</sub>	12.2	12.1	12.0

\* Background concentrations obtained from the latest 2013 based background maps

<sup>6</sup> <http://uk-air.defra.gov.uk/data/laqm-background-maps?year=2013>

## 7 Impact Assessment

- 7.1 **Table 3** shows that background NO<sub>2</sub> and PM<sub>10</sub> concentrations are well below the annual mean objectives. Due to the location of the development site, it is not expected that existing sensitive receptors adjacent to the site are experiencing pollutant concentrations much higher than those concentrations shown in **Table 3**.
- 7.2 An air quality assessment (planning ref 3/2015/0065, report number: 33590r5, Dilworth Lane, Longridge, REC Ltd, 21<sup>st</sup> January 2015) was submitted for a development of 195 dwellings currently being constructed to the north west of the development site. This assessment concluded that the development would have a negligible impact on all receptor locations, including dwellings adjacent to the proposed employment development site, and that predicted annual mean NO<sub>2</sub> and PM<sub>10</sub> concentrations experienced at receptor locations would be well below the annual mean objective (below 20 µg/m<sup>3</sup>). It is, therefore, extremely unlikely that the proposed employment development would increase pollutant concentrations by 20 µg/m<sup>3</sup> at adjacent receptor locations, which would be required to cause an exceedance of the respective air quality objectives.
- 7.3 The proposal includes a new junction to the site from Blackburn Road (plan reference T2267-H-01 Rev A) which would cause traffic to slow down at the site entrance, close to existing receptor locations, especially the dwelling directly to the east of the development site. The speed limit along this section of Blackburn Road is 60 mph, however, opposite and adjacent to the existing dwelling lies the car park for a public house - the Corporation Arms, two bus stops and 'Reduce Speed Now' signs. The transport statement prepared by PSA Design Ltd states:
- 'It should be noted that approximately 100m to the west of the site the speed limit reduces to 30mph and some 100m to the east of the site there is a sharp horizontal bend in the road at the junction with Lower Road which is likely to reduce vehicle speeds. On site observations would indicate that vehicular speeds in both directions are significantly below the 60mph speed limit currently in force.'*
- 7.4 As explained above, it is expected that existing vehicles travelling along this section of Blackburn Road are unlikely to be travelling at the speed limit of 60 mph, therefore, a drastic decrease in vehicle speeds is unlikely as a result of the traffic calming measures proposed.
- 7.5 The development itself will introduce new receptors located within the proposed buildings. The impact of the onsite vehicle movements at these new receptor locations will not be significant and the receptors on site will be expected to be experiencing pollutant concentrations well below the relevant objectives.
- 7.6 Heating plant such as boilers also have NO<sub>2</sub> emissions associated with them. In accordance with IAQM guidance, all gas-fired boilers included within the development will be low NO<sub>x</sub> and will meet a minimum standard of 40 mgNO<sub>x</sub>/kWh, thus keeping any boiler emissions as low as possible.
- 7.7 Any emissions associated with the processes undertaken on site will be controlled in line with relevant regulations and all equipment will be fitted with the appropriate mitigation.

## 8 Dust Impact Assessment

8.1 The IAQM provide guidance on the assessment of air quality impacts arising from construction and demolition activities<sup>7</sup>. This section follows a risk assessment to determine the likely impact of the development on nearby receptor location during the construction phase and goes on to recommend mitigation measures which should be implemented to reduce any impact. The methodology for the assessment is shown in **Appendix B**.

### 8.2 Step 1 – The Need for a Detailed Assessment

8.2.1 The site boundary is within 350 m of human receptors. In addition there are human receptors within 50 m of the route(s) used by construction vehicles on the public highway, up to 500 m from the site entrance. Therefore, a detailed assessment of the construction phase of the development was undertaken. The detailed assessment has not addressed ecological receptors.

### 8.3 Step 2 – Assess the Risk of Dust Impacts

#### *Step 2A Dust Emission Magnitude*

8.3.1 The potential dust emission magnitude in relation to the development has been determined using the criteria detailed in **Table 1 in Appendix B**:

- Demolition: not applicable;
- Earthworks: The total site area is >10 000 m<sup>2</sup>. The dust emission magnitude for earthworks is, therefore, considered to be **Large**.
- Construction: The total building volume to be constructed is 25 000 m<sup>3</sup> - 100 000 m<sup>3</sup>. The dust emission magnitude for construction is, therefore, considered to be **Medium**.
- Trackout: It is conservatively assumed that there are likely to be 10 - 50 HDV outward movements in any one day. The unpaved road length is likely to be 50 - 100 metres. The dust emission magnitude for trackout is, therefore, considered to be **Medium**.

8.3.2 The scale and nature of works onsite were considered to determine the potential dust emission magnitude for demolition, earthworks and trackout activities as outlined in **Table 4**.

**Table 4: Dust Emission Magnitudes for Each Activity**

Activity	Dust Emission Magnitudes	Justification
Demolition	n/a	<ul style="list-style-type: none"> <li>• Not applicable</li> </ul>
Earthworks	Large	<ul style="list-style-type: none"> <li>• the site area is &gt;10 000 m<sup>2</sup></li> </ul>
Construction	Medium	<ul style="list-style-type: none"> <li>• total building volume to be constructed is 25 000 m<sup>3</sup> to 100 000 m<sup>3</sup></li> </ul>
Trackout	Medium	<ul style="list-style-type: none"> <li>• there are likely to be 10 - 50 HDV outward movements in any one day</li> </ul>

<sup>7</sup> IAQM "Assessment of dust from demolition and construction" 2014

### *Step 2B Sensitivity of the Receptors to Dust Soiling and Health Effects*

8.3.3 Human receptors are located in residential houses adjacent to the site within a distance of 20 m from construction, demolition and earthworks and 20 m of road edges used by traffic associated with the site construction. In accordance with the criteria in **Table 2 in Appendix B** and the IAQM guidance, the sensitivity of human receptors to the effects of dust soiling and health effects from construction, demolition, earthwork activities, and from trackout is therefore likely to be **High**.

### *Step 2B Sensitivity of the Area to Dust Soiling*

8.3.4 The sensitivity of the area to dust soiling effects has been determined using the criteria detailed in **Table 3 in Appendix B**:

- Demolition – not applicable;
- Earthworks - sensitivity is considered to be **Medium** as earthworks activities take place less than 20 m of 1 - 10 high sensitivity receptors;
- Construction - sensitivity is considered to be **Medium** as construction activities take place less than 20 m of 1 - 10 high sensitivity receptors;
- Trackout activities – sensitivity is considered to be **High** as there are 10 -100 high sensitivity receptors within 20 metres of roads which relevant vehicles are likely to use that are up to 500 metres from the site.

### *Step 2B Sensitivity of People to the Health Effects of PM<sub>10</sub>*

8.3.5 The background PM<sub>10</sub> concentrations for the development site are shown in **Table 3**. Local levels of PM<sub>10</sub> are therefore likely to be less than 24 µg/m<sup>3</sup>, during the construction phase.

8.3.6 Using this information and **Table 4 in Appendix B**, the sensitivity of human receptors to health impacts from dust and PM<sub>10</sub> for each activity were defined as:

- Demolition - not applicable;
- Earthworks - sensitivity is considered to be **Low** as earthworks activities take place less than 20 m from 1 - 10 high sensitivity receptors and the background PM<sub>10</sub> concentration is predicted to be less than 24 µg/m<sup>3</sup>;
- Construction - sensitivity is considered to be **Low** as construction activities take place less than 20 m from 1 - 10 high sensitivity receptors and the background PM<sub>10</sub> concentration is predicted to be less than 24 µg/m<sup>3</sup>; and
- Trackout activities – sensitivity is considered to be **Low** as there are 10 -100 high sensitivity receptors within 20 metres of roads which relevant vehicles are likely to use that are up to 500 metres from the site, and the background PM<sub>10</sub> concentration is predicted to be less than 24 µg/m<sup>3</sup>.

8.3.7 The sensitivity of the area to dust soiling and human health in each activity is summarised in **Table 5**.

**Table 5: Outcome of Defining the Sensitivity of the Area**

Potential Impact	Sensitivity of the Surrounding Area			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	n/a	Medium	Medium	High
Human Health	n/a	Low	Low	Low

*Step 2C Risk of Impacts*

8.3.8 The dust emission magnitude and sensitivity of the area were combined and the risk of impacts determined using the criteria detailed in **Table 5 to Table 8 in Appendix B**.

- Demolition – not applicable;
- Earthworks – is considered to be **Medium** risk for dust soiling and **Low** risk for human health;
- Construction – is considered to be **Medium** risk for dust soiling and **Low** risk for human health; and
- Trackout activities – is considered to be **Medium** risk for dust soiling and **Low** risk for human health.

8.3.9 A summary of the risks, before mitigation measures are applied, for dust soiling and human health are shown in **Table 6**.

**Table 6: Risk of Dust Impacts**

Potential Impact	Dust Risk			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	n/a	Medium Risk	Medium Risk	Medium Risk
Human Health	n/a	Low Risk	Low Risk	Low Risk

## 8.4 Step 3 – Site-Specific Mitigation

8.4.1 Step 3 of the IAQM guidance identifies appropriate site-specific mitigation. These measures are related to the site risk for each activity. Good practice mitigation measures highly recommended for the proposed development taken from the IAQM guidance are detailed below.

8.4.2 The general mitigation measures (for site management, preparing and maintaining the site, operating vehicle/machinery, operations and waste management), are appropriate for a site with a 'medium risk' classification (in this instance the site is classified as "medium" risk due to earthworks, construction and trackout activities)<sup>8</sup>. Mitigation measures specific to earthworks, construction and trackout are proposed based on the risk classifications in **Table 6**.

### **Site Management**

- Develop and implement a stakeholder communications plan that includes community engagement before work commences on site;
- Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager;
- Display the head or regional office contact information;
- Develop and implement a Dust Management Plan (DMP);
- Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken;
- Make the complaints log available to the local authority when asked; and

<sup>8</sup> For those mitigation measures that are general, the highest risk category should be applied. For example, if the site is medium risk for earthworks and construction, but a high risk for demolition and track-out, the general measures applicable to a high risk site should be applied.

- Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the log book.

### ***Monitoring***

- Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and window sills within 100 m of site boundary, with cleaning to be provided if necessary;
- Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the local authority when asked; and
- Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.

### ***Preparing and maintaining the site***

- Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible;
- Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site;
- Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period;
- Avoid site runoff of water or mud;
- Keep site fencing, barriers and scaffolding clean using wet methods;
- Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below; and
- Cover, seed or fence stockpiles to prevent wind whipping.

### ***Operating vehicle/machinery and sustainable travel***

- Ensure all on-road vehicles comply with the requirements of the London Low Emission Zone and the London NRMM standards, where applicable ;
- Ensure all vehicles switch off engines when stationary - no idling vehicles;
- Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable;
- Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on unsurfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate);
- Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials; and
- Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing).

### ***Operations***

- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems;
- Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate;
- Use enclosed chutes and conveyors and covered skips;

- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate; and
- Ensure equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.

#### ***Waste management***

- Avoid bonfires and burning of waste materials.

#### ***Measures specific to earthworks***

There is a medium risk of dust associated with earthworks activities onsite, it is therefore, 'desirable' that the following measures are implemented:

- Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable;
- Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable; and
- Only remove the cover in small areas during work and not all at once.

#### ***Measures specific to construction***

There is a medium risk of dust associated with construction onsite, it is therefore, 'highly desirable' that the following measures are implemented:

- Avoid scabbling (roughening of concrete surfaces) if possible;
- Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place;
- Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery; and
- For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust.

#### ***Measures specific to trackout***

There is a medium risk of dust associated with trackout, it is therefore, 'highly desirable' that the following measures are implemented:

- Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use;
- Avoid dry sweeping of large areas;
- Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport;
- Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable;
- Record all inspections of haul routes and any subsequent action in a site log book;
- Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned;
- Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable);

- Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits; and
- Access gates to be located at least 10 m from receptors where possible.

## 8.5 Step 4 – Determine Significant Effects

8.5.1 The characteristics of the site and the surrounding area suggest that mitigation would not be impracticable or ineffective. With the implementation of the above mitigation measures, therefore, the residual impacts from the construction are considered to be not significant, in accordance with IAQM guidance.

# 9 Summary of Impacts and Conclusion

9.1 A road traffic emissions assessment was undertaken to consider the impact of vehicle exhaust emissions associated with the proposed employment development on existing receptor locations.

9.2 The assessment concluded that existing concentrations of NO<sub>2</sub> and PM<sub>10</sub> are well below the annual mean objective and it is extremely unlikely that the proposed development would increase concentrations by 20 µg/m<sup>3</sup> at existing sensitive receptor locations, which would be required to cause an exceedance of any relevant air quality objectives.

9.3 The assessment also considered whether the proposed development could significantly change air quality during the construction phase. With the implementation of mitigation measures the dust impacts from the construction are considered to be not significant, in accordance with IAQM guidance.

9.4 There is, therefore no reason for this application to be refused on the ground of air quality.

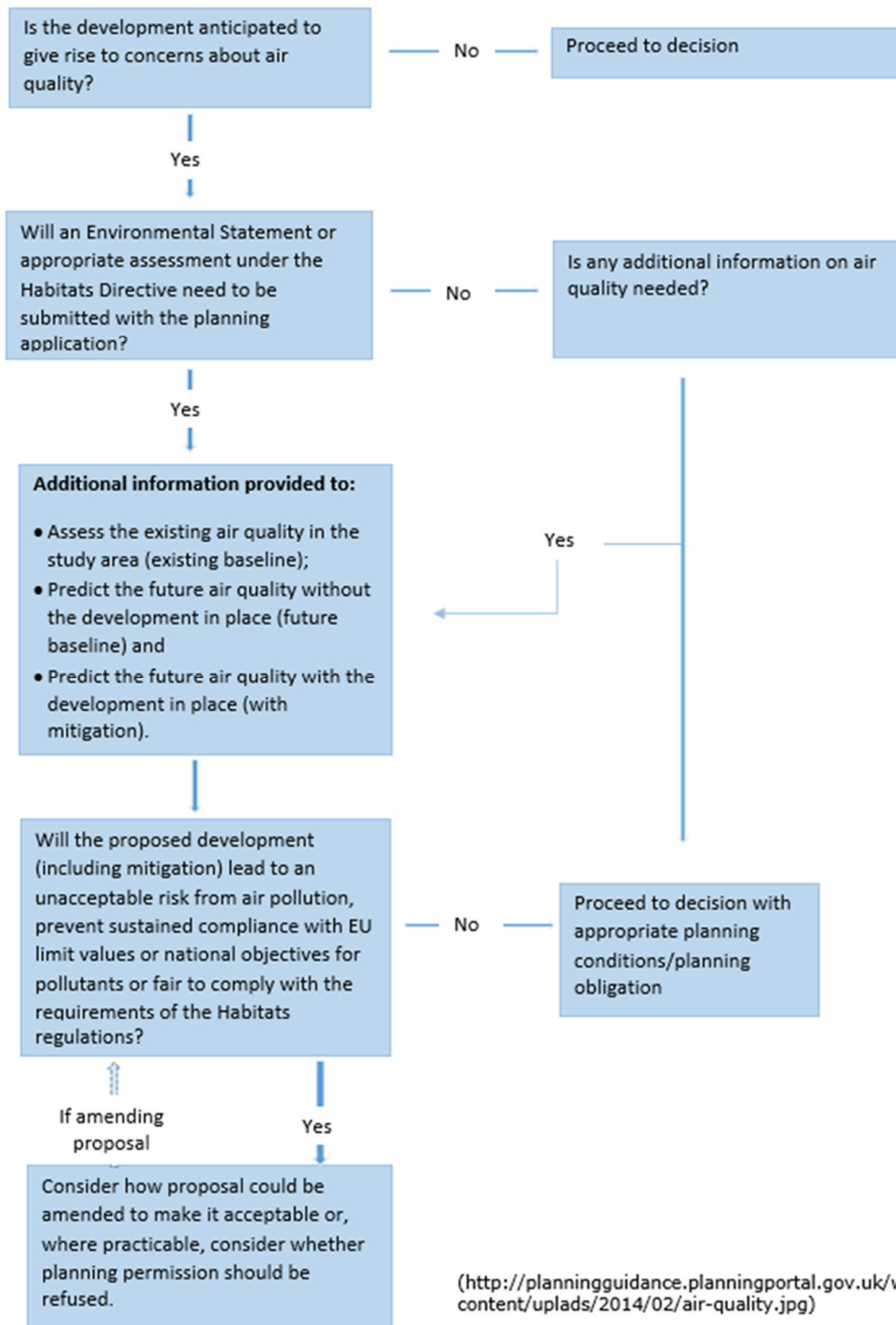
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## **APPENDICES**

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## Appendix A: Planning Practice Guidance

How considerations about air quality fit into the development management process.



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## Appendix B: Dust Risk Assessment Methodology

The following section outlines criteria developed by the IAQM for the assessment of air quality impacts arising from construction and demolition activities<sup>9</sup>. The assessment procedure is divided into four steps and is summarised below:

### *Step 1: Screen the Need for a Detailed Assessment*

An assessment will normally be required where there are human receptors within 350 m of the site boundary and/or within 50 m of the route(s) used by construction vehicles on the public highway, up to 500 m from the site entrance(s). Ecological receptors within 50 m of the site boundary or within 50 m of the route(s) used by construction vehicles on the public highway, up to 500 m from the site entrance(s), are also identified at this stage. An ecological receptor refers to any sensitive habitat affected by dust soiling. For locations with a statutory designation, such as a Site of Specific Scientific Interest (SSSI), Special Area of Conservation (SACs) and Special Protection Areas (SPAs), consideration should be given as to whether the particular site is sensitive to dust. Some non-statutory sites may also be considered if appropriate.

Where the need for a more detailed assessment is screened out, it can be concluded that the level of risk is 'negligible' and any effects will not be significant.

### *Step 2: Assess the Risk of Dust Impacts*

In step two, a site is allocated to a risk category on the basis of the scale and nature of the works (Step 2A) and the sensitivity of the area to dust impacts (Step 2B). These two factors are combined in Step 2C to determine the risk of dust impacts before the implementation of mitigation measures. The assigned risk categories may be different for each of the construction activities outlined by the IAQM (construction, demolition, earthworks and trackout). A site can be divided into zones, for example on a large site where there are differing distances to the nearest receptors.

#### *Step 2A: Define the Potential Dust Emission Magnitude*

Dust emission magnitude is based on the scale of the anticipated works and is classified as Small, Medium or Large. The IAQM guidance recommends that the dust emission magnitude is determined separately for demolition, earthworks, construction and trackout. **Table 1** describes the potential dust emission class criteria for each outlined activity.

**Table 1: Criteria Used in the Determination of Dust Emission Magnitude**

Activity	Criteria used to Determine Dust Emission Magnitude		
	Small	Medium	Large
Demolition	Total building volume <20,000 m <sup>3</sup> , construction materials with low potential for dust release.	Total building volume 20,000 m <sup>3</sup> – 50,000 m <sup>3</sup> , potential dusty construction material.	Total building volume >50,000 m <sup>3</sup> , potentially dusty construction material.
Earthworks	Total site area <2,500 m <sup>2</sup> , soil type with large grain	Total site area 2,500 – 10,000 m <sup>2</sup> , moderately dusty soil type	Total site area >10,000 m <sup>2</sup> , potentially dusty soil type
Construction	Total building volume <25,000 m <sup>3</sup> .	Total building volume 25,000 – 100,000 m <sup>3</sup> .	Total building volume >100,000 m <sup>3</sup> .

<sup>9</sup> IAQM "Assessment of dust from demolition and construction" 2014

Activity	Criteria used to Determine Dust Emission Magnitude		
	Small	Medium	Large
Trackout	<10 outward HDV trips in any one day. Unpaved road length <50 m.	10-50 outward HDV trips in any one day. Unpaved road length 50-100 m.	>50 outward HDV trips in any one day. Unpaved road length >100 m.

*Step 2B: Define the Sensitivity of the Area*

The sensitivity of the area takes into account the following factors:

- the specific sensitivities of receptors in the area;
- the proximity and number of receptors;
- the local background PM<sub>10</sub> concentration; and
- site-specific factors, such as whether there are natural shelters, such as trees, to reduce the risk of windblown dust.

The criteria detailed in **Table 2** is used to determine the sensitivity of the receptor in relation to dust soiling, health effects and ecological effects.

**Table 2: Criteria for Determining Sensitivity of Receptors**

Sensitivity of Receptor	Criteria for Determining Sensitivity		
	Dust Soiling Effects	Health Effects of PM <sub>10</sub>	Ecological Sites
High	Dwellings, museums and other culturally important collections, medium and long-term car parks and car showrooms	Residential properties, hospitals, schools and residential care homes	International or national designation <i>and</i> the features may be affected by dust soiling
Medium	Parks, places of work	Office and shop workers not occupationally exposed to PM <sub>10</sub>	Presence of an important plant species where dust sensitivity is uncertain or locations with a national designation with features that may be affected by dust deposition
Low	Playing fields, farmland, footpaths, short-term car parks and roads	Public footpaths, playing fields, parks and shopping streets	Local designation where features may be affected by dust deposition

**Table 3** and **Table 4** are then used to define the sensitivity of the area to dust soiling and human health effects. This should be derived for each of construction, demolition, earthworks and trackout.

**Table 3: Sensitivity of the Area to Dust Soiling Effects on People and Property.**

Receptor Sensitivity	Number of Receptors	Distance from Source (m)*			
		<20	<50	<100	<350
High	>100	High	High	Medium	Low
	10-100	High	Medium	Low	Low

Receptor Sensitivity	Number of Receptors	Distance from Source (m)*			
		<20	<50	<100	<350
	1-10	Medium	Low	Low	Low
Medium	>1	Medium	Low	Low	Low
Low	>1	Low	Low	Low	Low

\*distances considered are to the dust source

**Table 4: Sensitivity of the Area to Human Health Impacts**

Receptor Sensitivity	Annual Mean PM <sub>10</sub> Concentrations	Number of Receptors	Distance from the Source (m)				
			<20	<50	<100	<200	<350
High	>32 µg/m <sup>3</sup>	>100	High	High	High	Medium	Low
		10-100	High	High	Medium	Low	Low
		1-10	High	Medium	Low	Low	Low
	28-32 µg/m <sup>3</sup>	>100	High	High	Medium	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	High	Medium	Low	Low	Low
	24-28 µg/m <sup>3</sup>	>100	High	Medium	Low	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	<24 µg/m <sup>3</sup>	>100	Medium	Low	Low	Low	Low
		10-100	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Medium	>32 µg/m <sup>3</sup>	>10	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	28-32 µg/m <sup>3</sup>	>10	Medium	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	24-28 µg/m <sup>3</sup>	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	<24 µg/m <sup>3</sup>	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	Low	-	>1	Low	Low	Low	Low

The sensitivity of the area is then summarised.

*Step 2C Define the Risks of Impacts*

The dust emission magnitude from **Table 1** and sensitivity of the area and receptors from **Table 2**, **Table 3** and **Table 4** are combined, and the risk of impacts from each activity (demolition, earthworks, construction and trackout) before mitigation is applied, is determined using the criteria detailed in **Table 5** to **Table 8**.

**Table 5: Risk of Dust Impacts - Demolition**

Potential Impact Sensitivity of the Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Medium Risk
Medium	High Risk	Medium Risk	Low Risk
Low	Medium Risk	Low Risk	Negligible

**Table 6: Risk of Dust Impacts- Earthworks**

Potential Impact Sensitivity of the Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

**Table 7: Risk of Dust Impacts- Construction**

Potential Impact Sensitivity of the Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

**Table 8: Risk of Dust Impacts- Trackout**

Potential Impact Sensitivity of the Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Low Risk	Negligible
Low	Low Risk	Low Risk	Negligible

#### *Step 3 Determine Site Specific Mitigation*

Step three of the IAQM guidance identifies appropriate site-specific mitigation. These measures are related to whether the site is a low, medium or high risk site.

#### *Step 4 Determine Significance of Residual Effects*

At step four the significance of residual effects is assessed. For almost all construction activity, the aim should be to prevent significant effects on receptors through the use of effective mitigation. Experience shows that this is normally possible. Hence the residual effect will normally be 'not significant'.

There may be cases where, for example, there is inadequate access to water for dust suppression to be effective, and even with other mitigation measures in place there may be a significant effect. Therefore, it is important to consider the specific characteristics of the site and the surrounding area to ensure that a conclusion of no significant effect is robust.

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## Glossary of Terms

**AADT** Annual Average Daily Traffic flow

**Air Quality Standard** Pollutant standards relate to ambient pollutant concentrations in air, set on the basis of medical and scientific evidence of how each pollutant affects human health and the environment

**Air Quality Objective** Pollutant Objectives incorporate future dates by which a standard is to be achieved, taking into account economic considerations, practicability and technical feasibility

**Annual Mean** A mean pollutant concentration value in air which is calculated on a yearly basis, yielding one annual mean per calendar year. In the UK air quality regulations, the annual mean for a particular substance at a particular location for a particular calendar year is:

- (a) in the case of lead, the mean of the daily levels for that year;
- (b) in the case of nitrogen dioxide, the mean of the hourly means for that year;
- (c) in the case of PM<sub>10</sub>, the mean of the 24-hour means for that year.

**Annoyance (Dust)** Loss of amenity due to dust deposition or visible dust plumes, often related to people making complaints, but not necessarily sufficient to be a legal nuisance.

**AQAP** Air Quality Action Plan

**AQEG** Air Quality Expert Group

**AQMA** Air Quality Management Area

**AQMP** Air Quality Management Plan

**AQO** Air Quality Objective

**AQS** Air Quality Strategy for England, Scotland, Wales and Northern Ireland

**Background Concentrations** The term used to describe pollutant concentrations which exist in the ambient atmosphere, excluding local pollution sources such as roads and stacks

**CO** Carbon monoxide

**Construction** Any activity involved with the provision of a new structure (or structures), its modification or refurbishment. A structure will include a residential dwelling, office building, retail outlet, road, etc.

**Construction Impact Assessment** An assessment of the impacts of demolition, earthworks, construction and trackout. In this Guidance, specifically the air quality impacts.

**Defra** Department for Environment, Food and Rural Affairs

**Demolition** Any activity involved with the removal of an existing structure (or structures). This may also be referred to as de-construction, specifically when a building is to be removed a small part at a time.

**Deposited Dust** that is no longer in the air and which has settled onto a surface. Deposited dust is also sometimes called amenity dust or nuisance dust, with the term nuisance applied in the general sense rather than the specific legal definition.

**DMRB** Design Manual for Roads and Bridges

**DMP** Dust Management Plan; a document that describes the site-specific methods to be used to control dust emissions.

**Dust** Solid particles that are suspended in air, or have settled out onto a surface after having been suspended in air. The terms dust and particulate matter (PM) are often used interchangeably, although in some contexts one term tends to be used in preference to the other. In this guidance the term 'dust' has been used to include the particles that give rise to soiling, and to other human health and ecological effects. Note: this is different to the definition given in BS 6069, where dust refers to particles up to 75 µm in diameter.

**Earthworks** Covers the processes of soil-stripping, ground-levelling, excavation and landscaping.

**Effects** The consequences of the changes in airborne concentration and/or dust deposition for a receptor. These might manifest as annoyance due to soiling, increased morbidity or mortality due to exposure to PM<sub>10</sub> or PM<sub>2.5</sub> or plant dieback due to reduced photosynthesis. The term 'significant effect' has a specific meaning in EIA regulations. The opposite is an insignificant effect. In the context of construction impacts any effect will usually be adverse, however, professional judgement is required to determine whether this adverse effect is significant based in the evidence presented.

**EPAQS** Expert Panel on Air Quality Standards

**EPUK** Environmental Protection UK

**HGV** Heavy Goods Vehicle

**Impacts** The changes in airborne concentrations and/or dust deposition. A scheme can have an 'impact' on airborne dust without having any 'effects', for instance if there are no receptors to experience the impact.

**LAQM** Local Air Quality Management

**LDF** Local Development Framework

**LGV** Light Goods Vehicle

**Mg/m<sup>3</sup>** Microgrammes (of pollutant) per cubic metre of air. A measure of concentration in terms of mass per unit volume. A concentration of 1 µg/m<sup>3</sup> means that one cubic metre of air contains one microgramme (millionth of a gramme) of pollutant

**NO<sub>2</sub>** Nitrogen Dioxide

**NO<sub>x</sub>** A collective term used to represent the mixture of nitrogen oxides in the atmosphere, as nitric oxide (NO) and nitrogen dioxide (NO<sub>2</sub>)

**NPPF** National Planning Policy Framework

**Nuisance** The term nuisance dust is often used in a general sense when describing amenity dust. However, this term also has specific meanings in environmental law:

Statutory nuisance, as defined in S79(1) of the Environmental Protection Act 1990 (as amended from time to time).

Private nuisance, arising from substantial interference with a person's enjoyment and use of his land.

Public nuisance, arising from an act or omission that obstructs, damages or inconveniences the right of the community.

Each of these applying in so far as the nuisance relates to the unacceptable effects of emissions. It is recognised that a significant loss of amenity may occur at lower levels of emission than would constitute a statutory nuisance.

Note: as nuisance has a specific meaning in environmental law, and to avoid confusion, it is recommended that the term is not used in a more general sense.

**PM<sub>2.5</sub>** The fraction of particles with a mean aerodynamic diameter equal to, or less than, 2.5 µm. More strictly, particulate matter which passes through a size selective inlet as defined in the reference method for the sampling and measurement of PM<sub>2.5</sub>, EN 14907, with a 50% efficiency cut-off at 2.5 µm aerodynamic diameter

**PM<sub>10</sub>** The fraction of particles with a mean aerodynamic diameter equal to, or less than, 10 µm. More strictly, particulate matter which passes through a size selective inlet as defined in the reference method for the sampling and measurement of PM<sub>10</sub>, EN 12341, with a 50% efficiency cut-off at 10 µm aerodynamic diameter

**RSS** Regional Spatial Strategy

**Running Annual Mean** A mean pollutant concentration value in air which is calculated on an hourly basis, yielding one running annual mean per hour. The running annual mean for a particular substance at a particular location for a particular hour is the mean of the hourly levels for that substance at that location for that hour and the preceding 8759 hours

**Trackout** The transport of dust and dirt from the construction/demolition site onto the public road network, where it may be deposited and then re-suspended by vehicles using the network. This arises when heavy duty vehicles (HDVs) leave the construction/demolition site with dusty materials, which may then spill onto the road, and/or when HDVs transfer dust and dirt onto the road having travelled over muddy ground on site.

