

Camden Planning Guidance

Air quality

March 2019

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1 Introduction

What is Camden Planning Guidance?

- 1.1 The Council has prepared this Camden Planning Guidance (CPG) on Air quality to support the policies in the Camden Local Plan 2017. This guidance is therefore consistent with the Local Plan and forms a Supplementary Planning Document (SPD) which is an additional “material consideration” in planning decisions.
- 1.2 This document should be read in conjunction with and within the context of the relevant policies in Camden’s Local Plan, other Local Plan documents and other Camden Planning Guidance documents.
- 1.3 Camden Planning Guidance (CPG) covers a range of topics (such as design, housing and sustainability) and all sections should be read in conjunction with, and within the context of, Camden’s other documents.
- 1.4 The Council adopted this CPG on Air Quality in March 2019, following statutory consultation.

What does this guidance cover?

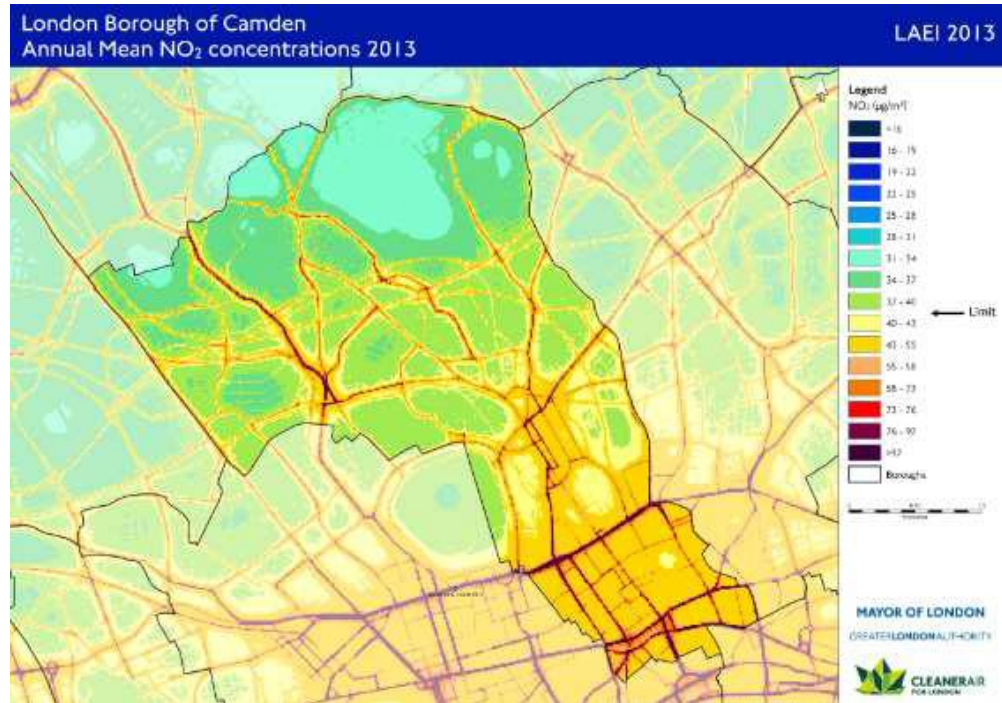
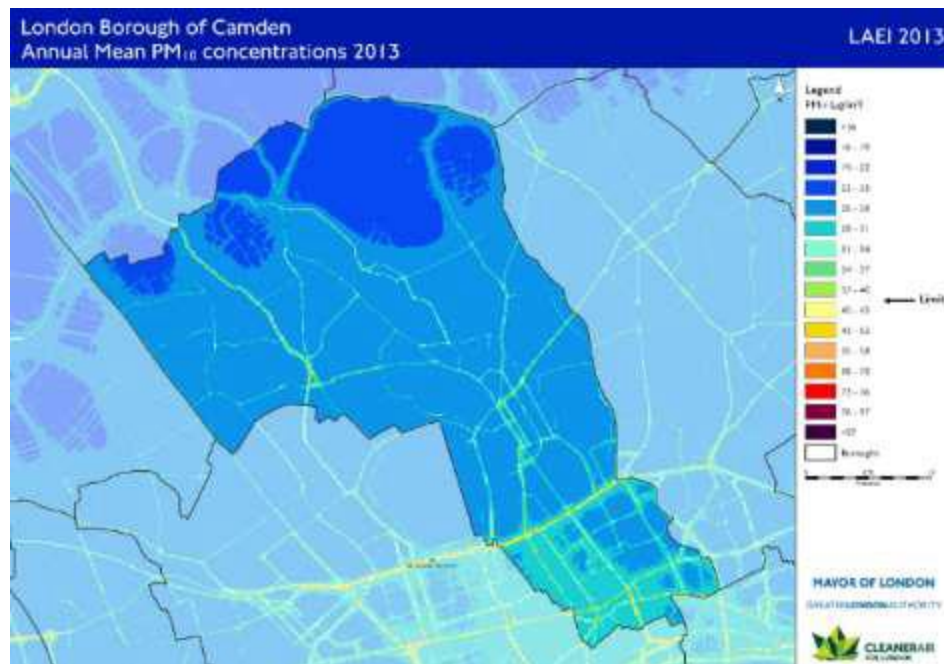
- 1.5 This guidance provides information on key air quality issues within the borough and supports Local Plan Policy CC4 Air quality.
- 1.6 Other relevant policies in the Local Plan include:
 - C1 Health and wellbeing
 - A2 Open space
 - A3 Biodiversity
 - CC1 Climate change mitigation
 - CC2 Adapting to climate change
 - T1 Prioritising walking, cycling and public transport
 - T2 Parking and car free development
 - T3 Transport infrastructure
 - T4 Sustainable movement of goods and vehicles
- 1.6 This document is for consultation purposes and if adopted will replace Chapter 2 CPG6 Amenity September 2011, updated March 2018.

2. Air quality in Camden

KEY MESSAGES

- All of Camden is a designated Air Quality Management Area due to the high concentrations of nitrogen dioxide (NO₂) and particulate matter (PM₁₀).
- All developments in areas of poor air quality are to protect future occupants from exposure to poor air quality.
- All developments are to limit their impact on local air quality and be at least air quality neutral.

- 2.1 The whole of Camden is an Air Quality Management Area (AQMA) as it does not meet national air quality objectives for nitrogen dioxide (NO₂) and because it is widely accepted that there is no safe level for particulates (PM₁₀ and smaller). Air quality is particularly severe along major roads through the borough, and in the south of borough which is characterised by high levels of traffic. Major roads are those either in the Transport for London Road Network or designated as a Major Road by Camden.
- 2.2 Air pollution is associated with a number of adverse health impacts that affects all members of society, and particularly those that are most vulnerable in society (children, older people, and those with pre-existing conditions and those living and working in deprived areas)..
- 2.3 Deaths caused by air pollution form one of the indicators of the Public Health Outcomes Framework. The latest figures state that in 2015, the percentage of Camden's annual adult mortality rate caused by particulate matter (PM_{2.5}) was 6.3%. This is higher than the England (4.7%) and Greater London (5.6%), and the joint sixth highest of all London boroughs.
- 2.4 The main sources of air pollution in Camden are road transport, gas boilers and construction. The Council's Clean Air Action Plan outlines measures to reduce emissions from the key sources of air pollution in the borough. Included in the plan are measures to minimise and control nitrogen dioxide and particulate matter associated with new developments both during the construction of a building and its future use.

Map 1: Modelled nitrogen dioxide levels**Map 2: Modelled Particulate Matter (PM₁₀) levels**

- 2.5 A number of policies in the Local Plan actively supports the improvement of air quality in the borough. The key focus of policy CC4 in the Local Plan is to improve local air quality by:

- mitigating the impact of development on air quality; and
 - reducing exposure to poor air quality.
- 2.6 The Council's overarching aim for developments is to be 'air quality neutral' in operation, not to lead to further deterioration of existing poor air quality, and, where possible, to improve local air quality ('air quality positive') through additional measures on and off site. Impacts can arise during both the construction and operational stages of a development as a result of increased NO₂ and particulate (PM_{2.5} and PM₁₀) emissions.
- 2.7 In this context Camden has adopted World Health Organisation pollution levels for nitrogen dioxide of 38µg/m³ (as opposed to the EU limit value of 40µg/m³). The goal is to achieve WHO limits by 2030 and this will be steered by the Council's Clean Air Action Plan.

3. Assessing air quality impacts

KEY MESSAGES

- This section explains when assessments for air quality are required and the level of information they should include according to the development.
- Air quality neutral assessments are required for all major developments. Major developments are schemes of 10 or more dwellings or buildings where the floorspace created is 1,000 square metres or more.

- 3.1 An Air Quality Assessment (AQA) is an assessment of the impact of a development on the levels of certain pollutants in a local area. It determines what mitigation measures are needed to protect future occupants and limit impact on local air quality. Air quality neutral assessments seek to ensure that emissions from a finished development are no greater than the previous use.

Air Quality Assessments

When are Air Quality Assessments required?

- 3.2 An Air Quality Assessment is required in all developments meeting the criteria of Local Plan policy CC4. This includes all major planning applications and development that:
- introduces sensitive receptors (nurseries, schools, care homes, hospitals) where occupants will be exposed to poor air quality (along a busy road, diesel railway lines or in a generally congested area) see Maps 1 and 2 above;
 - has potential to significantly change road traffic on a busy road;
 - includes biomass boilers or CHP (combined heat and power);
 - includes connections to existing decentralised energy networks (whereby the increased capacity is not already covered by an existing AQA);
 - involves substantial earthworks or demolition.
- 3.3 Table 1 below indicates the triggers when air quality needs to be assessed as part of a planning application. As stated in Local Plan policy CC4 'Air quality' we will require a basic assessment for all newly erected buildings/ substantial refurbishments and changes of use where occupants will be exposed to poor air quality (due to its location next to a busy road, diesel railway line or in a generally congested area) (see paragraph 3.6 below).

WHO ARE VULNERABLE OCCUPANTS?

Vulnerable occupants are all those who are at greater health risk from exposure. This also includes those who have a higher risk in the short to medium term e.g. due to aspects of illness, accident or treatment. This includes many of those in health or day care facilities.

Table 1: Air quality assessment triggers

Criteria met →				→ Assessments required		
Scale	Area of poor air quality ¹	Scheme brings sensitive receptors	Scheme brings air quality impacts ²	Air Quality Assessment type	Air Quality Neutral	Construction and Demolition Impacts
Major	Yes	Yes	Yes	Detailed	Required	Required
			No			
		No	Yes	Detailed		
			No	Basic		
	No	Yes	Yes	Detailed		
			No	Basic		
		No	Yes	Detailed		
			No	Basic		
Minor	Yes	Yes	Yes	Detailed	Not required	³ May be required
			No	Basic		
		No	Yes	Basic		
			No	Not required		
	No	Yes	Yes	Detailed		
			No	Not required		
		No	Yes	Basic		
			No	Not required		

Definitions

¹ Area of poor air quality - an area with NO₂ or PM₁₀ concentrations within 5% below the air quality objective, 38µg/m³ (micrograms per cubic metre).

² Air quality impacts - Produces changes in emissions from building sources, small industrial processes (including Short Term Operating Reserve and similar), or vehicle movements. (STOR power generators are those used intermittently to supply intensive amounts of electricity to the grid at short notice)

³ An assessment for demolition and construction impacts may be required for certain minor applications, such as basements. It is best to contact a planning officer if there is any uncertainty (tel: 020 7974 4444 email: planning@camden.gov.uk)

What should an air quality assessment cover?

3.4 The scope of an Air Quality Assessment is to:

- assess local air quality pollutants and dust;
- assess the current baseline situation in the vicinity of the proposed development;
- predict the future impact of operation, both with and without the proposed development, but including all consented development, by calculating statistics that can be compared with air quality objectives.

3.5 Air quality assessments are to include the following:

a) **Emissions:** An inventory of the PM₁₀ and NO_x emissions associated with the proposed development, including the type and quantity of emission concentrations, during the construction and operational phase. This shall cover transport, stationary and mobile emission sources.

b) **Modelling:** The application of atmospheric dispersion modelling to predicted NO₂ and PM₁₀ concentrations, both with and without the proposed development. Dispersion modelling shall be carried out in accordance with Air Quality and Planning Guidance, London Councils (2007) and London Local Air Quality Management Plan Technical Guidance 2016. Modelling should not predict improvements to future years (future vehicle emissions or future background concentrations).

c) **Impact and significance:** An assessment of the significance of air quality impacts during both the construction and operational phases. Reference shall be made to London Councils' 'Air Quality and Planning Guidance' (2007), the current and draft new London Plans and supplementary guidance, and London Local Air Quality Management (LLAQM) Technical Guidance' 2016.

d) **Cumulative impacts:** Consideration of the potential cumulative impacts on air quality which may arise during the construction or operational phases as a result of emissions arising from other developments within a 100m radius of the development.

e) **Biomass / CHP:** Where a biomass boiler or combined heat and power (CHP)/combined cooling, heating and power (CCHP) will be used for on-site energy generation, applicants are to complete the Council's Air Quality Information Request Form. This requires specific technical details related to the appliance, fuel type, emission concentrations, maintenance and exhaust stack. The forms can be obtained from Camden's Air Quality Officer.

f) **Biomass:** Applications which include biomass boilers or biomass CHP, the air quality assessment shall compare the impact of emissions from the intended biomass boiler/CHP and a gas boiler/CHP of identical thermal rating. (NB: Biomass will only be considered if it has lesser emissions to an ultra-low NO_x boiler)

g) **Exposure:** An indication of the number of new occupiers and users of the site who will be exposed to poor air quality as a result of the development (the occupiers/users should also be shown on a map). For further information please refer to the London Councils' 'Air Quality and Planning Guidance' (2007), the London Plan and supplementary guidance, and London Local Air Quality Management (LLAQM) Technical Guidance' 2016.

h) **Demolition and construction:** An assessment of the impacts on air quality of the demolition and construction phase and details of mitigation methods for controlling dust and emissions from plant and machinery. Reference should be made to the Mayor's 'The Control of Dust and Emissions during Construction and Demolition' SPG (2014).

i) **Mitigation:** An outline of, and justification for, mitigation measures associated with the design, location and operation of the development in order to reduce air pollution and exposure to poor air quality.

- 3.6 **Developments containing sensitive uses/receptors:** Developments which will not result in additional NO_x and/or PM₁₀ emissions and present no risk in worsening air quality, but introduce new sensitive uses to an area which breaches the air quality standards for NO₂ or PM₁₀ need to submit an assessment of the local air quality and appropriate mitigation measures but can omit requirements b, d and e above. Sensitive uses include residential use in areas exceeding the long term objective, as well as non-residential schemes with vulnerable occupants, and any use (where occupants stay at least 1 hour) in areas exceeding the short term objectives (see below for information).

NATIONAL AIR QUALITY OBJECTIVES

The national air quality objectives are legal limits set in respect of potential exposure to air pollutants at a given location. The limits vary according to both the pollutant and the duration of exposure being considered. These are derived in recognition of varying health effects of different lengths of exposure on different kinds of receptors.

- The long term AQ objectives ("Annual limits") are limits on average concentrations of a pollutant across a whole year.
- The short term objectives ("1-hour limits") are limits on potential exposure across a period of one hour.

Methodological approach

- 3.7 Following best practice, 'worst case' assumptions and input data should always be applied when modelling and interpreting air quality models. This includes but is not limited to:
- using London Atmospheric Emissions Inventory (LAEI, 2013) data or local measurements -whichever is the more pessimistic - for each scenario including the baseline, future 'with development', and future 'without development';
 - applying the most appropriate recent background concentration data (such as LAEI 2013), to all scenarios including the future scenarios, rather than projected data;
 - identifying and assessing impacts related to existing and future committed developments and construction sites in the area. This is relevant for evaluating cumulative vehicle movements and dust impacts during construction, and vehicle and point source emissions in the operational phase;
 - the potential (worst-case) air quality impacts of any standby generators and any equipment capable of use as Short Term Operating Reserve (or similar intensive or extensive uses which could harm local air quality) should be included in assessments. This equipment may be screened out only if it can be demonstrated to be out of scope, for example by means of explicit

undertakings in the proposed building management plan. It should be noted that standby generators and similar equipment are expected to only be used when required and should not be used at other times when electricity is available from the grid

Air quality neutral assessments

- 3.8 Major developments must demonstrate neutrality according to the relevant approved methodology published by the Mayor which supports the London Plan 'Air Quality Neutral Planning Support Update: GLA 80371' (2014) (or any more recent guidance).
- 3.9 London Plan policy requires all major developments to be air quality neutral or better. Emerging policy in the draft London Plan seeks to require air quality positive for large scale development areas or those requiring Environmental Impact Assessment. Developers should have regard to relevant London Plan policy at the time of application.
- 3.10 The air quality neutral assessment should be submitted with the planning application. There are two elements to the air quality neutral assessment that developers are required to take into account:
- determine the relevant emission benchmark for buildings for NO₂ and PM10 at the site, based on its land use and location; then calculate the site's NO₂ and PM10 emissions from the buildings and compare them with the buildings benchmark. The report should present the data used in the calculation, including plant emission data; and
 - determine the relevant emission benchmark for transport for NO₂ and PM10 at the site; then calculate them with the transport benchmark. The report should present the data used in the calculation.
- 3.11 Should any excess emissions be calculated in either transport or building categories, these must be mitigated through appropriate amendments to scheme design, before recalculating for the final AQA submitted with the planning application.

4. Minimising emissions into the air

KEY MESSAGES

- All proposals involving demolition and construction should adopt best practice measures to reduce and mitigate emissions.
- On-site monitoring may be required dependant on the scale of demolition and construction.
- Certain developments using Non Road Mobile Machinery (within the KW range) need to meet standards in the Mayor's Dust and emissions SPD.
- The impact of outdoor air pollution on indoor air quality in new developments needs to be taken into account at the earliest stages of building design.
- Development should take into consideration the location of amenity space and opportunities for appropriate planting 'greening'.
- Development should reduce emissions by being energy efficient (reducing emissions associated with the operation of the building).
- Development should prioritise more sustainable modes of transport and where applicable improve the walking and cycling environment.

- 4.1 Various actions can be taken to mitigate air pollution emissions arising from the construction and operational phases of a development. Additional actions can be adopted to curtail public exposure in areas where air pollution levels are particularly high. These should be taken into account during the design stage of an application. The key measures are detailed below.

Reducing dust and air quality impacts during demolition and construction



- 4.2 The impact of the construction and demolition phases of a development on air quality must be taken into account as part of planning applications and included in AQAs. Exhaust emissions from construction vehicles and machinery such as generators, piling and grinding equipment can result in dust emissions; gases (NO₂); and fine particles.

4.3 Controlling dust emissions is important to:

- prevent disturbance to local residents due to soiling;
- minimise damage to vegetation; and
- reduce impacts on local air quality, thereby protecting public health.

Scheme of protective works

Distance of impacts - depending of the size, location and characteristics of your development, impacts from demolition and construction phases can occur at distance of 10m to 500m.

4.4 Best practice measures should be adopted during construction and demolition work to reduce and mitigate air pollution emissions. Development that involves significant demolition, construction or earthworks will 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. Applicants are encouraged to adopt the procedures outlined Mayor's 'Control of Dust and Emissions during Construction and Demolition' SPD. These focus around three principles to control emissions – prevention, suppression and containment. We will expect you to include the following items in Construction Management Plans:

- Identification of whether demolition/construction represents a low, medium or high risk site in the context of air quality;
- Identification of the best practice measure required to control and mitigate plant and vehicles exhaust emissions; and
- How this will be monitored.

4.5 The importance of reducing emissions from non-road mobile machinery is recognised in the Mayor's 'Control of Dust and Emissions during Construction and Demolition' SPD.

4.6 Since September 2015 non-road mobile machinery (NRMM) with a net power between 37kW and 560kW are required to meet the standards below. These are based on engine standards set in EU Directive 97/68/EC.

- NRMM used on the site of any major development within Greater London will be required to meet Stage IIIA of the Directive as a minimum; and
- NRMM used on any site within the Central Activity Zone or Canary Wharf will be required to meet Stage IIIB of the Directive as a minimum.

4.7 From 1st September 2020 the following will apply:

- NRMM used on any site within Greater London will be required to meet Stage IIIB of the Directive as a minimum.
- NRMM used on any site within the Central Activity Zone or Canary Wharf will be required to meet Stage IV of the Directive as a minimum.

4.8 The Council has been placing the following condition on all major planning applications:

“All non-Road mobile Machinery (any mobile machine, item of transportable industrial equipment, or vehicle – with or without bodywork) of net power between 37kW and 560kW used on the site for the entirety of the [demolition and/construction] phase of the development hereby approved shall be required

to meet Stage IIIA of EU Directive 97/68/EC. The site shall be registered on the NRMM register for the [demolition and/construction] phase of the development.

Reason: To safeguard the amenities of the adjoining occupiers, the area generally and contribution of developments to the air quality of the borough in accordance with the requirements policies A1 and CC4 of the Camden Local Plan."

- 4.9 Any amendments of the Mayor's policy and guidance must be adhered to, please see '[Control of Dust and Emissions during Construction and Demolition](#)' SPD and www.nrmm.london for further information.

Monitoring

- 4.10 We may require monitoring, before and during the construction and demolition phases, dependent upon the scale of the proposed development. Medium risk schemes usually require a minimum of two real-time monitors, while high risk schemes usually require four. The choice of locations and positions must clearly be demonstrated on the basis of identified nearby receptors, the prevailing atmospheric conditions, off-site emission sources, local topography, and the relevant dust-generating site activities. Baseline monitoring would normally be required for at least 6 months (ideally 12 months) prior to commencement, and the results used to inform interpretation of construction phase monitoring and any actions required to be taken to avoid exceedances.
- 4.11 The Council may seek a financial contribution from major development towards the management and implementation of compliance monitoring, assessment and investigation. This would be secured through a s106 agreement and would be commensurate to the scale and risk of the development project using the rates to be published on the Council's website (please see section 5 of this guidance for more information).

Building location and design

- 4.12 The location of a development has a direct influence on exposure to elevated air pollution levels. This is particularly relevant where developments include sensitive uses such as hospitals, schools and children's playgrounds. Suitable building design, layout and orientation can avoid increasing exposure whilst minimising energy demand and energy loss. The Council requires the impact of outdoor air pollution on indoor air quality in new developments to be taken into account at the earliest stages of building design.
- **Energy efficient:**
An energy efficient building design can minimise air pollution resulting from the use of gas boilers. Adopting sustainable building design will reduce thermal heat losses and result in less gas use leading to lower NO_x emissions (see Chapter 3 'Making buildings more energy efficient' CPG Energy efficiency and adaptation).
 - **Building ventilation:**
Indoor air quality needs early consideration in building design. The location of ventilation inlets, flues, opening windows should be on higher floors away from the sources of air pollution at ground level, but also stationary sources of plant. If mechanical ventilation (air conditioning) is considered acceptable (following the cooling hierarchy, see Chapter 10 CPG Energy efficiency and adaptation), they should be fitted with proven filtration technology appropriate

for the pollutants of concern and should be maintained. Developments should also consider the location of neighbouring receptors.

- 4.13 The location of outside space is also an important consideration and any exposure of gardens and roof terraces should be screened and, where practicable, minimised through appropriate positioning and orientation. Applicants should take care not to locate flues and exhaust vents in close proximity to recreational areas such as roof terraces or gardens.
- 4.14 Plants can play a role in trapping particulates. Certain plants with small leaves, fine hairs, and those which are grooved provide surfaces which trap particles. To help improve local air quality developers need to consider appropriate planting and trees (including green walls and roofs). Additional information on the benefits of planting can be found in '[Impacts of Vegetation on Urban Air Pollution](#)', by Air Quality Expert Group.

Heating and energy supply

Gas boilers

- 4.15 Gas boilers are a large source of NO_x emissions in Camden. In order to minimise NO_x emissions arising from heating and hot water systems the Council requires boilers fitted in new development to achieve a NO_x emissions of <40 mg/m³ and an energy efficiency rating >90%.

Renewable Energy and Combined Heat and Power

- 4.16 Local Plan policy CC1 promotes the use of renewable energy technologies to reduce carbon emissions and tackle climate change. The adoption of renewable energy and energy efficiency technologies can minimise air pollution emissions through reductions in gas consumption required for heating and hot water. These include solar thermal collectors and ground source heat pumps in addition to gas and hydrogen fuel cell combined heat and power (CHP) or combined cooling heat and power (CCHP).

Hydrogen fuel cell

A fuel cell is an electrochemical cell that converts energy from a fuel (hydrogen) into electricity.

- 4.17 Biomass boilers however can give rise to higher emissions of NO_x and PM₁₀ emissions than conventional gas boilers. Permission to operate these appliances is unlikely to be granted in Camden and would only be possible if the air quality impacts are demonstrated to be equivalent or lower than those associated with a conventional gas boiler of similar thermal rating. Where an assessment demonstrates adverse effects on air quality, this type of biomass boiler should not be used in the development.
- 4.18 In cases where emissions released from a biomass boiler do not lead to negative impacts on air quality, the appliance will be required to meet high standards of air pollution control with particular emphasis given to:
- boiler design and operation;
 - pollution abatement equipment;
 - servicing and maintenance;
 - fuel quality, storage and delivery; and

- exhaust stack height.

Combined Heat and Power (CHP)

- 4.19 CHP and Combined Cooling, Heating and Power (CCHP) can be a more efficient way to provide energy in global carbon terms. However, these systems can cause higher local emissions and must meet the criteria cited within the London Plan (currently contained in SPG Sustainable Design and Construction: Appendix 7). The Council will require evidence that the exhaust stack height has been appropriately calculated to guarantee that NO_x emissions are effectively dispersed, and do not risk increasing NO₂ concentrations. An air quality assessment will be required for developments proposing CHP/CCHP. Where the assessment reveals a negative impact on air quality, mitigation measures will be required entailing the best available techniques to reduce emissions. This includes the installation of NO_x abatement technology such as:

- use of low NO_x burners, Selective Catalytic Reduction (SCR); or
- increasing stack height.

- 4.20 A programme of on-going maintenance and servicing will be necessary to minimise gas emissions released from CHP/CCHP. The Council will use Section 106 obligations to set requirements for controlling emissions from biomass boilers and CHP/CCHP.

Traffic Reduction

- 4.21 Road transport is one of the main sources of air pollution in Camden. The policies in the Local Plan prioritises sustainable means of travel and minimises the use of motor vehicles for the movement of people and freight. Policy T1 outlines how developments should prioritise sustainable modes of transport and contribute to improvements to the walking and cycling environment.
- 4.22 The Local Plan requires all new development in the borough to be car free in accordance with policy T2 Parking and car free development. This will limit opportunities for parking and car use in the borough and should lead to reductions in air pollutants. Other measures to reduce traffic impacts of development and improve the environment to encourage walking and cycling are detailed in Camden Planning Guidance on Transport.

5. Conditions and legal agreements

- 5.1 Local Plan policy CC4 seeks to ensure that development does not harm local air quality and limits exposure to poor air quality.
- 5.2 Planning permission may be granted subject to conditions or a legal agreement (Section 106 agreement) to ensure appropriate installation of mitigation measures and on-site monitoring.

Monitoring

- 5.3 Where on-site monitoring is required for the demolition and construction phases of development the Council will seek a financial contribution towards the management and implementation of compliance monitoring and assessment. This would be commensurate to the scale and risk of the development.

Mitigation

- 5.4 After all possible mitigations are explored and integrated into the development the Council may seek a financial contribution, paid towards actions identified in the Council's Clean air action plan, for instances where:
 - a development is likely to cause a deterioration in local air quality (once completed it will increase pollutant concentrations);
 - the demolition and/or construction phase of a development will impact on the local environment (through dust and exhaust emissions); and
 - a development introduces new receptors into an area of poor air quality (it will expose future occupiers to unacceptable pollutant concentrations/new exposure).
- 5.5 Please see Camden's Clean Air Action Plan.