

## Appendix 11.2: Assessment Methodology

### Construction Phase

The methodology for the construction phase dust assessment is set out in guidance from the Institute of Air Quality Management (IAQM)<sup>1</sup>.

#### *Significance Criteria*

The IAQM guidance details criteria for assessing the sensitivity of an area to dust soiling and human health effects of PM<sub>10</sub>, as summarised in Tables 11.3 to 11.7 below.

The guidance then goes on to provide significance criteria for the classification of dust soiling and human health effects from demolition, earthworks, construction activities and trackout, as summarised in Tables 11.8 to 11.10 below.

#### **Step 1**

Step 1 is to screen the requirement for a more detailed assessment. The guidance states that an assessment will normally be required where there are existing sensitive human receptors within 350m of the site boundary and/or within 100m of the route(s) used by construction vehicles on the public highway, up to 500m from the site entrance(s).

With regards to ecological receptors, the guidance states that an assessment will normally be required where there are existing receptors within 50m of the site boundary and/or within 50m of the route(s) used by construction vehicles on the public highway, up to 500m from the site entrance(s).

Where any of these criteria are met, it is necessary to proceed to Step 2.

#### **Step 2**

Step 2 determines the potential risk of dust arising in sufficient quantities to cause annoyance and/or health or ecological impacts. The risk is related to:

- The activities being undertaken (demolition, number of vehicles and plant etc);
- The duration of these activities;
- The size of the site;
- The meteorological conditions (wind speed, direction and rainfall);

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<sup>1</sup> Institute of Air Quality Management, Guidance on the Assessment of Dust from Demolition and Construction, February 2014

- The proximity of receptors to the activity;
- The adequacy of the mitigation measures applied to reduce or eliminate dust; and
- The sensitivity of receptors to dust.

The risk of dust impacts is determined using four risk categories: negligible, low, medium and high risk. A site is allocated to a risk category based upon the following two factors.

**Step 2A** assesses the scale and nature of the works which determines the potential dust emission magnitude as small, medium or large. Examples of how the magnitude may be defined are included in Table 11.3.

<b>Table 11.3: Determining the Dust Emission Magnitude of Construction Phase Activities</b>			
<b>Activity</b>	<b>Dust Emission Class</b>		
	<b>Large</b>	<b>Medium</b>	<b>Small</b>
<b>Demolition</b>	Total building volume >50,000m <sup>3</sup> ; Potentially dusty construction material (e.g. concrete); On-site crushing and screening; Demolition activities >20m above ground level	Total building volume 20,000-50,000m <sup>3</sup> ; Potentially dusty construction material; Demolition activities 10-20m above ground level	Total building volume <20,000m <sup>3</sup> ; Construction material with low potential for dust release (e.g. metal cladding or timber)
<b>Earthworks</b>	Total site area >10,000m <sup>2</sup> ; Potentially dusty soil type (e.g. clay, which will be prone to suspension when dry due to small particle size); >10 heavy earth moving vehicles active at any one time; Formation of bunds >8m in height; Total material moved >100,000 tonnes	Total site area 2,500-10,000m <sup>2</sup> ; Moderately dusty soil type (e.g. silt); 5-10 heavy earth moving vehicles active at any one time; Formation of bunds 4-8m in height; Total material moved 20,000-100,000 tonnes	Total site area <2,500m <sup>2</sup> ; Soil type with large grain size (e.g. sand); <5 heavy earth moving vehicles active at any one time; Formation of bunds <4m in height; Total material moved <20,000 tonnes; Earthworks during wetter months

<b>Table 11.3: Determining the Dust Emission Magnitude of Construction Phase Activities</b>			
<b>Activity</b>	<b>Dust Emission Class</b>		
	<b>Large</b>	<b>Medium</b>	<b>Small</b>
<b>Construction</b>	Total building volume >100,000m <sup>3</sup> ; On-site concrete batching; Sandblasting	Total building volume 25,000-100,000m <sup>3</sup> ; Potentially dusty construction material (e.g. concrete); On-site batching	Total building volume <25,000m <sup>3</sup> ; Construction material with a low potential for dust release (e.g. metal cladding or timber)
<b>Trackout</b>	>50 HDV (>3.5t) outward movements <sup>a</sup> in any one day <sup>b</sup> ; Potentially dusty surface material (e.g. high clay content); Unpaved road length >100m	10-50 HDV (>3,5t) outward movements <sup>a</sup> in any one day <sup>b</sup> ; Moderately dusty surface material (e.g. high clay content); Unpaved road length 50-100m	<10 HDV (>3.5t) outward movements <sup>a</sup> in any one day <sup>b</sup> ; Surface material with low potential for dust release; Unpaved road length <50m
<p><i>a. A vehicle movement is a one way journey i.e. from A to B, and excludes the return journey</i></p> <p><i>b. HDV movements during a construction project may vary over its lifetime, and the number of movements is the maximum not the average</i></p>			

**Step 2B** considers the sensitivity of the area to dust impacts which is defined as low, medium or high. The sensitivity categories for different types of receptors are described in Table 11.4. Based on the sensitivity of individual receptors, the overall sensitivity of the area to dust soiling, human health and ecological effects is then determined using the criteria detailed in Tables 11.5 to 11.7, respectively.

<b>Table 11.4: Sensitivity Categories for Dust Soiling, Human Health and Ecological Effects</b>			
<b>Sensitivity Category</b>	<b>Dust Soiling Effects</b>	<b>Health effects of PM<sub>10</sub></b>	<b>Ecological Effects</b>
<b>High</b>	Users can reasonably expect to enjoy a high level of amenity; Appearance, aesthetics or value of a property would be diminished; Examples include dwellings, museums and other culturally important collections, medium and long term car parks and car show rooms	Locations where members of the public are exposed over a period of time relevant to the air quality objective for PM <sub>10</sub> ; Examples include residential properties, hospitals, schools, and residential care homes	Locations with an international or national designation and the designated features may be affected by dust soiling; Locations where there is a community of a particularly dust sensitive species; Examples include a Special Area of Conservation with dust sensitive features

<b>Sensitivity Category</b>	<b>Dust Soiling Effects</b>	<b>Health effects of PM<sub>10</sub></b>	<b>Ecological Effects</b>
<b>Medium</b>	<p>Users would expect to enjoy a reasonable level of amenity, but would not reasonably expect to enjoy the same level of amenity as in their home;</p> <p>The appearance, aesthetics or value of their property could be diminished;</p> <p>People or property wouldn't reasonably be expected to be continuously present or regularly for extended periods of time;</p> <p>Examples include parks and places of work</p>	<p>Locations where people are exposed as workers and exposure is over a period of time relevant to the air quality objective for PM<sub>10</sub>;</p> <p>Examples include office and shop workers but will generally not include workers occupationally exposed to PM<sub>10</sub></p>	<p>Locations where there is a particularly important plant species, where its dust sensitivity is uncertain or unknown;</p> <p>Locations with a national designation where the features may be affected by dust deposition;</p> <p>Examples include a Site of Special Scientific Interest with dust sensitive features</p>
<b>Low</b>	<p>Enjoyment of amenity would not reasonably be expected;</p> <p>Property would not be diminished in appearance, aesthetics or value;</p> <p>People or property would be expected to be present only for limited periods of time;</p> <p>Examples include playing fields, farmland (unless commercially-sensitive horticultural), footpaths, short term car parks and roads</p>	<p>Locations where human exposure is transient;</p> <p>Examples include public footpaths, playing fields, parks and shopping streets</p>	<p>Locations with a local designation where the features may be affected by dust deposition;</p> <p>Examples include a Local Nature Reserve with dust sensitive features</p>

<b>Receptor Sensitivity</b>	<b>Number of Receptors</b>	<b>Distance from Source (m)<sup>c</sup></b>			
		<b>&lt;20m</b>	<b>&lt;50m</b>	<b>&lt;100m</b>	<b>&lt;350m</b>
<b>High</b>	>100	High	High	Medium	Low
	10-100	High	Medium	Low	Low
	1-10	Medium	Low	Low	Low
<b>Medium</b>	>1	Medium	Low	Low	Low
<b>Low</b>	>1	Low	Low	Low	Low

Table 11.5: Sensitivity of the Area to Dust Soiling Effects on People and Property <sup>ab</sup>					
Receptor Sensitivity	Number of Receptors	Distance from Source (m) <sup>c</sup>			
		<20m	<50m	<100m	<350m
<p>a. The sensitivity to the area should be derived for each of the four activities</p> <p>b. Estimate the total number of receptors within the stated distance. Only the highest level of sensitivity from the table needs to be considered</p> <p>c. For trackout, distances should be measured from the side of the roads used by construction traffic. Without site specific mitigation, trackout may occur for up to 500m from large sites, 200m from medium sites and 50m from small sites, measured from the site exit. The impact declines with distance from the site and it is only necessary to consider trackout impacts up to 50m from the edge of the road</p>					

Table 11.6: Sensitivity of the Area to Human Health Impacts <sup>ab</sup>							
Receptor Sensitivity	Annual Mean PM <sub>10</sub> Concentration <sup>c</sup>	Number of Receptors <sup>d</sup>	Distance from Source (m) <sup>e</sup>				
			<20m	<50m	<100m	<200m	<350m
High	>32µg/m <sup>3</sup>	>100	High	High	High	Medium	Low
		10-100	High	High	Medium	Low	Low
		1-10	High	Medium	Low	Low	Low
	28-32µg/m <sup>3</sup>	>100	High	High	Medium	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	High	Medium	Low	Low	Low
	24-28µg/m <sup>3</sup>	>100	High	Medium	Low	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	<24µg/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	>32µg/m <sup>3</sup>	>10	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	28-32µg/m <sup>3</sup>	>10	Medium	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	24-28µg/m <sup>3</sup>	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	<24µg/m <sup>3</sup>	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Low	-	>1	Low	Low	Low	Low	Low
<p>a. The sensitivity to the area should be derived for each of the four activities</p> <p>b. Estimate the total number of receptors within the stated distance. Only the highest level of sensitivity from the table needs to be considered</p> <p>c. Most straightforwardly taken from the national background maps but should also take account of local sources. The values are based on 32µg/m<sup>3</sup> being the annual mean concentration at which an exceedance of the 24-hour mean objective is likely in England, Wales and Northern Ireland. In Scotland, there is an annual</p>							

Table 11.6: Sensitivity of the Area to Human Health Impacts <sup>ab</sup>						
Receptor Sensitivity	Annual Mean PM <sub>10</sub> Concentration <sup>c</sup>	Number of Receptors <sup>d</sup>	Distance from Source (m) <sup>e</sup>			
			<20m	<50m	<100m	<200m
<i>mean objective of 18µg/m<sup>3</sup></i>						
<i>d. In the case of high sensitivity receptors with high occupancy (such as schools or hospitals) approximate the number of people likely to be present. In the case of residential dwellings, just include the number of properties</i>						
<i>e. For trackout, distances should be measured from the side of the roads used by construction traffic</i>						

Table 11.7: Sensitivity of the Area to Ecological Impacts <sup>abc</sup>		
Receptor Sensitivity	Distance from the Source (m)	
	<20	<50
High	High	Medium
Medium	Medium	Low
Low	Low	Low

a. The sensitivity to the area should be derived for each of the four activities outlined below.  
 b. Only the highest level of sensitivity from the table needs to be considered  
 c. For trackout, distances should be measured from the side of the roads used by construction traffic

These two factors are combined in **Step 2C** to determine the risk of dust impacts with no mitigation applied.

The risk of dust effects is determined for four types of construction phase activities, with each activity being considered separately. If a construction phase activity is not taking place on the site, then it does not need to be assessed. The four types of activities to be considered are:

- Demolition;
- Earthworks;
- Construction; and
- Trackout.

The risk of dust being generated by demolition activities at the site is determined using the criteria in Table 11.8.

Table 11.8: Risk of Dust Impacts for Demolition			
Sensitivity of 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

The risk of dust being generated by earthworks and construction at the site is determined

using the criteria in Table 11.9.

Sensitivity of 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

The risk of dust being generated by trackout at the site is determined using the criteria in Table 11.10.

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

### Step 3

Step 3 of the assessment determines the site-specific mitigation required for each of the activities, based on the risk determined in Step 2. Mitigation measures are detailed in guidance published by the Greater London Authority<sup>2</sup>, recommended for use outside the capital by LAQM guidance, and the IAQM guidance document itself. Professional judgement should be used to determine the type and scale of mitigation measures required.

If the risk is classed as negligible, no mitigation measures beyond those required by legislation will be necessary.

### Step 4

Step 4 assesses the residual effect, with mitigation measures in place, to determine whether or not these are significant.

### Professional Judgement

The IAQM guidance makes reference to the use of professional judgement when assessing the risks of dust and PM<sub>10</sub> from demolition and construction sites.

<sup>2</sup> Greater London Authority, The Control of Dust and Emissions from Construction and Demolition: Best Practice Guidance, 2006

## Operational Phase

### ***Assessing the Impact of a Proposed Development on Human Health***

Guidance has been prepared by Environmental Protection UK (EPUK) and the IAQM<sup>3</sup> with relation to the assessment of the air quality impacts of proposed developments and their significance.

The impact of a development is usually assessed at specific receptors and takes into account both the long term background concentrations, in relation to the relevant Air Quality Assessment Level (AQAL) at these receptors, and the change with the development in place.

The impact descriptors for individual receptors are detailed in Table 11.11.

<b>Table 11.11: Impact Descriptors for Individual Receptors</b>				
<b>Long Term Average Concentration at Receptor in Assessment Year*</b>	<b>Percentage Change in Concentration Relative to Air Quality Assessment Level (AQAL)*</b>			
	<b>1%</b>	<b>2-5%</b>	<b>6-10%</b>	<b>&gt;10</b>
75% or less of AQAL	Negligible	Negligible	Slight	Moderate
76-94% of AQAL	Negligible	Slight	Moderate	Moderate
95-102% of AQAL	Slight	Moderate	Moderate	Substantial
103-109% of AQAL	Moderate	Moderate	Substantial	Substantial
110% or more of AQAL	Moderate	Substantial	Substantial	Substantial

*\*Percentage pollutant concentrations have been rounded to whole numbers, to make it easier to assess the impact. Changes of 0% (i.e. less than 0.5% or 0.2µg/m<sup>3</sup>) should be described as Negligible*

### ***Determining the Significance of Effects***

Impacts on air quality, whether adverse or beneficial, will have an effect on human health that can be judged as either ‘significant’ or ‘not significant’.

Once the impact of the proposed development has been assessed for the individual impacts, the overall significance is determined using professional judgement. This takes into account a number of factors such as:

- The existing and future air quality in the absence of the development;
- The extent of the current and future population exposure to the impacts; and
- The influence and validity of any assumptions adopted when undertaking the prediction of impacts.

<sup>3</sup> Environmental Protection UK and Institute of Air Quality Management, Land-Use Planning and Development Control: Planning for Air Quality, January 2017

### ***Ecological Receptors***

The Guidance published by Natural England (NE)<sup>4</sup> provides advice on the assessment of road traffic emissions on sensitive designated habitat sites with international and/or European designations, i.e SAC (SCI or cSAC), SPA, pSPA and Ramsar sites. The screening criteria follow the superseded Design Manual for Roads and Bridges (DMRB) guidance, requiring that sites which are located within 200m of an ‘affected’ road, need to be considered.

Roads are deemed ‘affected’ if a proposed development leads to:

- A change in road alignment of 5m or more;
- A change in daily traffic flow of 1,000 AADT or more;
- A change in HGV flow of 200 AADT or more;
- A change in daily average speed of 10 kph or more; and
- A change in peak hour speed of 20kph or more.

### **Air Dispersion Modelling Inputs**

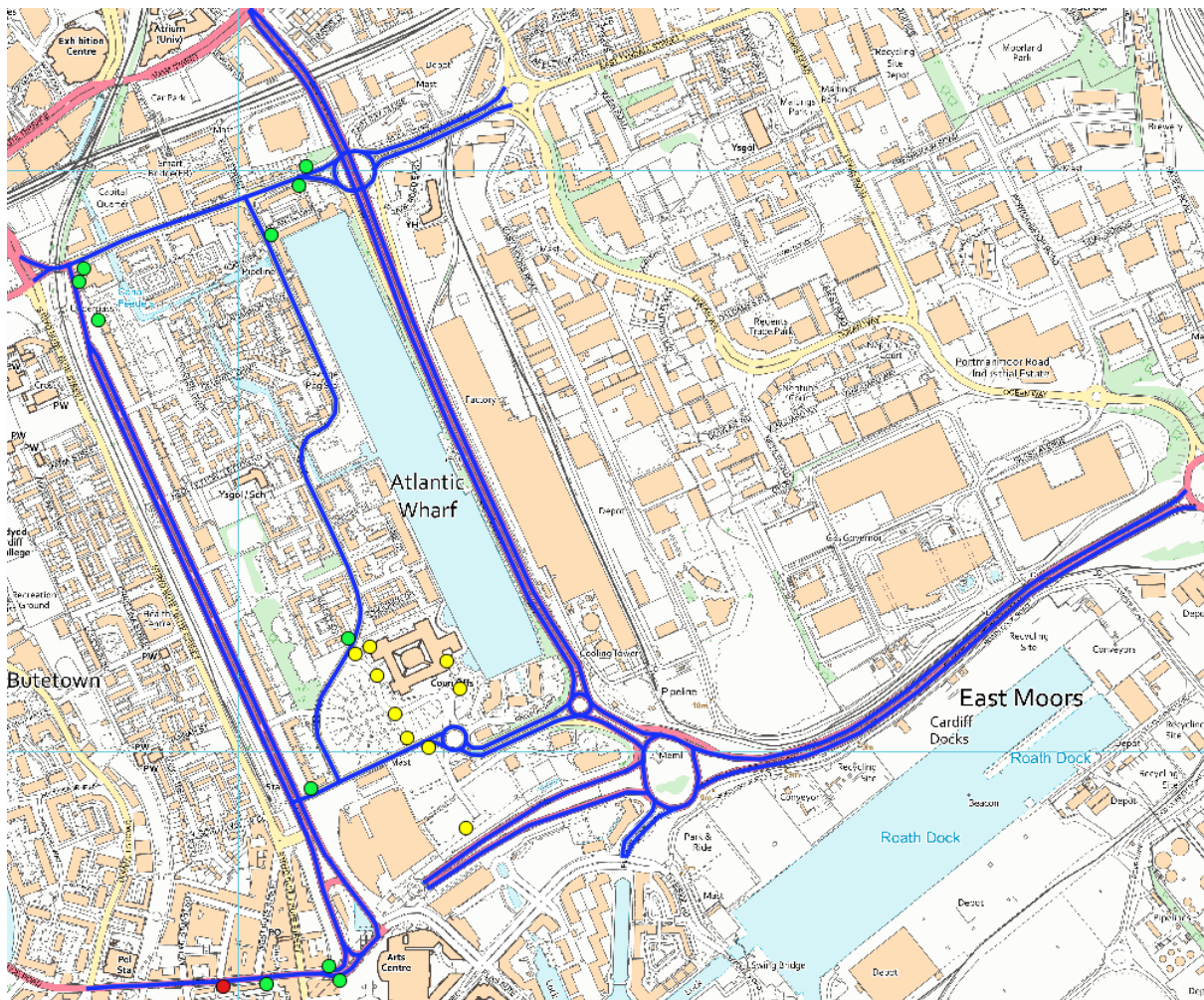
The air dispersion model ADMS-Roads (CERC, Version 4.1) has been used to assess the potential air quality impacts associated with development-generated road traffic emissions. This dispersion model is widely used and accepted for the purpose of undertaking assessments to support both planning and Environmental Permit applications.

### ***Traffic Flow Data***

The ADMS-Roads model requires the input of detailed road traffic flow data for those routes which may be affected by the proposed development. Traffic flow data has been provided for this project by WSP, the appointed transport consultants for the project. The study extent of the model is shown below; modelled roads are shown in blue, ESR locations in green, PSR locations in yellow and NO<sub>2</sub> diffusion tubes used for model verification in red.

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<sup>4</sup> Natural England’s approach to advising competent authorities on the assessment of road traffic emissions under the Habitat’s Regulations (June 2018)



Data has been provided as 24-hour Annual Average Daily Traffic (AADT) flows, with HGV percentages. Average speed data was used where available; otherwise, speed limits were used, with a reduction to 20kph in locations where congestion or the slowing down of vehicles would be expected.

The traffic flow data used in the assessment is included in Table 11.12.

Table 11.12: Traffic data used in air quality assessment						
Network ID	Road	Speed km/h	2019 Flows		2021 Flows	
			2019_Total	HGV%	2021_Total	HGV%
1	Eastern Bay Link Road (westbound)	64km/h	8348	5.63%	8531	5.63%
2	Eastern Bay Link Road (eastbound)	80km/h	6950	6.84%	7103	6.84%
3	Caspian Way (southbound)	20km/h	2996	4.24%	3062	4.24%
4	Caspian Way (northbound)	20km/h	2518	1.78%	2573	1.78%
5	Cardiff Bay Link Road (westbound)	80km/h	13642	3.93%	13942	3.93%
6	Cardiff Bay Link Road (eastbound)	80km/h	14014	3.11%	14323	3.11%
7	A4234 (westbound)	40km/h	10024	2.31%	10244	2.31%
8	A4234 (eastbound)	42km/h	8744	4.82%	8936	4.82%
9		20km/h	4597	3.60%	4698	3.60%

Network ID	Road	Speed km/h	2019 Flows		2021 Flows	
			2019_Total	HGV%	2021_Total	HGV%
10		20km/h	3751	6.70%	3833	6.70%
11	Hemingway Road	20km/h	8348	5.00%	8531	5.00%
12	James Street	35km/h	8061	3.15%	8238	3.15%
13	Hemingway Road	20km/h	4567	6.52%	4667	6.52%
14	Schooner Way	20km/h	5878	2.77%	6008	2.77%
15	Schooner Way	20km/h	5878	2.77%	6008	2.77%
16	Central Link (southbound)	64km/h	9267	3.22%	9471	3.22%
17	Central Link (northbound)	66km/h	9699	2.01%	9912	2.01%
18	East Tyndall Street (westbound)	20km/h	5489	1.84%	5610	1.84%
19	East Tyndall Street (eastbound)	20km/h	4910	2.24%	5018	2.24%
20	Central Link (southbound)	56km/h	6677	3.40%	6824	3.40%
21	Central Link (northbound)	31km/h	6994	2.03%	7148	2.03%
22	Tyndall Street	20km/h	9392	1.41%	9598	1.41%
23	Tyndall Street	20km/h	8393	1.41%	8578	1.41%
24	Tyndall Street	34km/h	9074	2.47%	9273	2.47%
25	Lloyd George Avenue (southbound)	49km/h	396	16.27%	405	16.27%
26	Lloyd George Avenue (northbound)	52km/h	662	8.65%	676	8.65%
27	Lloyd George Avenue (northbound)	46km/h	662	8.65%	676	8.65%
28	Lloyd George Avenue (southbound)	53km/h	396	16.27%	405	16.27%
29	Lloyd George Avenue (northbound)	24km/h	2770	8.45%	2831	8.45%
30	Lloyd George Avenue (northbound)	38km/h	2061	7.75%	2106	7.75%
31	Lloyd George Avenue (northbound)	30km/h	2004	6.52%	2048	6.52%
32	Lloyd George Avenue (northbound)	33km/h	2683	6.12%	2742	6.12%
33	Lloyd George Avenue (northbound)	41km/h	2623	5.16%	2681	5.16%
34	Cardiff Bay Link Road (westbound)	80km/h	14014	3.11%	14323	3.11%
35	Bute Place	31km/h	2972	8.76%	3038	8.76%
36	Cardiff Bay Link Road (eastbound)	80km/h	13642	3.93%	13942	3.93%
37	Lloyd George Avenue (northbound)	32km/h	2844	5.90%	2906	5.90%

### **Vehicle Emission Factors**

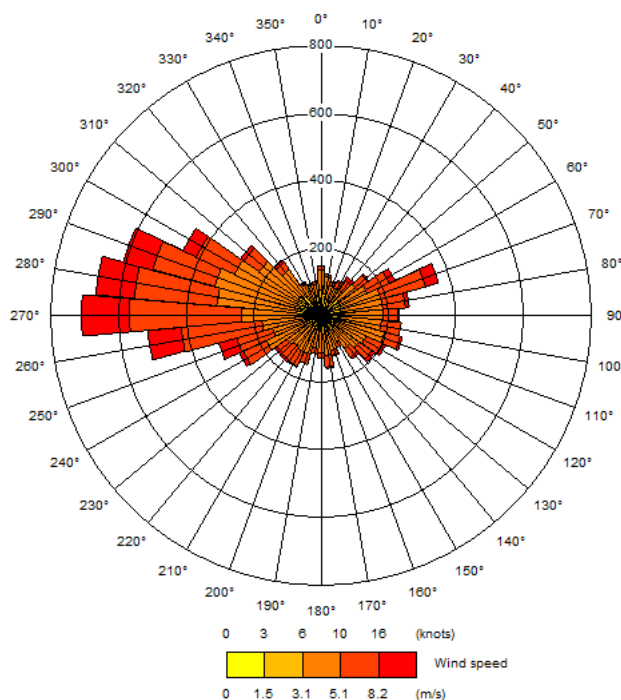
The air quality assessment has used vehicle emission factors calculated using the Emissions Factor Toolkit (EFT) version 10.1, released in August 2020. This is the most up-to-date version of the EFT currently available.

### **Meteorological Data**

The meteorological data used in the air quality modelling has been obtained from ADM Limited and is from the Cardiff Airport recording station, covering the period between 1st January and 31st December 2019. This has complete data capture for wind and temperature.

The Cardiff Airport recording station is located approximately 14km from the proposed development and is considered to be the most representative of the conditions at the proposed development, due to its relative location and similar altitude.

The 2019 wind rose for the Cardiff Airport meteorological recording station is shown below.



### ***Dispersion and Meteorological Site Characteristics***

The characteristics for the dispersion site and meteorological sites, included in the ADMS-Roads model, are detailed in Table 11.13.

<b>Table 11.13: Dispersion and Meteorological Site Characteristics</b>		
<b>Setting</b>	<b>Dispersion Site</b>	<b>Meteorological Site</b>
Surface Roughness	0.5m	0.02m
Surface Albedo	0.23	0.23
Minimum Monin-Obukhov Length	30m	30m
Priestley-Taylor Parameter	1	1

### ***NO<sub>x</sub> to NO<sub>2</sub> Conversion***

In accordance with the guidance within LAQM.TG(16), the ADMS-Roads model has been run to predict the road-contribution NO<sub>x</sub> concentrations for each receptor location. These have then been converted to NO<sub>2</sub> concentrations using the Defra NO<sub>x</sub> to NO<sub>2</sub> calculator<sup>5</sup>.

<sup>5</sup> Defra Local Air Quality Management web pages (<http://laqm.defra.gov.uk/tools-monitoring-data/no-calculator.html>)

### Model Validation and Verification

LAQM.TG(16) refers to model validation as “the general comparison of modelled results against monitoring data carried out by model developers”. ADMS-Roads is widely accepted by regulatory authorities for use in this type of assessment.

Model verification is used to check the performance of the model at a local level. The verification of the ADMS-Roads air dispersion model is achieved by modelling concentrations at existing monitoring locations in the vicinity of the proposed development, and comparing the modelled concentrations with the measured concentrations.

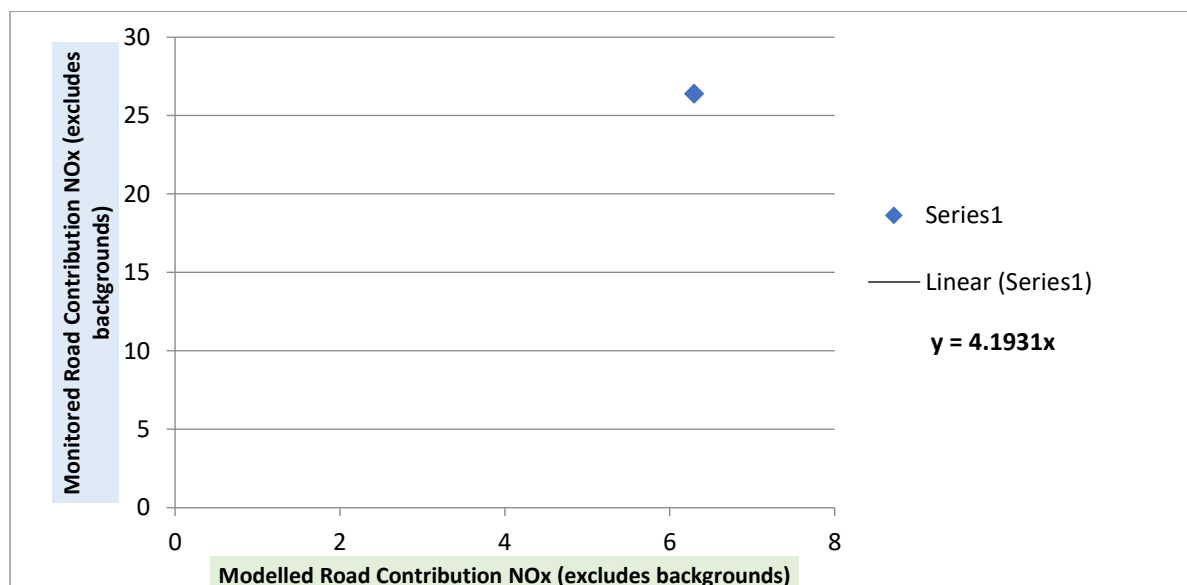
Cardiff Council currently operates one roadside automatic monitoring location in the area near to the proposed development Site which was used for model verification.

The monitoring data which has been used in the model verification procedures for NO<sub>2</sub> is detailed in Table 11.14 below.

Table 11.14: NO <sub>2</sub> Diffusion Tubes Located in Study Area			
Monitoring Location Reference	Grid Reference		2019 Bias Adjusted NO <sub>2</sub> Annual Average Concentration (µg/m <sup>3</sup> )
	Easting	Northing	
DT 216	318976	174596	29.93

*\*NO<sub>2</sub> monitoring data for 2019 obtained from Cardiff Council's 2020 Annual Progress Report.*

The comparison is shown in the below graph. The equation of the trend line is based on linear regression through zero, which provides an overall adjustment factor of 4.1931.



This adjustment factor has been applied to the modelled road-contribution NO<sub>x</sub> concentrations. The total NO<sub>2</sub> concentrations have been derived by combining the adjusted road-contribution NO<sub>x</sub> concentration and background NO<sub>2</sub> concentration, using the Defra NO<sub>x</sub>

to NO<sub>2</sub> calculator.

A final comparison has been made between the total measured NO<sub>2</sub> concentrations and total modelled NO<sub>2</sub> concentrations, as shown in Table 11.15. Following adjustment, modelled concentrations are within 25% of measured concentrations.

<b>Monitoring Location Reference</b>	<b>Measured Total NO<sub>2</sub> Concentration (µg/m<sup>3</sup>)</b>	<b>Modelled Total NO<sub>2</sub> Concentration (µg/m<sup>3</sup>)</b>	<b>Difference (%)</b>
DT 216	29.30	29.30	0.00

There are no representative roadside PM<sub>10</sub> or PM<sub>2.5</sub> monitoring locations along the road network for which traffic flow information is available. It has not therefore been possible to undertake verification of PM<sub>10</sub> or PM<sub>2.5</sub> concentrations.