

OVG Manchester

Daylight and sunlight assessment

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Glossary

Term	Definition
BRE	Formerly the Building Research Establishment
Obstruction angle	The angular altitude of the top of an obstruction above the horizontal, measured from a reference point in a vertical plane in a section perpendicular to the vertical plane.
Probable sunlight hours	The long-term average of the total number of hours during a year in which direct sunlight reaches the unobstructed ground (when clouds are taken into account).
Vertical sky component (VSC)	Ratio of the part of illuminance, at a point on a given vertical plane, that is received directly from a CIE standard overcast sky, to illuminance on a horizontal plane due to an unobstructed hemisphere of this sky. Usually the 'given vertical plane' is the outside of a window wall. The VSC does not include reflected light, either from the ground or from other buildings.

1 Executive summary

This report sets out the results of an assessment of the impact of the proposed OVG Manchester development on daylight and sunlight availability at existing adjacent dwellings and amenity spaces. The report has been prepared to accompany the planning application for the Proposed Development.

There will be negligible detrimental impact on existing adjacent dwellings as BRE guidance with respect to access to daylight and sunlight is met with the Proposed Development in place.

The impact on existing adjacent amenity spaces will also be negligible as overshadowing from the Proposed Development is transient and amenity spaces remain unshaded for longer than the BRE recommended duration with the Proposed Development in place.

The cumulative impact of the Proposed Development in combination with future developments will be negligible due to separation distances between the sites.

It is concluded that the overall impact of the Proposed Development on daylight and sunlight received by existing adjacent dwellings and amenity spaces will be negligible.

2 Introduction

This report sets out the results of an assessment of the potential impact of the proposed OVG Manchester development on daylight and sunlight availability at existing adjacent dwellings and amenity spaces. The methodology adopted for the assessment is in accordance with that detailed in the BRE report BR209, "Site Layout Planning for Daylight and Sunlight", 2011 (BR209).

BR209 sets out design guidance with the aim of providing sufficient access to light from the sky and sunlight in appropriate rooms of new and existing residential buildings and amenity spaces.

The design criteria described in BR209 are meant to provide guidance for designers rather than a regulatory requirement. Designers are encouraged to apply the guidance so that it is sensitive to the development being assessed. The Proposed Development is in a high density, urban environment and as such, numerical targets should be interpreted flexibly, as advised in BR209. Dense urban areas and city centre developments may often experience greater constraints when compared to low-rise suburban areas, and thus a high degree of obstruction which leads to non-compliance with BRE guidance is often unavoidable.

In the following assessment, daylight and sunlight access to existing dwellings and amenity spaces adjacent to the Proposed Development have been assessed against the criteria described in BR209.

Figure 3—1 shows the red line boundary of the Proposed Development site in relation to adjacent dwellings and amenity spaces. The Site is currently used as an over-spill surface level car park serving the Etihad Stadium, causing no overshadowing of its surroundings.

3 Methodology

Daylight and sunlight levels received by adjacent dwellings and amenity spaces have been assessed utilising a 3D computer model of the Proposed Development and surrounding context. The proposed massing used for this assessment was Populous architects' Revit model, BRA-POP-ZZ-ZZ-M3-A-4000 revision P01. Window locations on existing buildings were determined from photographs of the Site, however room uses could not necessarily be determined. Existing windows affected by the Proposed Development were assessed against BR209 guidance. It should be noted that rooms normally considered to have a need for light from the sky are residential kitchens, living rooms and bedrooms and only residential living rooms and conservatories are considered to have a need for direct sunlight. The Proposed Development site falls outside the remit of BR209 and is, therefore, excluded from this assessment.

The excerpts from BR209 in sections 3.1.1 to 3.1.3 set out details of the assessments undertaken, summarised as follows:

- Access to light from the sky and direct sunlight was assessed by determining the angle of visible sky at relevant window locations on existing buildings; and
- Access to sunlight for amenity spaces was assessed based on the proposed building's height, separation distance and orientation relative to the amenity spaces.

3.1.1 Light from the sky - buildings

The excerpt from BR209 below summarises the methodology for assessing access to sky light for existing adjacent buildings.

"If any part of a new building or extension, measured in a vertical section perpendicular to a main window wall of an existing building, from the centre of the lowest window, subtends an angle of more than 25° to the horizontal, then the diffuse daylight of the existing building may be adversely affected. This will be the case if either:

- *The VSC measured at the centre of an existing window is less than 27, and less than 0.8 times its former value; or*
- *The area of the working plane in a room which can receive direct skylight is reduced to less than 0.8 times its former value."*

3.1.2 Direct sunlight - buildings

The excerpt from BR209 below summarises the methodology for assessing access to direct sunlight for existing adjacent buildings.

"If a living room of an existing dwelling has a main window facing within 90° of due south, and any part of a new development subtends an angle of more than 25° to the horizontal measured from the centre of the window in a vertical section perpendicular to the window, then the sunlighting of the existing window may be adversely affected. This will be the case if the centre of the window:

- *receives less than 25% of annual probable sunlight hours, or less than 5% of annual probable sunlight hours between 21 September and 21 March; and*

- receives less than 0.8 times its former sunlight hours during either period; and
- has a reduction in sunlight received over the whole year greater than 4% of annual probable sunlight hours.”

3.1.3 Direct sunlight – amenity spaces

The excerpt from BR209 below summarises the methodology for assessing access to direct sunlight for gardens and open spaces.

“It is recommended that for it to appear adequately sunlit throughout the year, at least half of a garden or amenity area should receive at least two hours of sunlight on 21 March. If an existing garden or amenity area does not meet the above as a result of a new development, and the area which can receive two hours of sun on 21 March is less than 0.8 times its former value, then the loss of sunlight is likely to be noticeable. If a detailed calculation cannot be carried out, it is recommended that the centre of the area should receive at least two hours of sunlight on 21 March.”

3.1.4 Identification of assessment locations

Only facade locations on existing residential buildings having a line of sight to the Proposed Development, perpendicular to windows of habitable rooms, need to be assessed against the guidance of BR209. Of these locations, only those facing within 90° of south need to be assessed for exposure to direct sunlight.

Existing adjacent amenity spaces are assessed for exposure to sunlight on the March equinox, when sunrise is directly from the east and sunset is directly to the west, meaning that spaces located to the south of the development site are unshaded by the massing of the Proposed Development in the context of BR209 guidance and are excluded from the assessment.

Figure 3—1 shows the Proposed Development site and adjacent dwellings and amenity spaces potentially affected by the Proposed Development. Only the east to northeast facing windows of the circular apartment block on Stuart Street have a perpendicular line of sight to the Proposed Development and amenity spaces potentially affected are the southwest corner of Philips Park to the east of the Site and the outdoor playing surfaces of the Manchester Regional Tennis Centre to the west of the Site.

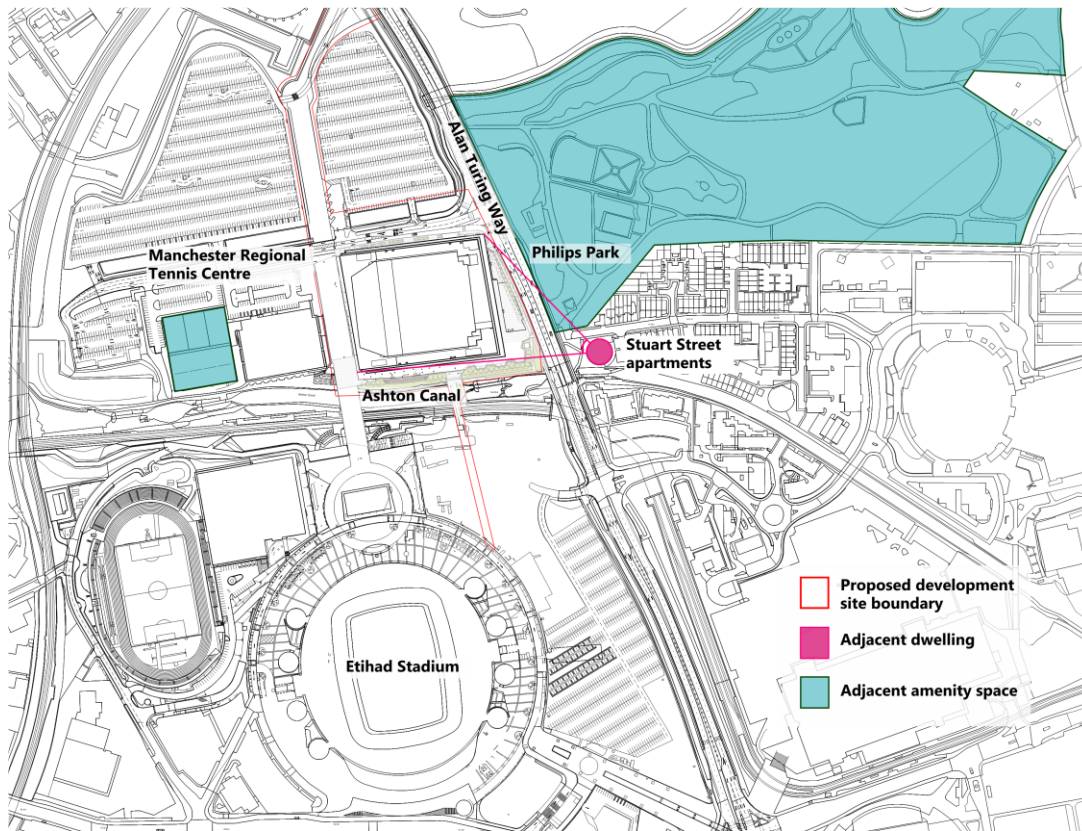


Figure 3—1 Proposed Development site and assessment locations

3.1.5 Impact of the Proposed Development on its surroundings

BR209 Appendix I describes the impact of a development in terms of the change in the amount of skylight and sunlight reaching an existing building where it is required, or the amount of sunlight reaching an open space. It also states that, 'The assessment of impact will depend on a combination of factors, and there is no simple rule of thumb that can be applied', however guidance is provided on quantifying the significance of relative adverse changes as minor, moderate or major, as follows:

Factors tending towards a minor adverse impact include:

- Only a small number of windows or limited area of open space are affected;
- The loss of light is only marginally outside the guidelines;
- An affected room has other sources of skylight or sunlight; and
- The affected building or open space only has a low level of requirement for skylight or sunlight.

Factors tending towards a major adverse impact include:

- A large number of windows or large area of open space are affected;
- The loss of light is substantially outside the guidelines;
- All the windows in a particular property are affected; and
- The affected indoor or outdoor spaces have a particular strong requirement for skylight or sunlight, e.g. a living room in a dwelling or a children's playground".

The impact is considered to be negligible if the guidance of BR209 is met.

4 Assessment results

4.1.1 Light at windows

Following the methodology detailed in section 3, a plane was projected at 25° above horizontal from the centre height of ground floor windows of the northeastern quadrant of the Stuart Street apartment block, as shown on the 3D model view in Figure 4—1. It can be seen that the massing of the Proposed Development does not intersect the 25° plane, indicating no adverse effect on either light from the sky or direct sunlight at the Stuart Street apartment block in the context of the BR209 assessment methodology.

The impact of the Proposed Development on daylight and sunlight access at existing dwellings is, therefore, negligible.

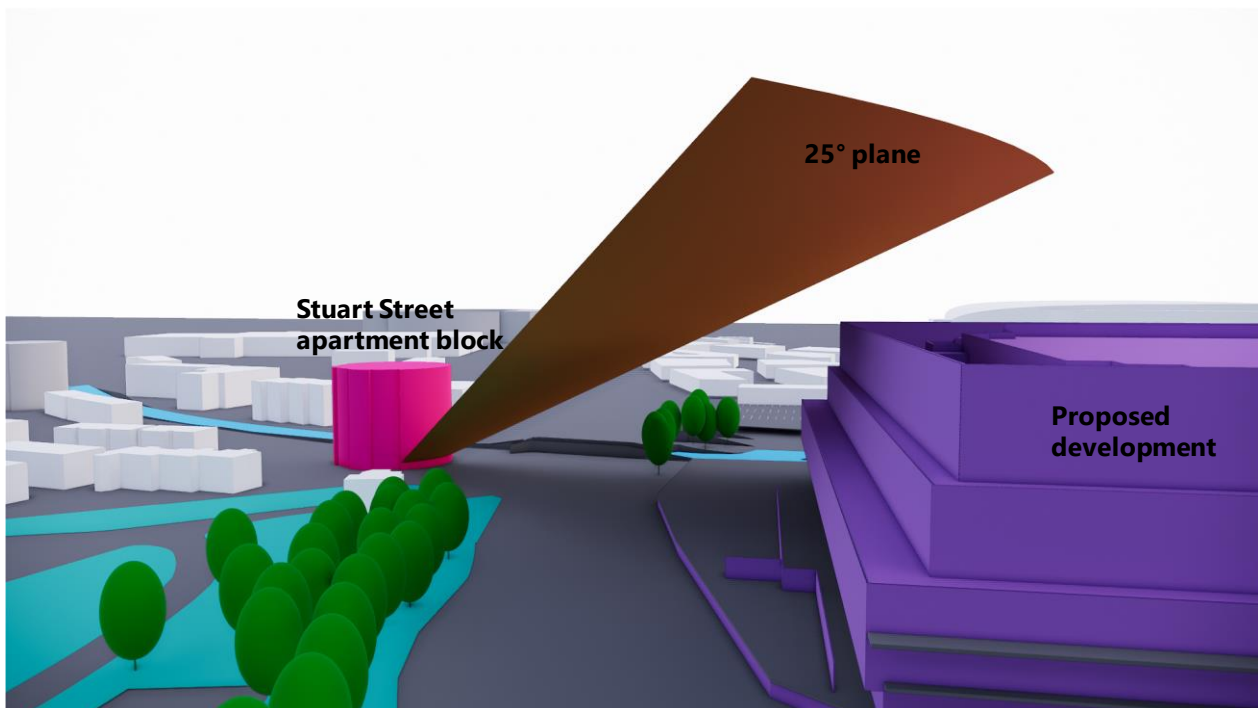


Figure 4—1 25° obstruction plane

4.1.2 Light on amenity areas

With reference to the shadow plots on the March equinox, shown in Figure 4—2, it can be seen that the southwest corner of Philips Park and the outdoor playing surfaces of the Manchester Regional Tennis Centre will remain unshaded by the Proposed Development from 07:00 to 14:00 and 08:00 to 17:00, respectively. Both amenity spaces exceed the BR209 recommended 2 hours of sunlight on at least 50% of their area, therefore, the impact of the Proposed Development on sunlight exposure on existing amenity spaces is negligible.

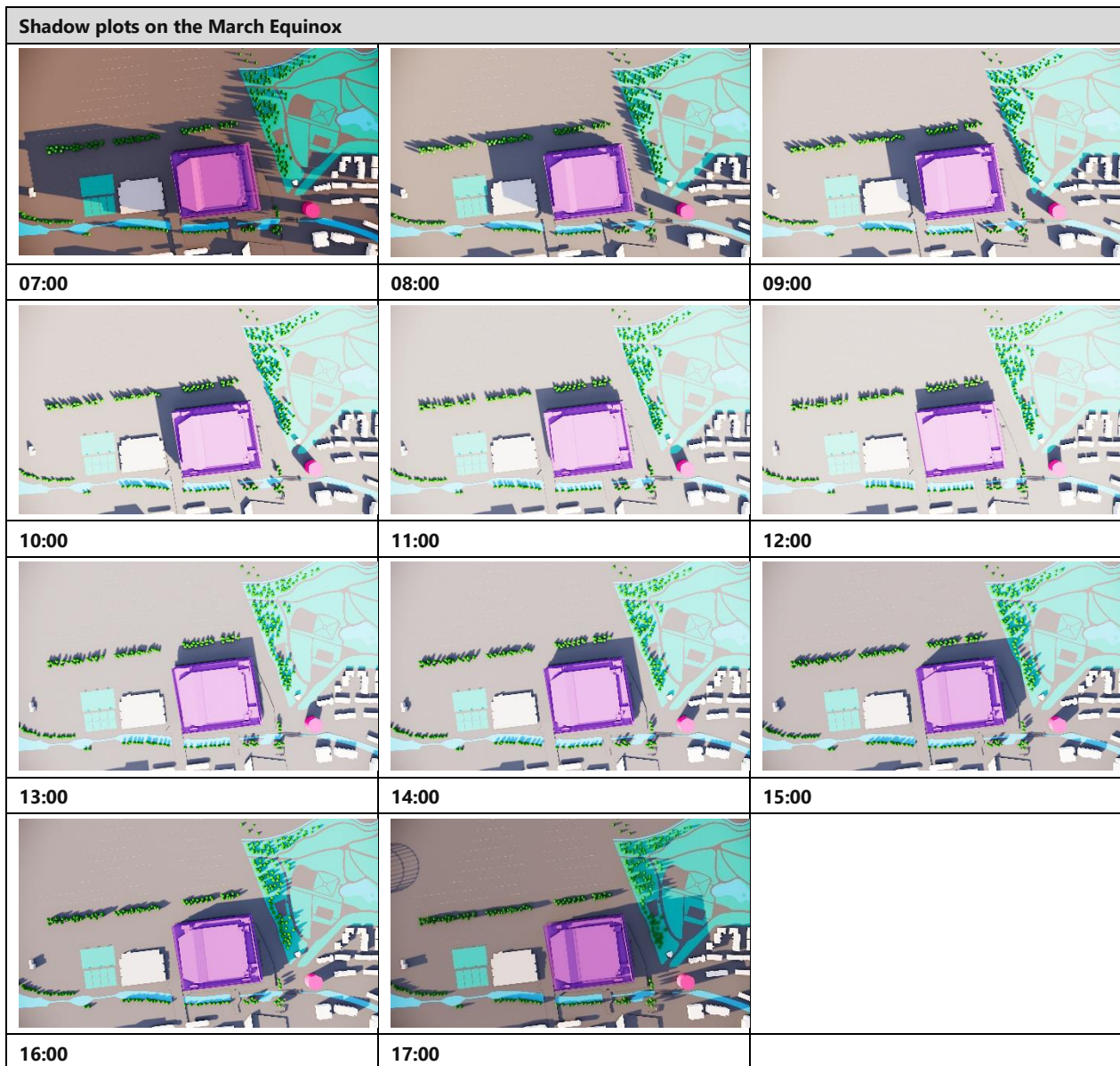


Figure 4—2 Shadow plots on the March equinox

4.2 Cumulative impact of proposed and future developments

With reference to the committed and potential development sites identified in the Environmental Statement accompanying the planning application, no potential future or under-construction development is close enough to produce a cumulative impact, in combination with the Proposed Development, on daylight and sunlight availability at dwellings or amenity spaces adjacent to the Proposed Development site. Similarly, the separation distance between the proposed development and potential residential development areas forming part of the Eastlands Regeneration Framework (ERF) area is sufficient to produce no cumulative impact on daylight and sunlight availability at adjacent dwellings or amenity spaces. The cumulative impact of the Proposed Development, committed and potential future developments on the existing context is, therefore, negligible.

5 Conclusion

This report sets out the results of an assessment of the impact of the proposed OVG Manchester development on daylight and sunlight availability at existing adjacent dwellings and amenity spaces. The report has been prepared to accompany the planning application for the Proposed Development.

There will be negligible detrimental impact on existing adjacent dwellings as BRE guidance with respect to access to daylight and sunlight is met with the Proposed Development in place.

The impact on existing adjacent amenity spaces will also be negligible, as overshadowing from the Proposed Development is transient and amenity spaces remain unshaded for longer than the BRE recommended duration with the Proposed Development in place.

The cumulative impact of the Proposed Development in combination with future developments will be negligible due to separation distances between the sites.

It is concluded that the overall impact of the Proposed Development on daylight and sunlight received by existing adjacent dwellings and amenity spaces will be negligible.

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