



Daylight and Sunlight

East Street, Reading

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Existing Drawings: 11307/IS01/01-03 (Rel01)
Consented Drawings: 11307/ IS02/01-03 (Rel01)
Daylight and Sunlight Results (Rel01)

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Appended to this report:

Appendix 01 - Principles of Daylight and Sunlight
Appendix 02 - Existing & Consented Drawings
Appendix 03 - Daylight and Sunlight Results

Sources of Information:

Information Received:	Valuation Office Agency Reading Borough Council – Online Planning Database Search 11307 - IR06 - Barton Willmore 11307 - IR14 - Studios 11307 - IR17 - Studios
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3D Models:	LDS Survey -IR12-180917 GDL Architecture – IR14-181010 GDL Architecture – IR17-181205
Site Photos:	GIA Google: Maps & Street Views

1.0 Executive Summary

GIA have undertaken a daylight and sunlight assessment to accompany the Section 73 for the proposed redevelopment of the surface car park at East Street, Reading.

It is inevitable when constructing buildings in an urban environment that alterations in daylight and sunlight to adjoining properties occur. The numerical guidance given in the BRE document "*Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice*", 2011 ("the BRE") should be treated flexibly, especially in dense urban environments and particularly where neighbouring properties are located within narrow streetscapes and with design obstructions restricting the availability of daylight and sunlight.

From the outset of the design process careful consideration has been given to ensure that the scheme caused as little impact on the daylight and sunlight amenity of the neighbouring residential units as possible. However, when considering the current underdeveloped nature of the site and the local topography some reductions in amenity to the neighbouring units is unavoidable.

It is GIA's understanding that the scheme has recently received planning consent under planning appeal reference APP/E0345/W/17/3190317. The proposed alterations to the building are entirely internal and as such the building footprint and dimensions will remain unchanged from what has already been consented. It is GIA's opinion that this exercise is unnecessary as the alterations in daylight and sunlight to the neighbouring properties will not change once the proposed amendments have been implemented to the extant permission.

The daylight and sunlight impacts to all of the surrounding primary residential properties (save 1-33 Bourne Stevens Close and New Century Place Building "NCP1") are fully compliant to the recommendations set out within the BRE Guidelines.

The technical analysis undertaken demonstrates that although there is some alteration to the daylight and sunlight of the surrounding residential units, for the most part there is good compliance with the BRE guidelines. Where there are windows and rooms which experience transgressions of the traditional BRE tests, these are unavoidable should the site be developed in a meaningful way. In almost all situations where there are reductions in daylight and sunlight the retained levels are considered to be good and comparable with other units in the local urban grain.

2.0 Instructions

GIA have been instructed to undertake detailed technical assessments to understand the potential daylight and sunlight changes that the consented GDL Architecture scheme received by GIA 30th November 2018 for the East Street, Reading site will have upon the surrounding residential properties.

The daylight and sunlight review within this report considers primarily residential properties which are recognised by the BRE as having the highest expectation for natural light when compared to other uses such as commercial. The criteria suggested within the BRE have been used to understand and compare the existing levels of light and the light achieved subsequent to the development of the PBSA scheme.

It is however pertinent to note that the BRE guidelines may also be applied to any existing non-domestic building where occupants have a reasonable expectation of daylight; these include, hospitals, hostels and hotels.

3.0 Introduction

Daylight and Sunlight

The technical analysis that forms the basis of this report has been predicated against the methodologies set out within the BRE. The guidelines in question are precisely that – guidelines which provide a recommendation to inform site layout and design. They are not mandatory nor do they form planning policy and their interpretation may be treated flexibly depending on the specifics of each site.

The BRE Guidelines provide three methodologies for daylight assessment, namely;

- 1) The Vertical Sky Component (VSC)
- 2) The No Sky Line (NSL); and
- 3) The Average Daylight Factor (ADF)

VSC and NSL assessment methods have been used to analyse the effects of the consented development on the surrounding properties. ADF is not generally recommended by the BRE for assessing daylight to existing surrounding properties, however, it may be used in certain circumstances and these are explained in more detail within the BRE handbook.

In addition, we have used one methodology provided by the BRE Guidelines for sunlight assessment, denoted as Annual Probable Sunlight Hours (APSH).

Appendix 01 of this report elaborates on the mechanics of each of the above assessment criteria, explains the appropriateness of their use and the parameters of each specific recommendation.

Analysis Scenarios

We have undertaken the daylight and sunlight analysis in the following scenario.

- (1) *The consented scheme against the existing site as a baseline;*

This is the standard “Existing State vs Proposed Scheme” scenario, whereby the changes in daylight and sunlight are assessed prior to and following implementation of the consented scheme. Usually this is run with a proposed scheme, however, as this scheme is already consented and no changes will be made to the footprint of the building or dimensions GIA will be running an “Existing State vs Consented Scheme” scenario.

4.0 Assumptions

- a) We have relied upon a 2D topographical survey data as well as elevation drawings of the surrounding context and site photographs to produce the three dimensional computer model which forms the basis of the technical analysis.
- b) All residential buildings have been identified by reference to the Valuation Office Agency (VOA) search and/or external observation.
- c) We have not sought access to the adjoining properties thus have made reasonable assumptions as to the internal layouts of the rooms behind the fenestration based upon the building form and architecture. This is normal practice where access to adjoining properties is not available. Unless the building form dictates otherwise, we assume a standard 4.2m deep room (14ft) for residential properties.
- d) Floor levels have been assumed for the adjoining properties. This dictates the level of the working place which is relevant for the No Skyline assessment.

5.0 The Site

The site is located on East Street in Reading, Reading Borough. The site currently comprises a car park and is bounded by a mixture of residential, commercial and mixed use properties. The existing site condition is shown in Figure 01 below and in Appendix 02 attached to this letter.

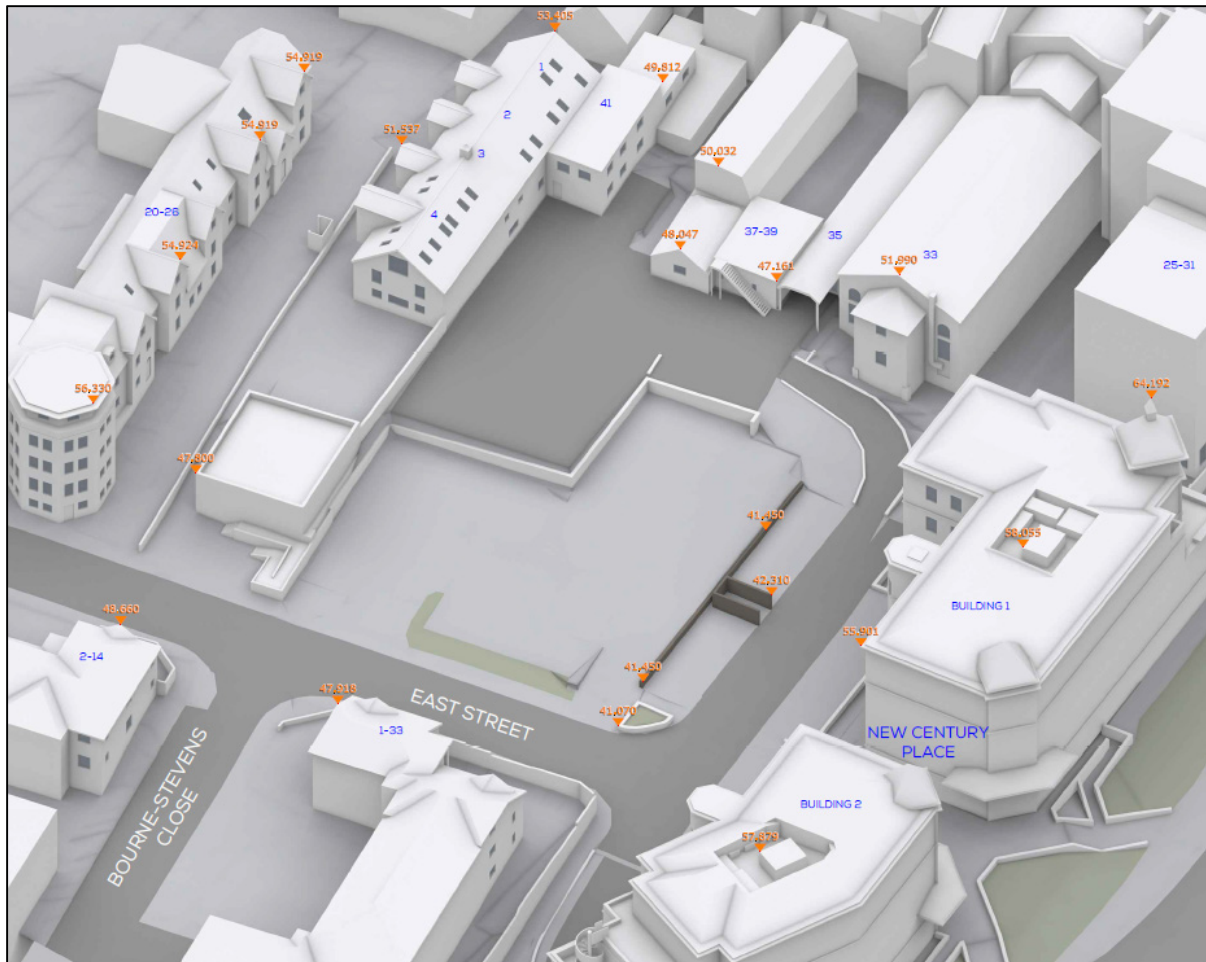


Figure 01 – Site Location and Existing Condition

6.0 The Proposal

The extant permission seeks to erect a four storey student accommodation block in place of the existing car park. GIA's understanding of the extant permission is illustrated in Figure 02 below as well as within the drawings located in Appendix 02 of this report. The technical analysis is based on the consented scheme massing model provided by Studios Development (Reading) Ltd on 25 June 2018.

GIA have reviewed the proposed and consented plans and can confirm the external massing does not differ in any way which would in any way cause additional effect on the amenity of the adjacent residential units.

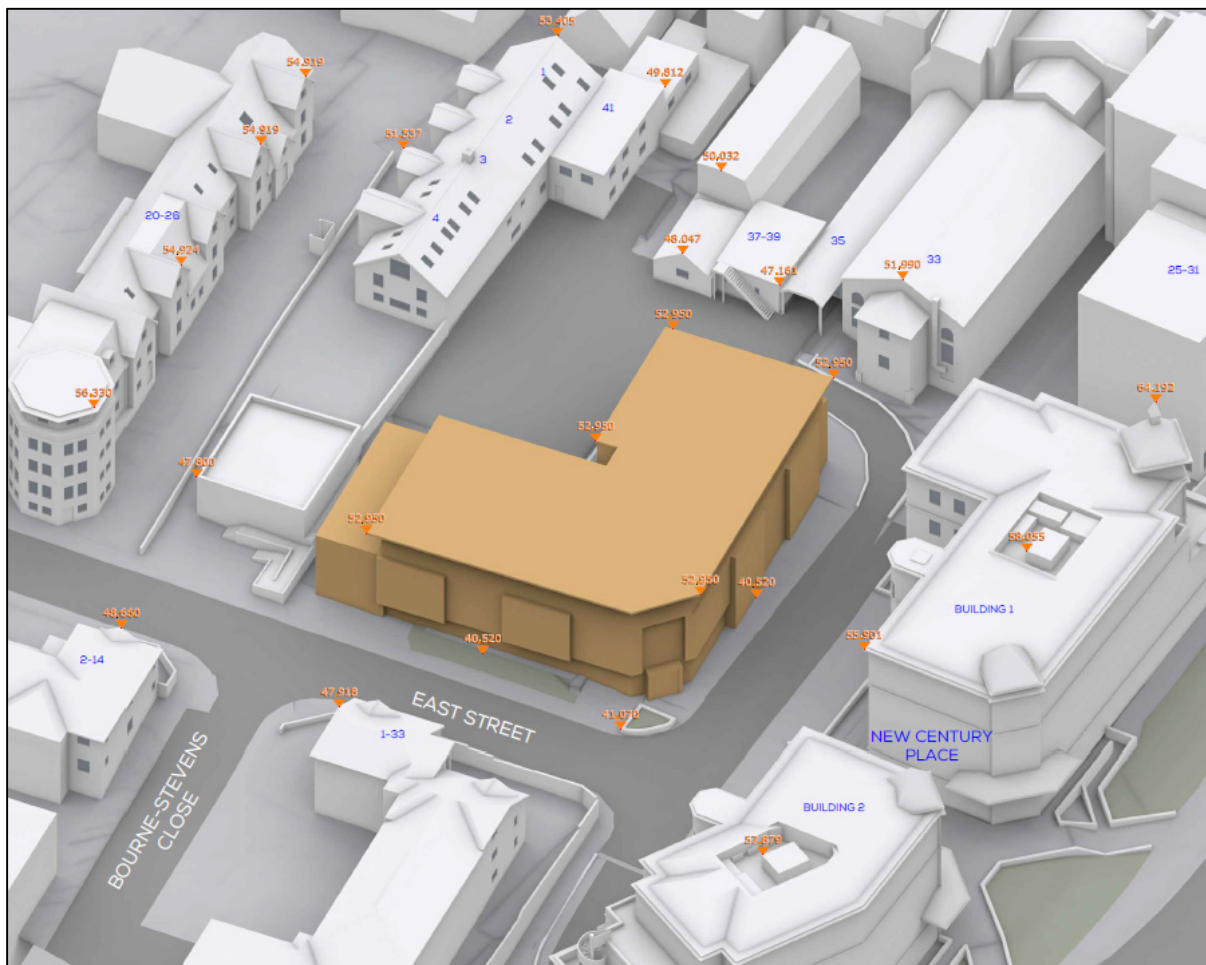


Figure 02 – Consented Scheme Shown in Teal

7.0 Surrounding Properties

We have created a three dimensional computer model of the site and the surrounding properties to allow for a detailed daylight and sunlight assessment.

The baseline condition of the existing buildings on site allows us to calculate the current daylight and sunlight conditions within the neighbouring buildings. From this we can then compare them with the conditions within these properties assuming the consented development is in place.

It is well-established and accepted that the BRE Guidelines, which set out the numerical benchmark for daylight and sunlight assessments, are predicated on a relatively low rise suburban environment. The methodologies and the resultant BRE daylight and sunlight recommendations are also predicated upon this suburban model. The guidance provided by the BRE is not mandatory and it is principally proposed to aid the architects and planners in achieving good site design. Clearly, in more densely developed urban locations and urban areas such as this site, the technical specifications recommended by the BRE Guidelines need to be treated with care.

The pertinent residential accommodation which is relevant for daylight and sunlight assessment is located to the north, east, south and west of the site.

Properties Experiencing No Noticeable Change to their Daylight and Sunlight Amenity

The technical analysis indicates that there will be no material daylight or sunlight loss to New Century Place Building 2 located to the north of the site, 1-4 London Court located to the south, 20-26 East Street to the south and 2-14 Bourne Stevens Close to the east, as a result of the consented scheme, as they meet the recommended target values set out within the BRE.

A short commentary of the potential daylight and sunlight alterations to the remaining property is provided below.

1-33 Bourne Stevens Close



This property is located directly to the east of the site and is residential in use. Floor plans have been assumed as per the assumptions in Section 4.0 of this report. It is important to note this property currently enjoys light unobstructed across the underdeveloped site, which is uncharacteristic given the central Reading location. Some alteration in the daylight and sunlight amenity should therefore be expected if the site is to be developed in a meaningful way which matches the urban grain of the surrounding area.

Daylight – VSC and NSL

VSC and NSL analysis has been undertaken for 15 rooms, served by 20 windows located between ground and second floors, in both the existing and consented scenarios.

Technical analysis found that 16 (80%) of the 20 windows assessed will meet the VSC daylight criteria. Of the remaining four windows assessed which fall short of the BRE guidelines, three experience only minor transgressions of the 20% threshold of between 20-30% and one window narrowly experiences moderate VSC alterations of 30.1%. Each of these windows experience strong retained values of between 20.5% and 23.7% once the consented scheme is built. GIA would consider this to be a good level of retained daylight amenity when considering the town centre context of the Site.

In terms of NSL, 12 (80%) of the 15 rooms tested meet the BRE recommendations. The three rooms experience varied extents of loss of daylight ranging between minor and moderate. However, all of these retain above 59.9% NSL once the consented scheme is built. These NSL levels indicate that while these rooms will experience a reduction in sky visibility within the room, retained daylight amenity will be good and commensurate with an inner-city location.

Sunlight – APSH

In total, it is GIA's understanding that nine of the 13 habitable rooms are relevant for APSH analysis as they are oriented with 90 degrees of due south and thus have been assessed against the BRE criteria.

Technical analysis found that eight (80%) of the ten windows assessed will retain sufficient levels of annual sunlight and six (60%) of winter sunlight as per the BRE recommendations.

Of the two windows which fall short of the BRE recommendations, GIA believe one to be communal circulation space. Should GIA's assumption be correct then this window and room would not have to be tested and the overall compliance for annual sunlight would increase to 88.8%. Nevertheless, both windows which currently fall short of the BRE recommendations for annual sunlight are also impacted by the inherent design of the building. The southern section of the building steps out and as a result limits the expectation of sunlight to these windows in the existing situation. Of the four windows that fall short of the BRE recommendations for winter sunlight, one is assumed to belong to communal circulation space and another misses the target value by 1%. All four of these windows are implicated by the inherent design of the building as mentioned above. Figure 03 and 04 below identify the area of the 1-33 Bourne Stevens Close which appears to be obstructive and restrictive to the impacted windows which are highlighted in red.

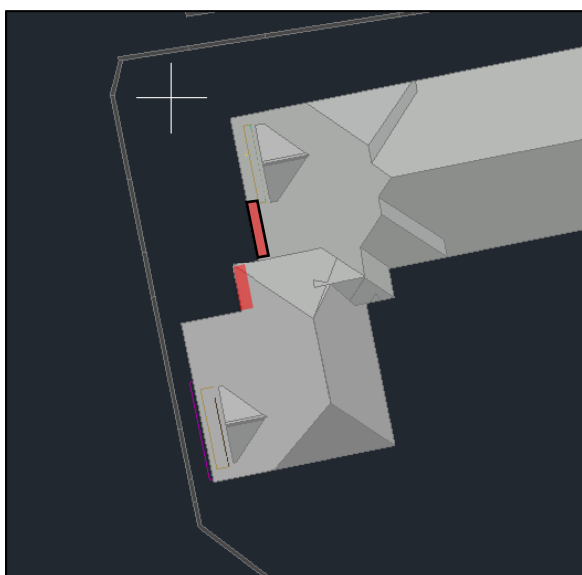


Figure 03 – 1 -33 Bourne Stevens Close
View South to North

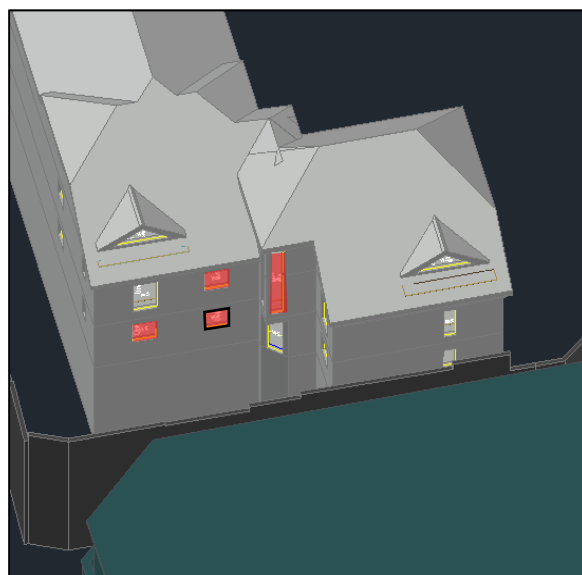


Figure 04 – 1 -33 Bourne Stevens Close
View West to East

Conclusion

Overall, it is evident why the consented scheme was awarded planning previously. 1-33 Bourne displays a high compliance to the BRE recommended target valued for the daylight and sunlight criterion. Where transgressions do occur, these are mostly considered minor. Additionally, the retained values for VSC and NSL more than commensurate with the local urban grain.

Furthermore, GIA consider the inherent design of the building as to attribute strongly to the windows and rooms which experience the alterations of VSC, NSL and APSH. It is the footprint of the building as evidenced above which highly restricts the APSH levels in the first place.

It is also important that the overall site context is be taken into account when considering adherence with the numerical target values. Due to the current underdeveloped nature of the site, being a surface car park, 1-33 Bourne Stevens Close has experienced uncharacteristically high daylight and sunlight levels. As such, relative reductions in daylight and sunlight outside of the BRE target values will inevitably occur were meaningful massing to be realised on site.

New Century Place Building 1 "NCP1"



This property is located directly to the north of the site and is currently being redeveloped from commercial to residential. Floor plans have been sourced from the Borough of Reading planning database.

Daylight – VSC and NSL

VSC and NSL analysis has been undertaken for 24 rooms, served by 40 windows located between ground and third floors, in both the existing and consented scenarios.

Technical analysis found that 27 (67.5%) of the 40 windows assessed will meet the VSC daylight criteria. Of the remaining 13 windows assessed which fall short of the BRE guidelines, six experience only minor transgressions of the 20% threshold of between 20%-30%. Six experience transgressions of between 30%-40% and only one experiences transgressions of above 40%+. Although VSC transgressions are experienced within this property once the consented scheme is implemented this is largely expected considering the context of the site. The surface car park has allowed NCP1 uncharacteristically high VSC levels. The VSC transgressions are also centralised to the ground and first floor.

In terms of NSL, 20 (%) of the 24 rooms tested meet the BRE recommendations. One of the remaining four rooms experience minor NSL transgressions of the 20% threshold of between 20%-30% and three experience major transgressions. The room experiencing the minor transgressions experiences a retained NSL of 73.7% which is more than commensurate with the urban grain. The three of the rooms which experience the larger alterations in NSL are located in the centre of the building and are undoubtedly impacted by the poor layouts of the rooms as can be seen in the image below and the projecting wings of the building which limit daylight to these rooms

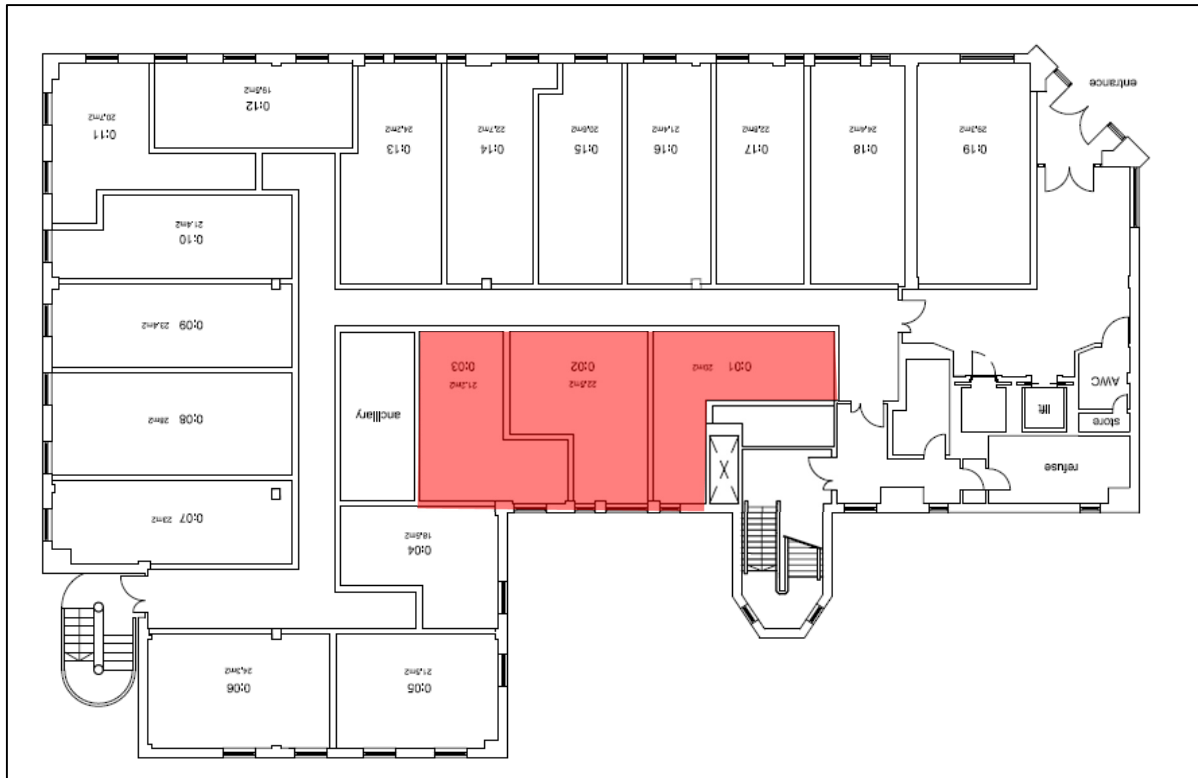


Figure 05 – New Century Place Room Layouts

Sunlight – APSH

In total, it is GIA's understanding that 20 of the 24 habitable rooms are relevant for APSH analysis as they are oriented with 90 degrees of due south and thus have been assessed against the BRE criteria.

Technical analysis found that 31 (96.9%) of the 32 windows assessed will retain sufficient levels of annual sunlight and 31 (96.9%) of winter sunlight as per the BRE recommendations. The window which falls short of the BRE recommendations for annual sunlight only misses the target by 1%. Equally so does the window which misses the winter sunlight.

Overall GIA believe these is a very high compliance rate for sunlight, considering the amount of BRE compliant windows and the retained level of the two that miss the targets narrowly.

Average Daylight Factor

While the BRE guidelines specifically state that ADF should not be used for existing buildings, given these properties are currently largely un occupied having been recently converted to residential use and that full internal layouts have been located, GIA believe that in this specific case looking at the ADF values is reasonable.

All of the rooms facing the site are bedrooms therefore have a requirement of 1% ADF. Of the 24 rooms assessed, 18 (75%) would meet the ADF requirement set out by the BRE in the existing and consented condition. All remaining six rooms would not meet 1% ADF in the existing situation and following the construction of the consented scheme all would only experience a reduction of 0.1% ADF which is a negligible reduction.

Conclusion

Overall, this property displays a strong compliance to the BRE recommended target values for the daylight and sunlight criterion, as such GIA can clearly see why this building was consented in the first place. This property remains almost fully BRE compliant for APSH and generally experiences only small alterations in Daylight with some exceptions. Where there are these exceptions these mostly occur in rooms that have a poor layout. The ADF assessment demonstrates that were rooms do not meet guidance in the proposed state, in all instances this is because they have below BRE recommended daylight levels in the existing situation.

It is also important to note that the overall site context is be taken into account when considering adherence with the numerical target values. Due to the current underdeveloped nature of the site, being a surface car park, NCP1 has experienced uncharacteristically high daylight and sunlight levels. As such, relative reductions in daylight and sunlight outside of the BRE target values will inevitably occur were meaningful massing to be realised on site.

8.0 Conclusions

GIA have undertaken a detailed daylight and sunlight for the GDL Architecture consented scheme for the East Street site in Reading.

As the footprint and dimensions will not be altered for the consented scheme it is GIA's opinion that the daylight and sunlight impacts will not differ. As such GIA are uncertain as to why a daylight and sunlight report was necessary for a consented building which would not be altered externally.

Nonetheless, it is inevitable when constructing buildings in an urban environment that alterations in daylight and sunlight to adjoining properties occur. The numerical guidance in the BRE guidelines should be treated flexibly, especially in dense urban environments and particularly where neighbouring properties are located within narrow streetscapes with the design obstructions restricting the availability of daylight and sunlight.

In consideration of this, throughout the design process, the consented scheme has been subjected to significant testing to minimise the daylight and sunlight impacts to the surrounding residential properties.

The technical analysis shows that the surrounding residential properties will experience a very high level of compliance, 91.4% for windows and 94.2% for rooms, within the daylight criterion. For sunlight there is an overall compliance of 91.9%. Where breaches of guidance occur, they are generally minor, and we consider that the retained daylight levels are strong and often more than commensurate with levels in the surrounding area

As previously mentioned, overall site context is be taken into account when considering adherence with the numerical target values. Due to the current underdeveloped nature of the site, being a surface car park, both 1-33 Bourne Stevens Close and NCP1 have experienced uncharacteristically high daylight and sunlight levels. As such, relative reductions in daylight and sunlight outside of the BRE target values will inevitably occur were meaningful massing to be realised on site.

Furthermore, the inherent design of each of the buildings must be considered. As highlighted in Section 7.0 both 1-33 Bourne Stevens Close and NCP1 are impacted by their own footprints. In NCP1's case this is also coupled with poor room layouts, where maximisation of rooms was considered more important than access to daylight and sunlight.

GIA's technical analysis therefore demonstrates the consented scheme will not have a detrimental effect on daylight and sunlight amenity of the adjoining residential accommodation.

Appendix 01

Principles of Daylight and Sunlight

Principles of Daylight and Sunlight

Background

The quality of amenity and open spaces is often stipulated within planning policy for protection or enhancement and is often a concern for adjoining properties and other interested parties.

Historically the department of environment provided guidance with the issues, and in this country, this role has now been taken on by the Building Research Establishment (BRE), the British Standards Institutions (BSI) and the Chartered Institute of Building Services Engineers (CIBSE). Fortunately they have collaborated in many areas, to provide as much unified advice as possible in the form of industry best practice.

Many local planning authorities consider daylight and sunlight an important factor for determining planning applications. Policies refer to both the protection of daylight and sunlight amenity within existing properties as well as the creation of proposed dwellings with high levels of daylight and sunlight amenities.

In terms of considering what is material, local authorities typically refer to the BRE guidelines and apply their criteria set out within. The guidelines were originally produced in 1991, but superseded by the BRE guidelines (2011) *site layout planning for daylight and sunlight*.

Where developers are seeking to maximise their development value, it is often in the area of daylight and sunlight issues that they may seek to push the boundaries. Particularly in London, there is a priority on the creation of more housing thus resulting in the densification of urban areas. Local authorities vary in their attitude of how flexible they can be with the degree of impact on the daylight and sunlight amenity enjoyed by neighbouring owners and it is one factor among many planning aspects considered when determining an application. In city centres where high density is common, the protection of amenity is more challenging and there are many factors that need to be taken into account: each case has to be considered on its own merits.

The BRE Guidelines

The guidelines are typically referred to for daylight and sunlight amenity issues, however they were not intended to be used as an instrument of planning policy. In the introduction of 'Site Layout Planning for Daylight and Sunlight (2011)', section 1.6 (page 1), 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 designer. Although it gives numerical guidelines, these should be interpreted flexibly because natural lighting is only one of many factors in site layout design (see Section 5). In special circumstances the developer or Planning Authority may wish to use different target values. For example, in an historic city centre, or in an area with modern high rise buildings, a higher degree of obstruction may be unavoidable if new developments are to match the height and proportions of existing buildings".

Again, the paragraph 2.2.3 (page 7) of the document states:-

"Note that numerical values given here are purely advisory. Different criteria may be used, based on the requirements for daylighting in an area viewed against other site layout constraints".

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The numerical criteria suggested by the BRE are therefore designed to provide industry advice/guidance to plan/design with daylight in mind. Alternative values may be appropriate in certain circumstances such as highly dense urban areas around London, for e.g. the approach to creating alternative criteria is detailed within Appendix F of the BRE.

Measurement and Criteria for Daylight and Sunlight as set out in the BRE Guidelines

The BRE guidelines state that they are;

"intended for use for rooms in adjoining dwellings where daylight is required, including living rooms, kitchens and bedroom. Windows to bathrooms, toilets, garages need not be analysed."

They are therefore primarily designed to be used for residential properties however, the BRE guidelines continue to state that they may be applied to any existing non-residential buildings where there may be a reasonable expectation of daylight including; schools, hospitals, hostels, small workshop and some offices.

Daylight

In the first instance, if a proposed development falls beneath a 25 degree angle taken from the centre point of the lowest window, then the BRE suggests that no further analysis is required as there will be adequate sky light (i.e. sky visibility). This rule is applied when considering the scope of any assessments.

The BRE guidelines provide two methods for calculating daylight to existing surrounding properties:

- Vertical Sky Component (VSC)
- No Sky Line (NSL) also referred to as daylight distribution

A further method, the Average Daylight Factor (ADF) is provided for calculating daylight within proposed properties. However, it is sometimes applied as a supplementary assessment for exiting surrounding properties.

Each method is described below:

Vertical Sky Component

Methodology

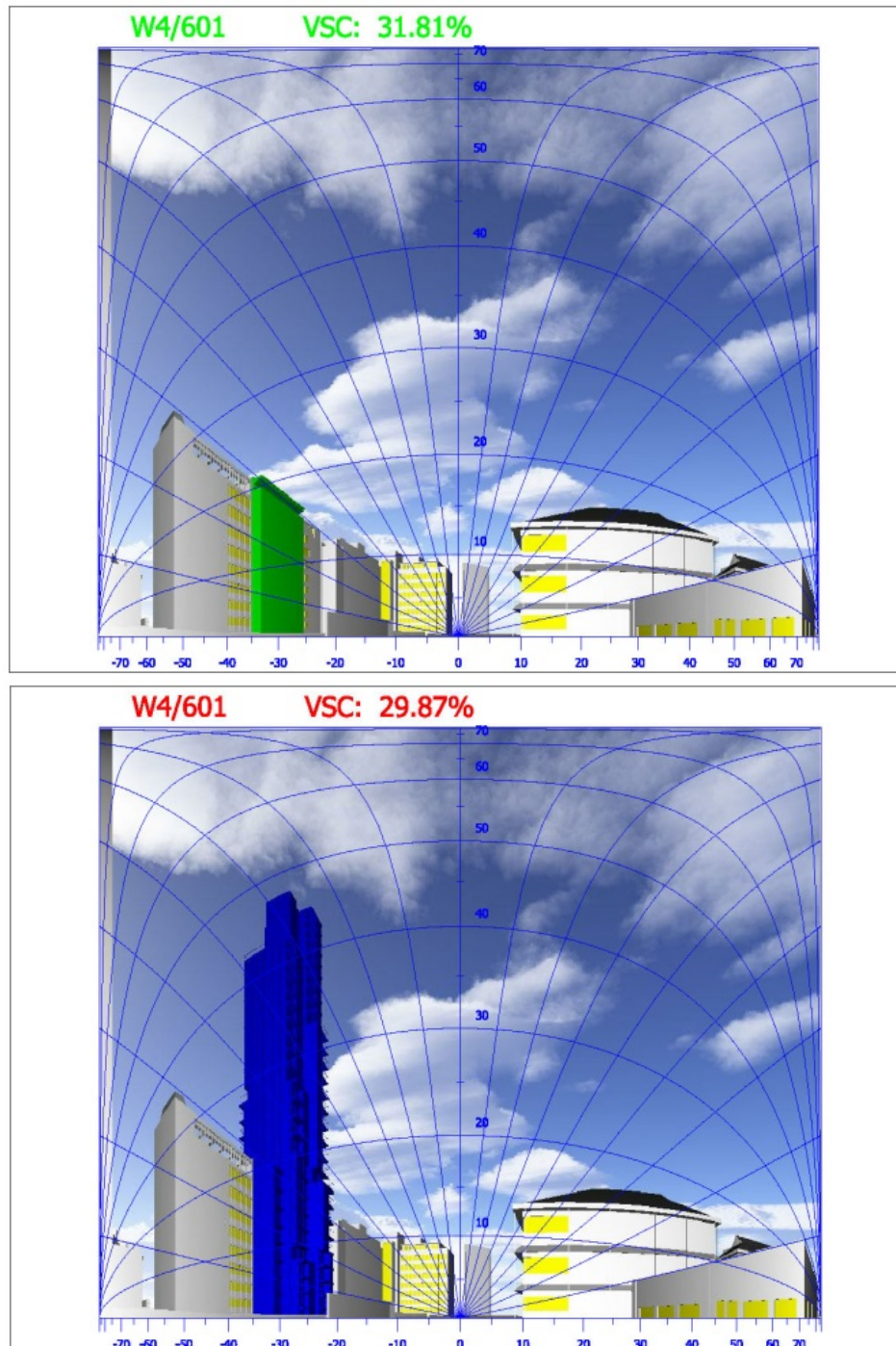
This is defined in the BRE as:-

"Ratio of that 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."

This statement means, in practice that if one had a totally unobstructed view of the sky, looking in a single direction, then just under 40% of the complete hemisphere would be visible. The measurement of this vertical sky component is undertaken using two indicators, namely a skylight indicator and a transparent direction finder.

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Alternatively a further method of measuring the VSC, which is easier to understand both in concept and analysis, is often more precise and can deal with more complex instructions, is that of the Waldram diagram.



The point of reference is the same as for the skylight indicator, at the centre of the outward window face. Effectively a snap shot is taken from that point of the sky in front of the window, before and after the obstruction is put in place together with all the relevant obstructions to it, i.e. the buildings.

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An unobstructed sky from that point of reference would give a vertical sky component of 39.6%, corresponding to 50% of the hemisphere, and therefore the purpose of the diagram is to discover how much sky remains once obstructions exist in front of that point.

Criteria

The BRE Handbook provides criteria for:

- (a) New Development
- (b) Existing Buildings
- (c) Adjoining Development Land

- (a) New Development

Paragraph 2.1.21 of the BRE states that:

"Obstructions can limit access to light from the sky. This can be checked by measuring or calculating the angle of visible sky 'theta', angle of obstruction or Vertical Sky Component (VSC) at the centre of the lowest window where daylight is required. If VSC is:

- at least 27% ('theta' is greater than 65 degrees, obstruction angle less than 25 degrees) conventional window design will usually give reasonable results.
- between 15% and 27% ('theta' is between 45 degrees and 65 degrees, obstruction angle between 25 degrees and 45 degrees) special measures (larger windows, changes to room layout) are usually needed to provide adequate daylight.
- between 5% and 15% ('theta' is between 25 degrees and 45 degrees, obstruction angle between 45 degrees and 65 degrees) it is very difficult to provide adequate daylight unless very large windows are used.
- less than 5% ('theta' less than 25 degrees, obstruction angle more than 65 degrees) it is often impossible to achieve reasonable daylight, even if the whole window wall is glazed."

- (b) Existing Buildings

Para 2.2.21 (page 11) of the BRE states:

"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 degree to the horizontal, then the diffuse daylighting of the existing building may be adversely affected. This will be the case if the vertical sky component measured at the centre of an existing main window is less than 27%, and less than 0.8 times its former value".

The VSC provides a quick and simple test which looks to give an early indication of the potential for light at the window face. However considered in isolation, it does not, in any fashion, indicate the quality of actual light within a space. It does not take into account the window size, the room size or room use. It helps by indicating that if there is an appreciable amount of sky visible from a given point there will be a reasonable potential for daylighting.

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(c) Adjoining Development Land

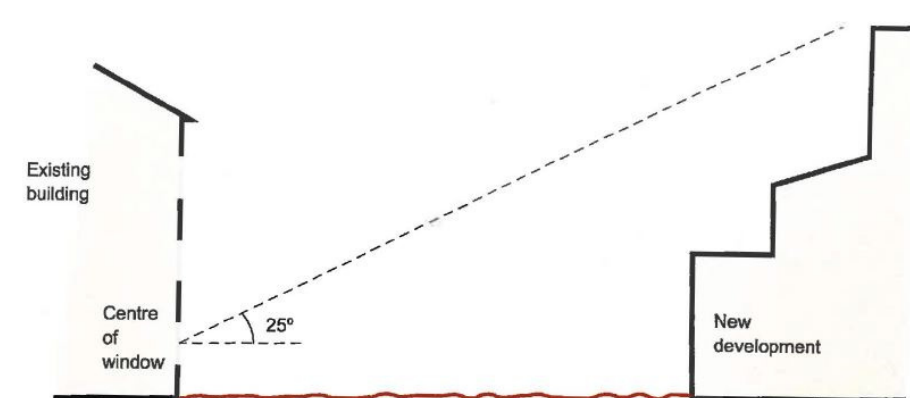
Paragraph 2.3.10 of the BRE guidelines states:

"in broad general terms, a development site next to a proposed new building will retain the potential for good diffuse daylighting provided that on each common boundary:

- (a) no new building, measured in a vertical section perpendicular to the boundary, from a point 1.6m above ground level, subtends an angle of more than 43 degrees to the horizontal;*
- (b) or, if (a) is not satisfied, then all points 1.6m above the boundary line are within 4m (measured along the boundary) of a point which has a VSC (looking towards the new building(s)) of 17% or more 2m above ground level are within 4m (measured sideways) of a point which has a vertical sky component of 27% or more.*

Alternative VSC criteria as per Appendix F of the BRE guidelines

The 27% VSC target criteria is based upon a sub-urban type environment whereby a 25 degree line was taken from the centre point on a ground floor window as shown below:



However, in city centre locations and urban areas where density levels are increasing, these values may not be considered appropriate. The BRE guidelines provide that *"different targets may be used based on the special requirements of the proposed development or its location"* (paragraph F1).

Appendix F of the BRE suggests several approaches as to how alternative targets may be considered including:

- Consented scheme – use of an extant planning permission to establish alternative benchmark criteria for VSC and APSH. It is not appropriate to treat a permitted scheme in the same manner as an existing building and allow a 20% reduction beyond this. If the levels of daylight and sunlight retained are similar to a previously consented scheme then it follows that these levels should be considered acceptable again, notwithstanding other planning considerations.
- Mirror massing – to ensure a development matches the height and proportions of existing buildings, the VSC and APSH targets could be set to those of a mirror image of the same height and size, an equal distance away from the boundary (paragraph F5).
- Consider surrounding context and existing obstruction angles as well as spacing to height ratios.

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In addition, due to the requirements for external amenity space within local planning policies, many residential buildings are served by balconies. Balconies can restrict the view of the sky dome whereby even the modest obstruction may result in a large relative impact on the VSC. The BRE guidelines therefore provide that an assessment can be carried out comparing the levels of VSC with and without the balconies in place for both the existing and proposed scenarios, to establish whether it is the presence of the balcony or the size of the new obstruction that is the main factor in the loss of light (paragraph 2.2.11).

No Sky Line

Methodology

The NSL method is a measure of the distribution of daylight at the working plane within a room. The 'working plane' means a horizontal 'desktop' plane 0.85m in height for residential properties. The NSL divides those areas of the working plane which can receive direct sky light from those which cannot. If a significant area of the working plane lies beyond the NSL (i.e. it receives no direct sky light), then the distribution of daylight in the room will be poor and supplementary electric lighting may be required.

It is similar to the VSC approach in that a reduction of 0.8 times in the area of sky visibility at the working plane may be deemed to be noticeable. It is however, very dependent upon knowing the actual room layouts or having a reasonable understanding of the likely layouts.

It is assessed by plotting the area of a room which can see the sky and which cannot, referred to as the NSL contour or daylight distribution contour. The contours assist in helping to understand the way the daylight is distributed within a room and the comparisons of existing and limitations of proposed circumstances within neighbouring properties. Like the VSC method, it relates to the amount of visible sky but does not consider the room use in its criteria, it is simply a test to assess the change in position of the No Sky Line, between the existing and proposed situation. It does take into account the number and size of windows to a room, but does not give any quantitative or qualitative assessment of the light in the rooms, only where sky can or cannot be seen.

Criteria

BS 8206 Part 2 (para 5.7) that the:

"uniformity of daylight is considered to be unsatisfactory if a significant part of the working plane (normally more than 20%) lies behind the no-sky line".

Therefore, it is implied that an NSL of at least 80% would be considered satisfactory in regards to deep rooms which are lit by windows on one side, the BRE Guidelines state (para, 2.2.10):

In regards to the alteration as a result of a proposed development or obstruction the BRE provide that the daylight may be adversely affected if *"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."*

Principles of Daylight and Sunlight

Average Daylight Factor

Methodology

The Average Daylight Factor (ADF) is defined within the 2011 BRE Guidelines as:

'a ratio of total daylight flux incident on a reference area to the total area of the reference area, expressed as a percentage of outdoor luminance on a horizontal plane, due to an unobstructed sky of assumed or known luminance distribution'.

Whilst the BRE guidelines provide this measure as a tool to understand daylight within proposed dwellings not existing dwellings, if room layouts are known it can provide a useful supplementary measure of daylight and is often requested by many local authorities.

The ADF method of assessment considers:

- The diffuse visible transmittance of the glazing to the room in question (i.e. how much light gets through the window glass). A transmittance value of 0.8% is assumed for single glazing and 0.65% for double glazed windows;
- The net glazed area of the window in question;
- The total area of the room surfaces (ceiling, walls, floor and windows); and
- The angle of visible sky reaching the window(s) in question

In addition, the ADF method makes allowance for the average reflectance of the internal surfaces of the room and of external obstruction (assumed to be 0.5 unless otherwise stated).

Criteria

The criteria for ADF is taken from the British Standard 8206 part II which gives the following criteria based on the room use:

- Bedroom – 1% ADF
- Living room – 1.5% ADF
- Kitchen – 2% ADF

Where a room has multiple uses such as a living kitchen diner (LKD) or a studio apartment, the highest value is taken so in these cases the required ADF is 2%.

Sunlight

Methodology

The BS 8206 part 2 (section 5.2) states that:

"Provided that the entry of sunlight is properly controlled, it is generally welcome in most buildings in the UK. Dissatisfaction can arise as much from the permanent exclusion of sunlight as from its excess. The provision of sunlight is important in dwellings, particularly during winter months. Sunlight is especially valued in habitable rooms used for long periods during the day."

Principles of Daylight and Sunlight

Sunlight is measured using a sun indicator which contains 100 spots, each representing 1% of Annual Probable Sunlight Hours (APSH). Where no obstruction exists the total APSH would amount to 1486 hours and therefore each spot equates to 14.86 hours of the total annual sunlight hours.

The number of spots is calculated for both the whole year and also during the winter period (21st September to 21st March) prior to an obstruction and after the obstruction is put in place. This provides a percentage of APSH for each of the time periods for each window assessed. The 2011 BRE Guidelines note that:

- *"In housing, the main requirement for sunlight is in living rooms, where it is valued at any time of day, but especially in the afternoon."*
- *"all main living rooms of dwellings...should be checked if they have a window facing within 90° of due south. Kitchens and bedrooms are less important, although care should be taken not to block too much sun";*
- *"If the main living room to a dwelling has a main window facing within 90° of due north, but a secondary window facing within 90° of due south, sunlight to the secondary window should be checked."*
- *"...a south facing window will, in general, receive most sunlight, while a north facing one will receive it only on a handful of occasions. East and west facing windows will receive sunlight only at certain times of day".*

When a room has multiple windows, not all may have a southerly orientation however, these windows may contribute to the levels of sunlight within a given room even if by 1-2% APSH. As well as the assessment on a window basis the BRE guidelines provide that an assessment can be undertaken on a room basis.

Whilst the emphasis of the BRE guidelines is in regards to living rooms, it is not always possible to determine the room uses within all of the properties assessed and therefore typically all windows or all rooms with windows facing within 90 degrees of due south and facing the site are assessed.

Criteria

The BRE provide that for existing buildings a window maybe adversely affected if a point at the centre of a window receives:

- Less than 25% of the APSH during the whole year, of which 5% APSH must be in the winter period; and
- Receives less than 0.8 times its former sunlight hours in either time period; and
- Has a reduction in sunlight for the whole year more than 4% APSH.

In terms of the assessment on a room basis the criteria applied is the same.

For proposed buildings the BRE provide (paragraph 3.1.15) that a dwelling or building which has a particular requirement for sunlight will appear reasonably sunlit provided:

- At least one main window faces within 90 degrees of due south; and

Principles of Daylight and Sunlight

- Centre of one main living room window can receive 25% of APSH including 5% APSH in the winter months.

It continues that where groups of dwellings are planned the layout should aim to maximise the number of living rooms that meet the above recommendations.

Overshadowing

As well as daylight and sunlight amenity to neighbouring dwellings, planning policy often refers to the levels of overshadowing to amenity areas such as parks, public squares, playgrounds etc. The BRE guidelines provide two methods of calculation in regards to overshadowing which are as follows:

Sun Hours on Ground

Methodology

This method of overshadowing assessment uses the sun on ground indicator to determine the areas which receive direct sunlight and those which do not. This method applies to both new and existing areas of amenity space. The BRE Guidelines suggest that the Spring Equinox (21st March) is a suitable date for the assessment as this is the midpoint of the sun's position throughout the year. Using specialist software, the path of the sun is tracked to determine where the sun would reach the ground and where it would not.

Criteria

The BRE guidelines recommend that at least half of an amenity space should receive at least two hours of direct sunlight on March 21st. In regards to existing spaces where the existing sunlit area is less than half of the area, the area which receives two hours of sunlight should not be reduced by more than 20% (it should retain 0.8 times its former value).

Transient Overshadowing

The BRE guidelines suggest that where large buildings are proposed which may affect a number of gardens or open spaces, it is useful to plot a shadow plan to illustrate the location of shadows at different times of the day and year. For the purpose of this assessment, shadow has been mapped at the following times of the year:

- 21st March (Spring equinox)
- 21st June (Summer solstice)
- 21st December (Winter solstice)

The September equinox is not assessed as this would provide the same results as those for March 21st.

For each of these dates the overshadowing is calculated at hourly intervals throughout the day however some images may not be present given the early sunset during the Winter period.

The BRE guidelines do not provide any criteria for transient overshadowing. Therefore the analysis provides a description of where additional shadow is cast as a result of a development with professional judgement to determine the effect comparing the shadow resulting from the proposed development against that of the existing site.

Principles of Daylight and Sunlight

Light pollution and Solar Glare

Light pollution is defined as any light emitting from artificial sources into spaces where it is not wanted for example from offices into neighbouring residential properties where it could cause a nuisance. The ILP Guidance notes provide details of how to measure light pollution and criteria based on the urban density of the respective area to determine the acceptability of the light levels.

Solar glare is particularly important at pedestrian and road junctions as well as along railway lines where the glare can cause a temporary blinding to drivers or pedestrians. Glare can occur from reflective materials such as glazed areas or metal cladding on the facades. This assessment is therefore undertaken from viewpoints surrounding the site at junctions and positioned at the driver's eye level. Focal points are dictated by the location of signals or oncoming traffic.

Other Amenity Considerations

Daylight and sunlight is one factor among many under the heading of residential amenity considerations for any given development design or planning application; others include:

- outlook
- sense of enclosure
- privacy
- access to outdoor space e.g. balconies or communal garden/courtyard

Appendix 02

Drawings

Existing



 **PLAN VIEW**
SCALE 1:400 @A3

SOURCES OF INFORMATION

11307-IR06
BARTON WILLMORE (30.11.2016)

11307-IR07
LDSSURVEY (30.11.2016)

11307-IR13
STUDIOUS (25.09.2018)

ALL INFORMATION DISPLAYED IS SUBJECT TO A COMPLETE VERIFIABLE SITE SURVEY BEING UNDERTAKEN. GIA TAKES NO RESPONSIBILITY ON THE ACCURACY OR RELIABILITY OF THE DISPLAYED DATA SINCE A VERIFIED SITE SURVEY WAS NOT MADE AVAILABLE PRIOR TO THE GENERATION OF SUCH INFORMATION.

NOTES:
EXISTING SCENARIO SHOWN IN SEPIA
ALL HEIGHTS AND DIMENSIONS GIVEN IN m AOD

N.B. DO NOT SCALE OFF THIS DRAWING

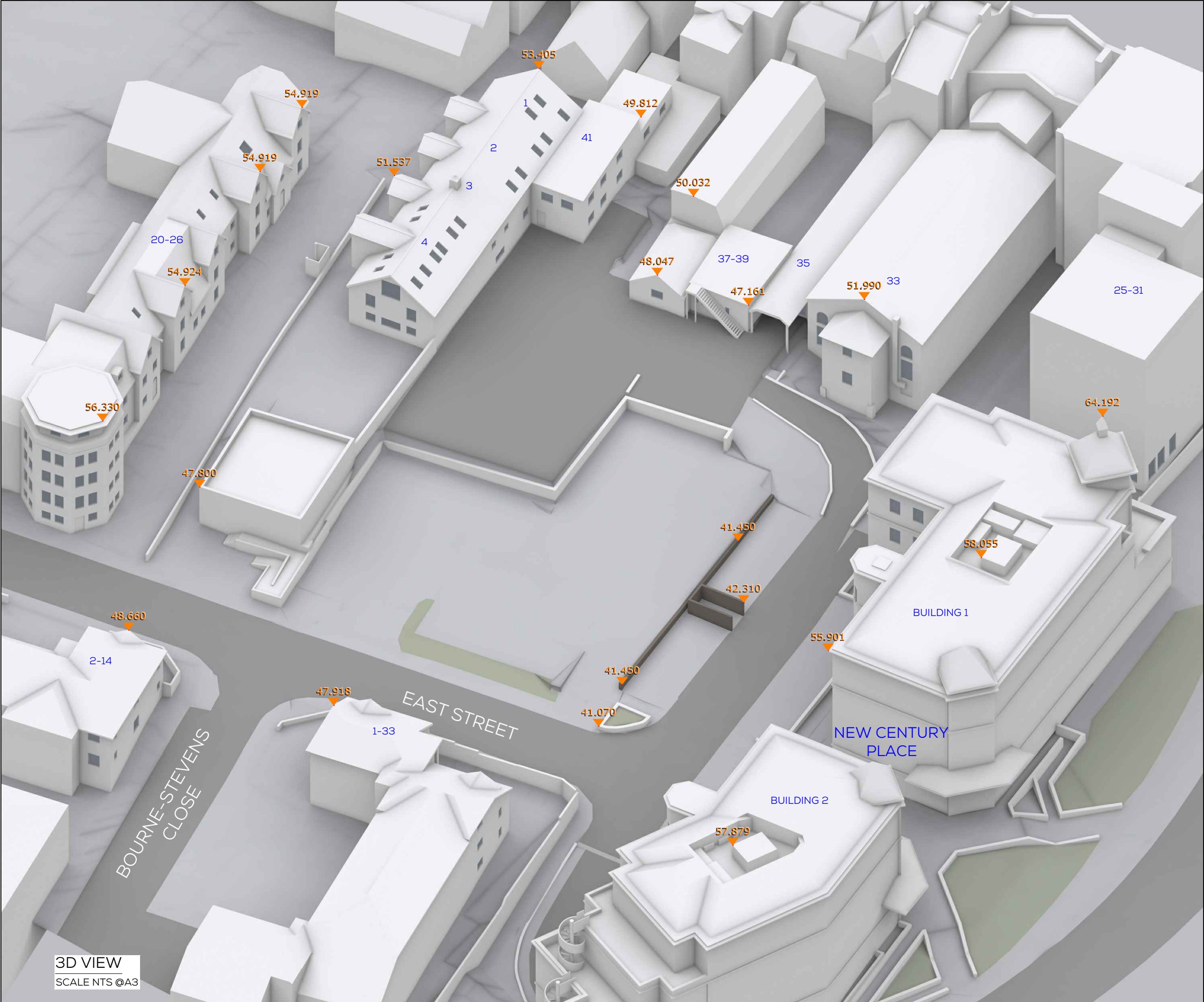
PROJECT:
**EAST STREET,
READING**

DRAWING NAME:
PLAN VIEW
EXISTING SCENARIO

DWN BY	SCALE	CHK BY	DATE	REV No.
BG	1:400 @A3	AH	SEPT 18	A
PROJ No.	REL No.	ADDR No.	IS No.	DWG No.
11307	01	-	01	01


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SOURCES OF INFORMATION

11307-IR06
BARTON WILLMORE (30.11.2016)

11307-IR07
LDSSURVEY (30.11.2016)

11307-IR13
STUDIOUS (25.09.2018)

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NOTES:
EXISTING SCENARIO SHOWN IN SEPIA
ALL HEIGHTS AND DIMENSIONS GIVEN IN m AOD

N.B. DO NOT SCALE OFF THIS DRAWING

PROJECT:
EAST STREET,
READING

DRAWING NAME:
3D VIEW
EXISTING SCENARIO

DWN BY	SCALE	CHK BY	DATE	REV No.
BG	NTS @A3	AH	SEPT 18	A
PROJ No.	REL No.	ADDR No.	IS No.	DWG No.
11307	01	-	01	02

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Consented



 **PLAN VIEW**
SCALE 1:400 @A3

SOURCES OF INFORMATION

11307-IR06
BARTON WILLMORE (30.11.2016)

11307-IR07
LDSSURVEY (30.11.2016)

11307-IR13
STUDIOUS (25.09.2018)

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NOTES:
CONSENTED SCHEME SHOWN IN ORANGE
ALL HEIGHTS AND DIMENSIONS GIVEN IN m AOD

N.B. DO NOT SCALE OFF THIS DRAWING

PROJECT:
**EAST STREET,
READING**

DRAWING NAME:
PLAN VIEW
CONSENTED SCHEME

DWN BY	SCALE	CHK BY	DATE	REV No.
AH	1:400 @A3	AH	OCT 18	A
PROJ No.	REL No.	ADDR No.	IS No.	DWG No.
11307	01	-	02	01



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3D VIEW
SCALE NTS @A3

SOURCES OF INFORMATION

11307-IR06
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11307-IR07
LDSSURVEY (30.11.2016)

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ALL HEIGHTS AND DIMENSIONS GIVEN IN m AOD

N.B. DO NOT SCALE OFF THIS DRAWING

PROJECT:
EAST STREET,
READING

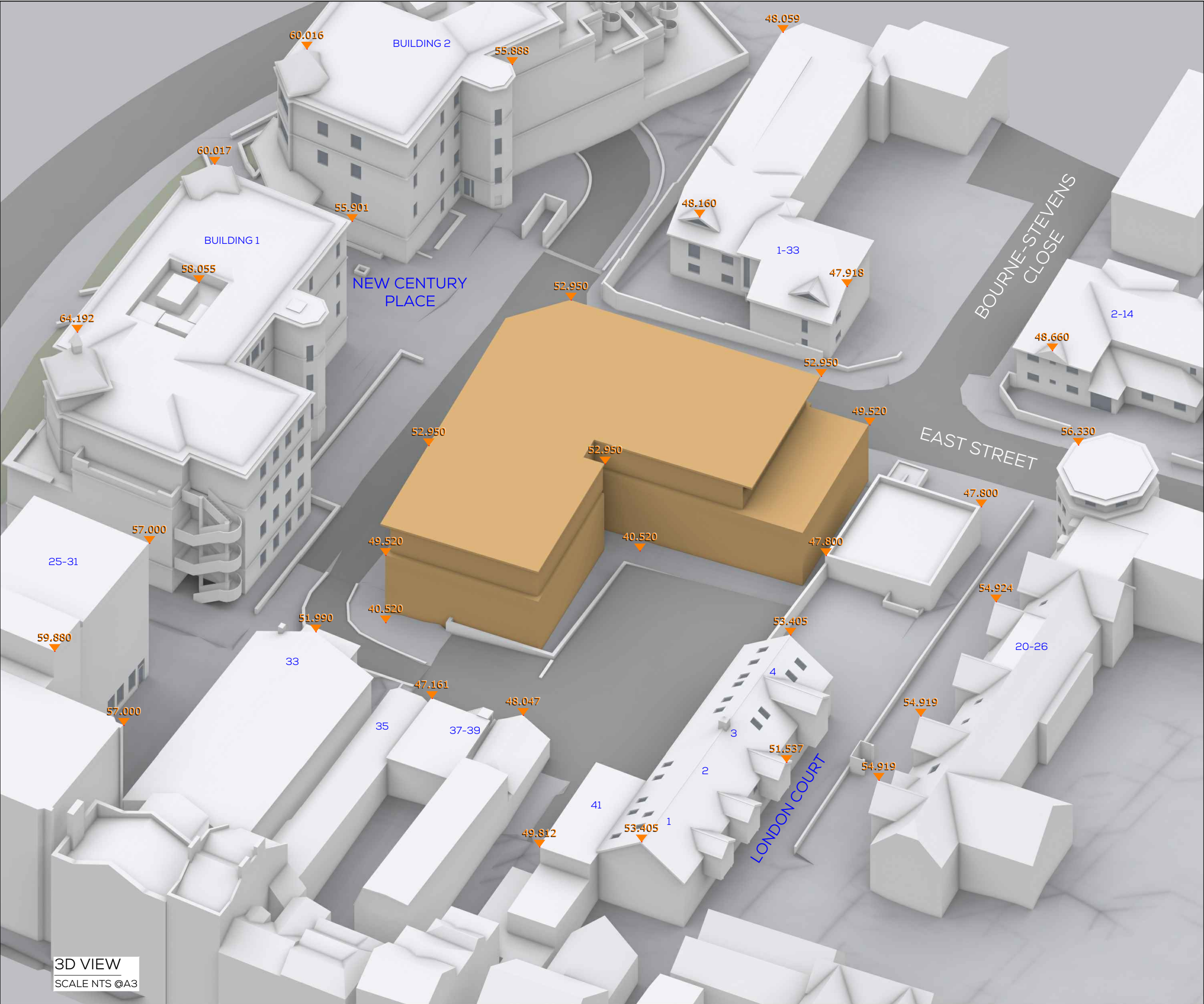
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3D VIEW
CONSENTED SCHEME

DWN BY	SCALE	CHK BY	DATE	REV No.
AH	NTS @A3	AH	OCT 18	A
PROJ No.	REL No.	ADDR No.	IS No.	DWG No.
11307	01	-	02	02



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3D VIEW
SCALE NTS @A3

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NOTES:
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ALL HEIGHTS AND DIMENSIONS GIVEN IN m AOD

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PROJECT:
EAST STREET,
READING

DRAWING NAME:
3D VIEW
CONSented SCHEME

DWN BY	SCALE	CHK BY	DATE	REV No.
AH	NTS @A3	AH	OCT 18	A
PROJ No.	REL No.	ADDR No.	IS No.	DWG No.
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Appendix 03

Daylight and Sunlight Results

Existing vs Consented

Vertical Sky Component (VSC)
No Sky Line (NSL)
Annual Probable Sunlight Hours (APSH)

					VSC (WINDOW)				NSL				APSH (WINDOW)						APSH (ROOM)					
FLOOR	ROOM	PROPERTY TYPE	ROOM USE	WINDOW	EX.	PR.	LOSS	LOSS	EX.	PR.	LOSS	LOSS	EX.		PR.		LOSS %		EX.		PR.		LOSS %	
					%	%		%	%	%	SQM	%	ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL	WINTER
1 LONDON COURT																								
F01	R1	RESIDENTIAL	LKD	W1/F01 / INC (2)	84.4	84.3	0.1	0.1%	98	98	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			LKD	W2/F01 / INC (2)	84.3	84.3	0	0.0%					N/A	N/A	N/A	N/A	N/A	N/A						
F02	R1	RESIDENTIAL	STUDIO-APT	W1/F02 / INC (2)	85	85	0	0.0%	100	100	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			STUDIO-APT	W2/F02 / INC (2)	85	84.9	0.1	0.1%					N/A	N/A	N/A	N/A	N/A	N/A						
2 LONDON COURT																								
F00	R1	RESIDENTIAL	UNKNOWN	W1/F00	22	21.2	0.8	3.6%	72	72	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
F01	R1	RESIDENTIAL	UNKNOWN	W1/F01 / INC (2)	84.5	84.4	0.1	0.1%	100	100	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			UNKNOWN	W2/F01 / INC (2)	84.4	84.4	0	0.0%					N/A	N/A	N/A	N/A	N/A	N/A						
3 LONDON COURT																								
F00	R1	RESIDENTIAL	BEDROOM	W1/F00	32.3	31	1.3	4.0%	92	92	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
F01	R1	RESIDENTIAL	LKD	W1/F01	20.9	20.9	0	0.0%	95	95	0.1	0.3%	44	16	44	16	0.0%	0.0%	53	16	52	16	1.9%	0.0%
			LKD	W2/F01	34.8	34.1	0.7	2.0%					9	0	8	0	11.1%	0.0%						
	R2	RESIDENTIAL	BEDROOM	W3/F01	34.2	33.5	0.7	2.0%	95	95	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
4 LONDON COURT																								
F00	R1	RESIDENTIAL	LKD	W1/F00	21.5	21.5	0	0.0%	97	97	0.0	0.0%	51	9	51	9	0.0%	0.0%	57	10	56	10	1.8%	0.0%
			LKD	W2/F00	33.8	32.4	1.4	4.1%					37	4	36	4	1.7%	0.0%						
			LKD	W3/F00	34.4	32.7	1.7	4.9%					38	4	37	4	2.6%	0.0%						
	R2	RESIDENTIAL	BEDROOM	W4/F00	35	32.8	2.2	6.3%	89	89	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
F01	R1	RESIDENTIAL	LKD	W1/F01	24.7	24.7	0	0.0%	94	94	0.0	0.0%	60	16	60	16	0.0%	0.0%	65	17	65	17	0.0%	0.0%
			LKD	W2/F01	35.7	34.9	0.8	2.2%					40	7	40	7	0.0%	0.0%						
4 LONDON COURT (CONTINUED)																								
	R2	RESIDENTIAL	BEDROOM	W3/F01	36.5	35.3	1.2	3.3%	96	96	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
F02	R1	RESIDENTIAL	LKD	W1/F02 / INC (2)	78.7	78.7	0	0.0%	100	100	0.0	0.0%	76	22	76	22	0.0%	0.0%	95	25	95	25	0.0%	0.0%
			LKD	W2/F02 / INC (2)	81.6	81.6	0	0.0%					83	25	83	25	0.0%	0.0%						
			LKD	W3/F02	37.2	36.9	0.3	0.8%					39	8	39	8	0.0%	0.0%						
			LKD	W4/F02 / INC (2)	85	84.9	0.1	0.1%					12	0	12	0	0.0%	0.0%						
			LKD	W5/F02 / INC (2)	85	84.9	0.1	0.1%					12	0	12	0	0.0%	0.0%						
	R3	RESIDENTIAL	BEDROOM	W8/F02 / INC (2)	84.9	84.9	0	0.0%	100	100	0.0	0.0%	12	0	12	0	0.0%	0.0%	98	28	98	28	0.0%	0.0%
			BEDROOM	W9/F02 / INC (2)	84.8	84.7	0.1	0.1%					12	0	12	0	0.0%	0.0%						

(1) KITCHEN SMALLER THAN 13m2
(2) INC\HZ = SKY COMPONENT (INCLINED\HORIZONTAL WINDOWS)
(3) SINGLE ASPECT ROOM DEEPER THAN 5m

					VSC (WINDOW)				NSL				APSH (WINDOW)						APSH (ROOM)					
FLOOR	ROOM	PROPERTY	ROOM	WINDOW	EX.	PR.	LOSS	LOSS	EX.	PR.	LOSS	LOSS	EX.		PR.		LOSS %		EX.		PR.		LOSS %	
													ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL	WINTER
			BEDROOM	W10/F02 / INC (2)	82.5	82.5	0	0.0%					86	28	86	28	0.0%	0.0%						
			BEDROOM	W11/F02 / INC (2)	81.3	81.3	0	0.0%					82	27	82	27	0.0%	0.0%						
20-26 EAST STREET																								
F00	R1	RESIDENTIAL	UNKNOWN	W1/F00	29.7	29.7	0	0.0%	99	99	0.0	0.0%	42	10	42	10	0.0%	0.0%	47	11	47	11	0.0%	0.0%
			UNKNOWN	W2/F00	30.7	30.7	0	0.0%					44	11	44	11	0.0%	0.0%						
			UNKNOWN	W3/F00	33.1	33.1	0	0.0%					41	9	41	9	0.0%	0.0%						
			UNKNOWN	W4/F00	33.2	33.2	0	0.0%					41	9	41	9	0.0%	0.0%						
	R2	RESIDENTIAL	UNKNOWN	W5/F00	34.2	33.7	0.5	1.5%	100	100	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			UNKNOWN	W6/F00	32.9	32.1	0.8	2.4%					N/A	N/A	N/A	N/A	N/A	N/A						
			UNKNOWN	W7/F00	32.4	31.6	0.8	2.5%					N/A	N/A	N/A	N/A	N/A	N/A						
			UNKNOWN	W8/F00	28.3	27.9	0.4	1.4%					N/A	N/A	N/A	N/A	N/A	N/A						
F01	R1	RESIDENTIAL	UNKNOWN	W1/F01	32.3	32.3	0	0.0%	100	100	0.0	0.0%	47	11	47	11	0.0%	0.0%	52	12	52	12	0.0%	0.0%
			UNKNOWN	W2/F01	33.3	33.3	0	0.0%					52	12	52	12	0.0%	0.0%						
			UNKNOWN	W3/F01	35.8	35.8	0	0.0%					43	10	43	10	0.0%	0.0%						
			UNKNOWN	W4/F01	35.9	35.9	0	0.0%					43	10	43	10	0.0%	0.0%						
			UNKNOWN	W5/F01	36.4	36.1	0.3	0.8%					19	1	19	1	0.0%	0.0%						
	R2	RESIDENTIAL	UNKNOWN	W6/F01	36.5	36.1	0.4	1.1%	100	100	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			UNKNOWN	W7/F01	36.5	35.7	0.8	2.2%					N/A	N/A	N/A	N/A	N/A	N/A						
			UNKNOWN	W8/F01	36.5	35.5	1	2.7%					N/A	N/A	N/A	N/A	N/A	N/A						
			UNKNOWN	W9/F01	33.2	32.5	0.7	2.1%					N/A	N/A	N/A	N/A	N/A	N/A						
			UNKNOWN	W10/F01	32	31.4	0.6	1.9%					N/A	N/A	N/A	N/A	N/A	N/A						
	R3	RESIDENTIAL	UNKNOWN	W11/F01	32.3	31.5	0.8	2.5%	93	93	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
20-26 EAST STREET (CONTINUED)																								
	R4	RESIDENTIAL	UNKNOWN	W12/F01	34.1	33.3	0.8	2.3%	95	95	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R5	RESIDENTIAL	UNKNOWN	W13/F01	35.7	34.9	0.8	2.2%	97	97	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R6	RESIDENTIAL	UNKNOWN	W14/F01	36.2	35.5	0.7	1.9%	78	78	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R7	RESIDENTIAL	UNKNOWN	W15/F01	28.7	28	0.7	2.4%	92	92	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R8	RESIDENTIAL	UNKNOWN	W16/F01	34.9	34.1	0.8	2.3%	97	97	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R9	RESIDENTIAL	UNKNOWN	W17/F01	34.5	33.8	0.7	2.0%	98	98	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R10	RESIDENTIAL	UNKNOWN	W18/F01	34.2	33.5	0.7	2.0%	98	98	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R11	RESIDENTIAL	UNKNOWN	W19/F01	33.3	32.6	0.7	2.1%	97	97	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R12	RESIDENTIAL	UNKNOWN	W20/F01	28.9	28.4	0.5	1.7%	90	90	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

(1) KITCHEN SMALLER THAN 13m2
(2) INC\HZ = SKY COMPONENT (INCLINED\HORIZONTAL WINDOWS)
(3) SINGLE ASPECT ROOM DEEPER THAN 5m

FLOOR	ROOM	PROPERTY TYPE	ROOM USE	WINDOW	VSC (WINDOW)				NSL				APSH (WINDOW)						APSH (ROOM)					
					EX.	PR.	LOSS	LOSS	EX.	PR.	LOSS	LOSS	EX.		PR.		LOSS %		EX.		PR.		LOSS %	
					%	%		%	%	%	SQM	%	ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL	WINTER
	R13	RESIDENTIAL	UNKNOWN	W21/F01	27.1	26.7	0.4	15%	88	88	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R14	RESIDENTIAL	UNKNOWN	W22/F01	30.2	29.8	0.4	13%	81	81	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R15	RESIDENTIAL	UNKNOWN	W23/F01	26.6	26.3	0.3	11%	77	77	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R16	RESIDENTIAL	UNKNOWN	W24/F01	31	30.8	0.2	0.6%	76	76	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R17	RESIDENTIAL	UNKNOWN	W25/F01	25.6	25.6	0	0.0%	80	80	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R18	RESIDENTIAL	UNKNOWN	W26/F01	29.3	29.2	0.1	0.3%	83	83	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R19	RESIDENTIAL	UNKNOWN	W27/F01	25.4	25.4	0	0.0%	88	88	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
F02	R1	RESIDENTIAL	UNKNOWN	W1/F02	35.2	35.2	0	0.0%	100	100	0.0	0.0%	55	13	55	13	0.0%	0.0%	61	17	61	17	0.0%	0.0%
			UNKNOWN	W2/F02	36.1	36.1	0	0.0%					60	16	60	16	0.0%	0.0%						
			UNKNOWN	W3/F02	38.4	38.4	0	0.0%					45	11	45	11	0.0%	0.0%						
			UNKNOWN	W4/F02	38.4	38.4	0	0.0%					45	11	45	11	0.0%	0.0%						
			UNKNOWN	W5/F02	38.4	38.3	0.1	0.3%					21	2	21	2	0.0%	0.0%						
	R2	RESIDENTIAL	UNKNOWN	W6/F02	38.4	38.3	0.1	0.3%	100	100	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			UNKNOWN	W7/F02	37.7	37.5	0.2	0.5%					N/A	N/A	N/A	N/A	N/A	N/A						
			UNKNOWN	W8/F02	37.6	37.4	0.2	0.5%					N/A	N/A	N/A	N/A	N/A	N/A						
			UNKNOWN	W9/F02	35.3	35.1	0.2	0.6%					N/A	N/A	N/A	N/A	N/A	N/A						
			UNKNOWN	W10/F02	34.4	34.2	0.2	0.6%					N/A	N/A	N/A	N/A	N/A	N/A						
	R3	RESIDENTIAL	UNKNOWN	W11/F02	33.1	32.8	0.3	0.9%	93	93	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R4	RESIDENTIAL	UNKNOWN	W12/F02	35	34.7	0.3	0.9%	94	94	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R5	RESIDENTIAL	UNKNOWN	W13/F02	37	36.7	0.3	0.8%	98	98	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R6	RESIDENTIAL	UNKNOWN	W14/F02	37	36.8	0.2	0.5%	99	99	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R7	RESIDENTIAL	UNKNOWN	W15/F02	28.6	28.4	0.2	0.7%	92	92	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
20-26 EAST STREET (CONTINUED)																								
	R8	RESIDENTIAL	UNKNOWN	W16/F02	36.7	36.4	0.3	0.8%	98	98	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R9	RESIDENTIAL	UNKNOWN	W17/F02	35.8	35.7	0.1	0.3%	97	97	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R10	RESIDENTIAL	UNKNOWN	W18/F02	31.9	31.8	0.1	0.3%	96	96	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R11	RESIDENTIAL	UNKNOWN	W19/F02	30.2	30.1	0.1	0.3%	96	96	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R12	RESIDENTIAL	UNKNOWN	W20/F02	34.4	34.2	0.2	0.6%	98	98	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R13	RESIDENTIAL	UNKNOWN	W21/F02	33.2	33.1	0.1	0.3%	91	91	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R14	RESIDENTIAL	UNKNOWN	W22/F02	34	33.9	0.1	0.3%	98	98	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R15	RESIDENTIAL	UNKNOWN	W23/F02	29.4	29.4	0	0.0%	96	96	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
F03	R1	RESIDENTIAL	UNKNOWN	W1/F03	37.7	37.7	0	0.0%	100	100	0.0	0.0%	66	21	66	21	0.0%	0.0%	68	23	68	23	0.0%	0.0%
			UNKNOWN	W2/F03	38.1	38.1	0	0.0%					68	23	68	23	0.0%	0.0%						

(1) KITCHEN SMALLER THAN 13m2
(2) INC\HZ = SKY COMPONENT (INCLINED\HORIZONTAL WINDOWS)
(3) SINGLE ASPECT ROOM DEEPER THAN 5m

FLOOR	ROOM	PROPERTY	ROOM	WINDOW	VSC (WINDOW)				NSL				APSH (WINDOW)						APSH (ROOM)					
					EX.	PR.	LOSS	LOSS	EX.	PR.	LOSS	LOSS	EX.		PR.		LOSS %		EX.		PR.		LOSS %	
					%	%		%	%	%	SQM	%	ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL	WINTER
			UNKNOWN	W3/F03	39.1	39.1	0	0.0%					45	12	45	12	0.0%	0.0%						
			UNKNOWN	W4/F03	39.1	39.1	0	0.0%					45	12	45	12	0.0%	0.0%						
			UNKNOWN	W5/F03	38.8	38.8	0	0.0%					21	2	21	2	0.0%	0.0%						
	R2	RESIDENTIAL	UNKNOWN	W6/F03	38.8	38.8	0	0.0%	100	100	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			UNKNOWN	W7/F03	38.3	38.2	0.1	0.3%					N/A	N/A	N/A	N/A	N/A	N/A						
			UNKNOWN	W8/F03	38.2	38.2	0	0.0%					N/A	N/A	N/A	N/A	N/A	N/A						
			UNKNOWN	W9/F03	37.4	37.4	0	0.0%					N/A	N/A	N/A	N/A	N/A	N/A						
			UNKNOWN	W10/F03	37.1	37.1	0	0.0%					N/A	N/A	N/A	N/A	N/A	N/A						
	R3	RESIDENTIAL	UNKNOWN	W11/F03	33.2	33.2	0	0.0%	83	83	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R4	RESIDENTIAL	UNKNOWN	W12/F03	36.5	36.5	0	0.0%	86	86	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R5	RESIDENTIAL	UNKNOWN	W13/F03	37.5	37.5	0	0.0%	95	95	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R6	RESIDENTIAL	UNKNOWN	W14/F03 / INC (2)	72.2	72.2	0	0.0%	81	81	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R7	RESIDENTIAL	UNKNOWN	W15/F03	37.5	37.4	0.1	0.3%	97	97	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R8	RESIDENTIAL	UNKNOWN	W16/F03	37.4	37.4	0	0.0%	97	97	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R9	RESIDENTIAL	UNKNOWN	W17/F03 / INC (2)	74	74	0	0.0%	83	83	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R10	RESIDENTIAL	UNKNOWN	W18/F03 / INC (2)	72.6	72.6	0	0.0%	85	85	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R11	RESIDENTIAL	UNKNOWN	W19/F03	37.3	37.2	0.1	0.3%	97	97	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R12	RESIDENTIAL	UNKNOWN	W20/F03 / INC (2)	74.6	74.6	0	0.0%	91	91	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R13	RESIDENTIAL	UNKNOWN	W21/F03	37.2	37.2	0	0.0%	97	97	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
F04	R1	RESIDENTIAL	UNKNOWN	W1/F04	27.9	27.9	0	0.0%	99	99	0.0	0.0%	57	26	57	26	0.0%	0.0%	57	26	57	26	0.0%	0.0%
			UNKNOWN	W8/F04	28	28	0	0.0%					38	14	38	14	0.0%	0.0%						
20-26 EAST STREET (CONTINUED)																								
	R2	RESIDENTIAL	UNKNOWN	W2/F04	27.8	27.8	0	0.0%	100	100	0.0	0.0%	54	30	54	30	0.0%	0.0%	68	30	68	30	0.0%	0.0%
			UNKNOWN	W3/F04	28	28	0	0.0%					47	18	47	18	0.0%	0.0%						
			UNKNOWN	W4/F04	28.1	28.1	0	0.0%					30	3	30	3	0.0%	0.0%						
	R3	RESIDENTIAL	UNKNOWN	W5/F04	27.9	27.9	0	0.0%	100	100	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			UNKNOWN	W6/F04	27.6	27.6	0	0.0%					N/A	N/A	N/A	N/A	N/A	N/A						
			UNKNOWN	W7/F04	27.7	27.7	0	0.0%					N/A	N/A	N/A	N/A	N/A	N/A						
1-33 BOURNE STEVENS CLOSE																								
F00	R1	RESIDENTIAL	UNKNOWN	W1/F00	23.1	23	0.1	0.4%	58	58	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R2	RESIDENTIAL	UNKNOWN	W3/F00 / INC (2)	31.2	23.7	7.5	24.0%	97	90	1.2	7.6%	41	9	28	4	31.7%	55.6%	44	9	36	4	18.2%	55.6%
			UNKNOWN	W2/F00	23.5	23.4	0.1	0.4%					10	0	10	0	0.0%	0.0%						

(1) KITCHEN SMALLER THAN 13m2
(2) INC\HZ = SKY COMPONENT (INCLINED\HORIZONTAL WINDOWS)
(3) SINGLE ASPECT ROOM DEEPER THAN 5m

					VSC (WINDOW)				NSL				APSH (WINDOW)						APSH (ROOM)					
FLOOR	ROOM	PROPERTY	ROOM USE	WINDOW	EX.	PR.	LOSS	LOSS	EX.	PR.	LOSS	LOSS	EX.		PR.		LOSS %		EX.		PR.		LOSS %	
		TYPE			%	%		%	%	%	SQM	%	ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL	WINTER
	R3	RESIDENTIAL	UNKNOWN	W4/F00 / INC (2)	28.4	20.5	7.9	27.8%	95	61	5.4	36.5%	28	4	15	0	46.4%	100.0%	28	4	15	0	46.4%	100.0%
	R4	RESIDENTIAL	UNKNOWN	W5/F00	23.9	19.4	4.5	18.8%	100	60	3.5	39.8%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R5	RESIDENTIAL	UNKNOWN	W7/F00 / INC (2)	21.1	19.7	1.4	6.6%	83	82	0.1	0.6%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R6	RESIDENTIAL	UNKNOWN	W6/F00	31.7	30.9	0.8	2.5%	97	95	0.4	2.6%	78	20	74	19	5.1%	5.0%	78	20	74	19	5.1%	5.0%
			UNKNOWN	W8/F00 / INC (2)	18.3	17.4	0.9	4.9%					26	8	26	8	0.0%	0.0%						
F01	R1	RESIDENTIAL	UNKNOWN	W1/F01	26.2	26.1	0.1	0.4%	66	66	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R2	RESIDENTIAL	UNKNOWN	W3/F01 / INC (2)	32	26	6	18.8%	98	92	0.9	5.9%	43	12	34	7	20.9%	41.7%	46	12	40	7	13.0%	41.7%
			UNKNOWN	W2/F01	26.3	26.2	0.1	0.4%					9	0	9	0	0.0%	0.0%						
	R3	RESIDENTIAL	UNKNOWN	W4/F01 / INC (2)	29.1	23	6.1	21.0%	96	70	4.1	27.2%	34	7	25	3	26.5%	57.1%	34	7	25	3	26.5%	57.1%
	R4	RESIDENTIAL	UNKNOWN	W6/F01	29	23.3	5.7	19.7%	100	100	0.0	0.0%	30	3	22	1	26.7%	66.7%	30	3	22	1	26.7%	66.7%
			UNKNOWN	W5/F01	24	23.4	0.6	2.5%					8	0	8	0	0.0%	0.0%						
	R5	RESIDENTIAL	UNKNOWN	W7/F01	23.3	22.1	1.2	5.2%	90	90	0.0	0.1%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R6	RESIDENTIAL	UNKNOWN	W9/F01	33.7	33.2	0.5	1.5%	99	95	0.5	3.7%	81	26	77	24	4.9%	7.7%	92	26	79	24	14.1%	7.7%
			UNKNOWN	W8/F01	32.9	23	9.9	30.1%					44	12	30	10	31.8%	16.7%						
F02	R1	RESIDENTIAL	UNKNOWN	W1/F02	27.2	27.2	0	0.0%	75	75	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R2	RESIDENTIAL	UNKNOWN	W2/F02 / INC (2)	35.3	31.9	3.4	9.6%	84	84	0.0	0.0%	53	18	48	14	9.4%	22.2%	53	18	48	14	9.4%	22.2%
	R3	RESIDENTIAL	UNKNOWN	W3/F02 / INC (2)	35.6	30.2	5.4	15.2%	85	80	0.8	5.3%	54	18	45	15	16.7%	16.7%	54	18	45	15	16.7%	16.7%
2-14 BOURNE STEVENS CLOSE																								
F00	R1	RESIDENTIAL	UNKNOWN	W2/F00	34	33.3	0.7	2.1%	88	88	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2-14 BOURNE STEVENS CLOSE (CONTINUED)																								
			UNKNOWN	W1/F00	26.8	26.8	0	0.0%					N/A	N/A	N/A	N/A	N/A	N/A						
	R2	RESIDENTIAL	UNKNOWN	W3/F00	33.6	32.5	1.1	3.3%	99	99	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R3	RESIDENTIAL	UNKNOWN	W5/F00	31.6	29.7	1.9	6.0%	100	100	0.0	0.0%	44	10	42	10	4.5%	0.0%	47	10	44	10	6.4%	0.0%
			UNKNOWN	W4/F00	34	32.4	1.6	4.7%					11	0	8	0	27.3%	0.0%						
	R4	RESIDENTIAL	UNKNOWN	W6/F00	31.3	29.8	1.5	4.8%	77	77	0.0	0.0%	47	13	46	13	2.1%	0.0%	47	13	46	13	2.1%	0.0%
	R5	RESIDENTIAL	UNKNOWN	W7/F00	30.6	29.4	1.2	3.9%	98	98	0.0	0.0%	44	10	43	10	2.3%	0.0%	44	10	43	10	2.3%	0.0%
	R6	RESIDENTIAL	UNKNOWN	W8/F00	28.3	27.3	1	3.5%	100	100	0.0	0.0%	38	9	37	9	2.6%	0.0%	38	9	37	9	2.6%	0.0%
	R7	RESIDENTIAL	UNKNOWN	W9/F00	25.4	25.1	0.3	1.2%	72	72	0.0	0.0%	33	7	32	7	3.0%	0.0%	33	7	32	7	3.0%	0.0%
	R8	RESIDENTIAL	UNKNOWN	W10/F00	24.7	24.3	0.4	1.6%	68	68	0.0	0.0%	29	3	29	3	0.0%	0.0%	29	3	29	3	0.0%	0.0%
F01	R1	RESIDENTIAL	UNKNOWN	W2/F01	32.1	31.7	0.4	1.2%	100	100	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			UNKNOWN	W1/F01	30.8	30.8	0	0.0%					N/A	N/A	N/A	N/A	N/A	N/A						
	R2	RESIDENTIAL	UNKNOWN	W3/F01	31.9	31.3	0.6	1.9%	98	98	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

(1) KITCHEN SMALLER THAN 13m2
(2) INC\HZ = SKY COMPONENT (INCLINED\HORIZONTAL WINDOWS)
(3) SINGLE ASPECT ROOM DEEPER THAN 5m

					VSC (WINDOW)				NSL				APSH (WINDOW)						APSH (ROOM)					
FLOOR	ROOM	PROPERTY	ROOM	WINDOW	EX.	PR.	LOSS	LOSS	EX.	PR.	LOSS	LOSS	EX.		PR.		LOSS %		EX.		PR.		LOSS %	
		TYPE	USE		%	%		%	%	%	SQM	%	ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL	WINTER
	R3	RESIDENTIAL	UNKNOWN	W5/F01	29	27.9	11	3.8%	100	100	0.0	0.0%	39	11	38	11	2.6%	0.0%	40	11	39	11	2.5%	0.0%
			UNKNOWN	W4/F01	32	31.1	0.9	2.8%					8	0	7	0	12.5%	0.0%						
	R4	RESIDENTIAL	UNKNOWN	W6/F01	25.3	24.5	0.8	3.2%	73	73	0.0	0.0%	34	8	33	8	2.9%	0.0%	34	8	33	8	2.9%	0.0%
	R5	RESIDENTIAL	UNKNOWN	W7/F01	28.2	27.5	0.7	2.5%	98	98	0.0	0.0%	38	10	37	10	2.6%	0.0%	38	10	37	10	2.6%	0.0%
	R6	RESIDENTIAL	UNKNOWN	W8/F01	0	0	0	-	0	0	0.0	-	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
BUILDING 2 - NEW CENTURY PLACE																								
B01	R1 (3)	RESIDENTIAL	UNKNOWN	W1/B01	5.7	5.7	0	0.0%	28	28	0.0	0.1%	9	0	9	0	0.0%	0.0%	9	0	9	0	0.0%	0.0%
F02	R1	RESIDENTIAL	UNKNOWN	W1/F02	36	36	0	0.0%	99	99	0.0	0.0%	18	5	18	5	0.0%	0.0%	46	13	46	13	0.0%	0.0%
			UNKNOWN	W2/F02	29.7	29.4	0.3	1.0%					39	13	39	13	0.0%	0.0%						
F03	R1	RESIDENTIAL	UNKNOWN	W1/F03	37	37	0	0.0%	99	99	0.0	0.0%	43	12	43	12	0.0%	0.0%	46	12	46	12	0.0%	0.0%
			UNKNOWN	W2/F03	34	34	0	0.0%					43	12	43	12	0.0%	0.0%						
BUILDING 1 - NEW CENTURY PLACE																								
F00	R1	RESIDENTIAL	BEDROOM	W1/F00	32.2	22.7	9.5	29.5%	96	74	5.6	23.3%	80	23	61	9	23.8%	60.9%	81	24	63	10	22.2%	58.3%
			BEDROOM	W2/F00	32.8	21.3	11.5	35.1%					81	24	61	8	24.7%	66.7%						
	R2	RESIDENTIAL	BEDROOM	W3/F00	33.2	20	13.2	39.8%	99	99	0.0	0.1%	81	24	54	4	33.3%	83.3%	83	26	62	8	25.3%	69.2%
			BEDROOM	W4/F00	33.5	18.9	14.6	43.6%					83	26	55	5	33.7%	80.8%						
			BEDROOM	W5/F00	21	17.1	3.9	18.6%					42	13	29	2	31.0%	84.6%						
BUILDING 1 - NEW CENTURY PLACE (CONTINUED)																								
	R3	RESIDENTIAL	BEDROOM	W6/F00	16.3	13.3	3	18.4%	85	80	0.9	6.2%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R4	RESIDENTIAL	BEDROOM	W7/F00	17.4	11.7	5.7	32.8%	77	44	7.1	42.0%	35	14	28	7	20.0%	50.0%	35	14	28	7	20.0%	50.0%
	R5 (3)	RESIDENTIAL	BEDROOM	W8/F00	19.8	12.9	6.9	34.8%	89	36	12.6	59.1%	38	15	30	7	21.1%	53.3%	42	17	32	7	23.8%	58.8%
			BEDROOM	W9/F00	20.8	13	7.8	37.5%					39	17	27	5	30.8%	70.6%						
	R6 (3)	RESIDENTIAL	BEDROOM	W10/F00	19.5	12	7.5	38.5%	55	23	6.6	57.7%	36	18	24	6	33.3%	66.7%	36	18	24	6	33.3%	66.7%
F01	R1	RESIDENTIAL	BEDROOM	W1/F01	35.4	28.7	6.7	18.9%	96	94	0.5	2.1%	83	26	72	15	13.3%	42.3%	85	28	74	17	12.9%	39.3%
			BEDROOM	W2/F01	35.7	27.5	8.2	23.0%					85	28	72	15	15.3%	46.4%						
	R2	RESIDENTIAL	BEDROOM	W3/F01	35.9	26.4	9.5	26.5%	99	99	0.0	0.0%	85	28	70	13	17.6%	53.6%	87	28	77	18	11.5%	35.7%
			BEDROOM	W4/F01	36	25.5	10.5	29.2%					85	28	68	11	20.0%	60.7%						
			BEDROOM	W5/F01	23.4	20.7	2.7	11.5%					46	14	39	7	15.2%	50.0%						
	R3	RESIDENTIAL	BEDROOM	W6/F01	18.2	16.2	2	11.0%	88	88	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R4	RESIDENTIAL	BEDROOM	W7/F01	18.5	14.8	3.7	20.0%	76	74	0.6	3.3%	35	15	31	11	11.4%	26.7%	35	15	31	11	11.4%	26.7%
	R5 (3)	RESIDENTIAL	BEDROOM	W8/F01	21	16.4	4.6	21.9%	89	88	0.3	1.4%	39	16	34	11	12.8%	31.3%	43	18	37	12	14.0%	33.3%

(1) KITCHEN SMALLER THAN 13m2
(2) INC\HZ = SKY COMPONENT (INCLINED\HORIZONTAL WINDOWS)
(3) SINGLE ASPECT ROOM DEEPER THAN 5m

					VSC (WINDOW)				NSL				APSH (WINDOW)						APSH (ROOM)					
FLOOR	ROOM	PROPERTY	ROOM	WINDOW	EX.	PR.	LOSS	LOSS	EX.	PR.	LOSS	LOSS	EX.		PR.		LOSS %		EX.		PR.		LOSS %	
													ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL	WINTER
			BEDROOM	W9/F01	22.1	17	5.1	23.1%					39	17	32	10	17.9%	41.2%						
	R6 (3)	RESIDENTIAL	BEDROOM	W10/F01	21	15.9	5.1	24.3%	56	56	0.1	0.7%	36	18	28	10	22.2%	44.4%	36	18	28	10	22.2%	44.4%
F02	R1	RESIDENTIAL	BEDROOM	W1/F02	37.6	34.8	2.8	7.4%	96	96	0.0	0.0%	86	29	84	27	2.3%	6.9%	87	30	85	28	2.3%	6.7%
			BEDROOM	W2/F02	37.7	34.2	3.5	9.3%					87	30	84	27	3.4%	10.0%						
	R2	RESIDENTIAL	BEDROOM	W3/F02	37.8	33.7	4.1	10.8%	99	99	0.0	0.0%	87	30	83	26	4.6%	13.3%	90	30	89	29	11%	3.3%
			BEDROOM	W4/F02	37.8	33.2	4.6	12.2%					87	30	83	26	4.6%	13.3%						
			BEDROOM	W5/F02	27.2	26	1.2	4.4%					45	13	44	12	3.2%	7.7%						
	R3	RESIDENTIAL	BEDROOM	W6/F02	21.5	20.7	0.8	3.7%	92	92	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R4	RESIDENTIAL	BEDROOM	W7/F02	19.6	18.1	1.5	7.7%	78	78	0.0	0.1%	36	15	36	15	0.0%	0.0%	36	15	36	15	0.0%	0.0%
	R5 (3)	RESIDENTIAL	BEDROOM	W8/F02	23.5	21.5	2	8.5%	89	89	0.0	0.0%	40	16	40	16	0.0%	0.0%	44	18	44	18	0.0%	0.0%
			BEDROOM	W9/F02	24.9	22.8	2.1	8.4%					41	17	41	17	0.0%	0.0%						
	R6 (3)	RESIDENTIAL	BEDROOM	W10/F02	23.7	21.5	2.2	9.3%	58	58	0.0	0.1%	40	17	40	17	0.0%	0.0%	40	17	40	17	0.0%	0.0%
F03	R1	RESIDENTIAL	BEDROOM	W1/F03	38.5	38.5	0	0.0%	96	96	0.0	0.0%	87	30	87	30	0.0%	0.0%	87	30	87	30	0.0%	0.0%
			BEDROOM	W2/F03	38.5	38.5	0	0.0%					86	30	86	30	0.0%	0.0%						
	R2	RESIDENTIAL	BEDROOM	W3/F03	38.5	38.5	0	0.0%	100	100	0.0	0.0%	86	30	86	30	0.0%	0.0%	90	30	90	30	0.0%	0.0%
			BEDROOM	W4/F03	38.5	38.5	0	0.0%					86	30	86	30	0.0%	0.0%						
			BEDROOM	W5/F03	33.8	33.8	0	0.0%					44	14	44	14	0.0%	0.0%						
	R3	RESIDENTIAL	BEDROOM	W6/F03	29.6	29.6	0	0.0%	95	95	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
BUILDING 1 - NEW CENTURY PLACE (CONTINUED)																								
	R4	RESIDENTIAL	BEDROOM	W7/F03	22	22	0	0.0%	85	85	0.0	0.0%	45	14	45	14	0.0%	0.0%	45	14	45	14	0.0%	0.0%
	R5 (3)	RESIDENTIAL	BEDROOM	W8/F03	29.9	29.9	0	0.0%	88	88	0.0	0.0%	61	18	61	18	0.0%	0.0%	70	21	70	21	0.0%	0.0%
			BEDROOM	W9/F03	31.5	31.5	0	0.0%					62	20	62	20	0.0%	0.0%						
	R6 (3)	RESIDENTIAL	BEDROOM	W10/F03	29.3	29.3	0	0.0%	58	58	0.0	0.0%	57	20	57	20	0.0%	0.0%	57	20	57	20	0.0%	0.0%

(1) KITCHEN SMALLER THAN 13m2
(2) INC\HZ = SKY COMPONENT (INCLINED\HORIZONTAL WINDOWS)
(3) SINGLE ASPECT ROOM DEEPER THAN 5m

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