

AIR QUALITY ASSESSMENT

on behalf of

**PEEL LAND AND PROPERTY LIMITED AND
PEEL PORTS GROUP**

for

WARRINGTON WATERFRONT

REPORT DATE: 16TH AUGUST 2019

REPORT NUMBER: 102116



Summary

Miller Goodall Ltd (MGL) has, on behalf of Peel Land and Property Limited and Peel Ports Group, undertaken a desk top assessment of air quality to review the potential issues related to air quality associated with the development known as Warrington Waterfront. Warrington Waterfront is proposed allocation within Warrington Council’s emerging Local Plan. The study has been undertaken to inform the expansion and re-development of Port Warrington along with the enhanced Arpley Moore Nature Park, a new business hub and infrastructure works.

The study reviews current data available in respect of local air quality around the site and the presence of air quality management areas (AQMAs). The Local Authority has identified areas close to the site where the air quality objective for annual levels of nitrogen dioxide are currently breached and has declared an AQMA.

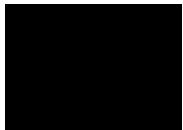
The short-term air quality objectives are not expected to be exceeded at the development site. Therefore, the development site is considered suitable for port and commercial use.

In relation to the impact of the development on air quality, information is limited and significance will need to be assessed via detailed modelling data and mitigation measures considered as part of any future planning application. The size of this site does indicate that air quality impacts are likely to arise from this development; however, mitigation measures could be implemented to enable delivery of the development.


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Reviewed By Lesley Goodall

Signed


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Signed


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1 Introduction

- 1.1 This air quality report is submitted in support of a proposed development of Port Warrington, including the expansion of Port Warrington, the loss of part of the existing Moore Nature Reserve with an enhanced Arpley Nature Park, the new business hub and new infrastructure. The site lies within the administrative boundary of Warrington Borough Council (WBC).
- 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.
- 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 (NO₂) and fine particulates – normally assessed as the fraction of airborne particles of mean aerodynamic diameter less than ten micrometres (PM₁₀), 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 NO₂ and PM₁₀.
- 1.5 Annual mean objectives do not apply at commercial premises. Therefore, only the short-term objectives apply to this development and only these objectives will be considered within the assessment in relation to onsite levels of NO₂ and PM₁₀. Box 1 of LAQM (TG16)¹ provides examples of where air quality objectives apply.

2 Site Description

- 2.1 The site is located approximately 1.7 km to the south west of Warrington town centre.
- 2.2 Port Warrington is an existing operation with planning permission for a multi-modal port facility on a site located at Acton Grange, Birchwood Lane, Warrington. The site includes Arpley Meadows, a landfill site, which is currently being restored to enable the development of Arpley Nature Park.
- 2.3 The River Mersey runs along the northern site boundary. Runcorn and Latchford Canal is located to the east of the site. The Manchester Ship Canal runs along the southern site boundary. There are fields to the west of the site.
- 2.4 The site is not located within an Air Quality Management Area (AQMA). However, there is an AQMA approximately 760 m east of the site, which was declared on the basis of annual average levels of NO₂. The site location and its relationship to the AQMA is shown in **Appendix A**.

¹ Department for the Environment Food and Rural Affairs (2018) '*Local Air Quality Management Technical Guidance Document LAQM.TG (16)*', London: Defra.

3 Proposed Development

3.1 The development consists of the expansion and re-development of Port Warrington which will include:

- commercial and industrial uses associated with the Port, access to the canal, including ships docking and loading/unloading;
- Development of a Business Park to the north east of the proposed Port Warrington Extension; and
- Further improvement of Arpley Meadows Country Park.

3.2 Access to the proposed development would ideally be via the Western Link Road (WLR), a major highways improvement connecting the A56 and A57 to the west of the town centre. A phased access strategy will be provided at the detailed planning stage.

4 Policy Context

4.1 Standards and Objectives

4.1.1 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.

4.1.2 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.

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*	
Nitrogen dioxide (NO ₂)	200 µg/m ³	1-hour mean not to be exceeded more than 18 times per year	31/12/2005
	40 µg/m ³	Annual mean	31/12/2005
Particles (PM ₁₀)	50 µg/m ³	24-hour mean not to be exceeded more than 35 per year	31/12/2004
	40 µg/m ³	Annual mean	31/12/2004
Particles (PM _{2.5})	25 µg/m ³	Annual mean (target)	2020
		15% cut in annual mean (urban background exposure)	2010-2020

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

4.1.3 Where an air quality objective is unlikely to be met by the relevant deadline, local authorities must designate those areas as AQMAs 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.

- 4.1.4 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 The NPPF advises that the planning system has three overarching objectives, which are interdependent and need to be pursued in mutually supportive ways (so that opportunities can be taken to secure net gains across each of the different objectives). One of these is an environmental objective which is described as follows;

“to contribute to protecting and enhancing our natural, built and historic environment; including making effective use of land, helping to improve biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.”

- 4.2.2 At paragraph 170 we are advised that

“Planning policies and decisions should contribute to and enhance the natural and local environment by:

e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans.

- 4.2.3 In direct reference to air quality paragraph 181 states;

*“Planning policies and decisions should **sustain and contribute towards compliance with relevant limit values or national objectives for pollutants**, taking into account the presence of Air Quality Management Areas and Clean Air Zones, and the cumulative impacts from individual sites in local areas. **Opportunities to improve air quality or mitigate impacts should be identified**, such as through traffic and travel management, and green infrastructure provision and enhancement. So far as possible these opportunities should be considered at the plan-making stage, to ensure a strategic approach and limit the need for issues to be reconsidered when determining individual applications. **Planning decisions should ensure that any new development in Air Quality Management Areas and Clean Air Zones is consistent with the local air quality action plan.**”*

4.3 Local Planning Policy

Warrington Proposed Submission Version Local Plan 2017 – 2037

- 4.3.1 The Warrington Proposed Submission Version Local Plan 2017 – 2037 (2019) will replace the Local Plan Core Strategy (2014). Emerging Policy ENV8 of the Warrington Proposed Submission Version Local Plan states that:

“The Council will seek to ensure that proposals for new development will not have an unacceptable negative impact on air quality and will not further exacerbate air quality in the Council’s designated Air Quality Management Areas (AQMA’s); or will contribute to air pollution in areas which may result in further areas being designated”

5 Review of Baseline Conditions in Relation to the Site

5.1 Data Sources

- 5.1.1 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
Warrington Borough Council (WBC)	WBC (2019) <i>2019 Air Quality Annual Status Report</i>
Department for Environment Food and Rural Affairs (Defra)	Defra (2018) <i>Local Air Quality Management Technical Guidance TG (16)</i>
Defra's LAQM Support Tools	Local Air Quality Management 1 km x 1 km grid background pollutant maps
Environmental Protection UK (EPUK) and Institute of Air Quality Management (IAQM)	EPUK and IAQM (January 2017) <i>Land Use Planning and Development Control: Planning for Air Quality (v1.2)</i>
Institute of Air Quality Management (IAQM)	IAQM (2014) <i>Assessment of Dust from Demolition and Construction</i>

5.2 Local Air Quality Management

- 5.2.1 There are several locations along major roads within the Warrington area where air quality does not meet the national annual mean NO₂ objective. WBC's first AQMA was declared in 2001 for exceedances of the NO₂ annual mean objective. Since this declaration there have been a total of four AQMAs within WBC, however two AQMAs were revoked in 2016. The AQMA in relation to the development site is shown in **Appendix A**.

5.3 Local Authority Air Quality Monitoring

Nitrogen Dioxide (NO₂)

- 5.3.1 WBC has NO₂ automatic monitoring sites within its authority. Three of the automatic monitoring stations, CM1, CM2, CM3, are within 1.2 km of the site.
- 5.3.2 WBC also undertakes diffusion tube monitoring of NO₂ across its authority. There are 12 monitoring locations within approximately 1.2 km of the proposed development located. The results from the monitoring locations are shown in **Table 3**; the locations of the tubes are shown in **Appendix A**.

Table 3: Annual Mean NO₂ Concentrations Monitored by the LA within the Study Area

Site ID (Type)	Location		Annual Mean NO ₂ Concentrations (µg/m ³)				
			2014	2015	2016	2017	2018
CM1 (urban background)	359151	388218	20.5	24.4	25	21	21.4
CM2 (roadside)	360015	387907	53.8	40	47	37.9	38.1
CM3 (roadside)	360331	360331	32.2	37	34	32	30
WA22 (urban background)	359152	388218	20.3	24.4	24.7	21.2	21.4
WA23 (urban background)	359152	388218	20.5	25	25.6	21.6	21.3
WA24 (urban background)	359152	388218	20.7	24.4	24.4	21.5	21.7
WA29 (roadside)	359450	388242	35.3	44.1	42.7	36.9	NA
WA30 (roadside)	358867	387672	33.4	41.4	40.6	37	31.6
WA65 (roadside)	359452	388111	40	51	49.9	42.1	39.6
WA66 (roadside)	359392	388104	31	37.4	40.3	NA	NA
WA67 (roadside)	359509	388235	33.8	41.2	37.5	32.8	32.19
WA85 (roadside)	359430	387947	34.7	41.1	42.3	37.7	35.5
WA72 (roadside)	360513	387048	34.2	39.9	39.2	37.6	31.6
WA86 (roadside)	357765	387908	30.1	36.6	36.8	34.9	27.2
WA93 (roadside)	360450	386052	33.2	45.1	40.9	37.1	34.5
Annual Mean NO ₂ air quality objective					40 µg/m ³		

5.3.3 The monitoring results in **Table 3** indicate that annual mean concentrations of NO₂ have been below the annual mean objective at urban background sites since 2014. Since 2016, there has been a decrease in the annual mean concentrations of NO₂ at the monitoring sites.

5.3.4 In 2018, the annual mean concentrations of NO₂ was below the annual mean objective at all of the monitoring locations within the study area.

5.3.5 The results indicate that it is unlikely that the short-term objective for NO₂ was exceeded at any the monitoring sites during the time period shown, as annual mean concentrations are less than 60 µg/m³¹.

Particulate Matter (PM₁₀)

5.3.6 WBC undertakes PM₁₀ monitoring at CM1 automatic station.

Table 4: Annual Mean PM₁₀ Concentrations Monitored by the LA within the Study Area

Site ID (Type)	Location		Annual Mean PM ₁₀ Concentrations (µg/m ³)				
			2014	2015	2016	2017	2018
CM1 (urban background)	359151	388218	16	15	16	12	13
Annual Mean PM ₁₀ air quality objective					40 µg/m ³		

5.3.7 The monitoring results in **Table 4** indicate that annual mean concentrations of PM₁₀ have been below the PM₁₀ annual mean objective at CM1, since 2014.

5.4 DEFRA Background Concentrations

5.4.1 There are several background monitoring locations in the vicinity of the proposed development site, as shown in **Table 3** and **Table 4**. Background concentrations of NO₂ and PM₁₀ were also obtained from the background concentration maps provided by Defra for the grid squares covering the proposed development². These are shown in **Table 5** below.

Table 5: Background Pollutant Concentrations Obtained for the 1km x 1km Grid Squares Covering the Site*

Grid Square	Pollutant	2018	2019	2022
		(µg/m ³)	(µg/m ³)	(µg/m ³)
356500, 385500	NO ₂	11.7	11.3	10.2
Site location	PM ₁₀	11.6	11.4	11.2
356500, 386500	NO ₂	11.9	11.5	10.4
Site location	PM ₁₀	11.6	11.5	11.3
357500, 385500	NO ₂	12.0	11.5	10.4
Site location	PM ₁₀	10.5	10.4	10.1
357500, 386500	NO ₂	11.5	11.1	10.0
Site location	PM ₁₀	10.5	10.4	10.1
358500, 385500	NO ₂	11.9	11.4	10.2
Site location	PM ₁₀	10.8	10.7	10.5
358500, 386500	NO ₂	11.6	11.2	10.1
Site location	PM ₁₀	10.9	10.8	10.5
359500, 385500	NO ₂	12.2	11.7	10.4
Site location	PM ₁₀	11.0	10.9	10.6
359500, 386500	NO ₂	13.7	13.2	12.0
Site location	PM ₁₀	10.5	10.4	10.1
	NO ₂	19.8	19.1	17.3

² <https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2017>

Grid Square	Pollutant	2018	2019	2022
		($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)
359500, 388500	PM ₁₀	12.5	12.5	12.4

** Background concentrations obtained from the latest 2017 based background maps*

5.5 **Table 5** shows that NO₂ and PM₁₀ background concentrations predicted by Defra are lower than monitored concentrations at WBC urban background monitoring sites for 2018.

6 Effect of Air Quality on the Development

6.1 As the development is for commercial use, the annual mean objectives do not apply at the development site itself. However, the short-term objectives do apply. Since 2014, nearby monitoring has not exceeded the short-term objective for NO₂ and PM₁₀. Several of the NO₂ monitoring sites are located on busy roads such as A5060 and the A57 A5061 roundabout. It is likely that the tubes located on these roads will be exposed to higher volumes of traffic compared to the site. Therefore, it is likely this site will experience lower NO₂ concentrations than the diffusion tubes and will be below the short-term NO₂ objective.

7 Impact of the Development on Existing Air Quality

- 7.1 As discussed above, the development is located 760 m west of an AQMA. IAQM guidance states that a detailed air quality assessment is required if the development introduces increases in AADT flows of either 100 LDV or 25 HDV within or adjacent to an AQMA, or 500 LDV or 100 HDV outside an AQMA. Due to the size of the development, a detailed air quality assessment will, therefore, be required to quantify the impact of the development on local air quality and the AQMA.
- 7.2 Ideally, the delivery of the WLR (or suitable alternative) would be delivered simultaneously with the development of the Waterfront in an appropriately phased manner to mitigate impacts in the existing highway from increases in traffic. However, the assessment will need to assess any phased access strategy.
- 7.3 As construction may take place before the WLR is operational, it is likely that the construction traffic will exceed the IAQM traffic thresholds and may pass through AQMAs. If this is the case, then the impact of construction traffic on local air quality will need to be modelled.
- 7.4 It is currently not known if the development will be operational before the WLR. If the development is expected to be operational before the completion of the WLR then multiple modelling scenarios would be required to assess the impact of the development on air quality before and after the completion of the Western Link Road.
- 7.5 If modelling indicates that the development will have a significant impact on local air quality, particularly prior to the construction of the WLR, mitigation will be required. This may comprise one or more of the following; provision of electric vehicle charging points, detailed travel planning, improved infrastructure, financial contributions to support low emission public transport options and other local plans or measures, fleet emission improvement.

8 Summary of Impacts and Conclusion

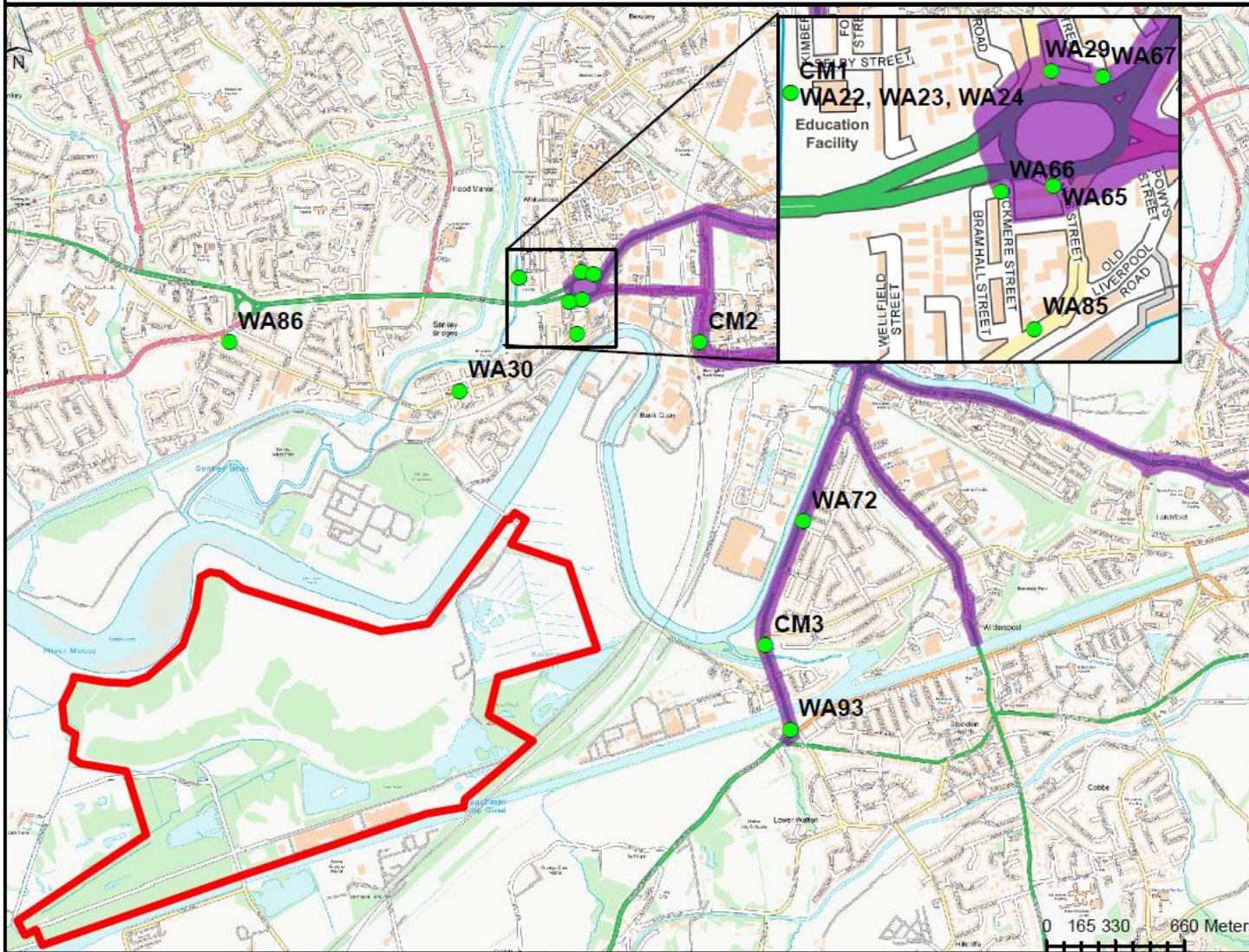
- 8.1 The short-term air quality objectives are not expected to be exceeded at the development site. Therefore, the development site is considered suitable for its proposed allocated use and the impact of air quality on the development is not a constraint to the delivery of the proposals.
- 8.2 This report supports the proposals as part of the local plan process. Further detailed modelling will be required to assess the significance of the development and required mitigation measures, once the full details of the scheme is known at the planning application stage.

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APPENDICES

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Appendix A: Location of site, AQMA and local authority monitoring



- Legend**
- Site
 - AQMA
 - LA monitoring



1	23/07/2018	Initial Issue	MH	LG
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ACOUSTICS AND AIR QUALITY

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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 PM₁₀, 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 PM₁₀ or PM_{2.5} 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

HDV Heavy Duty 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

LDV Light Duty Vehicle

Mg/m³ Microgrammes (of pollutant) per cubic metre of air. A measure of concentration in terms of mass per unit volume. A concentration of 1 µg/m³ means that one cubic metre of air contains one microgramme (millionth of a gramme) of pollutant

NO₂ Nitrogen Dioxide

NO_x A collective term used to represent the mixture of nitrogen oxides in the atmosphere, as nitric oxide (NO) and nitrogen dioxide (NO₂)

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_{2.5} 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_{2.5}, EN 14907, with a 50% efficiency cut-off at 2.5 µm aerodynamic diameter

PM₁₀ 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 PM₁₀, 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.

