



3.2.10 Number 28 would have two windows with larger proportional losses due to its proximity to Block EFG, but they had very high starting VSCs so even with the larger losses they would retain almost the recommended 27% of VSC. One ground floor room would have a moderate adverse change to its daylight distribution and three other rooms would have minor adverse changes.

3.2.11 Loss of sunlight

3.2.12 Eb7 have assessed all of the windows facing within 90° of due south, which is reasonable when room uses are not known.

3.2.13 The impact on sunlight to this terrace will depend upon the internal arrangement of the rooms. Parts of the development would lie to the south of the terrace, where they would block sunlight to windows at the rear of the property, particularly winter sunlight when the sun is lower in the sky. However, sunlight is generally assessed for main living rooms, and the windows affected may not necessarily light main living rooms. For numbers 2 to 20, the windows on the ground floor are most likely to light main living rooms. At numbers 22 to 28, which each contain two properties, there are likely to be living rooms on the upper floors as well.

3.2.14 Loss of year round sunlight would be within the BRE guidelines for all of the properties assessed at 2-28 Lynmouth Road.

3.2.15 Three properties would have a loss of winter sunlight outside the guidelines. These are summarised in Table 1 below.

Table 1 Loss of sunlight at 2-28 Lynmouth Road (GF – ground floor, 1F – first floor)

Property number	Room uses	Year-round sunlight	Winter sunlight impact
2	Not known	Loss within guidelines	One GF window and two 1F windows would lose most of what they receive, but one would retain just below the recommended amount.
8	Not known	Loss within guidelines.	GF W8/9 would lose around 2/3rds – these have the rear addition/conservatory as existing obstructions to the south. 1F W3 would have minor loss & retain just below the recommended amount.
12	Not known	Losses within guidelines.	Loss within guidelines for all windows except 1F W3 which would lose 2/5ths.

3.2.16 Winter sunlight can be difficult to provide in urban areas, where buildings block the lower parts of the sky.

3.2.17 We would therefore consider the impact on sunlight to be minor adverse.



3.3 5 & 6 Lynmouth Court

- 3.3.1 5 and 6 Lynmouth Court are the end properties of a block which faces south at the end of Lynmouth Road. They would be closest to block EFG of the proposed development, which would lie to the side of them.
- 3.3.2 Loss of both daylight and sunlight would be within the BRE guidelines for all of the windows analysed at number 5. This property is not considered further in this review.
- 3.3.3 At number 6, one ground floor window would have a loss of VSC which would be considered minor adverse. It would retain just below the recommended amount of VSC. Loss of sunlight would be within the BRE guidelines.

3.4 7 – 12 Lynmouth Court

- 3.4.1 7-12 Lynmouth Court are located in another building at the end of the terrace containing 2-28 Lynmouth Road. The east elevation would directly face block EFG. This building would be the most affected by the proposals.
- 3.4.2 All of the main windows on the east elevation would have a loss of VSC classed as moderate adverse. These losses are directly attributable to the proposed development. Although there are two windows on the second floor which would have much larger losses, these are secondary windows which would not be covered by the BRE guidelines. Another second floor window with a smaller loss is also a secondary window.
- 3.4.3 We agree with Eb7's comments that the presence of additional windows on other elevations or in bay windows would be a mitigating factor for the dual aspect room.
- 3.4.4 Changes to daylight distribution in the rooms would be of similar scale, although these are based on assumed room layouts. The exceptions are where the rooms are dual aspect and also have windows on the north elevation which would be less affected.
- 3.4.5 Changes to sunlight would be within the guidelines in most cases. One ground floor window would lose all of its winter sunlight, but would retain enough year round sunlight.
- 3.4.6 Eb7 state that the property has deep overhanging eaves, which lead to increased losses on the second floor. This could have been tested by repeating the calculations without the eaves.

3.5 51 Vastern Road

- 3.5.1 51 Vastern Road lies on the corner of Vastern Road and Lynmouth Road. Its east elevation would face block A across Lynmouth Road. Six windows in this elevation would have a loss of VSC outside the BRE guidelines, four on the ground floor, one on the first floor and one of the second floor. The losses would be minor to moderate adverse. Loss of sunlight would be within the BRE guidelines.
- 3.5.2 Valuation Office Agency records indicate that there is currently a flat on the first floor. At the time of writing there was no record of a ground floor flat and online streetview imagery shows a café on the ground floor. The recent planning history for the property includes some plans: a permitted development application reference 190692 for conversion of the upper floors to two flats and a planning application reference 191165 for conversion of the ground floor to two bedsits. The proposed room layouts for the latter are shown in Figure 3 below. The room layouts for the upper floors differ from those in the earlier permitted development application.



3.5.3 These room layouts, and the layouts in the existing plan submitted in the same application, suggest that the affected windows on the ground and first floors are either secondary windows with the main windows located on other elevations, or light stairwells. It therefore appears likely that none of the affected windows are covered by the BRE guidelines.

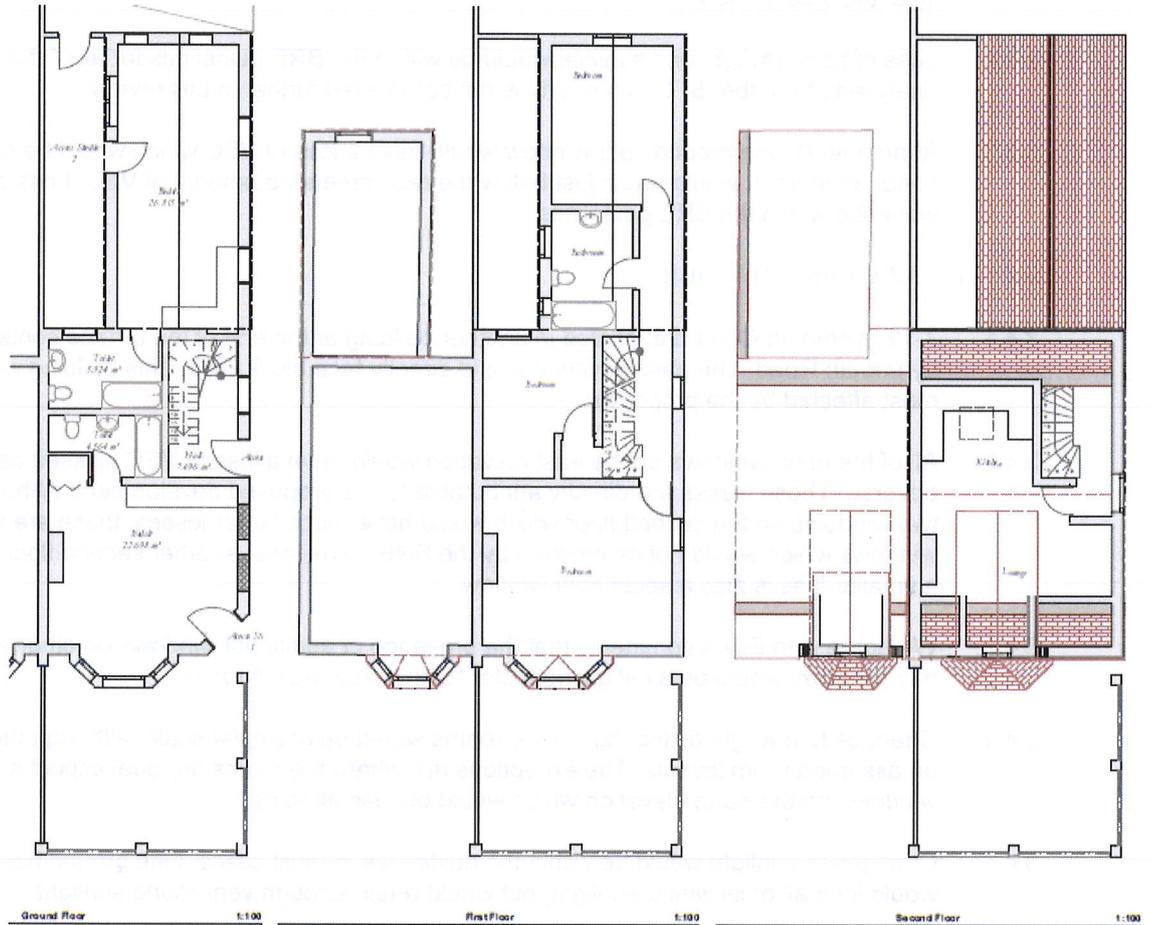


Figure 3 51 Vastern Road approved floor plans, from drawing PDM-06 Rev C by The Keen Partnership.



4 Daylight and sunlight provision

4.1 Locations analysed

- 4.1.1 Rooms on the lowest two residential floors of each proposed block have been analysed. This is a reasonable approach, as they would be expected to receive the least daylight and sunlight if room and window layouts are similar on each floor. In the case of Block D, this consists of the first and second floors, presumably as the ground floor is a non-residential use. For the other blocks, it consists of the ground and first floors.

4.2 Block A

- 4.2.1 Most of Block A would be well daylit and sunlit with the current levels of external obstruction. With the exception of the rooms discussed in the following paragraphs, average daylight factor would be well above the recommended minimum for the respective room types, and with the exception of one room, all of the living rooms would receive the recommended amount of year round and winter sunlight.
- 4.2.2 Living room A-24 on the first floor, see Figure 4 below, would have an ADF of 1.4%, just below the recommended minimum for living rooms. This is a large room facing south west with a balcony located above the window. This would normally be less of an issue as it is not unusual for a few rooms in a development to receive less daylight, the ADF would be only just below the guidelines and the balcony design gives the compensatory benefit of private amenity space. However, the concern is that at the moment the area opposite, Vastern retail park, is low rise, so the only limit on the daylight received by this room is the design of the development itself. This is anticipated to change. The design and access statement notes that there is an emerging development on the Vastern retail park site on the other side of Vastern Road. The developers of that site will also wish to make best use of their site and the levels of obstruction can therefore be expected to increase significantly in the future. If a room cannot receive enough daylight when it has very little external obstruction, it is likely to become significantly worse in the future. Windows with balconies above them can be expected to lose a larger proportion of their daylight if obstruction levels opposite them increase. This room is therefore vulnerable to a substantial future loss of light with its present design.

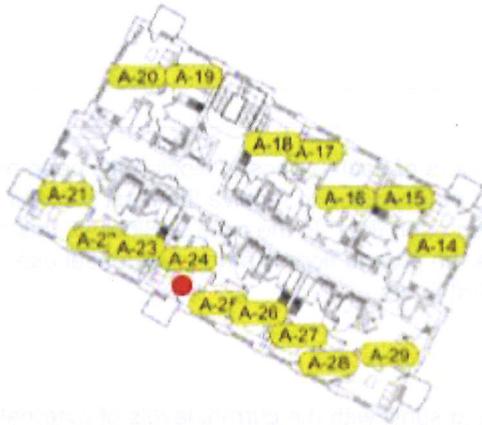


Figure 4 Block A first floor, ADF failure marked

- 4.2.3 The ground floor room below, which does not have a balcony rail in front of it, would receive just enough daylight with current levels of obstruction. The equivalent rooms on the upper floors would be expected to have similar results to the first floor. Whether they would be similarly affected by a development on the Vastern retail park site would depend on the height and proximity of the proposed buildings. Subject to other factors involved in site design, these rooms would benefit from some additional glazing which is not underneath a balcony to protect them from a disproportionate loss of daylight when Vastern retail park is redeveloped.
- 4.2.4 74% of the living rooms in Block A have a window facing within 90° of due south. This compares favourably with an equal distribution in each direction. The design of the block is effective at giving as many properties as possible the opportunity to receive sunlight.
- 4.2.5 Living room A-01 on the ground floor, see Figure 5 below, would receive just below the recommended amount of sunlight. It faces just within 90° of east and would have Block BC to the east of it. The equivalent rooms on upper floors would receive enough sunlight with current levels of obstruction. This individual result is probably reasonable given the room's orientation and position in the block.



Figure 5 Block A ground floor, sunlight failure marked.

4.3 Block BC

- 4.3.1 Seven living rooms on the ground and first floors of this block would not receive the recommended amount of daylight. Some of them would have extremely low ADFs. They are shown in Figure 6 and Figure 7 and considered individually below.

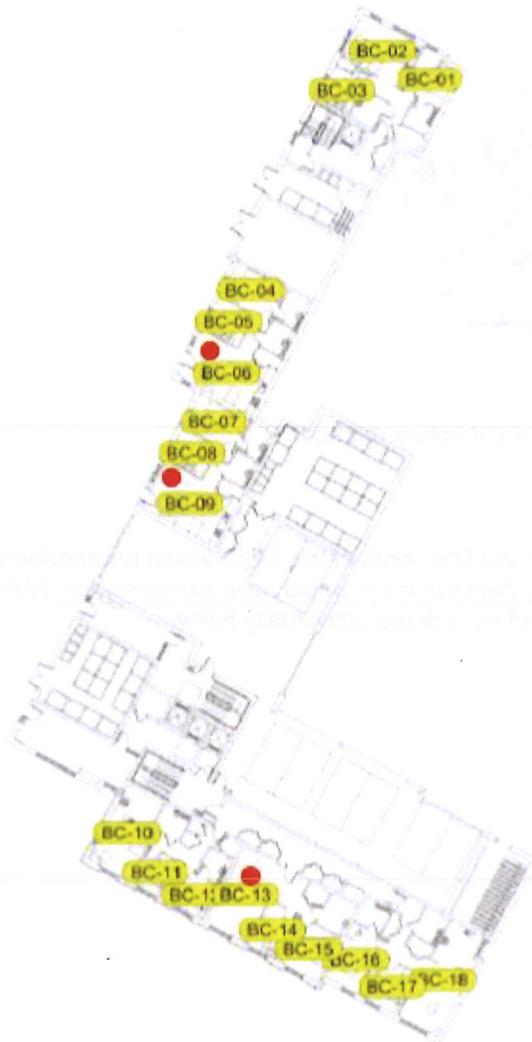


Figure 6 Block BC ground floor, ADF failures marked.

- 4.3.2 Living room BC-06 on the ground floor faces north west. It would have an extremely low ADF of 0.3%, where the recommended minimum for living rooms is 1.5%. This room would be very gloomy and need supplementary electric lighting almost all the time. Daylight provision to this room should be improved if at all possible. The equivalent room on the first floor would be better but would still fall well short at 1.0%. The main windows face the terrace of two storey houses on Lynmouth Road, and would therefore not be particularly obstructed externally; their poor levels of daylighting are therefore a consequence of their own design and the equivalent rooms on upper floors may well have the same issue. In particular, the ground floor room has a much narrower main window than the first floor room and has the potential for improvement subject to other site design factors. They both appear to have the potential for increased window area in their side elevation.



- 4.3.3 Living room BC-09, also on the ground floor and facing north-west, has a low ADF of 0.9%. This room is large for its window area. There appears to be some limited potential to increase window area but it is unlikely to be possible to bring this room up to a pass without loss of room area.



Figure 7 Block BC first floor, ADF failures marked

- 4.3.4 Living rooms BC-13 on the ground floor and BC-39 on the first floor face south west. BC-13 would have an ADF just below the recommended minimum for living rooms at 1.4%. BC-39 would be a lot lower at 0.8%. It has a large floor area for its window size, but it does have the compensatory benefit of private amenity space. These rooms are potentially vulnerable to loss of daylight due to the future development of Vastern retail park, but less so than the equivalent rooms under balconies in Block A as the retail park site is slightly to one side and block BC faces Station Shopping Park.
- 4.3.5 Living room BC-48 faces north east. It is important that north facing rooms are well lit as they will not have the benefit of sunlight in that position. The room has an ADF of 1.4%, just below the recommended minimum for living rooms. It does not have an overhead balcony limiting its overhead daylight, and so it does not have the compensatory benefit of private amenity space.



There is the potential for this window to be widened, particularly as it does not face south and will be less prone to overheating.

- 4.3.6 Room BC-51 also faces north east. It would have a very low ADF of 0.6%. It is set in the corner of the building so that the window is substantially obstructed to one side and the window is very small. There would be no compensatory outdoor benefit such as a balcony, and it would not receive any sunlight, so it would be a very gloomy space. The design has placed a large room with the greatest need for daylight in a position where it will receive the least. The result for this room should be improved if at all possible by altering the layout. Bedrooms are a better choice for building positions with limited prospect for daylight. On the higher floors, this location is occupied by a bedroom.
- 4.3.7 Room BC-56 would face south east. It would have an ADF of 1.2%, below the recommended value for living rooms. This room would have a reduced level of daylight, but without the compensatory benefit of private amenity space. It would receive the recommended amount of sunlight. Subject to other site design factors, there appears to be the potential to increase the size of this window.
- 4.3.8 52% of the living rooms in Block B would have a window facing within 90° of due south. A substantial number of living rooms will therefore not have the opportunity to receive sunlight, even though those which do have a window facing south east or south west would receive the recommended amount.

4.4 Block D

- 4.4.1 All of the habitable rooms analysed in this block would receive the recommended minimum amount of daylight and sunlight. This block has the best daylight provision of the four blocks.
- 4.4.2 Although only 42% of living rooms in the block would have a window facing within 90° of due south, many of those which would not, would have views of the River Thames instead, as this lies to the north of the site. This is likely to be prized and considered acceptable compensation for lack of sunlight.

4.5 Block EFG

- 4.5.1 68% of the living rooms in this block would have a window facing either south east or south west. Many of those which would not, would have views over the River Thames. The block therefore in theory provides good access to sunlight or an agreeable alternative. However, there are some very poor results on the lower floors, including low levels of sunlight despite a south east orientation.
- 4.5.2 Three ground floor rooms in this block, marked in Figure 8 below, would not receive enough of either daylight or sunlight. The individual rooms are discussed below.
- 4.5.3 Living room EFG-10 is dual aspect. It has a main window facing south east which is located underneath a balcony and a secondary window facing south west. It would have an ADF of 1.4%, just below the recommended amount for living rooms. It would receive the recommended amount of year round sunlight, but would receive just below the recommended amount of winter sunlight. The sunlight would be difficult to change due to the other buildings in the development presenting an obstruction to the south and east, and year round sunlight is more important. However, subject to other site design factors, the ADF could potentially be improved by increasing the glazing area.



- 4.5.4 Living room EFG-13 faces south east. It would be extremely poorly daylit. It is a large room for the size of its window and it would have an ADF of 0.3% against a recommended minimum for living rooms of 1.5%. It would also receive almost no sunlight, 3% of annual probable sunlight hours against a recommended minimum of 25%, and 2% of winter sunlight hours against a recommended minimum of 5%. It would be a very gloomy room which would need supplementary lighting almost all of the time. On higher floors, the rooms in the same position don't have the same problem as there is another window to the rear of the room. Daylight to this room should be improved if at all possible. It would be difficult to improve the amount of sunlight it receives as sunlight is obstructed by the other blocks of the development. This makes reasonable daylight provision even more important.
- 4.5.5 Living room EFG-18 also faces south east. It would have an ADF of 0.6% against a recommended minimum of 1.5% for living rooms. The room is large for its window size. There appears to be some limited potential for increased window area, but it is probably not possible to bring the daylight up to a pass without losing floor area or making very large changes to the design of the scheme. The window would also fall substantially short of the sunlight requirement, receiving 5% of APSH against a recommended minimum of 25%. Winter sunlight would be better, and only slightly below the recommended minimum.

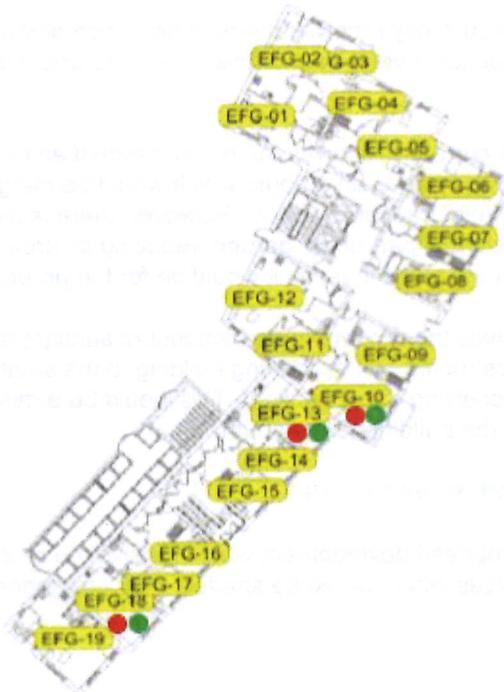


Figure 8 Block EFG ground floor, ADF (red) and sunlight (green) failures marked.

- 4.5.6 We disagree that the very poor results should be accepted as isolated deviations and suggest that the design should be revisited to see if their daylight and sunlight provision can be improved any further. The fact that other homes in the development would be better daylit would not provide any comfort to the people who live in the very poorly lit properties. In particular, 0.3% is an exceptionally low ADF which will provide very poor living conditions.



5 Overshadowing

5.1 Loss of sunlight to existing amenity areas

5.1.1 Four properties would have a loss of sunlight to their gardens which would be outside the BRE guidelines, shown below. The 3 Lynmouth Court location has been assumed based on the positions of 5 and 6 Lynmouth Court.

- Point 1 – 2 Lynmouth Road
- Point 2 – 4 Lynmouth Road
- Point 4 – 8 Lynmouth Road
- Point 17 – 3 Lynmouth Court

5.1.2 2 Lynmouth Road already has less than the recommended 50% of its area receiving at least two hours of sunlight on 21 March. With the development in place, it would lose all of the remaining area and none of the garden would receive at least two hours of sunlight on 21 March. This would be a major adverse impact. The garden is small and has walls around it which limit sun.

5.1.3 At 4 Lynmouth Road, the garden currently receives the recommended amount of sunlight over just over half its area. It would lose just over a third of this area. This would be a moderate adverse impact.

5.1.4 At 8 Lynmouth Road, the garden currently receives the recommended amount of sunlight over fractionally below half its area. It would lose an amount which would be marginally outside the BRE guidelines. This would be a minor adverse impact. However, there is a garden building in the model which occupies a substantial part of the garden, reducing its area. Without this building, the loss would be within the guidelines, as it would be for the properties either side.

5.1.5 3 Lynmouth Court currently receives the recommended amount of sunlight over just under three quarters of its area. It is partly obstructed by the existing building to the south. It would lose just under half of the area currently receiving direct sunlight. This would be a moderate adverse impact due to the contribution of the building to the south.

5.2 Sunlight provision to proposed amenity areas

5.2.1 All of the amenity areas in the proposed development would receive the recommended amount of sunlight. Although there are areas which would be shaded, they are generally in paved circulation areas.

5.3 Transient overshadowing

5.3.1 The transient overshadowing drawings show the shadows cast at different times of the day. Areas which would be overshadowed by existing buildings or fences are shown in grey, and the green and blue shadows show additional shadowing as a result of the existing and proposed buildings respectively. The column on the right shows changes in the amount of shadowing, which is a very helpful set of images. It is sometimes difficult to see the leading edge of the shadow due to the amount of grey.



- 5.3.2 21 March is the date used in the sun on ground assessment in the BRE Report. On 21 March, the shadow from one part of the existing building on site falls over the gardens of the first four houses on Lynmouth Road but clears them by 10 am. The shadow from another part of the building then overshadows the first one or two houses again in the afternoon. Other houses in the vicinity are unaffected as the rear of the site is mainly occupied by car parking.
- 5.3.3 The proposed development would overshadow the whole terrace at Lynmouth Road, the gardens on Vastern Road to the west and 7-12 Lynmouth Court at 8 am. At 9 am the shadow would reach 1-6 Lynmouth Court. It would clear the middle of the terrace at Lynmouth Road by 10 am but would continue to overshadow Vastern Road, 2-6 Lynmouth Road, part of 7-12 Vastern Court and 1-6 Lynmouth Court. It would clear the Vastern Road gardens by 11 am and Lynmouth Court by 12 pm. 1-6 Lynmouth Road would continue to be overshadowed for the rest of the day, as they would be overshadowed by other buildings once the shadow of the development has cleared it late in the day.
- 5.3.4 Shadowing is also shown for 21 June. This would be the date of the year when there would be the least overshadowing. We would treat the start of the day as 8 am, although plots for 6 am and 7 am are provided. On this date, the existing buildings on site would not have any impact on neighbouring properties at all.
- 5.3.5 The proposed development would overshadow Lynmouth Court and parts of the Vastern Road gardens from 8 am. It would clear Vastern Road by 10 am and Lynmouth Court by 11 am. It would overshadow 2 Lynmouth Road from 2 pm and would clear by 4 pm.



6 Conclusions

- 6.1.1 The impact of the proposed development on neighbouring residential properties and daylight and sunlight provision to the proposed development has been reviewed using guidance in BRE Report 'Site layout planning for daylight and sunlight: a guide to good practice' and BS 8206 part 2.
- 6.1.2 42 windows at 2-28 Lynmouth Road would have a loss of vertical sky component characterised as minor adverse. Some of these are secondary windows, and some of the losses would be only marginally outside the guidelines. The windows affected are principally on the end of the rear additions, with some on the main rear elevations. Changes in daylight distribution would be within the guidelines for the most part. Number 2 and number 24 are more affected than the other properties in the terrace and would have larger losses of light which would be characterised as major adverse. These have overhangs which limit the amount of daylight they can receive, which would be a mitigating factor.
- 6.1.3 Loss of year round sunlight would be within the guidelines. There would be losses of winter sunlight outside the guidelines for three properties.
- 6.1.4 There would be a minor adverse loss of VSC to just one window at 6 Lynmouth Court. Loss of sunlight would be within the guidelines.
- 6.1.5 7-12 Lynmouth Court is the building which would be most affected by the proposals. This building would have a moderate adverse loss of daylight. Some of the rooms have less affected windows on other elevations, which would be a mitigating factor. Loss of sunlight would be largely within the guidelines.
- 6.1.6 51 Vastern Road would have a minor to moderate adverse impact to windows on its side elevation. However, drawings submitted as part of a recent planning application suggest that none of them are main windows lighting habitable rooms which would be covered by the BRE guidelines.
- 6.1.7 Gardens at 2, 4 and 8 Lynmouth Road, and at 3 Lynmouth Court, would have a loss of sunlight to their gardens which would be outside the guidelines. The losses would be major for 2 Lynmouth Road, moderate for 4 Lynmouth Road and 3 Lynmouth Court, and minor with mitigating factors for 8 Lynmouth Road. Number 2 would be particularly affected. It would lose all of its area capable of receiving the recommended amount of sunlight, though the garden is small and has walls around it which limit sunlight.
- 6.1.8 There are some living rooms within the proposed development which would have average daylight factors well below the recommended minimum, going as low as 0.3%. These will be extremely gloomy, particularly in the cases where they would not receive any sunlight either. In some case, the windows are subject to low levels of external obstruction and the poor daylighting is therefore a consequence of the development's own design.
- 6.1.9 We disagree that the very poor results should be accepted as isolated deviations and suggest that the design should be revisited to see if rooms which fall well short of the recommended amount of daylight can be improved through measures such as changes to window design. The fact that other homes in the development would be better daylit would not provide any comfort to



the people who live in these properties. 0.3% is an exceptionally low ADF which will provide very poor living conditions.

- 6.1.10 Some south facing windows in Block A fall only marginally short of the recommended amount of daylight, but their design renders them vulnerable to substantial future loss of light from an emerging development for Vastern retail park. Where an increase in future obstruction is likely, the design could protect the future occupants by not rendering their windows dependent on an area of the sky which is likely to be blocked, for example by providing additional glazing which is not located underneath a balcony.
- 6.1.11 Living room windows facing within 90° of due south generally receive the recommended amount of sunlight. The exception is ground floor windows in block EFG, which are heavily obstructed by other blocks in the development.
- 6.1.12 All of the amenity areas in the proposed development would receive the recommended amount of direct sunlight.



7 References

1. BRE, BR209 Site Layout Planning for Daylight and Sunlight: A guide to good practice, 2011
2. Ministry of Housing, Communities & Local Government, National Planning Policy Framework, July 2018.
3. Commission Internationale de L'Eclairage (International Commission on Illumination), CIE Standard 011/E:2003 Spatial distribution of daylight - CIE standard overcast sky and clear sky
4. BS8206 Part 2:2008 Lighting for Buildings, Code of Practice for Daylighting

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7th April 2020

Our Ref. P117633-1000

Dear Mr Markwell

Independent Peer Review of a Microclimate Assessment for Planning Application 200188 at 53-55 Vasten Road, Reading, RG1 8BU

1. Introduction

BRE have been appointed by Reading Borough Council (RBC) to undertake an independent peer review of RWDI report #1901994 Pedestrian Level Wind Comfort Assessment of 55 Vasten Road, Reading, dated 29th January 2020.

The scope of this review was carried out with particular reference to the following:

- a) Is the level and nature (including the methodology) of information submitted sufficient and proportionate to the proposed level of development sought in this instance?
- b) Is the analysis and conclusions reached by the microclimate report reasonable and robust, set within the adopted local policy context of:
Relevant components of Policies CC3 (Adaption to Climate Change) and CC8 (Safeguarding Amenity) of the Reading Borough Local Plan (Adopted November 2019).
- c) If it is considered that the analysis / conclusions are not reasonable and robust, guidance as to what measures (e.g. alternative mitigation measures) / information would be required to address any concerns raised (if any)?

This report provides BRE's review of RWDI report #1901994 Pedestrian Level Wind Comfort Assessment of 55 Vasten Road, Reading.



BRE's Quality Management System is approved to BS EN ISO9001:2008, certificate number LRQ 10000513.

BRE's Environmental Management System is approved to BS EN ISO14001:2004, certificate number LRQ 10000536.

2. Peer Review of Wind Comfort Assessment Report

Issue Considered	BRE Comments	Action Required
Compliance with RBC Policies CC3 and CC8	<p>The proposed development is below the 12 storey height limitation of Policy CR10. However, Policy CC8 requires wind impacts to be considered for buildings >8 storeys tall.</p> <p>The submitted wind microclimate assessment fulfils the requirement of Policy CC8.</p>	No action required.
Compliance with Appropriate Methodology	<p>The report provides a quantitative CFD assessment of the wind microclimate around the proposed development. The assessment is based on the 'Lawson' LDDC criterion for pedestrian comfort. However, the RWDI analysis only presents the mean wind speed effects. The Lawson approach requires a gust equivalent mean wind speed (GEM) analysis to be carried out. See for example Ref 1, which presents best practice guidelines for CFD studies.</p>	<p>The Lawson methodology is appropriate, however, the RWDI assessment does not adequately implement the Lawson methodology.</p> <p>Provide an assessment of GEM wind speeds, Without this, the assessment cannot be considered to be robust.</p>
Level and Nature of Information Submitted	<p>The report is generally well written and easy to understand and provides an acceptable level of detail and information, subject to the clarifications and omissions described below.</p>	Minor issues as discussed below
Scope of Assessment	<p>The scope of the assessment is as expected for a CFD study of this type</p> <p>The assessment includes the baseline site, the proposed development and the cumulate scenario.</p>	<p>No action required</p> <p>This follows normal best practice – no further action required.</p>
Assumptions	<p>In line with standard methodology, and consistent throughout the report.</p>	No action required
Analysis	<p>The assessment uses meteorological data from Heathrow Airport. These data appears to be appropriate for this assessment.</p> <p>The Lawson methodology requires an assessment of both mean and gust windspeeds (where the gust wind speeds are presented as gust equivalent values, GEM). The report only presents mean wind speed results.</p>	<p>No action required</p> <p>Provide an assessment of GEM wind speeds, (either quantitative or qualitative).</p>

Ref 1 Wind Microclimate Guidelines for Developments in the City of London, August 2019

	<p>There is limited information provided regarding the CFD modelling, such as, for example, the extent of the calculation domain, the calculation grid size, etc.</p> <p>The assessment has been carried out for 18 wind directions. Current best practice is to use 36 wind directions.</p> <p>It is stated that the CFD RANS simulation used in this assessment does not have the ability to predict the fluctuating or gusty nature of the wind. This is justified by the argument that <i>'As comfort is a function of average conditions, this model is more suited to help analyse this'</i>.</p> <p>This assessment uses <i>'informed engineering judgement'</i> to <i>'determine the potential for strong winds leading to potential safety issues'</i>. The assumption is that strong winds are generally associated with areas which would be classified as acceptable for walking or as uncomfortable. However, the assessment appears to assume that only the lower 15m/s safety threshold can be exceeded in these areas. The possibility of exceedance of the 20m/s threshold appears to have been totally ignored.</p>	<p>Confirm whether the CFD modelling complies with best practice in these respects, see for example Ref 1.</p> <p>Given the massing and height of the proposed development, 18 wind directions is considered reasonable in this case. No further action required.</p> <p>This is an erroneous argument. Pedestrian comfort is not just a function of average conditions. In regions where highly turbulent flow occurs, for example near building corners, then pedestrian comfort tends to be dominated by gust wind speeds. A GEM analysis must be carried out.</p> <p>This approach is not best practice in a quantitative study but can be considered acceptable providing the authors of the report have extensive wind engineering experience to draw on. However, consideration must be given to the possibility of exceedance of the 20m/s safety threshold.</p>
<p>Results</p>	<p>General comment: the report discusses various specific locations such as entrances and the open air café. These locations are not marked on the figures in the report.</p> <p>Section 6.2. Figure 6 shows an area where wind conditions are suitable for walking. This location appears to be a footpath along Vasten Road. This is not specifically discussed in the report.</p> <p>The discussion of wind conditions in amenity areas and on balconies is limited to the summer season. (this comment also applies to Section 6.3)</p> <p>Section 6.3.1 This section states: <i>'Wind conditions around the Proposed Development during the windiest season</i></p>	<p>Mark up on the appropriate figures all specific locations discussed in the report.</p> <p>The expected pedestrian activity on this footpath is likely to be Strolling. In which case the wind conditions will be unsuitable for this activity. Please discuss and advise on appropriate mitigation measures.</p> <p>It is reasonable to assume that the public/residents would expect to be able to use these areas during other times such as spring and autumn. Consideration should be given to assessing the wind conditions in other seasons when the public will use these areas.</p> <p>It is not correct to say that these wind conditions would be suitable for standing</p>

	<p>would range from suitable for sitting to walking use. These conditions would be suitable for all entrance locations as they would have conditions suitable for standing use or calmer’.</p> <p>Section 6.3.1.1 This section states: ‘an area to the south-east of Building B would have walking use wind conditions during the windiest season’.</p> <p>Section 6.3.2 This section identifies areas where mitigation might be required but fails to mention the area along Vasten Road adjacent to the existing building where walking wind conditions occur.</p>	<p>use, when clearly some locations are only suitable for walking.</p> <p>Figure 10 shows four separate areas where walking use wind conditions occur. One of which is some 60m away from the proposed development along Vasten Road adjacent to an existing building.</p> <p>Consider the need for mitigation at this location.</p>
Omissions	Failure to include a GEM windspeed analysis	As discussed in previous sections
Mitigation	<p>It is not possible to read the text on the proposed landscaping scheme (Figure 17 of Appendix B) and the entrance to the café and the seating area are not shown so this cannot be reviewed.</p> <p>The efficacy of the proposed mitigation measures are based on judgement. The report recommends further testing to assess mitigation measures.</p>	<p>Provide a readable and annotated landscaping plan</p> <p>We agree that further testing would be beneficial.</p>
Conclusions	<p>The conclusions reached with regard to the expected wind comfort effects around the proposed development are reasonable subject to the points raised above and below.</p> <p>The assessment of exceedance of the 15m/s wind safety threshold is based on judgement. However, exceedance of the 20m/s safety threshold has not been considered.</p> <p>The third bullet point states: With the Proposed Development, wind conditions would range from suitable for sitting to strolling use on- and off-Site at ground and podium levels during the windiest season.</p> <p>The conclusions give detailed and specific guidance on type and location of mitigation measures.</p>	<p>We expect the safety assessment to be generally conservative with regard to the 15m/s threshold. The 20m/s threshold should be considered.</p> <p>There is an area to the south east of the site where the wind conditions are only suitable for walking. Correct this bullet point.</p> <p>These measures appear to be reasonable and well judged.</p>

3. General Summary

Several relatively minor issues have been identified with the RWDI report as noted above. However, the main issue is that the assessment methodology only presents mean wind speed results and therefore does not comply with the Lawson methodology which requires an assessment of both mean and gust (GEM) wind speeds. The omission of a gust wind speed analysis could result in an underestimate of the wind conditions in relation to both pedestrian comfort and pedestrian safety. An analysis of gust wind speeds must be included. This is not possible with the CFD modelling methodology used; therefore this could be a qualitative assessment in a similar way to the qualitative assessment of wind safety used in the RWDI assessment.

Yours sincerely



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