Daylight and Sunlight Report

182-184 High Holborn, London WC1

Covent Garden Investments SARL

August 2016

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APPENDICES

1 INTRODUCTION AND SCOPE OF REPORT

1.1 Lumina London Limited are retained by Covent Garden Investments SARL to assess the performance and impact of the proposed 182-184 High Holborn in respect of Daylight and Sunlight to determine whether the proposed development will satisfy the Council's policy standards.

1.2 The purpose of this Report is to assess the impact of the proposed development on the daylight and sunlight enjoyed by existing neighbouring residential buildings in accordance with the standards in the Building Research Establishment (BRE) Guidelines "*Site Layout for Daylight and Sunlight – a Guide to Good Practice*" 2011, to ensure that the proposed development will not result in any material impact on the amenity enjoyed by existing and future neighbouring residents.

2 SOURCES OF INFORMATION AND LIMITATIONS

2.1 The existing and surrounding buildings have been modelled from an accurate 3D scanned survey commissioned from MBS Survey Software Solutions Limited Reference: MB515-514 182 High Holborn Arab Press House.dwg.

2.2 The Proposed Scheme has been based on the SPPARC Architecture 3D Model reserved on 11 August 2016 Reference 182 High Holborn 160811.skp which represents the same massing on the planning application drawings.

2.3 The site has been inspected on a number of occasions and the survey information has been supplemented by measurements taken on site together with general site photography.

2.4 A review of the Council's planning records has been undertaken from which we have been able to ascertain the location and uses of the habitable rooms within 18 Stukeley Street and the proposals for the future redevelopment of the former sorting office at 21-31 New Oxford Street.

3 DAYLIGHT AND SUNLIGHT STANDARDS

3.1 The BRE Guidelines: *"Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice"* are well established and are adopted by most Local Authorities, including the London Borough of Camden as the appropriate scientific and empirical methods of measuring daylight and sunlight in order to provide objective data on which to apply their planning policies. The guidelines are not fixed standards but should be applied flexibly to take account of the specific circumstances of each case.

3.2 The Introduction of the Guidelines states that: -

"The guide is intended for building designers and their clients, consultants and planning officials. The advice given here is not mandatory and this document should not be seen as an instrument of planning policy. Its aim is to help rather than constrain the developer. Although it gives numerical guidelines, these should be interpreted flexibly because natural light is only one of many factors in site layout design."

3.3 The "flexibility" recommended in the Guidelines should reflect the specific circumstances of each case being considered. For example, as the numerical standards within the Guidelines have been derived on the basis of a low density suburban housing model, it would be entirely appropriate to apply a more flexible approach when dealing with higher rise developments in a denser inner city urban environment where the height and scale of buildings is generally greater. In addition, where existing and proposed buildings have specific design features such as projecting balconies, deep recesses, bay windows etc., it is equally valid to apply a degree of flexibility to take account of the effect of these particular design features. This does not mean that the recommendations and targets within the Guidelines can be disregarded, but instead, the "flexibility" that should be applied should be founded on sound scientific principles that can be supported and justified. This requires a certain level of professional value judgement and experience, but general guidance on setting alternative numerical targets in such circumstances, is set out in Appendix F of the Guidelines.

Daylighting

3.4 The primary method for measuring the adequacy of daylight received by existing neighbouring buildings is the use of Vertical Sky Components (VSC).

3.5 VSC is a "spot" measurement of daylight taken on the face of the window and is a measure of the availability of direct light from the sky received from over and around the "existing" and "proposed" obstruction caused by the buildings or structures in front of the window. As it is measured on the outside face of the window, one of the inevitable shortcomings is that it does not take account of the size of the window or the size of the room served by the window. For this reason, the BRE Guidelines recommend that where the internal room layouts and dimensions are known, the internal Daylight Distribution can be measured in addition to VSC to determine the extent of daylight penetration and direct sky visibility from within the room.

3.6 The maximum VSC value that can be achieved for a totally unobstructed vertical window is 40% VSC. The target VSC value for good daylighting conditions is 27% VSC and this represents a typical VSC value that would be achieved on the face of a window on the main elevation of a well-spaced 2 storey suburban housing development.

3.7 In simple terms, 27% VSC equates to being able to see 27% of the Sky Dome, i.e. the hemisphere of sky above a given reference point. A VSC value of 27% will be achieved where the obstruction in front of a vertical window is continuous and parallel to the plane of that window, and where it subtends a vertical angle of 25 degrees when measured from the midpoint of that window. It therefore follows that if a proposed new development is below a vertical angle of 25 degrees, the resultant VSC value will remain above 27%. This is the scientific basis for the initial "screening" test in the BRE Guidelines where it is unnecessary for any further daylight (or sunlight) tests to be undertaken where a proposed development will remain below a vertical angle of 25 degrees. It is clear that in an inner city urban environment, the relationship with the vast majority of existing buildings already exceeds a vertical angle of 25 degrees and that the VSC values that prevail will therefore be below 27% VSC as a norm. In such circumstances, VSC values in the mid-teens are typical and therefore represent the reasonable expectation of daylight in an urban environment, and values in excess of 20% of VSC will be considered to be good. It is only where VSC values fall in single figures that it becomes difficult

to achieve good interior lighting conditions without the need to provide supplementary artificial lighting for longer periods during the day.

3.8 In the present circumstances, the general height of the existing buildings along High Holborn, Smarts Place and Stukeley Street are well in excess of the model used in setting the BRE targets in that all of the existing neighbouring buildings are multi-storey. In addition, Smarts Place and Stukeley Street are relatively narrow thoroughfares. The results of these factors is that existing daylight levels presently enjoyed by the existing neighbouring dwellings are relatively low, and well below the ideal BRE targets. As the starting point in terms of daylight and sunlight is already low, the key consideration when assessing the potential impact on amenity is to ensure that those existing levels of daylight and sunlight are not materially reduced beyond the 20% permissible margin of reduction advised in the BRE Guidelines.

3.9 VSC is measured at the mid-point on the external face of a window serving a habitable room. For the purpose of the Guidelines, a "*habitable*" room is defined as a Kitchen, Living Room or Bedroom. Bathrooms, hallways and corridors are excluded from this definition. In addition, there is often a further distinction in respect of small kitchens. Where the internal area of a small kitchen limits the use of the kitchen to food preparation only and is not of sufficient size to accommodate some other form of "*habitable*" use such as dining, the kitchen need not be classed as a "*habitable*" room in its own right. This can also apply to relatively small internalised or galley-type kitchens and can also apply to relatively small kitchen areas which form part of a larger Living / Kitchen / Diner.

3.10 For VSC, the Guidelines state that:

"If this Vertical Sky Component is greater than 27% then enough skylight should still be reaching the window of the existing building. Any reduction below this level should be kept to a minimum. If the Vertical Sky Component with the new development in place is both less than 27% and less than 0.8 times its former value, then the occupants of the existing building will notice the reduction in the amount of skylight".

We have emphasised the word "notice" as just because a change in lighting conditions is noticeable does not necessarily equate to the loss of light being a material reduction to the level of amenity enjoyed by the neighbouring property.

3.11 In context, as mentioned above, the maximum VSC value that can be achieved for a totally unobstructed vertical window is 40% VSC. It is therefore permissible for an obstruction to reduce the amount of visible sky seen from that window by 13% of the Sky Dome to 27% VSC, or 32.5% of the present value, before the level of daylight received by the window could be below standard. There are however many circumstances where the VSC value is already below 27%. In such circumstances, it is permissible to reduce existing VSC values by a factor of 0.2 (i.e. 20%) so that the VSC value under "proposed" conditions remains more than 0.8 times its former value. The scientific foundation for this permissible margin is that through the research undertaken at the Building Research Establishment, they have found that existing daylight (and sunlight) levels can be reduced by a factor of 20% before the loss becomes materially noticeable. This factor of reduction applies to VSC, Daylight Distribution, Sunlight and Overshadowing. Where existing windows enjoy very high levels of daylight under existing conditions, the percentage reduction can be higher provided that the residual VSC value remains adequate.

Sunlighting

3.12 The requirements for protecting sunlight to existing residential buildings are set out in Section 3.2 of the BRE Guidelines. As with daylight, it is unnecessary for detailed sunlight tests to be undertaken if a proposed development will be below a vertical angle of 25 degrees drawn from the midpoint of the lowest window serving a habitable room, as in such circumstances, the availability of sunlight will remain adequate.

3.13 The availability of sunlight varies throughout the year, with the maximum amount of sunlight being available on the summer solstice and the minimum on the winter solstice. In view of this, the internationally accepted test date for measuring sunlight is the median between the two, the Spring Equinox (21st March), on which day the United Kingdom has equal periods of daylight and darkness and sunlight is available from approximately 0830 to 1730. In addition, on that date, sunlight received perpendicular to the face of a window will only be received where that

window faces within 90 degrees of due south. The BRE Guidelines therefore limits the extent of testing for sunlight where a window faces within 90 degrees of due south.

3.14 The sunlight standards are normally applied to the principal Living Room within each dwelling rather than to kitchens and bedrooms.

3.15 The recommendation for sunlight is: -

"If this window reference point can receive more than one quarter of annual probably sunlight hours, including at least 5% of annual probable sunlight hours during the winter months of 21st September and 21st March, then the room should receive enough sunlight……any reduction in sunlight access below this level should be kept to a minimum. If the availability of sunlight hours are both less than the amounts given and less than 0.8 times their former value, either over the whole year or just during the winter months, then the occupants of the existing building will notice the loss of sunlight".

3.16 A good level of sunlight will therefore be achieved where a window receives more than 25% APSH, of which 5% APSH should be received in the winter months. Where sunlight levels fall below this suggested recommendation, a comparison with the existing condition should be undertaken and if the reduction ratio is less than 0.2, i.e. the window continues to receive more than 0.8 times its existing sunlight levels, the impact on sunlight will be acceptable.

3.17 It should however be noted that during the winter months, the angle of the sun is much lower, and sunlight is much more only available at relatively low vertical angles. The consequence of this is that even relatively small and modest increases in the height or "massing" of a new development can have a disproportionate impact on the availability of winter sunlight. This is a further example of where greater flexibility may be appropriate.

4 SCHEME ASSESSMENT

4.1 For the purpose of Planning, the tests within the BRE Guidelines are usually limited to habitable rooms within existing neighbouring residential buildings. Non-domestic and commercial buildings are usually excluded as it is generally accepted that these uses normally rely primarily on supplementary artificial lighting throughout the day and are therefore not dependent on natural light for their main source of amenity. We have not had access to the interior of any of the existing neighbouring buildings and have therefore relied upon an external inspection and review of any publically available records to establish the extent and location of existing neighbouring residential premises, and have assumed that all of the windows identified within those premises serve habitable rooms. The main, and most reliable, source of establishing the extent of existing neighbouring residential premises is through a review of the Valuation Office records which document those properties that are registered for the payment of Council Tax. The only existing neighbouring building that contains residential accommodation is 18 Stukeley Street. We are however aware that the former sorting office building at 21-31 New Oxford Street has planning consent which includes a new residential development. We have therefore obtained the drawings of that scheme from Camden's planning records and modelled and tested those windows which will sit directly opposite the Site.

4.3 VSC is the most important measure of daylight as it represents the amount of direct daylight received by a window expressed at the percentage of "*visible sky*". Whilst the BRE Guidelines permit a percentage reduction of 20% of the current VSC value before the change in lighting conditions will be noticeable, this does not mean that the availability of daylight will be inadequate if the loss is more than 20%, especially where existing VSC values are unusually high. It does however provide a useful guide to establish whether the occupants of a room will notice a material change in natural lighting conditions.

4.4 Drawings of the floor plans of 18 Stukeley Street have been obtained from the archives of the Council's planning records. They have therefore been used to establish the room uses, layouts and dimensions in our analysis.

4.5 It should be noted that 18 Stukeley Street was originally a commercial building which was refurbished and changed to residential use. Part of those alterations were the opening-up of the ground floor slab to create a small and narrow lightwell / void in order to allow light to be received at basement level. The record drawings show *habitable* rooms at basement level, and those rooms are poorly lit even under existing conditions, the rooms uses and layouts are illustrated on Drawing No. HH2016-001-07-3002 annexed at Appendix 2.

4.6 18 Stukeley Street lies to the east of the site and does not have windows which have a direct outlook onto the Site. The windows do however have a relatively oblique view of the site and given that the windows are relatively poorly lit under existing conditions, they have been tested to ensure that there will be no material impact on existing amenity.

4.7 Annexed at Appendix 1 are Drawing No. HH2016-001-07-1001, 1002, 1003 and 1004 which are images of the Site Plan and 3D computer model of the "existing" and "proposed" massing set in context with the neighbouring properties. They are followed in Appendix 2 by Drawing No. HH2016-001-07-3002 which show the room and window location plans for 18 Stukeley Street, and Drawing No. HH2016-001-07-3001, which is the Window Map of the windows tested in 21-31 New Oxford Street. The room and window references on those drawings should be cross-referenced with the room and window references in the Vertical Sky Component (VSC) and Sunlight Tables annexed at Appendices 3 and 4.

4.8 The results of the VSC analysis show that not only will the potential impact on the daylight received by the windows serving 18 Stukeley Street be well within the recommendations of the BRE Guidelines, the actual percentage reduction in daylight will be in single figures with one exception where the percentage loss was recorded at 10.64% (Window W8/50 serving Room R3/50). That said, this is still well within the 20% permissible margin of reduction, but more importantly, the room in question, i.e. Room R3/50 is served by three other windows (W9/50, W10/50 and W11/50), all of which will be in single figures.

4.9 The BRE sunlight criteria does not apply to 18 Stukeley Street as none of the windows in question face within 90 degrees of due south and therefore do not fall within the BRE sunlight criteria.

4.10 The proposed development at 21-31 New Oxford Street is a very large scheme and only part of the proposed development lies directly opposite 182-184 High Holborn. It was therefore only necessary to test those windows directly opposite the current Application Site.

4.11 The results of the VSC analysis for 21-31 New Oxford Street show that with the exception of one window, the impact on VSC will all be within the BRE recommendations. The only window that did not fully satisfy the BRE Guidelines is the window labelled W5/43 at third floor level where the percentage reduction in VSC was measured at 20.78% just marginally above the 20% threshold. This different is so marginal as to be of no consequence. In addition, the residual VSC value for that particular window will remain at 20.28% VSC, which is an extremely good absolute daylight reading for a window / room in an inner city urban environment.

4.12 The windows serving 21-31 New Oxford Street do fall within the BRE sunlight criteria as they face within 90 degrees of due south. The results of the sunlight analysis are annexed at Appendix 4 and they show that not only will there be full compliance with the BRE sunlight recommendations, the actual amount of sunlight that the windows will continue to receive will by and large be more than twice the BRE targets.

5 SUMMARY AND CONCLUSION

5.1 The results of the daylight and sunlight analyses show that none of the existing neighbouring residential properties (including the yet-to-be-built residential development at 21-31 New Oxford Street) will experience a material or noticeable loss of daylight or sunlight and there will be no material impact on existing levels of daylight and sunlight amenity.

5.2 The results of the analysis therefore clearly demonstrate that not only will the performance of the proposed development satisfy the BRE Guidelines, none of the occupants of the existing neighbouring dwellings will experience any noticeable change in natural light conditions. It therefore follows that the Council's policy objectives have been satisfied.

APPENDIX 1

Drawing Nos: HH2016-001-07-1001, 1002, 1003 and 1004

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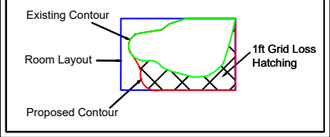
VIEWS

Legend

- Existing Site
- Proposed Scheme
- Analysed Buildings
- Surrounding Buildings



Source of Information

Existing And Surrounding Buildings
MBS Survey Software Ltd
3d Survey sent 29 Sept 2015
MBS15_514 182 High Holborn Arab Press House.dwg

Proposed Scheme
SPPARC Architecture Limited
3d Model Sent on 11 Aug 2016
182 High Holborn 160811.skp

Project Title
182-184 High Holborn
London
WC1

Client
Axa

Drawing Title
Existing Site Plan

Drawn By	Scale @A3
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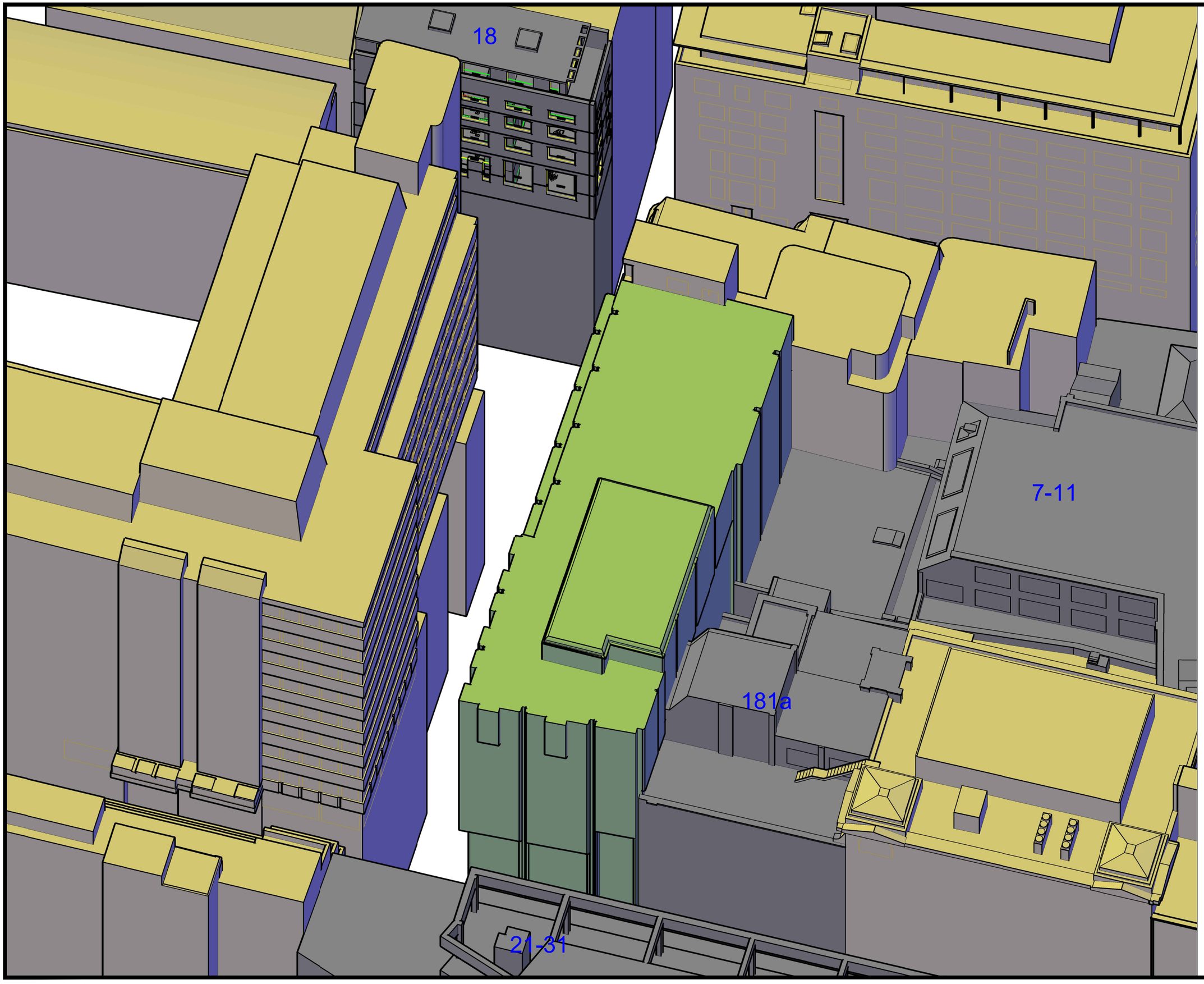
Project No	Date
HH2016-001	12/08/2016

Drawing No	Rev
07- 1001	



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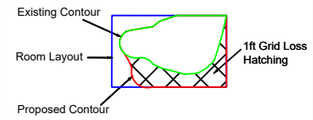

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Axa

Drawing Title
Existing 3d View

Drawn By	Scale @A3
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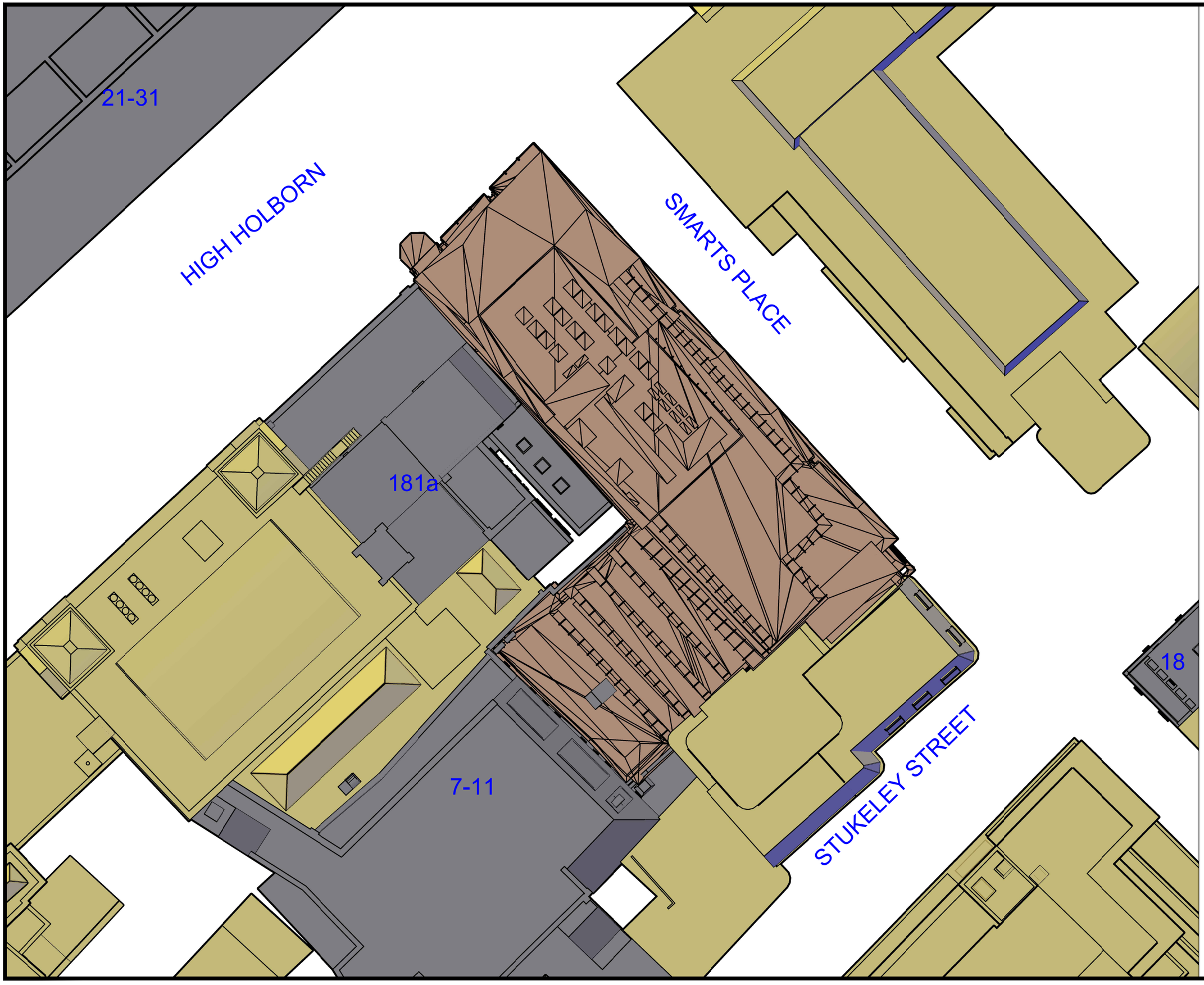
Project No	Date
HH2016-001	12/08/2016

Drawing No	Rev
07- 1002	



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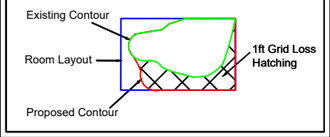

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Mo	1/250

Project No	Date
HH2016-001	12/08/2016

Drawing No	Rev
07- 1003	