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LOW EMISSIONS STRATEGY

9.337 – 369 – 377 KENTISH TOWN ROAD

06/04/2020 *by SD, reviewed by KM*

INTRODUCTION

The purpose of this technical note is to discharge condition 32 for 369 – 377 Kentish Town Road, in the London Borough of Camden which states:

No development shall take place until an updated Air Quality Risk Assessment in relation to construction has been submitted and approved by the Local Planning Authority in writing. The risk assessment shall be in accordance with the IAQM guidance and the Mayor's Sustainable Design and Construction SPG. The risk assessment shall include reference to the IAQM criteria and justification for the selections made.

A revised construction phase assessment has been undertaken in accordance with the Environmental Protection UK (EPUK) and Institute of Air Quality Management (IAQM) planning guidance[1] and IAQM construction dust guidance[2]. The IAQM construction dust guidance is closely aligned with the Mayor of London's SPG for the control of dust and emissions during construction and demolition[3].

CONSTRUCTION TRAFFIC

The Environmental Protection UK (EPUK)/ IAQM planning guidance, states that for developments within or near an AQMA, a detailed assessment of traffic-related impacts is required where:

- There is a change in the annual average daily traffic (AADT) flow of light goods vehicles (LGV) of more than 100 vehicles; and/or
- There is a change in the AADT flow of heavy goods vehicles (HGV) of more than 25 vehicles; and/or
- There is a change in the road re-alignment by more than 5m; and/or
- A new junction is introduced, which will significantly alter vehicle speeds.

During the construction phase the trip generation will be restricted to a maximum of 20 HGV trips (10 arrivals and 10 departures) and a small number of LGV trips. On the basis of the above criteria, the temporary increase in traffic is unlikely to significantly affect local air quality.

[1] Land-use Planning and Development Control: Planning for Air Quality, Guidance from Environmental Protection UK and the Institute of Air Quality Management for the consideration of air quality within the land use planning and development control process, January 2017.
[2] Guidance on the assessment of dust from demolition and construction, IAQM,v1.1 June 2016
[3] The Control of Dust and Emissions during Construction and Demolition Supplementary Planning Guidance, The Mayor of London, July 2014

NON-ROAD MOBILE MACHINERY (NRMM)

Construction on site is unlikely to commence until after September 2020 and therefore in accordance with the Mayor of London's Control of Dust and Emissions during Construction and Demolition SPG, all NRMM with a net power rating between 37kW and 650kW will comply with the Stage IIIB emission standards specified in EU Directive 97/68/EC. An inventory of all NRMM will be kept on-site and the machinery will be regularly serviced. Service logs will be kept on-site for inspection by local authority officers as required. Details of the NRMM used on-site will be submitted to the NRMM Register[4].

CONSTRUCTION DUST

INTRODUCTION

The potential impact of dust generated during site enabling, earthworks and construction works at the proposed development has been undertaken in accordance with the Mayor of London's construction and demolition SPG for the control of dust and the IAQM construction dust guidance. A full description of the construction dust methodology is provided in Appendix A.

A detailed assessment of dust impacts is required where there are human or ecological receptors within:

- 50m of the site boundary; or
- 50m of the route(s) used by construction vehicles on public roads, up to 500m from the site entrance(s).

There are no dust sensitive ecological sites within 50m of the site; therefore, impacts on ecology have not been considered in the assessment.

The IAQM/ SPG methodology allows the potential risk of dust soiling and human health effects to be determined, based primarily on the sensitivity of nearby receptors (human and ecological) and the anticipated magnitude of the dust emission due to:

- Demolition;
- Earthworks;
- Construction; and
- Track-out (re-suspended dust from vehicle movements).

The assessment of dust risk is also based on professional judgement taking into account factors such as the prevailing wind direction, the proposed construction phasing, the likely duration of dust raising activities, local topography and existing air quality.

A range of best practice mitigation measures are provided within the guidance, which are dependent on the level of dust risk attributed to the site. It is recommended that these measures are incorporated into a Dust Management Plan (DMP) for the proposed development. The significance of the residual impacts following appropriate mitigation is determined by professional judgement.

SENSITIVITY OF THE AREA TO DUST IMPACTS

The assessment of dust impacts is dependent on the sensitivity, number and proximity of receptors to the site boundary, as described in Tables A1, A2 and A3 of Appendix A. The sensitivity of receptors within the area around the site to health impacts is dependent on existing particulate (PM_{10}) concentrations. A higher baseline concentration increases the risk of an exceedance of the air quality objective of 40 $\mu g/m^3$ from additional dust generated from construction activities.

4

There are no local particulate monitoring sites to establish existing concentrations at sensitive receptor locations, however based on the 2020 Defra mapped background concentration for the area (17.3 µg/m^3) and the level of congestion on Kentish Town Road / close proximity of the railway, it is considered likely that roadside annual mean PM_{10} concentrations in the area are between 24 and 28 µg/m^3.

A summary of the receptor and area sensitivity to health and dust soiling impacts due to construction activities at the proposed development is presented in Table 1**Error! Reference source not found.**. The overall sensitivity of the area to health and dust soiling impacts is 'high'.

Table 1: Sensitivity of Receptors and the Local Area to Dust Impacts

Receptor	Distance from Site Boundary	Number of Receptors	Sensitivity to Health Impacts		Sensitivity to Dust Soiling Impacts	
			Receptor	**Area**	**Receptor**	**Area**
Residential Properties	<20 m	10 - 100	High	High	High	High
	<50 m	10 - 100		Medium		Medium
	< 100 m	>100		Low		Medium
Shops	< 20m	10 - 100	Medium	Low	Medium	Medium
Primary School	220 m	>100	High	Low	High	Medium
Overall Sensitivity of the Area			**High**		**High**	

The precise behaviour of the dust, its residence time in the atmosphere and the distance it may travel before being deposited, will depend upon several factors. These include wind direction and strength, local topography and the presence of intervening structures (buildings, etc.) that may intercept dust before it reaches sensitive locations. Furthermore, dust would be naturally suppressed by rainfall.

Wind roses for London City Airport are presented in Appendix B, which show that the prevailing wind is from the southwest, therefore receptors to the northeast of the site are most likely to experience dust impacts during the construction phase.

DUST EMISSION MAGNITUDE

The magnitude of the likely dust emission from demolition, earthworks, construction and trackout, has been evaluated using the criteria in Table A5 of Appendix A and is presented in Table 2.

Table 2: Evaluation of Dust Emission Magnitude

Dust Source	IAQM Criteria	Proposed Development	Dust Emission Magnitude
Demolition	Total Building Volume (m^3)	Estimated < 1000 m^3	Small
	Potentially dusty material?	Buildings to be demolished are a mixture of steel framed/metal clad and low level brick-built structures. Material is therefore potential dusty.	Medium
	On-site crushing and screening?	Yes	Large
	Maximum height of demolition activities above ground-level (m)	4.5m	Small
	Demolition during wetter months?	Unknown, but cannot be guaranteed.	Medium
Overall Dust Emission Magnitude From Demolition			**Medium**
Justification: Whilst crushing and screening will be undertaken on site, it is our professional judgement that based on the very small scale of the demolition works, the dust emission magnitude would be medium, rather than large.			
Earthworks	Total site area (m^2)	360 m^2	Small
	Soil type?	Clay	Large
	Number of heavy earth moving vehicles active at any one time	1	Small
	Maximum bund height (m)	2m	Small
	Total material moved (tonnes)	Approx. 3,200	Small
	Earthworks during wetter months?	Unknown, but cannot be guaranteed.	Medium
Overall Dust Emission Magnitude From Earthworks			**Medium**
Justification: Whilst the soil type is potentially dusty, it is our professional judgement that based on the very small scale of the earthworks, the dust emission magnitude would be medium, rather than large.			
Construction	Total building volume (m^3)	Approx. 5,000 m^3	Small
	Potentially dusty construction material?	Concrete frame	Medium
	On-site concrete batching?	No	Small
	Sandblasting?	No	Small
Overall Dust Emission Magnitude From Construction			**Medium**
Justification: n/a			
Trackout	Number of outward HGV movements in any one day	Maximum of 10	Medium
	Dusty surface material?	Yes, clay	Large
	Unpaved road length (m)	2m	Small
Overall Dust Emission Magnitude From Trackout			**Medium**
Justification: Whilst the surface soil type is potentially dusty, it is our professional judgement that based on the very small scale of the proposed development, the dust emission magnitude from trackout would be medium, rather than large.			

ASSESSMENT OF DUST RISK PRIOR TO MITIGATION

The risk of dust impacts is determined from the sensitivity of the area and the dust emission magnitude, as shown in Tables A6, A7 and A8 of Appendix A. A summary of the potential risk of dust impacts from the proposed development, based on the high sensitivity of the area to human health and dust soiling impacts, is presented in Table 3.

The assessment shows that prior to mitigation, there is a 'medium risk' of dust impacts from the proposed development at sensitive receptor locations.

Table 3: Risk of Dust Impacts Prior to Mitigation

Dust Source	Emission Magnitude	Human Health Risk	Dust Soiling Risk	Overall Risk
Demolition	Medium	Medium	Medium	**Medium**
Earthworks	Medium	Medium	Medium	**Medium**
Construction	Medium	Medium	Medium	**Medium**
Trackout	Medium	Medium	Medium	**Medium**

PROPOSED MITIGATION MEASURES

The risk of dust soiling and human health impacts from the site has been assessed as 'medium', prior to mitigation. In accordance with the IAQM and Mayor of London guidance, it is therefore proposed that the 'highly recommended' measures detailed in Table 4 are incorporated into the DMP. The 'desirable' measures detailed in

Table 5 should also be considered for inclusion.

The significance of dust impacts on nearby receptors following the implementation of appropriate and best practice mitigation is considered to be negligible.

Table 4: Highly Recommended Mitigation Measures

Description	Mitigation Measure
Site management	- Develop and implement a stakeholder communications plan that includes community engagement before work commences on site. - Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site Manager. - Display the head or regional office contact information. - Record and respond to all dust and air quality pollutant emissions complaints. - Make the complaints log available to the local authority when asked. - Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the log book. - Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the local authority when asked. - Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions. - Record any exceptional incidents that cause dust and air quality pollutant emissions, either on or off the site, and the action taken to resolve the situation is recorded in the log book.

Preparing and maintaining the site	- Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible. - Erect solid screens or barriers around dusty activities or at the site boundary that are at least as high as any stockpiles on site. - Fully enclosure site or specific operations where there is a high potential for dust production and the site is active for an extensive period. - Avoid site runoff of water or mud. - Keep site fencing, barriers and scaffolding clean using wet methods. - Remove materials from site as soon as possible. - Cover, seed or fence stockpiles to prevent wind whipping. - Where possible, consider real-time dust and air quality pollutant monitors across the site and ensure they are checked regularly. Potentially agree monitoring locations with the Local Authority if feasible. - Where possible, commence baseline monitoring at least three months before phase begins.
Operating vehicle/machinery and sustainable travel	- Ensure all on-road vehicles comply with the requirements of the London Low Emission Zone. - Ensure all non-road mobile machinery (NRMM) comply with the relevant emission standards. - Ensure all vehicles switch off engines when stationary - no idling vehicles. - Avoid the use of diesel or petrol-powered generators and use mains electricity or battery powered equipment where practicable. - Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials. - Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing).
Operations	- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems. - Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate. - Use enclosed chutes and conveyors and covered skips. - Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate. - Ensure equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.

Waste management	- Reuse and recycle waste to reduce dust from waste materials - Avoid bonfires and burning of waste materials
Demolition	- Ensure water suppression is used during demolition operations. - Avoid explosive blasting, using appropriate manual or mechanical alternatives. - Bag and remove any biological debris or damp down such material before demolition.
Construction	- 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.
Trackout	- Regularly use a water-assisted dust sweeper on the access and local roads, as necessary, to remove any material tracked out of the site. - Avoid dry sweeping of large areas. - Ensure vehicles entering and leaving sites are securely covered to prevent escape of materials during transport. - Record all inspections of haul routes and any subsequent action in a site log book. - Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems and regularly cleaned. - Inspect haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable; - Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable). - Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits. - Access gates to be located at least 10m from receptors where possible.

Table 5: Desirable Mitigation Measures

Description	Mitigation Measure
Preparing and maintaining the site	- Install green walls, screens or other green infrastructure to minimise the impact of dust and pollution. - Carry out regular dust soiling checks of buildings within 100m of site boundary and cleaning to be provided if necessary.
Operating vehicle/machinery and sustainable travel	- Impose and signpost a maximum-speed-limit of 10mph on surfaced haul routes and work areas.
Demolition	- Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust).
Earthworks	- Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces. - Use Hessian, mulches or tackifiers where it is not possible to re-vegetate or cover with topsoil. - Only remove secure covers in small areas during work and not all at once.
Construction	- Avoid scabbling (roughening of concrete surfaces) if possible. - Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery. - For smaller supplies of fine powder materials ensure bags are sealed after use and stored appropriately to prevent dust.
Trackout	- Apply dust suppressants to locations where a large volume of vehicles enter and exit the construction site.

SUMMARY AND CONCLUSIONS

An assessment of the potential impacts during the construction phase has been carried out in accordance with the Mayor of London's Construction Dust SPG; this has shown that releases of dust and PM_{10} are likely to occur during site activities. A range of best practice mitigation measures are proposed to be included within the DMP for the development, which will be agreed with the London Borough of Camden, prior to commencing site works. Following the successful implementation of these measures, construction traffic, construction dust and site plant exhaust emissions are predicted to have a negligible effect on local air quality.

APPENDIX A – CONSTRUCTION DUST ASSESSMENT METHODOLOGY

Factors defining the sensitivity of a receptor to dust impacts are presented in Table A1.

Table A1: Receptor Sensitivity

Receptor Sensitivity	Human Health	Dust Soiling	Ecological
High	- Locations where members of the public are exposed over a time period relevant to the air quality objectives for PM_{10} (a) - Examples include residential dwellings, hospitals, schools and residential care homes.	- Regular exposure - High level of amenity expected. - Appearance, aesthetics or value of the property would be affected by dust soiling. - Examples include residential dwellings, museums, medium and long-term car parks and car showrooms.	- Nationally or Internationally designated site with dust sensitive features (b) - Locations with vascular species (c)
Medium	- Locations where workers are exposed over a time period relevant to the air quality objectives for PM_{10} (a) - Examples include office and shop workers (d)	- Short-term exposure - Moderate level of amenity expected - Possible diminished appearance or aesthetics of property due to dust soiling - Examples include parks and places of work	- Nationally designated site with dust sensitive features (b) - Nationally designated site with a particularly important plant species where dust sensitivity is unknown
Low	- Transient human exposure - Examples include public footpaths, playing fields, parks and shopping streets	- Transient exposure - Enjoyment of amenity not expected. - Appearance and aesthetics of property unaffected - Examples include playing fields, farmland (e), footpaths, short-term car parks and roads	- Locally designated site with dust sensitive features (b)

a) In the case of the 24-hour objective, a relevant location would be one where individuals may be exposed for eight hours or more in a day.
b) Ecosystems that are particularly sensitive to dust deposition include lichens and acid heathland (for alkaline dust, such as concrete).
c) Cheffing C. M. & Farrell L. (Editors) (2005), The Vascular Plant. Red Data List for Great Britain, Joint Nature Conservation Committee.
d) Does not include workers' exposure to PM_{10} as protection is covered by Health and Safety at Work legislation.
e) Except commercially sensitive horticulture.

The sensitivity of the area is dependent on the number of receptors within each sensitivity class and their distance from the source. Human health impacts are also dependent on the existing PM_{10} concentrations in the area.

Table A2 and Table A3 summarise the criteria for determining the overall sensitivity of the area to dust soiling and health impacts respectively. The sensitivity of the area to ecological impacts is presented in Table A4.

Table A2: Sensitivity of the Area to Dust Soiling Effects on People and Property

Receptor Sensitivity	Number of Receptors	Distance from the Source			
		<20m	<50m	<100m	<350m

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

Table A3: Sensitivity of the Area to Health Impacts from Dust

Receptor Sensitivity	Annual Mean PM_{10} Concentration ($\mu g/m^3$)	Number of Receptors	Distance from the Source				
			<20m	<50m	<100m	<200m	<350m
High	>32	>100	High	High	High	Medium	Low
		10-100	High	High	Medium	Low	Low
		1-10	High	Medium	Low	Low	Low
	28-32	>100	High	High	Medium	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	High	Medium	Low	Low	Low
	24-28	>100	High	Medium	Low	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	<24	>100	Medium	Low	Low	Low	Low
		10-100	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Medium	>32	>10	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	28-32	>10	Medium	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	24-28	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	<24	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Low	-	≥1	Low	Low	Low	Low	Low

Table A4: Sensitivity of the Area to Ecological Impacts from Dust

Receptor Sensitivity	Distance from the Source	
	<20m	<50m
High	High	Medium
Medium	Medium	Low
Low	Low	Low

The magnitude of the dust impacts for demolition, earthworks, construction and trackout is classified as small, medium or large depending on the scale of the proposed works as detailed in Table A5.

Table A5: Dust Emission Magnitude

Receptor Sensitivity	Large	Medium	Small

Demolition	- Total building volume >50,000m^3 - Potentially dusty material (e.g. concrete) - Onsite crushing and screening - Demolition activities >20m above ground level.	- Total building volume 20,000 - 50,000m^3 - Potentially dusty material - Demolition activities 10 - 20m above ground level.	- Total building volume <20,000m^3 - Construction material with low potential for dust release - Demolition activities <10m above ground level - Demolition during wetter months
Earthworks	- Total site area >10,000m^2 - Potentially dusty soil type (e.g. clay) - >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^2 - Moderately dusty soil type (e.g. silt) - 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^2 - 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
Construction	- Total building volume >100,000m^3 - On site concrete batching - Sandblasting	- Total building volume 25,000 - 100,000m^3 - Potentially dusty construction material (e.g. concrete) - On site concrete batching	- Total building volume <25,000m^3 - Material with low potential for dust release (e.g. metal cladding or timber
Trackout	- >50 HGV movements in any one day (a) - Potentially dusty surface material (e.g. high clay content) - Unpaved road length >100m	- 10 - 50 HGV movements in any one day (a) - Moderately dusty surface material (e.g. silt) - Unpaved road length 50 - 100m	- <10 HGV movements in any one day (a) - Surface material with low potential for dust release - Unpaved road length <50m
a) HGV movements refer to outward trips (leaving the site) by vehicles of over 3.5 tonnes			

For each dust emission source, the worst-case area sensitivity is used in combination with the dust emission magnitude to determine the risk of dust impacts prior to mitigation as illustrated in Tables A6, A7 and A8.

Table A6: Risk of Dust Impacts from Demolition

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

Table A7: Risk of Dust Impacts from Earthworks and Construction

Area Sensitivity	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 Risk

Table A8: Risk of Dust Impacts from Trackout

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