Regeneration and Planning Development Management
London Borough of Camden
Town Hall, Judd Street
London WC1H 8ND

Our Ref : DJJ/2614-01-01(2)

DATE : 9th OCTOBER 2014

c/o COUPDEVILLE ARCHITECTS, Unit 1A Woodstock Studios, 36 Woodstock Grove, London W12 8LE

Dear Sirs

TOWN and **COUNTRY PLANNING ACTS** - DAYLIGHT AND SUNLIGHT ANALYSIS
Site Address : 145 MALDEN ROAD – LONDON NW5 4HT

1.00 INSTRUCTIONS :

1.01 It is proposed to extend the existing 4 storey mid-terrace (one from the end) house with a new rear extension building at first and second floors, and with an additional floor at roof level: "The development proposal".

1.02 I have been requested by the applicant's architects, to verify (i) that the proposed rear extension building will not detrimentally impact on the daylight and sunlight amenity received into the south west facing main habitable rooms of the adjoining dwellings at 2 Malden Place and 147-149 Malden Road respectively; and, (ii) that the proposed additional floor at roof level will not detrimentally impact on the daylight and sunlight amenity received into the north facing main habitable rooms of the adjoining dwellings fronting Quadrant Grove : "The adjoining dwellings"

2.00 TERMS OF REFERENCE :

2.01 The Building Research Establishment Practice Guidance Report, Site Layout Planning for Daylight and Sunlight 2nd Ed. BR209 Oct. 2011 – "The BRE Guidelines"; the British Standards Code of Practice for Daylighting BS8206-2:2008; and, the CIBSE Lighting Guide LG10 "Daylighting and Window Design".

2.02 The extracted drawing and Modelled Waldram Diagram Analysis for exterior Vertical Sky Component and Annual Sunlight Probability; and Calculation Sheet for Room Interior Daylight values; appendices 2614-A01a, and 2614-A02.

/continued.....

3.00 VERIFICATION :

3.01 I can confirm that the development proposal will not detrimentally impact on the daylight and sunlight amenity received into the main habitable rooms of the adjoining dwellings.

4.00 IN BRIEF :

4.01 All daylight is sunlight, and by the terms of reference *daylight* means the sun's radiation diffused over the whole dome of sky by the earth's atmosphere (Commission Internationale de l'Eclairage - CIE standard overcast sky), and *sunlight* means the sun's radiation unobstructed by cloud formation in the southern hemisphere (north of the equator).

4.02 Broadly in planning for good daylight and sunlight, the BRE guidelines consider the quantity of sky visible from a building, measured with respect to the vertical plane and expressed as a percentage of the whole dome of sky, Vertical Sky Component [VSC].

4.03 At London's latitude (51.5°N), subject to any qualifying conditions that may apply to a particular situation, the preference is that any new development will leave a VSC value of some 27% of the dome of sky available for the windows of the main habitable rooms in any neighbouring building.

4.04 In these circumstances the main habitable rooms of neighbouring buildings will have a good standard of daylight, and according with orientation to the south, good probable sunlight as well.

4.05 However, in any inner city urban environment, there will be an accustomed abidance with less than the preference guideline value of 27% VSC, because of the more densely built neighbourhood characteristics.

4.06 So that where a development proposal involves the extension and alteration of existing buildings, or the entire replacement of existing buildings with others, then more detailed terms for assessing the acceptable daylight and sunlight standards of a particular neighbourhood, are available, as follows.

4.07 **EXTERIOR DAYLIGHT :**

4.071 Daylight reduction to accustomed levels in existing overlooking neighbour property, where levels are less than the preference daylight values given for new development :

- An assessment of exterior percentage reduction of Vertical Sky Component and interior percentage reduction of Daylight Distribution over the room Illumination Plane, before and after the development proposal.

4.072 Daylight levels permitting development by grant of local public policy, relative to the application curtilage boundary, as enables similar development on adjoining land to take place.

- An assessment of exterior and interior day-lighting levels, within both approved neighbouring built accommodation and the development proposal itself.

4.073 For changes to the existing built environment, the guidelines offer that a reduction of less than 0.8 times the existing exterior VSC value or the existing interior DD value, is unlikely to be noticeable by inhabitants. If however the variation is greater than this, then a more detailed interior daylight study may be necessary in assessing whether the variation will be materially detrimental to the neighbouring property.

4.08 **INTERIOR DAYLIGHT :**

4.081 In planning for good interior daylight, the guidelines consider the following three principle criteria for predicting whether or not the interior of any proposed residential accommodation may be regarded as having good daylight.

4.082 These criteria seek to collectively apply found values for exterior VSC value for sky visibility with the interior light reflectivity of component surfaces to give an average daylight factor, and then weigh this with an assessment of the relationship of the size and shape of the windows to the size and shape of the rooms they are designed serve.

/continued…….

4.083 Criteria for the assessment of Interior Daylighting Values :

(i) The percentage Average Daylight Factor within a subject room (ADF).

(ii) For rooms lit by windows in one wall only : A Limiting Value for room depth (L).

(iii) The significance of Daylight Distribution (DD) spread over the Illumination Plane (IP) of a room, with reference to the No Sky Line (NSL).

4.084 The percentage value for average daylight factor seeks to analyse the ratio of the exterior sky illumination adjusted for clean glass light transmissibility through the window area, to the interior surface area of the room adjusted for average light reflectivity; and, the preference value range for rooms used as bedrooms and dining / living rooms, is respectively given from 1% to 1.5%.

4.085 The limiting value for room depth where a room is lit by windows in one wall only, seeks to discourage the design of especially deep rooms where the surrounding built townscape horizon is high in relation to the proposed window head, and daylight distribution over the room illumination plane (adopted at 850mm above the floor level of a habitable room) is likely to be poor.

4.086 This will often be the case with lower ground floor and basement accommodation where daylight is rarely spread over more than 30% of the illumination plane, however the assessment of daylight distribution can usefully show that deep rooms are comfortably achievable at these lower levels by using skylights, and also for rooms lit by more than one window where the limiting value for room depth is not applicable.

4.09 **SUNLIGHT: [**Lat.51.5°N: Annual Sunlight Probability according to orientation in the southern hemisphere E-180°-W in the azimuth, *"the sun path arc"*; and, Sun-on-Ground on the Vernal and Autumnal equinox (21-03/21-09**]**

4.091 Access for annual sunlight probability [ASP], through windows and probable annual sunlight spread (PASS) on ground, both within a development proposal and for neighbouring property.

- An assessment of the expectant annual probable sunshine to southerly facing windows and percentage ground amenity area in permanent shadow.

4.092 ASP and PASS reduction to accustomed levels in existing overlooking neighbour property, where levels are less than the given sunlight probability preference values for new development.

- An assessment of the percentage reduction of expectant annual probable sunshine to southerly facing windows and ground amenity area in permanent shadow, before and after the development proposal.

4.093 For new development, the guidelines seek an annual sunlight probability of 370 hours (25% of total ASP) of which 75 hours (5%) are in the winter months (ASP:25[5]); and also, a preference for the ground of any private amenity area to receive at least 2 hours of probable annual sunlight spread over one half of its surface (PASS:50[2]), on the equinox dates.

4.094 For changes in the existing built environment, where the found existing value is less than the above, the guidelines offer that a reduction which is smaller than 0.8 times the former value is unlikely to be noticeable by inhabitants, and that it is desirable that the existing overall annual probable sunlight hours are not reduced by more than 4%.

4.094 For changes in the existing built environment, where the found existing value is less than the above, the guidelines offer that a reduction which is smaller than 0.8 times the former value is unlikely to be noticeable by inhabitants, and that it is desirable that the existing overall annual probable sunlight hours are not reduced by more than 4%.

4.10 Broadly the recommendation is that all of the above given criteria are applied flexibly and that the guidelines are interpreted permissively rather than restrictively

5.00 ANALYTIC COMMENTARY: Please see Appendix 2614-A01a

5.01 The preference criteria for good external daylight (VSP) and good annual sunlight probability (ASP) under paras 4.03 and 4.093 are respectively met.

5.02 The station point SP01 at first floor window centre level of the dwelling at 147 Malden Road has been identified to represent the point of greatest potential daylight and sunlight impact for all south west facing overlooking habitable rooms.

/continued…….

5.021 **DAYLIGHT:** The At SP01 the rear extension proposal will not reduce the vertical sky component below 27% implying that the inhabitants will continue to enjoy a good standard of daylight.

5.022 **Corollary:** The rear extension proposal will not reduce the vertical sky component below 27% with respect to all other overlooking windows serving habitable rooms implying that all neighbouring inhabitants will continue to enjoy a good standard of daylight.

5.023 **SUNLIGHT:** The rear extension proposal lies in the south east quadrant with respect to SP01.

5.024 At SP01 the rear extension proposal leaves 61% ASP of which 16% is in the winter months, which is well within the guideline criteria for acceptability.

5.025 **Corollary :** The rear extension proposal will leave in excess of 25% ASP of which 5% is in the winter months, with respect to all other overlooking windows serving habitable rooms, implying that all neighbouring inhabitants will continue to enjoy a good standard of sunlight.

5.03 Regarding the north facing overlooking habitable rooms of the buildings fronting Quadrant Grove, I can confirm by observation that by their distance from and orientation to the roof extension proposal, inhabitants will experience no noticeable change to daylight or sunlight.

5.04 **INTERIOR DAYLIGHT:** Please see appendix 2614-A02

5.041 Ground Floor (rearmost) Bedroom A :-

(i) This room is lit by a north east facing window into a light well and introduces only external reflected component daylight into the room, but is substantially compensated by the proposed skylight.

(ii) (a) The found average daylight factor : *ADF* = 1.2%.

(b) This implies the room is suitable for all residential habitable room uses.

(iii) The limiting value for room depth is not applicable by virtue of the Skylight

(iv) (a) The found daylight distribution : *DD* = 100%

(b) The full direct daylight spread is by virtue of the Skylight, which with the good ADF value for use as a bedroom, implies this room will not require supplementary lighting.

/continued…….

(v) Comment : This room has been designed to receive a comfortable standard of interior daylight for use as a bedroom.

5.042 Ground Floor (rear) Bedroom B :

(i) This room is lit by a south west facing window into a light well with access to the sky above the built townscape horizon line produced by the rear of the houses that front onto Quadrant Grove; equivalent angle theta value 50°.

(ii) (a) The found average daylight factor : *ADF* = 1.5%.

(b) This implies the room is suitable for all residential habitable room uses.

(iii) (a) The found limiting value for room depth : *L* = 5.0m

(b) The designed room depth is 3.0m, which implies the room will not require supplementary lighting to its rear.

(iv) (a) The found daylight distribution : *DD* = 60%

(b) The found limiting room depth value compensates the lack of daylight distribution to the rear of this room, which with the good ADF value for all residential habitable room use, implies this room will not require supplementary lighting.

(v) Comment : This room has been well designed to receive a comfortable standard of interior daylight for use as a bedroom.

5.043 First Floor (rear) Bedroom :

(i) This room is lit by a south west facing window with good access to the sky above the built townscape horizon line produced by the rear of the houses that front onto Quadrant Grove; equivalent angle theta value 70°.

(ii) (a) The found average daylight factor : *ADF* = 1.1%.

(b) This implies the room is suitable for all residential habitable room uses.

(iii) (a) The found limiting value for room depth : *L* = 5.6m

(b) The designed room depth is 5.8m, which implies the room will not require supplementary lighting to its rear.

(iv) (a) The found daylight distribution : *DD* = 90%

(b) The daylight distribution result and limiting value for room depth, with the good ADF value for a bedroom implies this room will not require supplementary lighting for use as a bedroom

(v) Comment : This room has been designed to receive a comfortable standard of interior daylight for use as a bedroom.

5.044 Second Floor (rear) Bedroom :

(i) This room is lit by a south west facing window with good access to the sky above the built townscape horizon line produced by the rear of the houses that front onto Quadrant Grove; equivalent angle theta value 80°.

(ii) (a) The found average daylight factor : *ADF* = 1.2%.

(b) This implies the room is suitable for all residential habitable room uses.

(iii) (a) The found limiting value for room depth : *L* = 5.6m

(b) The designed room depth is 5.8m, which implies the room will not require supplementary lighting to its rear.

(iv) (a) The found daylight distribution : *DD* = 100%

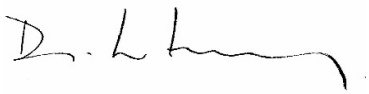
(b) The daylight distribution result, and limiting value for room depth, with the good ADF value for a bedroom implies this room will not require supplementary lighting for use as a bedroom

(v) Comment : This room has been designed to receive a comfortable standard of interior daylight for use as a bedroom.

6.00 CONCLUSION

6.01 The development proposal has been well designed with respect to the officially adopted criteria for interior daylight values for habitable bedroom use, and it will have an unnoticeable impact on the daylight and sunlight amenity of all overlooking neighbouring property.

Yours faithfully



Donald Jessop

Jessop Associates (UK) Limited
Daylight–Sunlight–Consultants

APPENDICES

[NOT PAGINATED]

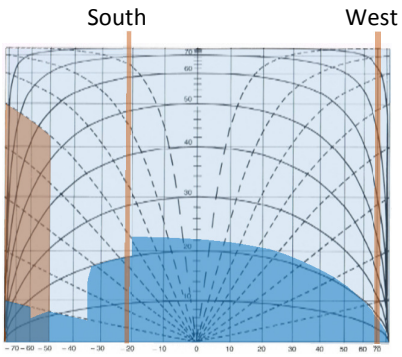
2614-A01a	Extract Drawing : At Station Point SP01 Waldram Diagram Analysis for Exterior Vertical Sky Component; Modelled Annual Sunlight Probability
2614-A02	Interior Room Daylight Calculations and Analysis

Site Address : 245 MALDEN ROAD – LONDON NW5 4HT

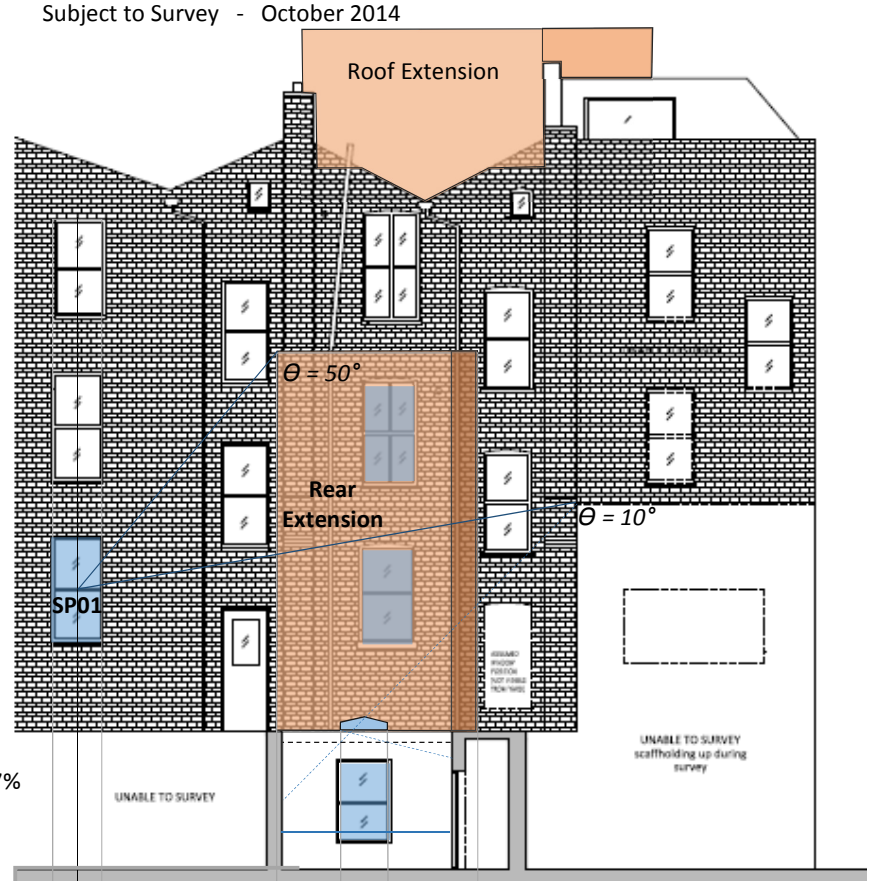
TOWN and COUNTRY PLANNING ACTS (BRE Guideline Criteria)

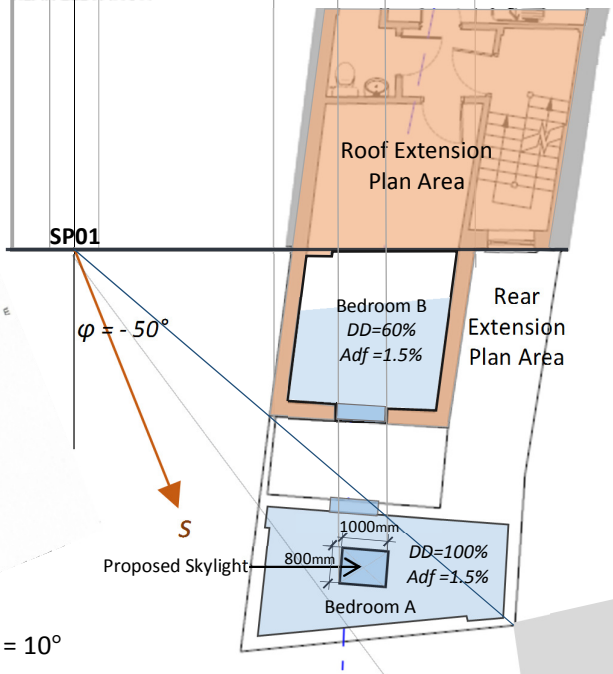
Extract Drawings Reduced in Scale for Identification ONLY

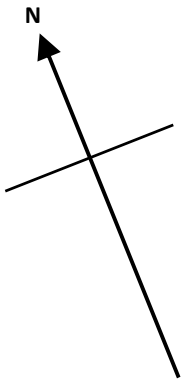
Subject to Survey - October 2014

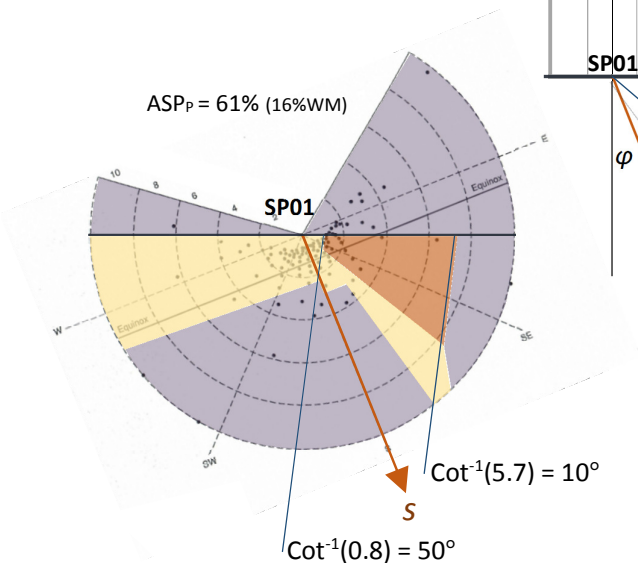


SP01 : VSC_E = 30% : VSC_P = 28% VSC > 27%









Interior Day Lighting Calculations:- Average Daylight Factor (ADF) -and- Limiting Value for Room Depth (L)

$$ADF = \frac{\{[T_U(WA_U) + T_L(WA_L)](\theta_{EQ})\}_1 + \{[T_U(WA_U) + T_L(WA_L)](\theta_{EQ})\}_2 + \ldots\ldots \{[T_U(WA_U) + T_L(WA_L)](\theta_{EQ})\}_N}{[(ISA)(1 - R^2)]}$$

WA_U = upper Window Area ; T_U = upper glazing Transmission factor ; WA_L = lower Window Area ; T_L = lower glazing Transmission factor
θ_{EQ} = equivalent angle Theta ; ISA = Interior Surface Area ; R = surface area average Reflectance value

$$L = \frac{(2)(R_W)(W_H)}{(R_W + W_H)(1 - R)}$$

R_W = Room width ; W_H = Window head height above floor level ; R = surface area average Reflectance value

---

Analysis :

1 Ground Floor (rearmost) Bedroom – "A"

Room Analysis Area =9.9 m² ; Analysis Area Perimeter = 13.2 m ; Floor-Ceiling Height = 2.5 m
ADF values: Skylight (W) =[1.0 x 0.8] : T =[0.68] ; θ_{EQ} =[90°] ; ISA =[52.8] ; R =[0.5]
L values : Not Applicable
(i) *ADF* = 1.2% (ii) *L* = N/A (iii) *DD* = 100% (see appendix 2614-A01a)

2 Ground Floor (rear) Bedroom – "B"

Room Analysis Area =8.4 m² ; Analysis Area Perimeter = 11.6 m ; Floor-Ceiling Height = 2.5 m
ADF values: Window (W) =[1.0 x 1.5] : T =[0.68] ; θ_{EQ} =[50°] ; ISA =[45.8] ; R =[0.5]
L values : R_W =[2.8] ; W_H =[2.3] ; R =[0.5]
(i) *ADF* = 1.5% (ii) *L* = 5.0m (iii) *DD* = 60% (see appendix 2614-A01a)

3 First Floor Bedroom

Room Analysis Area =16.2 m² ; Analysis Area Perimeter = 17.2 m ; Floor-Ceiling Height = 3.0 m
ADF values: Window (W) =[0.8 x 1.8] : T =[0.68] ; θ_{EQ} =[70°] ; ISA =[135.6] ; R =[0.5]
L values : R_W =[2.8] ; W_H =[2.8] ; R =[0.5]
(i) *ADF* = 1.1% (ii) *L* = 5.6m (iii) *DD* = 90%

4 Second Floor Bedroom

Room Analysis Area =16.2 m² ; Analysis Area Perimeter = 17.2 m ; Floor-Ceiling Height = 3.0 m
ADF values: Window (W) =[0.8 x 1.8] : T =[0.68] ; θ_{EQ} =[80°] ; ISA =[135.6] ; R =[0.5]
L values : R_W =[2.8] ; W_H =[2.8] ; R =[0.5]
(i) *ADF* = 1.2% (ii) *L* = 5.6m (iii) *DD* = 100%