10 Wind and micro-climate

KEY MESSAGES:

- Buildings taller than their surroundings may cause excessive wind in neighbouring streets and public areas.
- New developments should consider the local wind environment, local temperature, overshadowing and glare, both on and off the site.
- Where poor wind conditions already exist reasonable attempts must be made to improve conditions generally.

10.1 The construction of a building changes the microclimate in its vicinity. Micro-climate refers to local conditions including wind, temperature, overshadowing, access to daylight and general comfort. In particular high-rise buildings can cause high wind velocities at pedestrian level which can create an uncomfortable environment and can even be dangerous. Therefore, the design of your building should not only focus on the building envelope and on providing good indoor environment, but should also include the effect of the design on the surrounding outdoor environment.

10.2 The purpose of this guidance is to ensure that appropriate standards are met in the design of buildings and outdoor features to ensure that suitable wind safety and comfort levels are achieved.

10.3 This guidance relates to Core Strategy CS14 - *Promoting high quality places and conserving our heritage* and policy DP24 - *Securing high quality design* of the Camden Development Policies.

When does this guidance apply?

10.4 This guidance applies to all development that has the potential to change their environment with regard to wind and micro-climate, whether new build or extension. However, the implications for a proposal will vary greatly depending on the nature of the site, the scale of development, its interaction with surrounding sites, and existing buildings and structures on the site.

DEVELOPMENTS LARGE ENOUGH TO CHANGE THEIR LOCAL ENVIRONMENT WILL INCLUDE:

- New or modified buildings that are 18 metres or 5 storeys higher than any surrounding building;
- Significant modifications to the built environment in areas of quantifiable and recognised existing wind nuisance;
- Major proposals adjacent to or incorporating a significant area of public or outdoor space;
- Developments with a large amount of glazing or dark masonry surfaces; or
- A combination of new or modified buildings that cumulatively, will significantly change the wind environment.

Wind environment around buildings

10.5 Buildings taller than their surroundings may cause excessive wind in neighbouring streets and public areas. Environmental winds are primarily driven by building massing and should be considered at the early design stages, when changes to achieve design objectives can be made most easily.

10.6 We will expect you to consider the local wind environment when designing your scheme, both on and off the site. Where poor wind conditions exist in the area prior to development, a reasonable attempt must also be made to improve conditions in general.

What information should I provide?

10.7 Relevant developments are expected to use the Lawson Comfort Level Ratings (set out below). Areas that must be considered are:

- public and private open spaces on and adjacent to the site;
- outdoor areas on upper levels of the development;
- entrance and exit areas;
- shop windows;
- bus stops;
- outdoor dining areas;
- thoroughfares; and
- pedestrian crossing points.

10.8 The Lawson Criteria are used throughout the UK to assess local wind environments and are a widely accepted assessment tool.

The Lawson Comfort Criteria
The Lawson Comfort Criteria is a scale for assessing the suitability of wind conditions in the urban environment based upon threshold values of wind speed and frequency of occurrence. It sets out a range of pedestrian activities from sitting through to crossing the road and for each activity defines a wind speed and frequency of occurrence. If the wind conditions exceed the threshold then the conditions are unacceptable for the stated activity.

Figure 1. Lawson Comfort Level Rating

Lawson Comfort Level Rating	**Predominant activity**	**Mean hourly wind speed exceeded less than 5% of the time**
C4 - Long term "Sitting"	Reading a newspaper and eating and drinking	4m/s
C3 - "Standing" or short term sitting	Appropriate for bus stops, window shopping and building entrances	6m/s
C2 - Pedestrian Walking or "Strolling"	General areas of walking and sightseeing	8m/s
C1 - Business "Walking"	Local areas around tall buildings where people are not expected to linger	10m/s

10.9 If this applies to your development your planning application should be accompanied by qualitative wind impact statement, prepared by a suitably qualified professional (i.e. wind engineer or similar).

10.10 Your must firstly carry out a qualitative wind impact assessment. If the results of this show potential negative impacts you will also need to carry out a quantitative assessment. Both assessments must be submitted with your planning application. Your assessment must provide detailed information on how the proposal meets the criteria in the guidance, using quantitative measures (i.e. evidence of wind tunnel testing or similar).

Your Wind Impact Statement must:

- Show how the proposal is expected to affect the local wind environment;
- Describe how the proposal has addressed the local wind environment;
- Include reference to specific features of the site or the development that make a contribution to the wind environment, either positively or negatively, and highlight areas of concern; and

- Reference the proposal's ability to meet the targets of this guidance, and make recommendations regarding the necessity for additional work, as described below.

Your Wind Impact Statement should:

- Compare existing and proposed conditions against the Lawson Comfort Criteria in both summer and winter conditions;
- Demonstrate how the proposal has adapted to the local wind environment;
- Reference specific features of the site or the development that make a contribution to the wind environment, both positively or negatively;
- Highlight areas of concern, and
- Describe the proposal's ability to adhere to the guidance.

10.11 If your proposal does not achieve the targeted ratings or outcomes you must provide sound justification to demonstrate, to the satisfaction of the Council, why your proposal cannot meet the targets. This justification should be prepared in conjunction with, and endorsed by your wind engineer, and must include evidence of the attempts that have been made to address design deficiencies.

10.12 If your proposal does not satisfactorily meet the criteria, and you have not provided justification, your proposal may be refused.

10.13 A condition may be imposed to secure the achievement of wind speed(s) around the building no greater than those predicted. The Council may require alterations or other remedial measures at the developer's expense if wind speed targets are not met.

Other considerations relating to the wind environment

10.14 Your development must not compromise the viability of wind-driven renewable energy generators on adjacent and nearby sites. Where wind-driven energy generators are likely to be significantly affected, you are responsible for ameliorating the loss by moving, modifying or replacing the installation, or by incorporating equivalent renewable energy generation within your site.

10.15 Where a development affects the viability of an existing wind-driven renewable energy generator, and the solution is to modify the installation off-site, all approvals, expenses and risks are the responsibility of the applicant. This requirement will be incorporated as a condition or in a S106 agreement relating to any approval. Where additional renewable energy capacity is to be installed on site, this will be assessed in conjunction with other renewable energy installations. (Note: additional capacity that is gained by installations off-site should be credited toward the onsite requirement for the development)

10.16 Wind environment also impacts on natural ventilation systems. Natural ventilation must also be considered in building design.

Other influences on micro-climate

Local heat

10.17 Local air temperature can be affected by your building's ability to absorb heat during the day and release it at night. This cumulative effect of this happening across London results in the urban heat island effect. We strongly encourage green roofs, brown roofs, green walls and soft landscaping in all developments to reduce this affect. You can also consider light coloured building materials so unnecessary heat is not absorbed by your building. See Camden Planning Guidance 3 – Sustainability for further guidance on these issues.

Overshadowing

10.18 You should consider the design of your proposal carefully so that it does not overshadow windows to habitable rooms or open spaces and gardens. This may be particularly difficult in central London. However, it will be particularly important in Central London to prevent overshadowing of amenity space and open spaces given the limited amount of open spaces and the existing amount of overshadowing.

Glare

10.19 Glare is uncomfortably bright sunlight reflected from a building façade. It is generally caused by tall, fully glazed and sloping facades with reflective finishes that reflect the sun. Tall buildings should be designed to avoid this and use materials that do not result in glare.

Further information

General guidance on design principles	By Design: Urban Design in the Planning System – Towards Better Practice, DETR/CABE, 2000
Tall buildings	Guidance on tall buildings, English Heritage/CABE, 2007
Urban design in relation to the historic environment	Understanding Place, English Heritage 2010; and Building in Context, English Heritage/CABE, 2002