Former Hampstead Police Station, Camden

February 2024

# FORMER HAMPSTEAD POLICE STATION, CAMDEN

# AIR QUALITY ASSESSMENT

temple

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## Document Control

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## Contents

# 1 Introduction

Temple Group Limited (Temple) has undertaken an air quality assessment for the former Hampstead Police Station, within the jurisdiction of the London Borough of Camden (LBC). The Proposed Development comprises the refurbishment of the former Hampstead Police Station for office and residential use.

The development description is as follows: *"The design intent for the restoration of the former Police Station, listed building and Magistrates' courthouse is proposed into a development of high-quality and mixed-use scheme, comprising of residential and commercial floorspace. On the lower ground and ground floors the commercial spaces are proposed and 5 large family homes, a mixture of one, two and three beds, spread over the first and second floor."* In addition, office floorspace (including for private medical use) is provided at lower ground, ground and first floor level. The site location plan is shown in Figure 1.1, below.

This report includes a baseline assessment of local air quality, a qualitative construction and operational phase (including site suitability) assessment and an air quality neutral assessment. Mitigation measures and/or further work have been recommended where appropriate.

**Figure 1.1: Site Location Plan**

# 2 Legislation and Policy

## 2.1 National Legislation, Regulations and Policy

The ambient AQOs are established in the Air Quality (England) Regulations 2000[1], as amended[2].

The Environment Act 1995[3] requires all local authorities to carry out periodic reviews of air quality within their administrative areas. Where air quality is known or expected to exceed one or more of the AQOs, they must declare an air quality management area (AQMA) and implement an air quality action plan (AQAP) to work toward meeting the AQOs.

Moreover, the European Union emissions limit values derived from the Ambient Air Quality Directive (2008/50/EC)[4] were transposed into English and Welsh law as air quality standards (AQSs) via the Air Quality Standards Regulations 2010[5], as amended[6].

The Environment Act 2021[3] amends part of the Environment Act 1995 and sets legally binding targets in priority areas including air quality, which must be met in England over a 25-year period. The Act requires for Environmental Improvement Plans to be produced by the Department for Environment, Food and Rural Affairs (Defra) to monitor progress and commit the Government to greater compliance with those targets if insufficient progress is made.

The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 set the following legally binding targets (LBTs) to be met by 2040:

- Annual mean concentration target (AMCT) of 10µg/m$^3$; and,
- Population exposure reduction target (PERT) of 35% compared to 2018 exposure.

The Environmental Improvement Plan 2023 set interim targets (ITs) to be met by end of January 2028:

- AMCT of 12µg/m$^3$; and,

[1] The Air Quality (England) Regulations 2000.

[2] The Air Quality (England) (Amendment) Regulations 2000.

[3] Environment Act 1995.

[4] Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe. European Commission.

[5] The Air Quality Standards Regulations 2010.

[6] The Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020.

- PERT of 22% (compared to 2018 exposure).

Planning applications are not yet required to meet these LBTs or ITs (although updates to national planning guidance are being considered); however, Local Authorities are expected to work towards these targets through the planning system.

Across the country, most of the AQOs and AQSs are no longer breached. Therefore, this air quality assessment has focussed on achieving compliance with those established for those AQOs and AQSs which continue to be breached in local hotspots and which are considered relevant based on the nature of the Proposed Development. The AQOs and AQSs shown in Table 2.1 below have been considered within this assessment and are herein collectively referred to as AQOs, as the AQSs are generally the same. Explanation regarding why these (and not others) have been considered is detailed in the planning policy sections thereafter.

**Table 2.1: Ambient AQOs relevant to the assessment**

| Pollutant | AQOs | Measured as | Dates to be achieved and maintained thereafter |
|---|---|---|---|
| $NO_2$ | 200 µg/m$^3$, not to be exceeded more than 18 times per year | 1-hour mean | 31 December 2005 |
| | 40 µg/m$^3$ | Annual mean | 31 December 2005 |
| $PM_{10}$ | 50 µg/m$^3$, not to be exceeded more than 35 times per year | 24-hour mean | 31 December 2004 |
| | 40 µg/m$^3$ | Annual mean | 31 December 2004 |
| $PM_{2.5}$ | 20 µg/m$^3$ | Annual mean | 01 January 2020 |

## 2.2 National Planning Policy

The land use planning process is a key means of improving air quality, particularly in the long term, through the careful location and design of new developments. Any air quality concern that relates to land use and its development can be a material consideration in the determination of planning applications.

## National Planning Policy Framework and Planning Practice Guidance

A revised version of the National Planning Policy Framework (NPPF) was published during December 2023[7]. The NPPF establishes a framework under the Town and Country Planning Act which should be used by local authorities to make local plans and determine planning applications.

Paragraph 180 states:

*"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…."*

Paragraph 192 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".*

The 2019 Air Quality Planning Practice Guidance[8] supports the NPPF, by including recommendations on the scope of an air quality assessment.

## 2.3 Regional and Local Planning Policy

## The London Plan 2021

Policy SI1 relates specifically to air quality and states that:

1. *Development proposals should not:*

[7] National Planning Policy Framework, 2023. Department for Levelling Up, Housing and Communities.

[8] Ministry of Housing, Communities & Local Government, 2019. *Planning Practice Guidance: Air Quality.*

a. *Lead to further deterioration of existing poor air quality*

b. *Create any new areas that exceed air quality limits, or delay the date at which compliance will be achieved in areas that are currently in exceedance of legal limits*

c. Create unacceptable risk of high levels of exposure to poor air quality

2. *In order to meet the requirements in Part 1, as a minimum:*

   a. *Development proposals should be at least Air Quality Neutral*

   b. *Development proposals should use design solutions to prevent or minimise increased exposure to existing air pollution and make provision to address local problems of air quality in preference to post-design or retro-fitted mitigation measures*

   c. *Major development proposals must be submitted with an air quality assessment. Air quality assessments should show how the development will meet the requirements of B1*

   d. *Development proposals in Air Quality Focus Areas or that are likely to be used by large numbers of people particularly vulnerable to poor air quality, such as children or older people should demonstrate that design measures have been used to minimise exposure.*

3. *Masterplans and development briefs for large-scale development proposals subject to an Environmental Impact Assessment should consider how local air quality can be improved across the area of the proposal as part of an air quality positive approach. To achieve this a statement should be submitted demonstrating:*

   *1) how proposals have considered ways to maximise benefits to local air quality, and*

   *2) what measures or design features will be put in place to reduce exposure to pollution, and how they will achieve this.*

4. *In order to reduce the impact on air quality during the construction and demolition phase development proposals must demonstrate how they plan to comply with the Non-Road Mobile Machinery Low Emission Zone and reduce emissions from the demolition and construction of buildings following best practice guidance.*

5. *Development proposals should ensure that where emissions need to be reduced to meet the requirements of Air Quality Neutral or to make the impact of development on local air quality acceptable, this is done on-site. Where it can be demonstrated that emissions cannot be further reduced by on-site measures, off-site measures to improve local air quality may be acceptable, provided that equivalent air quality benefits can be demonstrated within the area affected by the development.'*

### Camden Local Plan (2017)

Policy CC4, 'Air Quality', of the 'Camden Local Plan' (2017), states that:

*'The Council will ensure that the impact of development on air quality is mitigated and ensure that exposure to poor air quality is reduced in the borough.*

*The Council will take into account the impact of air quality when assessing development proposals, through the consideration of both the exposure of occupants to air pollution and the effect of the development on air quality. Consideration must be taken to the actions identified in the Council's Air Quality Action Plan.*

*Air quality assessments (AQAs) are required where development is likely to expose residents to high levels of air pollution. Where the AQA shows that a development would cause harm to air quality, the Council will not grant planning permission unless measures are adopted to mitigate the impact.*

*Similarly, developments that introduce sensitive receptors (i.e. housing, schools) in locations of poor air quality will not be acceptable unless designed to mitigate the impact.*

*Development that involves significant demolition, construction or earthworks will also be required to assess the risk of dust and emissions impacts in an AQA and include appropriate mitigation measures to be secured in a Construction Management Plan.'*

## 2.4 Technical Standards and Guidance

### Land-Use Planning & Development Control: Planning for Air Quality ('the EPUK-IAQM guidance')

Published by Environmental Protection UK (EPUK) and the IAQM, this guidance[9] includes a method for screening the requirement for an air quality assessment and determining the significance of any air quality impacts associated with a development proposal. It also identifies mitigation measures which can be implemented to reduce air quality effects attributable to the scheme.

### Guidance on the Assessment of Dust from Construction and Demolition

The IAQM has produced guidance on the assessment of air quality impacts from construction activities entitled the 'Guidance on the Assessment of Dust from Construction and Demolition' ('the IAQM 2014 guidance')[10]. This guidance provides a

[9] Environmental Protection UK & the Institute of Air Quality Management, 2017. *Land-Use Planning & Development Control: Planning for Air Quality.*

[10] Institute of Air Quality Management, 2014, incorporating 2016 updates. *Guidance on the assessment of dust from demolition and construction.* Institute of Air Quality Management.

framework for assessing the risk of dust effects that may arise and suggests appropriate dust and air emissions mitigation measures for sites according to the level of risk.

The Mayor of London produced Supplementary Planning Guidance entitled 'The Control of Dust and Emissions during Demolition and Construction' ('the MOL SPG')[11] in 2014. This guidance is widely referred to in assessments of construction impacts in and outside London but recommends that the latest IAQM 2014 guidance is used to assess the impacts of fugitive dust generated from construction sites. It also identifies mitigation measures, including in relation to construction site monitoring and non-road mobile machinery (NRMM) controls, which should be enforced at construction sites.

## Local Air Quality Management (LAQM) Technical Guidance ('TG22') and London LAQM Technical Guidance (Mayor of London, 2019) ('TG19')

TG22[12] and TG19[13] include guidance for local authorities to assess and, where required, deliver improvements in air quality within their jurisdiction. TG22 also recommends where the AQOs should be applied, as outlined in Table 2.2.

**Table 2.2: Examples of where the air quality objectives should apply, as per TG22**

| Averaging Period Objectives | Objectives should apply at | Objectives should generally not apply at |
|---|---|---|
| Annual mean | All locations where members of the public might be regularly exposed. Building façades of residential properties, schools, hospitals, care homes etc. | Building façades of offices or other places of work where members of the public do not have regular access.<br>Hotels, unless people live there as their permanent residence.<br>Gardens of residential properties.<br>Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term. |

[11] Mayor of London, 2014. The Control of Dust and Emissions During Construction and Demolition Supplementary Planning Guidance.

[12] Department for Environment, Food and Rural Affairs, 2022. Part IV of the Environment Act 1995: Local Air Quality Management: Technical Guidance LAQM.TG (22), August 2022 London: Crown.

[13] Mayor of London, 2016. *London Local Air Quality Management (LLAQM) Technical Guidance 2019 (LLAQM.TG (19)).*

| Averaging Period Objectives | Objectives should apply at | Objectives should generally not apply at |
|---|---|---|
| 24-hour mean and 8-hour mean | All locations where the annual mean objective would apply, together with hotels.<br>Gardens of residential properties (not at peripheries or front gardens unless exposure is likely there). | Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term. |
| 1-hour mean | All locations where the annual mean and: 24 and 8-hour mean objectives apply. Kerbside sites (for example, pavements of busy shopping streets). Those parts of car parks, bus stations and railway stations etc. which are not fully enclosed, where members of the public might reasonably be expected to spend one hour or more. Any outdoor locations where members of the public might reasonably expect to spend one hour or longer. | Kerbside sites where the public would not be expected to have regular access. |

## London Plan Guidance: Air Quality Neutral ('the MOL AQN guidance')

The MOL AQN guidance[14] has been used to complete the air quality neutral assessment.

## Air Quality Supplementary Planning Document

The 'Camden Planning Guidance: Air Quality' ('the CPGAQ')[15], adopted by LBC in 2021, is a Supplementary Planning Document considered as material in determining planning applications. The SPD outlines an assessment method which should be considered as material in the determination of planning applications. The CPGAQ outlines a method to determine whether an assessment is required, including whether this should be a 'basic' or 'detailed' assessment and, where detailed assessments are required, discusses the approach which should be undertaken to facilitate detailed dispersion modelling. Mitigation measures which should be considered, depending on the proposal type, are also outlined.

[14] Mayor of London, 2023. London Plan Guidance: Air Quality Neutral.

[15] London Borough of Camden, 2021. Camden Planning Guidance: Air Quality. Available from: https://www.camden.gov.uk/documents/20142/4823269/Air+Quality+CPG+Jan+2021.pdf/4d9138c0-6ed0-c1be-ce68-a9ebf61e8477?t=1611580574285

# 3 Air Quality Assessment Method

## 3.1 Overall Assessment Approach

The approach taken for assessing the potential air quality impacts of the Proposed Development is as follows:

- baseline characterisation of local air quality;
- qualitative impact assessment of dust and emissions generated by construction related activities;
- qualitative assessment of air quality once the Proposed Development is operational;
- air quality neutral assessment;
- recommendation of mitigation measures, where appropriate, to ensure any adverse effects on air quality are minimised; and,
- identification of residual impacts resulting from the Proposed Development.

### Pollutants

The main pollutants for consideration in this assessment are:

- Fugitive $PM_{10}$, $PM_{2.5}$ and dust emissions from construction related activities; and,
- $NO_2$, $PM_{10}$ and $PM_{2.5}$ emissions from existing baseline traffic and the emergency generator which may be proposed to operate the life safety sprinkler system, depending on the progression of detailed design.

## 3.2 Baseline Assessment

Existing or baseline air quality refers to the concentrations of relevant substances that are already present in ambient air, including road traffic and industrial sources.

A desk-based study has been undertaken using data obtained from continuous and diffusion tube monitoring stations maintained by LBC; estimated background from the United Kingdom Air Information Resource (UK-AIR) website maintained by the Defra; and estimated baseline data from the London Atmospheric Emissions Inventory (LAEI) published by Kings College London on behalf of the Mayor of London.

In Section 4.0 of this assessment, these data have been described and the potential for future site users to be introduced into an area of poor ambient air quality assessed. A development would be considered as having a potentially significant effect (requiring further assessment) where it introduced receptors into an area where ambient AQOs could be exceeded when the proposed development becomes operational.

## 3.3 Construction Phase Dust Assessment

Potential air emissions from demolition and construction activities, particularly in the form of dust, have the potential to cause a loss of amenity (due to dust soiling). The finer fraction of dust, in the form of $PM_{10}$ and particulates of finer fractions, have the potential to affect human health. Given the variability of construction sites and the range of activities undertaken, making an accurate assessment of the dust and air pollutants generated is rarely feasible or practicable. Instead, a qualitative assessment has been undertaken to examine potential areas of concern and identify the best practicable means for eliminating, minimising and mitigating potential emissions.

While emissions from non-road mobile machinery (NRMM, i.e. plant) are expected to contribute to emissions of pollutants such as NOx and PM, their emissions are not typically assessed on the basis that any NRMM used within London should comply with the emissions standards specified in the MOL SPG and be registered with the Greater London Authority.

The IAQM 2014 guidance and the MOL SPG have been respectively used to undertake the risk assessment and recommend mitigation measures proportionate to the degree of risk ascertained. The method recommended by this guidance is outlined in **Section 5**.

## 3.4 Assessment of Vehicle Movements (Construction and Operational phases)

Road traffic is a primary source of emissions to air. The combustion of fuel in vehicles leads to several harmful by-products which can affect air quality in the vicinity of roads. Areas with high traffic volumes or near to major roads often experience elevated pollutant levels, particularly in the form of $NO_2$ and fine particles ($PM_{10}$ and $PM_{2.5}$). Fixed sources, such as boilers or large plant, can also contribute to local air pollution.

A screening assessment has been undertaken, following the methodology detailed in EPUK-IAQM guidance and the CPGAQ to determine whether significant air quality effects associated with the introduction of vehicles or plant attributable to the development could be screened out.

As the development constitutes a 'minor' development which may introduce receptors into an area of poor air quality, but which is not expected to affect air quality, a 'basic' air quality assessment has been prepared to accord with the CPGAQ.

The EPUK-IAQM guidance identifies two sets of screening criteria. The 'Stage 1' screening criteria indicate that further screening should be undertaken where the Proposed Development:

- Comprises 10 or more residential units or the site area is greater than 0.5ha; or comprises more than 1,000$m^2$ of floor space for all other uses or a site area greater than 1ha; and

- The development has more than 10 parking spaces or will have a centralised energy facility or other centralised combustion process.

The development will be comprised of 5 residential units (apartments) but its non-residential floor area exceeds 1,000m$^2$. However, it will not have a centralised energy facility and is car free, generating 20 two-way vehicle movements per day. According to the mechanical engineers for the Proposed Development, all proposed plant for space heating and hot water will be electrically powered and therefore on-site sources of combustion do not require assessment. There may be a generator back up for sprinklers, but it is understood this will be avoided if possible. Therefore, further assessment has not been undertaken.

Nonetheless, the development has been screened in accordance with the 'Stage 2' screening criteria from the EPUK-IAQM guidance in Section 5 of this report. If none of the criteria are triggered, there is no requirement to carry out a further air quality assessment for the impact of the development on the local area, and the impacts can be considered to have a not significant effect. Reference will also be made to the air quality assessment criteria within the CPGAQ, where applicable.

## 3.5 Air Quality Neutral Assessment

An air quality neutral assessment has been undertaken in accordance with the MOL AQN guidance, the results of which can be found in the Operational Phase results section.

# 4 Baseline Conditions

## 4.1 Site Environment and proximity to AQMAs

The Site is located within the grounds of the existing Hampstead Police Station, in an 'urban' location adjacent to Rosslyn Hill (A502) and Downshire Hill. It is located within the borough-wide AQMA declared by LBC due to known or anticipated breaches of the annual mean $NO_2$ and 24-hour $PM_{10}$ AQOs in 2002.

## 4.2 LBC air quality monitoring

During 2022, the latest year for which air quality monitoring data are available, LBC monitored to determine compliance with the annual mean $NO_2$ air quality objective at three locations along Rosslyn Hill to the southeast of the Site. The annual mean $NO_2$ AQO was not breached at any of the monitoring locations, as is shown in Table 4.1 below.

**Table 4.1: Annual mean $NO_2$, concentrations monitored along Rosslyn Hill**

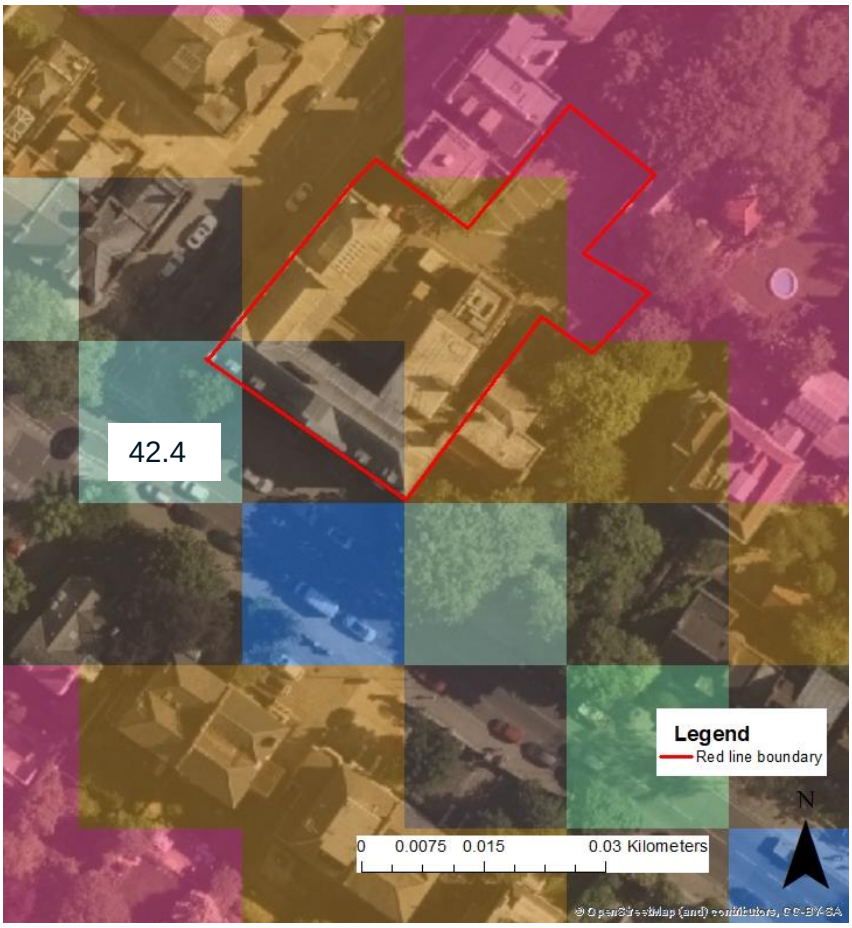
| Site ID | Site Description | Annual mean $NO_2$ pollutant concentration ($\mu g/m^3$) | | | | |
|---|---|---|---|---|---|---|
| | | 2018 | 2019 | 2020 | 2021 | 2022 |
| CAM138 | Haverstock Hill 1 - Haverstock Hill northbound | - | - | 30.83 | 30.93 | 32.1 |
| CAM141 | Haverstock Hill 4 - Haverstock Hill (between Upper Park Road and Downside Crescent) | - | - | 26.53 | 26.32 | 26.32 |
| CAM139 | Haverstock Hill 2 - Haverstock Hill southbound | - | - | 32.23 | 37.29 | 34.53 |

## 4.3 London Atmospheric Emissions Inventory

The LAEI pollution maps[16] provide modelled estimates of 2019 baseline annual mean $NO_2$ concentrations in $20m^2$ grids. Concentrations where annual mean $NO_2$ concentrations breached the AQO also ranged from $30.8\mu g/m^3$ in the north-eastern Site corner, to $42.4/m^3$ at the southwestern corner. Figure 4.1 presents the modelled annual mean $NO_2$ concentrations across the Site from the LAEI.

**Figure 4.1: Modelled annual mean $NO_2$ concentrations ($\mu g/m^3$, from 2019 LAEI) at the Site (superimposed with concentrations in grid square where $NO_2$ >38 $\mu g/m^3$)**

[16] London Atmospheric Emissions Inventory, 2021. Annual Pollution Maps. Kings College London on behalf of Greater London Authority.




Whilst this exceeds the annual mean $NO_2$ AQO in the top left-hand corner of the Site, it is noted that the annual mean $NO_2$ concentrations presented in the 2025 modelled scenario (using the 2019 LAEI as a base year) was 26.1µg/$m^3$ in the southwestern corner of the Site, with concentrations lower across the remainder of the Site.

## 4.4 Pollutant Background Concentrations

Background concentrations of $NO_2$, $PM_{10}$ and $PM_{2.5}$ were obtained from maps downloaded from the UK-AIR website[17] maintained by Defra. The maps present annual mean pollutant concentrations on a $1km^2$ basis for the years 2018 (the base mapping year) to 2030. The concentrations for the 1km x 1km grid square centred on OS coordinates 526500, 185500, corresponding to the location of the Proposed Development, for 2019, 2021 and 2022 are shown in Table 4.2. The data show that annual mean pollutant concentrations were not expected to exceed the annual mean $NO_2$, $PM_{10}$ or $PM_{2.5}$ AQOs in any of the presented years. As concentrations reduce with time, concentrations would also be expected to meet the AQOs within future years.

**Table 4.2: Background pollutant concentrations at the Proposed Development from the UK-AIR website**

| Pollutant | 2019 (µg/m$^3$) | 2021 (µg/m$^3$) | 2022 (µg/m$^3$) | Objective |
|---|---|---|---|---|
| $NO_2$ | 26.3 | 24.0 | 23.3 | 40.0 |
| $PM_{10}$ | 17.9 | 17.2 | 17.0 | 40.0 |
| $PM_{2.5}$ | 11.7 | 11.2 | 11.1 | 25.0 |

## 4.5 Current Baseline

Based on the monitored and estimated background data presented above, it is considered that the Proposed Development site is located in an area where the annual mean $NO_2$, $PM_{10}$ and $PM_{2.5}$ AQOs are unlikely to be exceeded.

TG22 indicates that the annual mean $NO_2$ AQO needs to breach 60µg/m$^3$ before the hourly mean AQO is breached. Annual mean $PM_{10}$ concentrations also need to exceed 32µg/m$^3$ before the number of days on which the 24-hour mean $PM_{10}$ AQO is exceeded would be breached. The baseline data therefore indicates that these AQOs would not be exceeded.

For these reasons, air quality is not expected to breach the AQOs at the Site.

[17] Department for Environment, Food and Rural Affairs, 2020. UK Air Information Resource. [online] Available at: http://uk-air.defra.gov.uk

# 5 Construction Phase Assessment

## 5.1 Construction Dust

The dust emission magnitudes for each of the four construction related activities (demolition, earthworks, construction and trackout) are informed by the types of construction related activities expected to take place at the Proposed Development site. These comprise:

- Demolition: It is understood that the Proposed Development will involve the redevelopment of the existing building and as such will not involve external demolition works. Hence, this has not been assessed further;
- Earthworks: Some earthworks will be required to accommodate the extension of the existing building and may be required for stockpiling and landscaping across the Site;
- Construction: External construction work will comprise the extension of the existing building; and,
- Trackout: According to the IAQM 2014 guidance, trackout is defined as *'The transport of dust and dirt from the construction/ demolition site when HDVs leave the site (having travelled over muddy ground) onto the public road network, where it may be deposited and then re-suspended by vehicles using the network.'*

Potential dust emission magnitudes from each of the construction related activities has been assessed using the IAQM 2014 guidance criteria and are detailed in Table 5.1.

**Table 5.1: Dust Emission Magnitudes**

| Type of work | Description of site characteristics with reference to IAQM 2014 guidance | Dust emissions magnitude |
|---|---|---|
| Earthworks | As the Proposed Development involves the redevelopment of the existing site, the total material moved is expected to be <20,000m$^3$<br>Site area where earthworks will take place <2,500m$^2$<br>Anticipated <5 heavy earth moving vehicles will be active at any one time<br>Stockpiles anticipated to be <4m in height<br>Earthworks may be expected at all times of the year | Small |
| Construction | As the Proposed Development involves the redevelopment of the existing site, the total volume of construction is expected to be <25,000m$^3$<br>The building is therefore expected to have a low potential for dust release | Small |

| Type of work | Description of site characteristics with reference to IAQM 2014 guidance | Dust emissions magnitude |
|---|---|---|
| Trackout | HGVs will travel over <50m of unpaved ground on site, with construction traffic anticipated to enter and leave the site via the local road network<br><br><10 HDV outward movements from site expected on any one day | Small |

## Step 2B: Define sensitivity of the area

Using the IAQM 2014 guidance process outlined in Appendix A**, the sensitivity** of the surrounding area was determined. This is shown in Table 5.2.

**Table 5.2: Sensitivity of the surrounding area**

| Type of work | Earthworks | Construction | Trackout |
|---|---|---|---|
| Dust soiling | **High:** 10-100 high sensitivity receptors within 20m of site boundary | **High:** 1-10 high sensitivity receptors within 20m of site boundary | **High:** 10-100 high sensitivity receptors within 50m of routes along which trackout could occur |
| Human health impacts | **Low:** 1-10 high sensitivity receptors within 20m of the site boundary and annual mean $PM_{10}$ concentrations are likely to be below 24µg/m$^3$ the vicinity of the Application Site. | **Low:** 1-10 high sensitivity receptors within 20m of the site boundary and annual mean $PM_{10}$ concentrations are likely to be below 24µg/m$^3$ the vicinity of the Application Site. | **Low:** Less than 100 high sensitivity receptors within 50m of the roads used by construction traffic $PM_{10}$ concentrations are likely to be below 24µg/m$^3$ the vicinity of the Application Site. |
| Ecological | **Negligible:** According to the MAGIC Maps website, there are no SACs, SPAs, Ramsar sites, SSSIs, National Nature Reserves or Ancient Woodlands within 50m of the Proposed Development site or routes along which trackout could arise. It is therefore assumed that there are no species sensitive to the impacts of dust deposition within the vicinity of the Proposed Development site. | | |

## Step 2C: Define the risk of dust impacts

Using the IAQM 2014 guidance process outlined in **Appendix A**, the risk of dust impacts derived from the different on-site activities is shown in Table 5.3.

**Table 5.3: Summary of the dust risk from site activities**

| Potential Impact | Dust Risk Summary | | | |
|---|---|---|---|---|
| | Demolition | Earthworks | Construction | Trackout |
| Dust Soiling | N/A | Low risk | Low risk | Low risk |
| Health Effects | N/A | Negligible risk | Negligible risk | Negligible risk |
| Ecological | N/A | Negligible Risk – none expected | | |

The overall dust risk from the Proposed Development site is predicted to be a maximum of low, in connection with dust soiling risks attributable to all four activities. Therefore, in the absence of mitigation, effects on air quality are assessed as significant. Mitigation measures will help to negate some of the potential negative air quality impacts resulting from fugitive dust attributable to construction related activities and will avoid significant dust effects. This is further discussed in the mitigation section.

## 5.2 Construction road traffic emissions

### Screening assessment

Construction traffic will comprise haulage/construction vehicles and vehicles used for workers' trips to and from the site.

The EPUK-IAQM guidance indicates that an air quality assessment is required when one or more of a series of screening criteria are not met. The two (secondary screening) criteria considered most relevant to construction related vehicle movements are:

- A change in light duty vehicle (LDV) movements of 100 or more (within or adjacent to an AQMA); or
- A change in heavy duty vehicle (HDV) movements of 25 or more (within or adjacent an AQMA).

The operation of vehicles and equipment powered by internal combustion engines results in the emission of NOx, $PM_{10}$ and $PM_{2.5}$. At the time of writing, information regarding the number of additional vehicle movements which may be expected as a result of construction phase activities has not been made available. However, due to the relatively short period during which construction activities will take place, site size and scale of the project, it is not envisaged that construction related traffic would result in an exceedance of the above EPUK-IAQM guidance screening criteria and thus a materially deleterious effect on air quality.

# 6 Operational Phase Assessment

## 6.1 Impacts of the Development

Table 6.1 below outlines the secondary screening criteria from the EPUK-IAQM guidance and identifies whether any would be exceeded in relation to the Proposed Development.

**Table 6.1: Comparison of the proposed development to screening criteria replicated from the EPUK-IAQM guidance**

| Criterion from EPUK-IAQM guidance | Is criterion exceeded (Y/N), including explanation |
|---|---|
| A change in road alignment of five metres or more, within an AQMA. | **No:** The site is not expected to result in realignments to the existing road network. |
| Introduce a new junction or remove an existing junction near to relevant receptors which cause traffic to significantly accelerate or decelerate, such as traffic lights or roundabouts. | **No:** The Proposed Development would not introduce a roundabout or signalised junction. |
| Have an underground car park with extraction system, where the ventilation extract is within 20m of a relevant receptor and the total daily vehicle movements in and out is >100. | **No:** No underground car parking is proposed. |
| Light-duty-vehicle (LDV) annual average daily traffic (AADT) flows changing by 100 AADT or more, within or adjacent to an AQMA, or 500 AADT or more elsewhere. | **No:** The development is expected to be car-free and residents will not be able to request an on-street parking permit. The Site is expected to result in a net reduction of vehicle movements, falling to 20 AADT. |
| Heavy-duty-vehicle (HDV) flows or bus flows (at a bus station) changing by 25 AADT or more, within or adjacent to an AQMA, or 100 AADT elsewhere. | **No:** The development is not expected to generate a perceptible number of HDV vehicle movements and is not introducing a bus station. |
| Inclusion of one or more substantial combustion processes, where there is a risk of impacts at relevant receptors. | **No:** No centralised energy/heating provision is expected within the Proposed Development. |

### Air quality neutral assessment

In accordance with the MOL AQN guidance, an air quality neutral assessment of the building and transport emissions was undertaken.

The Proposed Development is car-free. The commercial aspect of the development will make use of either Mechanical Ventilation with Heat Recovery (MVHR) or natural vents with a variable refrigerant flow (VRF) system. For the residential apartments, heat pumps will be used for cooling, heating and hot water, along with MVHR for domestic

ventilation/extract. As any generator will only be used during emergencies to operate any sprinkler system, these are not required to be considered within the assessment according to the MOL AQN guidance. As such, the development can be classified as air quality neutral.

### Significance of effects

As shown in Table 6.1, none of the EPUK-IAQM screening criteria are to be exceeded at the Proposed Development site. The Proposed Development is also not expected to create a street canyon which would serve to increase pollutant concentrations on the adjacent Rosslyn Hill or Downshire Hill. This highlights that the development is not expected to have a significant effect on air quality at existing receptor locations. As such, no mitigation is requited to mitigate air quality effects.

## 6.2 Impacts on future receptors introduced by the Proposed Development

As explained in Section 4, the Site is not expected to introduce future Site users into an area of poor ambient air quality.

# 7 Mitigation

## 7.1 Mitigation of Construction Dust

Under best practice guidance, the Proposed Development will constitute a maximum of low risk for construction dust. The use of appropriate mitigation measures throughout the construction period will ensure that impacts to sensitive receptors are minimised.

The following is a set of best-practice measures from the MOL SPG that should be incorporated into the specification for the works. These measures should ideally be written into a Dust Management Plan (DMP), Construction Environmental Management Plan (CEMP) or similar, which can be done at the post-consent stage. Some of the measures may only be necessary during specific phases of work, or during activities with a high potential to produce dust, and the list should be refined and expanded upon in liaison with the construction contractor when producing the DMP. The measures in italics are classified as desirable in the MOL SPG guidance, the others being highly recommended.

### Site Management

- Develop and implement a stakeholder communications plan that includes community engagement before and during work on the Proposed Development site
- Display the name and contact details of person(s) accountable for air quality and dust issues on the Proposed Development site boundary
- Display the head or regional office contact information
- Record and respond to all dust and air quality pollutant emissions complaints
- Make the complaints log available to the local authority when asked
- Carry out regular inspections at the Proposed Development site to monitor compliance with air quality and dust control procedures, record inspection results, and make an inspection log available to the local authority when asked
- Increase the frequency of inspections at the Proposed Development site by those accountable for dust and air quality pollutant emissions issues when activities with a high potential to produce dust and emissions and dust are being carried out, and during prolonged dry or windy conditions
- Record any exceptional incidents that cause dust and/or air emissions, either on- or off- site, and the action taken to resolve the situation in the logbook

### Preparing and Maintaining the Proposed Development Site

- Plan the Proposed Development site layout so that machinery and dust-causing activities are located away from receptors, as far as possible

- Erect solid screens or barriers around dusty activities or the Proposed Development site boundary that are at least as high as any stockpiles on site
- Fully enclose the Proposed Development site or specific operations where there is a high potential for dust production and the site is active for an extensive period
- *Install green walls, screens or other green infrastructure to minimise the impact of dust and pollution*
- Avoid runoff of water or mud from the Proposed Development site
- Keep fencing, barriers and scaffolding clean using wet methods at the Proposed Development site
- 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
- Cover, seed, or fence stockpiles to prevent wind whipping [unless alternative practices are undertaken as described in the 'Measures Specific to Earthworks' below]
- Agree monitoring locations with the local authority: put in place real-time dust and air quality pollutant monitors across the site and ensure they are checked regularly

## Operating vehicles/ machinery and sustainable travel

- Ensure all on-road vehicles comply with the requirements of the London Low Emission Zone
- Ensure all NRMM comply with the standards set within the MOL SPG (as discussed below)
- 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 possible
- *Impose and signpost a maximum-speed-limit of 10mph on surfaced haul routes and work areas*

## 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 for effective dust/particulate matter suppression/ mitigation, using non-potable water where possible and appropriate
- Use enclosed chutes, 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

- Ensure equipment is readily available at the Proposed Development 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
- Reduce and recycle wate to reduce dust from waste materials

## Measures Specific to Earthworks

- Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable [not required if other measures used to secure stockpiles]
- Use hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable [not required if other measures used to secure stockpiles]
- Only remove the cover from small areas during work, not all at once

## Measures Specific to Construction

- 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

## Measures Specific to Trackout

- 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 areas
- Ensure vehicles entering and leaving the site are covered to prevent escape materials during transport
- Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable)
- *Apply dust suppressants to locations where a large volume of vehicles enter and exit the construction site*

With the proposed construction activities mitigation measures as described in place, the likely residual impact of works undertaken during the construction phase on local air quality can be considered as 'not significant'.

## 7.2 Mitigating emissions attributable to construction vehicle movements and plant

It is recommended that plant used on-site comply with the NOx, PM and carbon monoxide emissions standards specified in the EU Directive 97/68/EC and subsequent amendments as a minimum (as required to comply with the MOL SPG), where they have net power of between 37kW and 560kW. The emissions standards vary depending on the net power the engine produces. The following actions can be taken to enable compliance:

- Reorganising the fleet;
- Replacing equipment if required;
- Installing retrofit abatement technology (such as by diesel particulate filters in existing NRMM); and,
- Re-engining.

The plant should be registered at www.nrmm.london, which also details the applicable emissions standards.

While the impacts of emissions from construction related traffic on air quality are unlikely to be significant, the client could consider implementing a Construction Logistics Plan to manage the sustainable delivery of goods and materials, implementing a Travel Plan which supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing) and/or providing or signposting nearby electric vehicle charge points for construction workers. Information on nearby car clubs, public transport routes and electric vehicle charge points could be signposted using a billboard and measures implemented during toolbox talks signposted while construction related activities are undertaken.

Following the implementation of the above mitigation measures, the magnitude of effects associated with construction related vehicle movements on air quality will be reduced/ will be insignificant.

## 7.3 Mitigating emissions attributable to operational phase vehicle movements and plant

This assessment has shown that the Proposed Development is unlikely to impact local air quality once operational. The development has also been assessed as air quality neutral.

As such, no mitigation is required for the operational phase of the Proposed Development.

A travel plan has been submitted to accompany the planning application for the Site. It includes cycle parking amongst other measures to encourage active travel.

Where an emergency generator is ultimately proposed, it is recommended that it is designed to minimise the effects on air quality by:

- Where possible, prioritise the use of generators not powered by fossil fuels or run using fossil fuels with a lesser effect on air quality over diesel generators;

Where the generator must be fuelled by an on-site source of combustion, ensuring servicing and testing resulting in emissions to air is not undertaken during 15 hours per annum or greater, thereby allowing for three hours per annum for the generator to operate during power outages before there is a risk of the hourly mean $NO_2$ AQO being breached at Site. Three hours is substantially greater than the average length of time per annum over which power outages have been reported by the National Grid. It should discharge vertically via a flue and should meet the emissions limit value of 400mgNOx/$Nm^3$ cited in the EPUK-IAQM guidance. Exhaust flues should not be located in the vicinity of any inlets to the mechanical ventilation system or facades of buildings used by members of the public.

Following the implementation mitigation measures to control emissions from the generator, the impacts of the Proposed Development on local air quality are expected to remain insignificant. The other measures recommended will ensure the insignificant effects identified in Section 6 remain insignificant.

# 8 Conclusions

This air quality assessment has determined the following:

- The dust risk assessment has identified that construction activities pose a maximum of a low dust risk. With the implementation of the mitigation measures detailed in the relevant section of this report, the activities are not anticipated to result in significant effects on local receptors.
- The assessment of air quality in relation to roads during the construction stage has determined that there will be a negligible impact on air quality as a result of construction traffic and therefore its effect will not be significant.
- The assessment of air quality in relation to roads during the operational stage has determined that there will be a negligible impact on air quality at nearby existing sensitive receptors and therefore its effect will not be significant.
- The assessment in relation to the road traffic and combustion plant has determined that future receptors within the Proposed Development are not exposed to be exposed to concentrations of $NO_2$, $PM_{10}$ or $PM_{2.5}$ in excess of the AQOs.
- The development has been assessed as air quality neutral.

# Appendix A Construction Phase Assessment

## Construction Phase Dust Assessment Methodology

The qualitative construction dust and $PM_{10}$ risk assessment method outlined in the IAQM 2014 guidance is summarised below.

### *Step 1: Identify the need for a detailed assessment*

An assessment would normally be required where there is:

- A human receptor within 350 metres of the proposed scheme; and/or within 50 metres of the access route(s) used by the construction vehicles on the public highway up to 500 metres from the study area site entrance(s); and/or
- An ecological receptor within 50 metres of the proposed scheme and/or within 50 metres of the access route(s) used by construction vehicles on the public highway up to 500 metres from the entrance(s).

A human receptor refers to any location where a person or property may experience the adverse effects of airborne dust or dust-soiling, or exposure to $PM_{10}$ over a period relevant to the ambient AQOs.

An ecological receptor refers to any sensitive habitat affected by dust soiling. For locations with a statutory designation, such as a National Nature Reserve, Ramsar site, Site of Special Scientific Interest (SSSI), Special Area of Conservation (SAC) or Special Protection Areas (SPA), consideration should be given as to whether the particular site is sensitive to dust. Some non-statutory sites may also be considered if appropriate, such as a Site of Importance for Nature Conservation.

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 would be 'not significant'.

### *Step 2: Assess the risk of dust impacts*

A site is allocated 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 allocation of mitigation measures. Risks are described as low, medium or high for each of the four separate activities (demolition, construction, earthworks and trackout). Site-specific mitigation is required, proportionate to the level of risk.

### *Step 2A: Define the potential dust emission magnitude*

The potential dust emission magnitude is based on the scale of the anticipated works and should be classified as small, medium or large. Table B-1 presents the dust emission criteria outlined for each construction activity.

**Table B.1: Potential dust emission magnitude criteria**

| Construction activity | Large | Medium | Small |
|---|---|---|---|
| Demolition | Total building volume >50,000 $m^3$, potentially dusty construction material (e.g. concrete), on-site crushing and screening, demolition activities >20 m above ground level. | Total building volume 20,000 $m^3$ – 50,000 $m^3$, potentially dusty construction material, demolition activities 10-20 m above ground level. | Total building volume <20,000 $m^3$, construction material with low potential for dust release (e.g. metal cladding or timber), demolition activities <10 m above ground, demolition during wetter months. |
| Earthworks | Total site area >10,000 $m^2$, 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 >8 m in height, total material moved >100,000 tonnes. | Total site area 2,500 $m^2$ – 10,000 $m^2$, moderately dusty soil type (e.g. silt), 5-10 heavy earth moving vehicles active at any one time, formation of bunds 4 m – 8 m in height, total material moved 20,000 tonnes – 100,000 tonnes. | Total site area <2,500 $m^2$,<br>soil type with large grain size (e.g. sand),<br><5 heavy earth moving vehicles active at any one time, formation of bunds <4 m in height, total material moved <20,000 tonnes, earthworks during wetter months. |
| Construction | Total building volume >100,000 $m^3$, on site concrete batching, sandblasting. | Total building volume 25,000 $m^3$ – 100,000 $m^3$, potentially dusty construction material (e.g. concrete), on site concrete batching. | Total building volume <25,000 $m^3$, construction material with low potential for dust release (e.g. metal cladding or timber). |
| Trackout | >50 HDV (>3.5 t) outward movements[a] in any one day[b], potentially dusty surface material (e.g. high clay content), unpaved road length >100 m. | 10-50 HDV (>3.5 t) outward movements[a] in any one day[b], moderately dusty surface material (e.g. high clay content), unpaved road length 50 m – 100 m. | <10 HDV (>3.5 t) outward movements[a] in any one day[b], surface material with low potential for dust release, unpaved road length <50 m. |

a. A vehicle movement is a one way journey. i.e. from A to B and excludes the return journey.
b. HDV movements during a construction project vary over its lifetime, and the number of movements is the maximum not the average.

## *Step 2B Define the sensitivity of the area*

The sensitivity of the area is described as low, medium or high. It takes into account a number of factors:

- The specific sensitivities of receptors in the area;
- The proximity and number of those receptors;
- The local background $PM_{10}$ concentrations; and
- Site-specific factors, such as whether there are natural shelters, such as trees, to reduce the risk of wind-blown dust.

Table B-2 presents indicative examples of classification groups for the varying sensitivities of people to dust soiling effects and to the health effects of $PM_{10}$; and the sensitivities of receptors to ecological effects. A judgement is made at the site-specific level where sensitivities may be higher or lower, for example a soft fruit business may be more sensitive to soiling than an alternative industry in the same location. Box 6, Box 7 and Box 8 within the IAQM 2014 guidance outlines more detailed information on defining sensitivity.

**Table B.2: Indicative examples of the sensitivity of different types of receptors**

| Sensitivity of receptor | Sensitivities of people and ecological receptors | | |
|---|---|---|---|
| | Dust soiling effects [a] | Health effects of $PM_{10}$ [b] | Ecological effects [c] |
| 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. | Locations with an international or national designation and the designated features may be affected by dust soiling (e.g. SAC/SPA/Ramsar).<br>Locations where there is a community of a species particularly sensitive to dust such as vascular species included in the Red Data list for Great Britain. |
| Medium | Parks, places of work. | Office and shop workers not occupationally exposed to $PM_{10}$. | Locations where there is a particularly important plant species, where dust sensitivity is uncertain or unknown.<br>Locations with a national designation where the features may be affected by dust deposition (e.g. SSSIs). |
| Low | Playing fields, farmland, footpaths, short-term car parks and roads. | Public footpaths, playing fields, parks and shopping streets. | Locations with a local designation where the features may be affected by dust deposition (e.g. Local Nature Reserves). |

a. People's expectations would vary depending on the existing dust deposition in the area.
b. This follows the Department for Environment, Food and Rural Affairs (Defra, 2016) guidance as set out in Local Air Quality Management Technical Guidance (LAQM.TG (16)). Notwithstanding the fact that the ambient AQOs and limit values do not apply to people in the workplace, such people can be affected to exposure of $PM_{10}$. However, they are considered to be less sensitive than the general public as a whole

because those most sensitive to the effects of air pollution, such as young children are not normally workers. For this reason workers have been included in the medium sensitivity category.

c. Only if there are habitats that might be sensitive to dust. A Habitat Regulation Assessment of the site may be required as part of the planning process if the site lies close to an internationally designated site i.e. SACs, SPAs and Ramsar sites.

The IAQM 2014 guidance and MOL SPG advise consideration of the risk associated with the nearest receptors to construction activities.

The sensitivity and distance of receptors from the source of dust (i.e. demolition activities, earthworks, etc.) are then used to determine the potential dust risk for each dust effect for each construction activity as shown in Table B-3, Table B-4 and Table B-5. It is noted that distances are to the dust source and so a different area may be affected by trackout than by on-site works.

For trackout, the distances should be measured from the side of the roads used by construction HDVs. Without site specific mitigation, trackout may occur from roads up to 500 metres from large sites, 200 metres from medium sites and 50 metres from small sites, as measured from the site exit. The impact declines with distance from the site. It is only necessary to consider trackout impacts up to 50 metres from the edge of the road.

**Table B.3: Sensitivity of the area to dust soiling effects on people and property [a]**

| Receptor area sensitivity | Number of Receptors [b] | Distance from the Source (m) | | | |
|---|---|---|---|---|---|
| | | <20 | <50 | <100 | <350 |
| High | >100 | High | High | Medium | Low |
| | 10-100 | High | Medium | Low | Low |
| | 1-10 | Medium | Low | Low | Low |
| Medium | >1 | Medium | Low | Low | Low |
| Low | >1 | Low | Low | Low | Low |

a. Estimate the total number of receptors within the stated distance. Only the highest level of area sensitivity from the table needs to be considered. For example, if there are 7 high sensitivity receptors <20 metres of the source and 95 high sensitivity receptors between 20 and 50 m, then the total of number of receptors <50 metres is 102. The sensitivity of the area in this case would be high.

b. Exact counting of number of human receptors not required. It is instead recommended that judgement is used to determine the approximate number of receptors within each distance band. For example, a residential unit is one receptor. For receptors which are not dwellings, professional judgement should be used to determine the number of human receptors. For example a school or hospital is likely to be within the >100 receptor category.

**Table B. 4: Sensitivity of the area to human health impacts [a b c]**

| Receptor sensitivity | Annual Mean $PM_{10}$ Concentrations | Number of Receptors | Distance from the Source (m) | | | | |
|---|---|---|---|---|---|---|---|
| | | | <20 | <50 | <100 | <200 | <350 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| High | >32 µg/m$^3$ | >100 | High | High | High | Medium | Low |
| | | 10-100 | High | High | Medium | Low | Low |
| | | 1-10 | High | Medium | Low | Low | Low |
| | 28-32 µg/m$^3$ | >100 | High | High | Medium | Low | Low |
| | | 10-100 | High | Medium | Low | Low | Low |
| | | 1-10 | High | Medium | Low | Low | Low |
| | 24-28 µg/m$^3$ | >100 | High | Medium | Low | Low | Low |
| | | 10-100 | High | Medium | Low | Low | Low |
| | | 1-10 | Medium | Low | Low | Low | Low |
| | <24 µg/m$^3$ | >100 | Medium | Low | Low | Low | Low |
| | | 10-100 | Low | Low | Low | Low | Low |
| | | 1-10 | Low | Low | Low | Low | Low |
| Medium | >32 µg/m$^3$ | >10 | High | Medium | Low | Low | Low |
| | | 1-10 | Medium | Low | Low | Low | Low |
| | 28-32 µg/m$^3$ | >10 | Medium | Low | Low | Low | Low |
| | | 1-10 | Low | Low | Low | Low | Low |
| | 24-28 µg/m$^3$ | >10 | Low | Low | Low | Low | Low |
| | | 1-10 | Low | Low | Low | Low | Low |
| | <24 µg/m$^3$ | >10 | Low | Low | Low | Low | Low |
| | | 1-10 | Low | Low | Low | Low | Low |
| Low | - | ≥1 | Low | Low | Low | Low | Low |

a. Estimate the total within the stated distance (e.g. the total within 350 metres and not the number between 200 and 350 m), noting that only the highest level of area sensitivity from the table needs to be considered. For example, if there are 7 high sensitivity receptors <20 metres of the source and 95 high sensitivity receptors between 20 and 50 m, then the total of number of receptors <50 metres is 102. If the annual mean $PM_{10}$ concentration is 29 µg/m$^3$, the sensitivity of the area would be high.

b. Annual mean $PM_{10}$ concentrations are most straightforwardly taken from the national background maps but should also take account of local sources. The values are based on 32 µg/m$^3$ being the annual mean concentration at which an exceedance of the 24-hour objective is likely in England, Wales and Northern Ireland.

c. 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, simply include the number of properties.

## Table B. 5: Sensitivity of the area to ecological impacts

| Receptor Sensitivity | Distance from the Source (m)[a] | |
|---|---|---|
| | <20 | <50 |
| High | High | Medium |
| Medium | Medium | Low |

| | | |
|---|---|---|
| Low | Low | Low |

a. Only the highest level of area sensitivity from the table needs to be considered.

## *Step 2C Define the risk of impacts*

The dust emission magnitude is then combined with the sensitivity of the area to determine the overall risk of impacts with no mitigation measures applied. The matrices in Table B-6 provide a method of assigning the level of risk for each activity. These can then be used to determine the level of mitigation that is required.

**Table B.6: Risks of dust impacts**

| Receptor Sensitivity | Dust Emission Magnitude | | |
|---|---|---|---|
| | Large | Medium | Small |
| Demolition | | | |
| High | High Risk | Medium Risk | Medium Risk |
| Medium | High Risk | Medium Risk | Low Risk |
| Low | Medium Risk | Low Risk | Negligible |
| Earthworks | | | |
| High | High risk | Medium risk | Low risk |
| Medium | Medium risk | Medium risk | Low risk |
| Low | Low risk | Low risk | Negligible |
| Construction | | | |
| High | High risk | Medium risk | Low risk |
| Medium | Medium risk | Medium risk | Low risk |
| Low | Low risk | Low risk | Negligible |
| Trackout | | | |
| High | High risk | Medium risk | Low risk |
| Medium | Medium risk | Low risk | Negligible |
| Low | Low risk | Low risk | Negligible |

## *Step 3 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. The highest risk category of a site (of all activities being undertaken) is recommended when considering appropriate mitigation measures for the site. Where risk is assigned as 'negligible', no mitigation measures beyond those required by legislation are required. However, additional mitigation measures may be applied as good practice.

A selection of these measures is specified as suitable to mitigate dust emissions from activities, based on professional judgement.

### *Step 4 Determine significant effects*

Following Step 2 (definition of the proposed scheme and the surroundings and identification of the risk of dust effects occurring for each activity), and Step 3 (identification of appropriate site-specific mitigation), the significance of the potential dust effects can be determined. The recommended mitigation measures should normally be sufficient to reduce construction dust impacts to a not significant effect.

The approach in Step 4 of the IAQM dust assessment guidance has been adopted to determine the significance of effects with regard to dust emissions. The guidance states the following:

'*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'*.'

IAQM guidance also states that:

'*Even with a rigorous DMP* [Dust Management Plan] *in place, it is not possible to guarantee that the dust mitigation measures will be effective all the time, and if, for example, dust emissions occur under adverse weather conditions, or there is an interruption to the water supply used for dust suppression, the local community may experience occasional, short-term dust annoyance. The likely scale of this would not normally be considered sufficient to change the conclusion that with mitigation the effects will be 'not significant'*.'

Step 4 of IAQM guidance recognises that the key to the above approach is that it assumes that the regulators ensure that the proposed mitigation measures are implemented. The management plan would include the necessary systems and procedures to facilitate on-going checking by the regulators to ensure that mitigation is being delivered, and that it is effective in reducing any residual effect to 'not significant' in line with the guidance.

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