

Table 4: Estimated Annual Mean Background Pollutant Concentrations in 2011 ($\mu\text{g}/\text{m}^3$)

Year	NO ₂	PM ₁₀	PM _{2.5}
2011	43.8 – 49.1	22.3 – 22.7	15.4 – 15.8
Objectives	40	40	25 ^a

^a There are no objectives for PM_{2.5} that apply during these years, however the European Union limit value of 25 $\mu\text{g}/\text{m}^3$ is to be met by 2015.

- 4.9 Recently a disparity between the road transport emission projections and measured annual mean concentrations of nitrogen oxides and nitrogen dioxide has been identified by Defra (Carslaw et al., 2011). The background concentrations presented in the maps (Table 4) include the influence of emissions from a range of different sources; one of which is road traffic. As Defra may have over-predicted the rate at which road traffic emissions of nitrogen oxides will fall in the future, actual background concentrations of nitrogen dioxide may be slightly higher than those presented in Table 4.

5 Impact Assessment

Road Traffic Impacts

- 5.1 Traffic flows on Tottenham Court Road in 2011 are as follows (GLA, 2009):
- Annual Average Daily Traffic (AADT): 18,661;
 - Percentage Heavy Duty Vehicles (HDV): 9.7 %.
- 5.2 The scheme would not result in an increase in traffic and would therefore not impact or worsen local air quality.
- 5.3 Local monitoring shows that air quality in the local area is poor, with nitrogen dioxide concentrations exceeding the annual mean objective, even at background locations in the area. There is also evidence that the short-term nitrogen dioxide objectives could potentially be exceeded in the area (paragraph 4.5). Concentrations of PM₁₀ and PM_{2.5} are below the objectives or limit values in the site vicinity (paragraph 4.7).
- 5.4 Based on the high background concentrations in the area, and the relatively high traffic flows, and percentage HDV, it would be expected that concentrations at the façade of the development would exceed the annual mean nitrogen dioxide objective, and potentially the one-hour nitrogen dioxide objective.
- 5.5 Whilst the annual mean nitrogen dioxide objective does not apply at the development site, the short term nitrogen dioxide objective applies at the pavements of busy shopping streets (paragraph 2.15). As the scheme does not involve a change of use, it would not introduce new exposure either within the scheme itself, or on the adjoining street.

Construction Impacts

- 5.6 The site currently comprises a Grade II listed building which will be refurbished as part of the scheme. There will be no demolition or ground works. The greatest potential for construction impacts is generally from the initial phase of site preparation, and from the passage of vehicles travelling across unpaved ground during periods of dry weather. Such works would not occur in this case, as the building is not being demolished and there would be no unpaved ground. In terms of construction works, the scheme involves refurbishment, with some external works including covering of an existing outdoor atrium, some minor external recladding, and internal works. There is nonetheless potential for dust emissions during the handling of dusty materials and the cutting of stone/concrete. Given the nature of the development, it is not anticipated that dust would be tracked out of the site onto the adjoining road network. Any impacts would be of a localised and temporary nature.

- 5.7 Based upon the criteria defined in Appendix A2, the construction activities are judged to be “Minor” in scale and assuming that standard mitigation measures are applied, significant dust-soiling impacts should be confined to a distance of up to 25 m from the source, whilst PM₁₀ impacts may extend out to 20 m.
- 5.8 The areas potentially at risk from dust and PM₁₀ impacts are presented in Figure 2 and Figure 3, respectively.

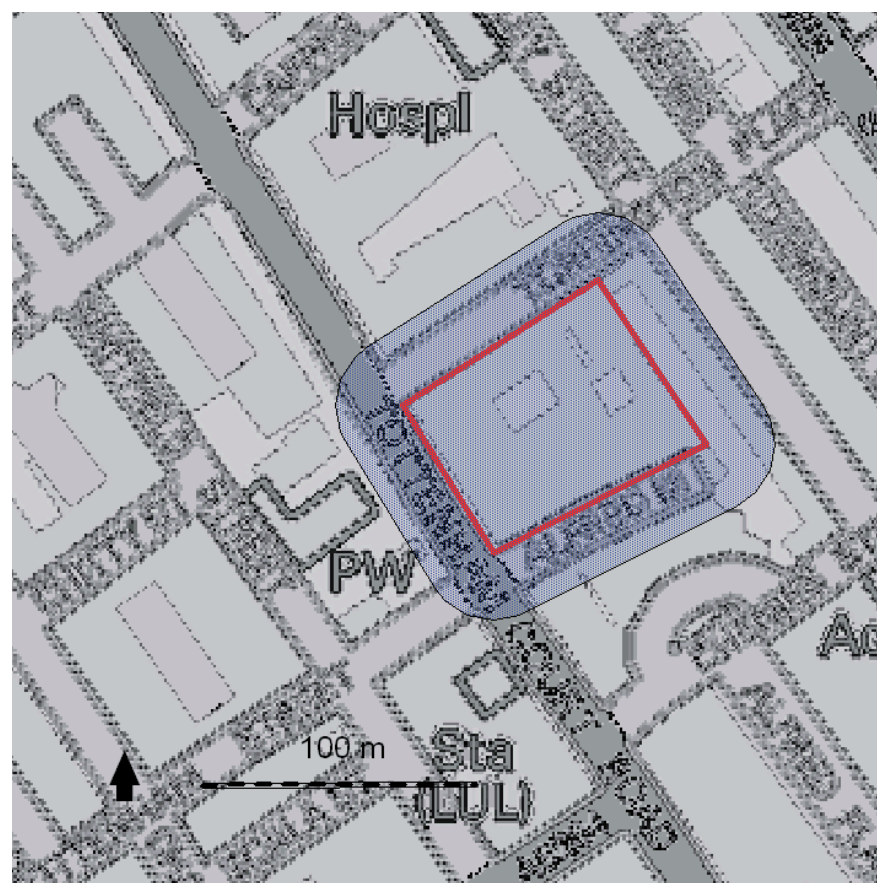


Figure 2: Area of Potential Construction Dust-soiling Impacts

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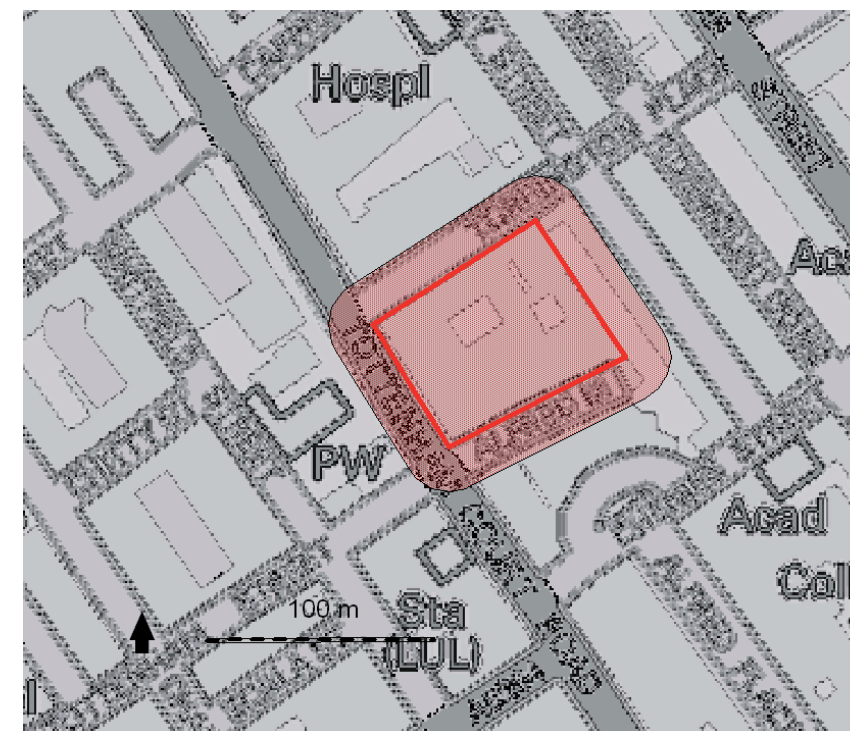


Figure 3: Area of Potential Construction PM₁₀ Impacts

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- 5.9 There are a number of commercial properties close by the site which could potentially be impacted by dust during the construction phase. There may also be number of residential premises on Torrington Place and Huntley Street, as well as cafes on Tottenham Court Road which may be impacted by PM₁₀.
- 5.10 There are no areas of sensitive vegetation within 10 m of the site boundary, and any significant impacts can be discounted.
- 5.11 Any effects will be temporary and relatively short lived, and will only arise during dry weather with the wind blowing towards a receptor, at a time when dust is being generated and mitigation measures are not being fully effective. Such conditions would only arise occasionally during the construction period, further limiting the potential for any impacts.

6 Mitigation

Road Traffic Impacts

- 6.1 Mitigation measures to reduce pollutant emissions from road traffic are being delivered in the longer term by the introduction of more stringent emissions standards, largely via European legislation.
- 6.2 The proposed scheme would not increase traffic on local roads, and no further mitigation measures are considered necessary.

Construction Impacts

- 6.3 Measures to mitigate dust emissions would be required during the construction phase of the scheme in order to reduce impacts upon nearby residential properties.
- 6.4 The site has been identified as a 'Low' site based on the criteria set out in the GLA Best Practice Guidance (GLA, 2006) and reproduced in Appendix A2. The guidance describes the following best practice measures that should be employed, as appropriate, to minimise the impact of the site:

Site Planning

- Plan site layout – machinery and dust causing activities should be located away from sensitive receptors.

Construction Traffic

- All vehicles to switch off engines – no idling vehicles.

Site Activities

- Minimise dust generating activities;
 - Use water as dust suppressant where applicable.
- 6.5 Where mitigation measures rely on water, it is expected that only sufficient water will be applied to damp down the material. There should not be any excess to potentially contaminate local watercourses.

7 Summary and Conclusions

- 7.1 The air quality impacts associated with the construction and operation of the proposed commercial development at Heals Building have been assessed. Existing conditions within the study area show poor air quality, with background concentrations of nitrogen dioxide exceeding the annual mean objective. An AQMA has been declared for this area.
- 7.2 The operational impacts of the scheme have been assessed. The proposed scheme would not increase traffic volumes on local roads, and therefore the scheme would not result in any changes in pollutant concentrations. The scheme would not introduce any new exposure as there are no sensitive locations within the scheme where the air quality objectives would apply. The operational impacts of the scheme are therefore not considered further.
- 7.3 The construction works have the potential to create dust. During construction it will therefore be necessary to apply a package of mitigation measures to minimise dust emission. Even with these measures in place, there remains a risk that a number of existing off-site properties might be affected by occasional dust-soiling and PM₁₀ impacts. Any effects will be temporary and relatively short lived, and will only arise during dry weather with the wind blowing towards a receptor, at a time when dust is being generated and mitigation measures are not being fully effective.
- 7.4 The proposed scheme is consistent with PPS23. Furthermore, the scheme does not conflict with the requirements of LB of Camden's LDF or CPG 6.

8 References

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- Planning Policy Statement 23: Planning and Pollution Control (PPS23)* (2004), ODPM.
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- The Air Quality Regulations, 2000, Statutory Instrument 928* (2000), HMSO.

The Air Quality Standards Regulations 2010 (No. 1001) (2010), HMSO.

9 Glossary

AADT	Annual Average Daily Traffic
AQMA	Air Quality Management Area
Defra	Department for Environment, Food and Rural Affairs
DfT	Department for Transport
Exceedence	A period of time when the concentration of a pollutant is greater than the appropriate air quality objective. This applies to specified locations with relevant exposure
HDV	Heavy Duty Vehicles (> 3.5 tonnes)
LDV	Light Duty Vehicles (<3.5 tonnes)
LEZ	Low Emission Zone
µg/m³	Microgrammes per cubic metre
NO	Nitric oxide
NO₂	Nitrogen dioxide
NO_x	Nitrogen oxides (taken to be NO ₂ + NO)
Objectives	A nationally defined set of health-based concentrations for nine pollutants, seven of which are incorporated in Regulations, setting out the extent to which the standards should be achieved by a defined date. There are also vegetation-based objectives for sulphur dioxide and nitrogen oxides
PM₁₀	Small airborne particles, more specifically particulate matter less than 10 micrometres in aerodynamic diameter
PM_{2.5}	Small airborne particles less than 2.5 micrometres in aerodynamic diameter
Standards	A nationally defined set of concentrations for nine pollutants below which health effects do not occur or are minimal
TEA	Triethanolamine – used to absorb nitrogen dioxide

A1 Extracts from the London Plan, Mayor's Air Quality Strategy and the Low Emission Zone (LEZ)

London Plan

A1.1 The London Plan sets out the following points in relation to planning decisions:

"Development proposals should:

- a) minimise increased exposure to existing poor air quality and make provision to address local problems of air quality (particularly within AQMAs or where development is likely to be used by large numbers of those particularly vulnerable to poor air quality, such as children or older people) such by design solutions, buffer zones or steps to promote greater use of sustainable transport modes through travel plans (see Policy 6.3);*
- b) promote sustainable design and construction to reduce emissions from the demolition and construction of buildings following the best practice guidance in the GLA and London Councils "The control, of dust and emissions form construction and demolition";*
- c) be at least "air quality neutral" and not lead to further deterioration of existing poor air quality (such as areas designated as Air Quality Management Areas (AQMAs));*
- d) ensure that where provision needs to made to reduce emissions from a development, these usually are made on site. Where it can be demonstrated that on-site provision is impractical or inappropriate, and that it is possible to put in place measures having clearly demonstrated equivalent air quality benefits, planning obligations or planning conditions should be used as appropriate to ensure this, whether on a scheme by scheme basis or through joint area-based approaches;*
- e) where the development requires a detailed air quality assessment and biomass boilers are included, the assessment should forecast pollutant concentrations. Permission should only be granted if no adverse air quality impacts from the biomass boiler are identified."*

The Mayor's Air Quality Strategy

A1.2 The Mayor's Air Quality Strategy commits to the continuation of measures identified in the 2002 MAQS, and sets out a series of additional measures, including:

Policy 1 – Encouraging smarter choices and sustainable travel;

Measures to reduce emissions from idling vehicles focusing on buses, taxis, coaches, taxis, PHVs and delivery vehicles;

Using spatial planning powers to support a shift to public transport;

Supporting car free developments.

Policy 2 – Promoting technological change and cleaner vehicles:

Supporting the uptake of cleaner vehicles.

Policy 4 – Reducing emissions from public transport:

Introducing age limits for taxis and PHVs.

Policy 5 – Schemes that control emissions to air:

Implementing Phases 3 and 4 of the LEZ from January 2012

Introducing a NOx emissions standard (Euro IV) into the LEZ for Heavy Goods Vehicles (HGVs), buses and coaches, from 2015.

Policy 7 – Using the planning process to improve air quality:

Minimising increased exposure to poor air quality, particularly within AQMAs or where a development is likely to be used by a large number of people who are particularly vulnerable to air quality;

Ensuring air quality benefits are realised through planning conditions and section 106 agreements and Community Infrastructure Levy.

Policy 8 – Creating opportunities between low to zero carbon energy supply for London and air quality impacts:

Applying emissions limits for biomass boilers across London;

Requiring an emissions assessment to be included at the planning application stage.

Low Emission Zone (LEZ)

A1.3 A key measure to improve air quality in Greater London is the Low Emission Zone (LEZ). This entails charges for vehicles entering Greater London not meeting certain emissions criteria, and affects older, diesel-engined lorries, buses, coaches, large vans, minibuses and other specialist vehicles derived from lorries and vans. The LEZ was introduced on 4th February 2008, and will be phased in through to January 2012. The timescale for implementation was 2008 for diesel HGVs, coaches and buses and 2010 for the heaviest, most polluting large vans and minibuses (a standard of Euro III). From January 2012 a standard of Euro IV will be implemented for lorries over 12 tonnes, buses and coaches. Cars and lighter Light Goods Vehicles (LGVs) are excluded. The third phase of the LEZ, which was to apply to vans and minibuses from October 2010, has been deferred by the Mayor until January 2012. As set out in the 2010 MAQS, a NOx emissions standard (Euro IV) will be included into the LEZ for HGVs, buses and coaches, from 2015.

A2 Construction Dust Assessment Criteria

A2.1 The distance-based criteria developed by Air Quality Consultants Ltd are set out in Table A2.1 for construction activities and in Table A2.2 for trackout. For construction activities the distances are from the source of the dust, but in practices this is often not known and the default position sets out the assessment criteria in terms of distance from the site boundary to which significant dust may be tracked out and the potential distance from the roadside for significant effects.

Table A2.1: Assessment Criteria for Dust from Construction Activities with Standard Mitigation in Place

Source		Potential Distance for Significant Effects (Distance from Source)		
Scale	Description	Soiling	PM ₁₀ ^a	Vegetation Effects
Major	Large construction sites, with high use of haul routes	100 m	50 m	25 m
Moderate	Moderate sized construction sites, with moderate use of haul routes	50 m	30 m	15 m
Minor	Minor construction sites, with limited use of haul routes	25 m	20 m	10 m

^a Significance based on the daily mean objective, which allows 35 daily exceedences/year of 50 µg/m³

A2.2 There is also the possibility of dust being tracked out of the site along roads. Table A2.2 sets out the assessment criteria in terms of distance from the site to which significant dust may be tracked out and the potential distance from the roadside for significant effects.

Table A2.2: Assessment Criteria for Construction Dust Track-Out with Standard Mitigation in Place

Source		Potential Distance from Roadways for Significant Effects (Distance from Edge of Road)		
Scale	Distance Along Roadways that Dust Might be Tracked	Soiling	PM ₁₀	Vegetation Effects
Major	250 m	50 m	30 m	15 m
Moderate	100 m	25 m	20 m	10 m
Minor	25 m	15 m	10 m	5 m

A2.3 The GLA (2006) sets out additional criteria as guidelines for site evaluation. These guidelines, which are set out in Table A2.3, can be used to define the level of dust mitigation that is likely to be required.

Table A2.3: GLA (2006) Site Evaluation Guidelines

Category	Description
Low Risk Sites	Developments of up to 1,000 m ² of land and; Developments of 1 to 10 properties and; Potential for emissions and dust to have an infrequent impact on sensitive receptors.
Medium Risk Sites	Developments of between 1,000 m ² and 15,000 m ² of land and; Developments of 10 to 150 properties and; Potential for emissions and dust to have an intermittent or likely impact on sensitive receptors.
High Risk Sites	Developments of over 15,000 m ² ; Developments of over 150 properties or; Major developments referred to the Mayor and/or the London Development Agency, or; Major Development defined by the London borough or; Potential for emissions and dust to have a significant impact on sensitive receptors.

A3 Professional Experience

Prof. Duncan Laxen, BSc (Hons) MSc PhD MEnvSc MIAQM

Prof Laxen is the Managing Director of Air Quality Consultants, a company which he founded in 1993. He has over forty years experience in environmental sciences and is a member of Defra’s Air Quality Expert Group and the Department of Health’s Committee on the Medical Effects of Air Pollution. He has been involved in major studies of air quality, including nitrogen dioxide, lead, dust, acid rain, PM₁₀, PM_{2.5} and ozone and was responsible for setting up UK’s urban air quality monitoring network. Prof Laxen has been responsible for appraisals of all local authorities’ air quality Review & Assessment reports. He has carried out air quality assessments for power stations; road schemes; ports; airports; railways; mineral and landfill sites; and residential/commercial developments. He has also been involved in numerous investigations into industrial emissions; ambient air quality; indoor air quality; nuisance dust and transport emissions. Prof Laxen has prepared specialist reviews on air quality topics and contributed to the development of air quality management in the UK. He has been an expert witness at numerous Public Inquiries and published over 70 scientific papers and given numerous presentations at conferences.

Penny Wilson, BSc (Hons) MEnvSc MIAQM

Ms Wilson is a Principal Consultant with AQC, with more than ten years relevant experience in the field of air quality. She has been responsible for air quality assessments of a wide range of development projects, covering retail, housing, roads, ports, railways and airports. She has also prepared air quality review and assessment reports and air quality action plans for local authorities and appraised local authority assessments on behalf of the UK governments. Ms Wilson has analysed and interpreted air quality data from the national air quality network and new local authority monitoring, as well as from monitoring of dust. She has also arranged monitoring programmes for PM10, sulphur dioxide and nitrogen dioxide. Ms Wilson has provided expert witness services for planning appeals.

Mella O’Driscoll, BSc (Hons) MSc AMEnvSc

Ms O’Driscoll is a Consultant with AQC, with more than five years experience in environmental consultancy. Previously working in the area of contaminated land she now works on air quality assessments and is involved in a range of development projects, most of which have involved use of ADMS modelling methodologies for biomass boilers and roads. Ms O’Driscoll has also been involved in the analysis and interpretation of air quality data, the preparation of Review and Assessment reports for local authorities, nitrogen deposition assessments and traffic assessments.

Full CVs are available at www.aqconsultants.co.uk

